Progress Report on the Management of Bats

in the Northwest Territories (2021-2025)

SPECIES AT RISK (NWT) ACT

Progress Report and Review Series 2026

For copies of the progress report, management plan, or for additional information on Northwest Territories (NWT) species at risk, please visit the NWT Species at Risk website (www.nwtspeciesatrisk.ca).

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Little brown myotis (*Myotis lucifugus*), credit: Allicia Kelly/GNWT-ECC
Northern myotis (*Myotis septentrionalis*), credit: Cori Lausen
Long-eared myotis (*Myotis evotis*), credit: Donald Solick
Hoary bat (*Lasiurus cinereus*), credit: MerlinTuttle.org
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Long-legged myotis (*Myotis volans*), credit: Donald Solick

What is the *Species at Risk (NWT) Act*?

The *Species at Risk (NWT) Act* (the Act) provides a process to identify, protect and recover species at risk in the NWT. The Act applies to any wild animal, plant or other species for which the Government of the Northwest Territories has management authority. It applies everywhere in the NWT, on both public and private lands, including private lands owned under a land claims agreement.

What is the Conference of Management Authorities?

The Conference of Management Authorities (CMA) was established under the Act and is made up of the wildlife co-management boards and governments in the Northwest Territories (NWT) that share responsibility for the management of species at risk in the NWT (referred to as 'Management Authorities'). The purpose of the CMA is to build consensus among Management Authorities on the conservation of species at risk and to provide direction, coordination and leadership with respect to the assessment, listing, conservation and recovery of species at risk while respecting the roles and responsibilities of Management Authorities under land claim and self-government agreements. The CMA develops consensus agreements on listing species at risk, conservation measures, management plans and recovery strategies. Only Management Authorities in or near the range of a species are involved in making decisions.

What is a species of Special Concern?

Under the Act, a species of Special Concern is a species that may become Threatened or Endangered in the NWT because of a combination of biological characteristics and identified threats.

What is a management plan?

Under the Act, a management plan is a document that recommends objectives for the management of a species of Special Concern. It also recommends approaches to achieve those objectives. It includes a description of threats and positive influences on the species and its habitat. Under the Act, a management plan must be completed for species of Special Concern within two years of the species being added to the NWT List of Species at Risk.

What is a progress report?

Under the Act, a progress report is required every five years, or sooner, to report on the actions undertaken to implement a management plan or recovery strategy and on the progress made toward meeting its objectives.

PREFACE

The *Management Plan for Bats in the Northwest Territories* (CMA 2020) defines an overall goal and objectives to guide the management and conservation of bats in the Northwest Territories (NWT) and recommends approaches to achieve those objectives.

The management plan recognizes the collaborative and interjurisdictional nature of bat management and the shared responsibility for bat management among Indigenous governments and organizations, federal/provincial/territorial governments, and co-management boards.

Under subsection 73(1) of the *Species at Risk (NWT) Act* and Section 8 of the management plan (Next Steps), a progress report must be completed every five years on the actions undertaken to implement the management plan and the progress towards meeting its objectives.

This document is a report on progress towards the management and conservation of bats in the NWT from 2021 to 2025. It describes the actions taken by co-management partners to implement the *Management Plan for Bats in the Northwest Territories* and meets the legislative requirement for a progress report under the *Species at Risk (NWT) Act*.

ACKNOWLEDGMENTS

This progress report was developed collaboratively by the Conference of Management Authorities partners involved in the management and conservation of bats in the NWT: Gwich'in Renewable Resources Board (GRRB), ʔehdzo Got'ı̨nę Gots'ę́ Nákedı (Sahtú Renewable Resources Board, SRRB), Wek'èezhìı Renewable Resources Board (WRRB), Tłı̨chǫ Government (TG), Government of the Northwest Territories (GNWT), and the Government of Canada (Parks Canada).

Preparation of this progress report was funded by the GNWT Department of Environment and Climate Change (ECC). The management partners would like to thank the Species at Risk Secretariat for addressing the requirements of a progress report under the *Species at Risk (NWT) Act*. The principal preparers of this progress report were Joslyn Oosenbrug and Michele Grabke (Species at Risk Secretariat) and Joanna Wilson (GNWT Wildlife Biologist – Species at Risk).

Background information in this document is summarized from the *Management Plan for Bats in the Northwest Territories* (CMA 2020) and the *Species Status Report for Big Brown Bat, Little Brown Myotis, Northern Myotis, Long-eared Myotis, and Long-legged Myotis (*Eptesicus fuscus, Myotis lucifugus, Myotis septentrionalis, Myotis evotis, and Myotis volans*) in the Northwest Territories* (SARC 2017), as well as the forthcoming 2027 *Species Status Report for Little Brown Myotis (*Myotis lucifugus*) and Northern Myotis (*Myotis septentrionalis*) in the Northwest Territories* (SARC *in prep.*).

To avoid repetitive citations, it can be assumed that information was taken from one of these sources unless another reference is given.

ACRONYMS

ARU	Autonomous recording unit
CMA	Conference of Management Authorities
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWHC	Canadian Wildlife Health Cooperative
CWS	Canadian Wildlife Service (ECCC)
ECC (or GNWT-ECC)	Department of Environment and Climate Change, Government of the Northwest Territories
ECCC	Environment and Climate Change Canada
FSMC	Fort Smith Métis Council
GNWT	Government of the Northwest Territories
GRRB	Gwich'in Renewable Resources Board
GSA	Gwich'in Settlement Area
HTC	Hunters and Trappers Committee
INF (or GNWT-INF)	Department of Infrastructure, Government of the Northwest Territories
ISR	Inuvialuit Settlement Region
KFN	Kátł'odeeche First Nation
KTFN	Ka'a'gee Tu First Nation
LKDFN	Łutsël K'é Dene First Nation
NABat	North American Bat Monitoring Program
NSMA	North Slave Métis Alliance
NTBMP	NWT Biodiversity Monitoring Program
NWT	Northwest Territories
PC	Parks Canada
Pd	*Pseudogymnoascus destructans*
RRC	Renewable Resources Council
SARC	NWT Species at Risk Committee
SARA	*Species at Risk Act*
SCARF	NWT Species Conservation and Recovery Fund
SLFN	Tthebatthı Dënesųłiné Nation (formerly Smith's Landing First Nation)

SRFN	Salt River First Nation
SRRB	ʔehdzo Got'ı̨nę Gots'ę́ Nákedı (Sahtú Renewable Resources Board)
TDN	Tthebatthı Dënesų̨łiné Nation (formerly Smith's Landing First Nation)
TG	Tı̨chǫ Government
WMAC (NWT)	Wildlife Management Advisory Council NWT
WMIS	NWT Wildlife Management Information System
WNS	White-nose syndrome
WRRB	Wek'èezhìı Renewable Resources Board

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MANAGEMENT PROGRESS FROM 2021 TO 2025

HIGHLIGHTS

Progress has been made towards meeting all objectives in the management plan.

Some of the **key actions** implemented between 2021-2025 include:

- **Acoustic bat detectors** (sound recorders/ARUs) are being deployed across the NWT to learn about bat presence and species distributions. Systematic acoustic monitoring has been conducted since 2021 as part of the North American Bat Monitoring Program. As of 2025, ARUs have been deployed in all NWT regions except the Inuvialuit Settlement Region (ISR) as part of the NWT Biodiversity Monitoring Program and other monitoring initiatives.
- **Bat surveys** took place to improve information about bat presence/absence, species distribution and important habitats, at Old Fort Rae and in Nahanni National Park Reserve and the Prairie Creek area. Additional information about bat distribution and ecology has been gained through local knowledge and reported observations.
- **White-nose syndrome** (WNS) surveillance efforts included collecting and testing guano (feces), swabbing captured bats, submitting dead bats for disease testing, and encouraging the public to report unusual bat observations. **WNS has not been detected in the NWT as of 2025.** A fact sheet and sampling instructions have been developed to support WNS surveillance efforts in the NWT. Surveillance results are shared with the Canadian Wildlife Health Cooperative (CWHC) as part of continental monitoring for WNS. GNWT-ECC is also part of a research project exploring the use of healthy bacteria on bat's skin (probiotics) to fight white-nose syndrome.
- **Best practices to prevent unnecessary human-caused harm** to bats, especially at sensitive sites like maternity colonies and hibernacula, have been developed and shared. These practices are promoted through direct advice, outreach campaigns and published resources (e.g. 'Got Bats?' NWT Guide for Managing Bats in Buildings; best management practices for the use of bat houses; and a poster encouraging people to avoid entering caves). Reducing other threats supports resilient bat populations and gives them the best chance of persisting in the face of white-nose syndrome.
- **Bridges were surveyed** throughout the southern NWT from 2021-2024 to investigate bat distribution and roosting habitat as part of the Bats and Bridges

project. A brochure for bridge workers and wildlife managers with information on how bats use bridges was also developed as part of this project.

- Little brown myotis **maternity colonies are monitored annually** for population trends and health in Fort Smith, Kakisa, Hay River, and Fort Providence. There is also ongoing banding of bats at these sites which can provide information on the population such as age, survival rate, reproduction, and movements.
- Efforts to **increase awareness of NWT bats** include social media campaigns like Bat Week, media interviews, bat box building workshops, and educational resources that promote respect and appreciation for bats. A video posted on social media in 2024 of a **bat near Aklavik** provided an opportunity to share information on GRRB's monitoring efforts and the importance of reporting all bat sightings.
- The **national Bat Maternity Roost Working Group** was active from 2022 to 2025 to help better manage and protect these important sites across Canada, including in the NWT. In 2024, the group published a guidance document on how to define, characterize, and locate bat maternity roost habitat.
- Researchers in the NWT are required to follow established **protocols and best practices** to protect the health of bats (and people) by preventing spread of pathogens such as coronaviruses (that lead to COVID-19) and white-nose syndrome fungus. This includes decontamination protocols, masking, and risk assessments for handling bats.
- **Collaborative research and monitoring** for bats and white-nose syndrome are ongoing through programs and working groups that share information about bat health and help coordinate conservation, monitoring and surveillance efforts across jurisdictions. NWT bat information/samples also contribute to larger, continental-scale research projects.

PROGRESS REPORT

1. INTRODUCTION

Bats are a unique and important group of species in our ecosystem. They prey on a wide range of insect types and eat large numbers of insects. Seven bat species are known to occur in the Northwest Territories (NWT): little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*), long-eared myotis (*Myotis evotis*), long-legged myotis (*Myotis volans*), big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), and hoary bat (*Lasiurus cinereus*). The presence of eastern red bat (*Lasiurus borealis*) is expected but unconfirmed in the NWT.

Species of Special Concern

Little brown myotis and northern myotis are hibernating bats that are listed as species of Special Concern under the *Species at Risk (NWT) Act*. This means they could become Threatened or Endangered in the NWT because of a combination of biological factors and identified threats. These species are also listed nationally as Endangered under the federal *Species at Risk Act*.

Little Brown Myotis and Northern Myotis

	NWT	Canada
Listed	Special Concern (2018)	Endangered (2014)
Recovery Planning	Management plan (2020)	Recovery strategy (2018)

Three other hibernating NWT bat species were also assessed under the *Species at Risk (NWT) Act* (big brown bat, long-eared myotis, and long-legged myotis), but were found to be Data Deficient, meaning there was not enough information to categorize these species as Extinct, Extirpated, Endangered, Threatened, Special Concern, or Not at Risk.

The main threat facing all five hibernating bat species in the NWT is white-nose syndrome (WNS). This disease is caused by the fungus *Pseudogymnoascus destructans* (Pd) and has resulted in mass die-offs in bat populations elsewhere in Canada and the United States. Although white-nose syndrome has not yet been reported in the NWT, it is spreading quickly and in 2025, the Pd fungus was reported in northern Alberta.

Human activities at key habitat sites where many bats congregate can have negative impacts on bat populations. This includes the removal of maternity roosts, exclusion of bats from buildings using inappropriate methods, and human-caused injury to bats found in buildings. It also includes human activities at hibernation sites such as caves and mines, which can disturb bats, alter hibernation conditions, or introduce disease.

In 2023, the three migratory bat species in the NWT (eastern red bat, hoary bat, and silver-haired bat) were assessed as Endangered in Canada by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2023). A federal decision on listing is pending. These species have not been assessed under the *Species at Risk (NWT) Act*.

Eastern Red Bat, Hoary Bat and Silver-haired Bat

	NWT	Canada
Assessed	--	Endangered (2023)
Listed	--	--
Recovery Planning	Management plan (2020)	--

The main threat to these migratory species is wind turbines, which kill hundreds of thousands of migratory bats every year in North America. Wind turbine collisions are also an important threat to other bat species (including little brown myotis). While the use of wind turbines in NWT is presently quite limited, NWT bats can be affected by this threat when they move around and migrate (e.g., outside the NWT).

Loss of habitat also remains a threat to all bat species in the NWT. Declines in the number of older-age forests and the removal of dead trees can affect bat species that rely on mature forests for roosting and foraging. Other threats include widespread declines in insect populations, environmental contaminants, and domestic cats preying on bats.

Management Plan

While only two species of bats (little brown myotis and northern myotis) are currently listed on the NWT List of Species at Risk, they share several threats in common with other NWT bats and there is considerable overlap in their management needs. As a result, the multispecies *Management Plan for Bats in the Northwest Territories* was completed by the CMA in April 2020 to address the needs of all NWT bats. It is intended to provide guidance and direction to co-management partners to help with decision-making for bat management.

An agreement to implement the management plan for bats was finalized on April 9, 2021. This agreement outlines the actions Management Authorities intend to take to implement the management plan.

This progress report highlights the actions taken to implement the management plan for bats from 2021 to 2025 and progress made towards meeting its objectives.

Section 74 of the *Species at Risk (NWT) Act* also states that the CMA shall review a management plan or recovery strategy every five years. A review of the management plan for bats took place on November 21, 2025, and the findings are summarized in this document.

2. MANAGEMENT PARTNERS FOR BATS

Success in the management and conservation of bats in the NWT depends on the commitment and cooperation of many different groups involved in implementing the recommendations set out in the management plan. The management authorities that share responsibility for the management of bats in the NWT through the Conference of Management Authorities (CMA) are:

- Gwich'in Renewable Resources Board[i]
- ʔehdzo Got'ı̨nę Gots'ę́ Nákedı (Sahtú Renewable Resources Board)
- Wek'èezhìı Renewable Resources Board
- Tłı̨chǫ Government
- Government of the Northwest Territories

Acho Dene Koe First Nation, Akaitcho Territory Government, Dehcho First Nations, Denesųłiné Né Né Land Corporation, Kátł'odeeche First Nation, North Slave Métis Alliance, Northwest Territory Métis Nation and Salt River First Nation are also invited to participate in CMA meetings.

The Government of Canada is responsible for the implementation of the federal *Species at Risk Act*, as well as conservation and recovery of bats on federal Crown lands (including national parks and reserves, migratory bird sanctuaries, and national wildlife areas).

Further information on the management partners that developed this progress report is provided in Appendix A.

[i] Bats were not confirmed in the Gwich'in Settlement Area until 2024. As such, the GRRB was not formally a Management Authority for bats at the time the management plan was being developed and is not a signatory to the management plan (2020). However, GRRB has stated that it is committed to the management and recovery of species that may be in the GSA and has committed to implementing the management approaches identified in Annex A of the management plan, subject to appropriations, priorities, and budgetary constraints.

3. SPECIES INFORMATION

All bat species in the NWT belong to the family Vespertilionidae ('vesper bats' or 'evening bats') (Table 1). Before 2006, only three bat species were known to live in the NWT. There are now seven confirmed species and one suspected for a total of eight bat species in the NWT. Bats are widespread throughout the southern NWT and occasionally occur below the treeline further north.

Table 1. Common and scientific names for NWT bats.

Common Name(s) (English)	Common Name(s) (French)	Scientific Name
Little brown myotis Little brown bat	Vespertilion brun Petite chauve-souris brune	*Myotis lucifugus*
Northern myotis Northern long-eared bat	Vespertilion nordique Chauve-souris nordique	*Myotis septentrionalis* (classified as *Myotis keenii* prior to 1979)
Long-eared myotis Western long-eared bat	Vespertilion à longue oreilles Chauve-souris à longue oreilles	*Myotis evotis*
Long-legged myotis Hairy-winged bat	Vespertilion à longue pattes Chauve-souris à longue pattes	*Myotis volans*
Big brown bat	Sérotine brune Grande chauve-souris brune	*Eptesicus fuscus*
Silver-haired bat	Chauve-souris argentée	*Lasionycteris noctivagans*
Hoary bat	Chauve-souris cendrée	*Lasiurus cinereus*
Eastern red bat	Chauve-souris rousse Chauve-souris rousse de l'est	*Lasiurus borealis*

Common names or terms for bat in Indigenous languages:

Tsáret'áneé (bat)	Chipewyan – Denínu Kue and Łutsel K'e (SSDEC 2012; 2014)
Gútłóolía dlụą det'onı (bat)	Dene Zhatıé – Kátł'odeeche (SSDEC 2009)
Dlûâ det'oni (mouse + flying/migrating bird)	Dene Zhatıé – Fort Providence (Ecology North 2019; Jumbo pers. comm. *in* CMA 2020:16)

Dléa det'ǫne (flying squirrel)	Shúhta/Shíhta Got'ıne or Mountain and K'áalo Got'ıne or Willow Lake dialects [Tulít'a], Délıne Got'ıne, K'ásho Got'ıne [Fort Good Hope and Colville Lake] (SRRB and SARS 2013)
Dłı̀ą k'et'à (flying mouse)	Tłıchǫ (Guile pers. comm. *in* CMA 2020:16)
Daatsadh natandit'ee (flying mouse)	Gwichya Gwich'in (GSCI 2009)
Daatsoo natindit'ee (flying mouse)	Teetł'it Gwich'in (GSCI 2009)

In the NWT, all bats eat insects. Some can consume their own body weight in insects each night. Bats are nocturnal which means they rest during the day and are most active at night. Bats rely on echolocation (high-frequency sounds) more than their eyes to find food and move through the night skies. Bats are sensitive to population decline because they have the slowest reproductive cycles of mammals their size on earth. Many bat species only produce one pup per year.

In the summer, NWT bats roost (rest) in tree hollows, under tree bark, among the leaves of trees, in caves, in rock crevices, and in buildings. A bat roost may also be home to a 'maternity colony' – a group of female bats raising their young. In the winter, some species of NWT bats migrate south to warmer areas. Other species stay and hibernate in caves or deep crevices.

Buildings and other human-made structures can offer safe shelters for some bat species to roost in and can be especially important for bats in the north. A building with bats may be home to a maternity colony. Bats roosting in buildings are vulnerable to human-caused disturbance and injury.

Maternity colonies and hibernacula (hibernating habitat) can be home to many bats (meaning a negative impact can harm many bats at once), and bats often return to use the same locations year after year. Protecting maternity colonies and hibernacula is an essential part of bat conservation.

4. HOW ARE BATS DOING IN THE NORTHWEST TERRITORIES?

Biological status

The NWT Species at Risk Committee (SARC) assessed the biological status of five hibernating (non-migratory) bat species in April 2017. Little brown myotis and northern myotis are scheduled for reassessment in 2027. The reassessments will determine whether the status of these species has improved, worsened, or remains the same (i.e. has not become further at risk). A species status report is being prepared that compiles and analyzes the best available Indigenous and community knowledge and science on the biological status of these species in the NWT, as well as existing and potential threats and positive influences (SARC *in prep.*).

Big brown bat, long-eared myotis, and long-legged myotis are not being reassessed. These species were assessed as Data Deficient in 2017 under the *Species at Risk (NWT) Act*, and would likely still be Data Deficient. The three migratory bat species in the NWT (eastern red bat, hoary bat, and silver-haired bat) have not been assessed to date under the *Species at Risk (NWT) Act*. If assessed, these three species would likely also be Data Deficient.

A detailed discussion of the biological status of the five non-migratory bat species in the NWT, including threats and positive influences to these species and their habitat, can be found in the 2017 species status report (SARC 2017). The forthcoming 2027 species status report (SARC *in prep.*) provides updated biological information on the two listed species, little brown myotis and northern myotis.

The *Management Plan for Bats in the Northwest Territories* (CMA 2020) includes biological information on all NWT bat species up to 2020. A summary of new information on all NWT bat species is provided below.

For a full discussion of biological status of little brown myotis and northern myotis in the NWT, including threats and positive influences to the species and their habitat, consult the 2027 species status report (SARC *in prep*).

Population, distribution and habitat

Population

The information available does not allow for calculating population sizes or trends of bat populations in the NWT. However, larger-scale projects and analyses provide broad-scale trends affecting our eight NWT bat species. The first-ever State of the Bats Report, published in 2023 by the North American Bat Conservation Alliance, includes population information for 154 bat species, including species occurring in the NWT (Adams *et al.* 2024). The report documents severe declines in bat populations across

North America due to climate change, habitat loss, wind energy, and white-nose syndrome—a deadly fungal disease that has killed millions of hibernating bats in the United States and Canada. White-nose syndrome has not yet reached the NWT but is getting close.

For the non-migratory bat species (little brown myotis, northern myotis, long-eared myotis, long-legged myotis, and big brown bat), the primary threats affecting these species elsewhere in Canada (white-nose syndrome, wind turbines, and timber harvesting) are not yet occurring at a large scale in the NWT. Therefore, it is reasonable to assume that populations of non-migratory bats in the NWT are still stable. This assumption is supported by ongoing monitoring of four little brown myotis maternity colonies in southern NWT (2011/2018 to 2025) where colony size has remained within the expected range of variation and no signs of disease have been detected (ECC unpubl. data 2025a). Additionally, GNWT-ECC continues to receive frequent reports of bat observations from the public with no declines reported (Wilson pers. comm. 2026). The surviving healthy bat populations in northwestern Canada are becoming increasingly important on a continental scale as populations elsewhere have declined (e.g., Lausen *et al.* 2019; Hoff *et al.* 2025); this may be especially true for the highly impacted northern myotis.

However, the imminent arrival of white-nose syndrome to the NWT continues to be a serious concern for bat species that hibernate – especially for small-bodied *Myotis* bat species – because of the high likelihood it will cause declines in the NWT after it arrives as it has elsewhere. One comprehensive study using data from 1995 to 2018 (from >200 sites in 2 provinces and 27 U.S. states) found that winter counts of little brown myotis and northern myotis declined by more than 90% within the decade after white-nose syndrome emerged (Cheng *et al.* 2021). Although white-nose syndrome has had limited geographic overlap with long-eared myotis and long-legged myotis so far, it is considered a serious threat to these species as well (Adams *et al.* 2024). Estimated population declines for the larger-bodied big brown bat due to white-nose syndrome have been less severe but still serious, at 35% (Cheng *et al.* 2021).

The assessment of three migratory bat species (hoary bat, eastern red bat and silver-haired bat) as Endangered in Canada (COSEWIC 2023) highlighted that these species are experiencing large population declines, largely due to high levels of mortality caused by collisions with wind turbines. Although there are insufficient data to examine population trends of these species at the NWT level, the overall declines are almost certainly affecting the populations found in the NWT. While bats likely experience little mortality from this threat while in the NWT, migratory individuals that spend part of their year in the NWT are the same individuals that spend the rest of their year in southern Canada, the U.S. and Mexico where high levels of mortality and population declines are documented (COSEWIC 2023; Wieringa *et al.* 2024).

Habitat

Non-migratory bat species found in the NWT must spend the winter in hibernacula, typically deep caves with stable, cool temperatures and high humidity levels. Hibernacula are important sites that are used by many bats at once, year after year, and are sensitive to disturbance. In 2019, there were four known hibernacula in the NWT: two in Nahanni National Park Reserve and two in the Fort Smith area (Figure 1). Since then, a field survey led by Parks Canada in 2025 investigated over 60 caves in the eastern part of Nahanni National Park Reserve and found signs of bats (e.g., guano) at 23 caves, suggesting some may be used as hibernacula. Parks Canada continues to investigate their potential use as overwintering habitat for bats (Murchison pers. comm. 2025). Further exploration of karst terrain, and investigation of known caves in winter, could identify additional hibernacula in the NWT.

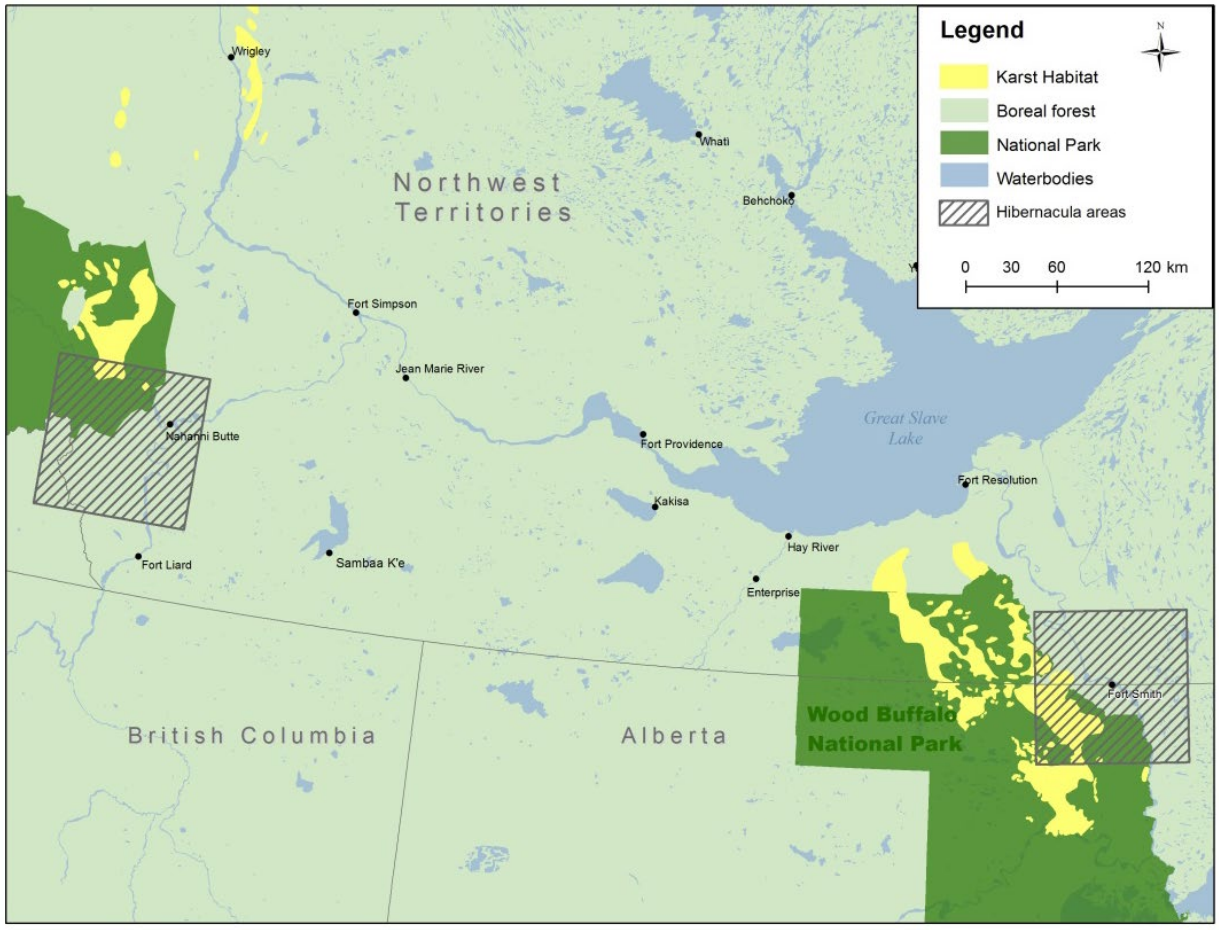

Figure 1. General areas containing known bat hibernacula in the South Slave and Nahanni regions, NWT. Specific locations of hibernacula are deemed sensitive information; contact GNWT-ECC or Parks Canada for further information. The karst terrain shape files were provided by the NWT Protected Areas Strategy and Wood Buffalo National Park. Figure from CMA 2020.

Roosts used by reproductive female bats and their young are called 'maternity roosts'. In some species, reproducing females tend to roost together in groups in a 'maternity colony'. Like hibernacula, maternity roosts are important and sensitive habitat sites and are often re-used year after year. Although no surveys to locate maternity roosts took place during the reporting period, bridge surveys caused the number of maternity colonies documented for little brown myotis in the NWT to increase from 13 to 15 since 2019 (Figure 2). A 2025 capture of a reproductive female northern myotis indicates that maternity colonies are found in the Fort Providence area, further north than previous such records for the species (Figure 3).

Figure 2. Locations of known little brown myotis maternity colonies and other records of reproductive female little brown myotis in the NWT. Each colony may use multiple roosts. Map adapted from CMA 2020; new data added from WCS Canada and ECC unpubl. data 2025.

Figure 3. Locations of known northern myotis maternity colonies and other records of reproductive female northern myotis in the NWT. Each colony may use multiple roosts. Map adapted from CMA 2020; new data added from ECC unpubl. data 2025a.

The Bats and Bridges project (2021-2024) has confirmed that bats roost under bridges throughout the southern NWT, with particularly heavy use of bridges in the Liard Valley (along Highway 7). Use of NWT bridges was documented for little brown myotis, northern myotis, long-legged myotis and big brown bat. At least two bridges in the NWT are almost certainly used by maternity colonies of little brown myotis (Figure 2), and three additional bridges are possible maternity roosts for bats with uncertainty about which species. Several other bridges are used by bats, perhaps as night roosts or as day roosts for males

and non-reproductive females. This new information on roosting habitat suggests the presence of bats should be considered when planning and implementing bridge maintenance and construction in the NWT. Bridges with heavy use by bats can also be useful sites for monitoring (e.g., guano collection for disease surveillance) and have been incorporated into GNWT-ECC's bat monitoring program.

Distribution

Recent bat survey efforts (2020-2025) have significantly expanded the amount and geographic coverage of bat occurrence data in the NWT. Species records are classified as confirmed or unconfirmed in Figures 4-12 to reflect the levels of confidence associated with different types of evidence, following the approach of Wilson et al. (2019). Caution is needed when assigning echolocation call recordings to specific bat species, however acoustic monitoring provides valuable clues about areas where species may occur and that warrant further investigation to confirm.

New insights into the distribution of bat species in the NWT are described on the following pages. The list of sources used to update the bat distribution maps can be found in Appendix B.

Little brown myotis – Little brown myotis is the most abundant and widespread bat species in the NWT. Bridge surveys, cave surveys and information submitted by the public have greatly increased the number of confirmed records of little brown myotis in the southern NWT, particularly along the highway network and in Nahanni National Park Reserve. In addition to filling in "gaps" in the southern NWT, information from previously under-surveyed areas has also shown that the species' range extends eastward in the taiga shield (including Łutsël K'é and forested areas east of the Slave River), and northward down the Mackenzie Valley into the Sahtú region. More records have also been added from north of Great Slave Lake. Although it is possible for its echolocation calls to be confused with other species, it is safe to assume the species is present in places where calls are recorded and classified as little brown myotis (Figure 4).

Figure 4. Little brown myotis occurrences in the Northwest Territories using data available up to 2025. Map adapted from CMA 2020; see Appendix B for new data sources.

Northern myotis – Bridge surveys and cave surveys have substantially increased the number of confirmed records (i.e., guano and specimens) for this species in the Liard Valley and Nahanni area and have expanded its known range to include Fort Providence and Fort Resolution. Acoustic monitoring has recorded echolocation calls classified as northern myotis at additional locations, suggesting distribution may be even broader, but acoustic evidence alone is not sufficient to confirm presence of this species (Figure 5).

Figure 5. Northern myotis occurrences in the Northwest Territories using data available up to 2025. Map adapted from CMA 2020; see Appendix B for new data sources.

Long-eared myotis – There is still only one confirmed record of this species from the South Nahanni watershed in 2006. Acoustic monitoring has recorded echolocation calls classified as long-eared myotis at several other locations, but without physical evidence long-eared myotis is presumed absent because of the potential for calls to be confused with another species (Figure 6).

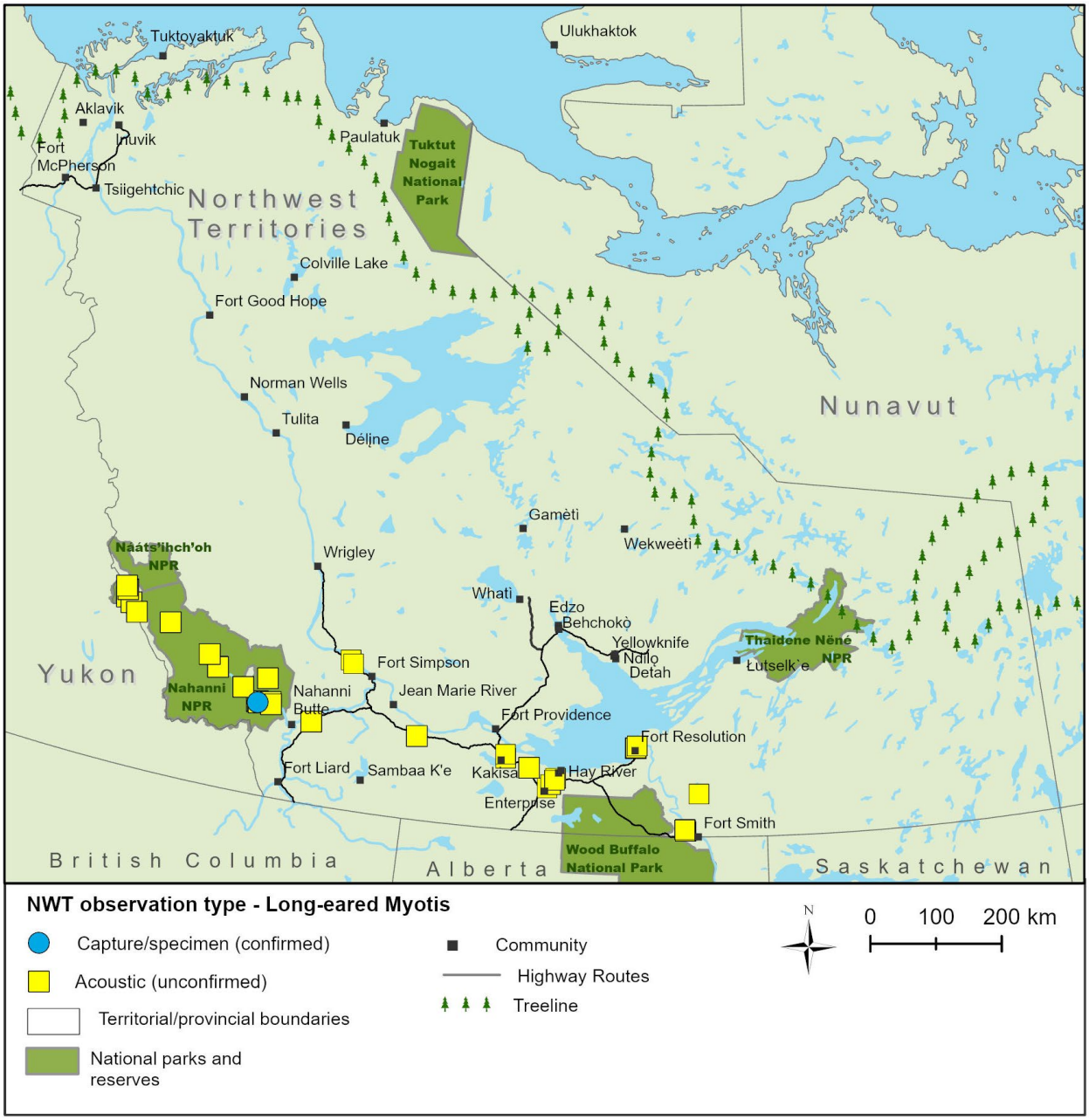

Figure 6. Long-eared myotis occurrences in the Northwest Territories using data available up to 2025. Map adapted from CMA 2020; see Appendix B for new data sources.

Long-legged myotis – Bridge surveys and cave surveys have substantially increased the number of confirmed records (i.e. guano and specimens) for this species in the NWT, all of which are in the Liard Valley and South Nahanni watershed. Although acoustic monitoring has produced recordings elsewhere in the NWT that could be attributed to this species, the potential for misidentification is high. Without physical evidence, the species is presumed absent from those areas (Figure 7).

Figure 7. Long-legged myotis occurrences in the Northwest Territories using data available up to 2025. Map adapted from CMA 2020; see Appendix B for new data sources.

Big brown bat – Bridge surveys and cave surveys have confirmed the presence of this species in the Liard Valley and Nahanni area; additional records have been confirmed in the Fort Smith area because of information submitted by the public. Low-frequency echolocation calls attributed to this species have been recorded at several other locations in the southern NWT, suggesting big brown bats may be more broadly distributed along the south side of Great Slave Lake as well as east of the Slave River.

However, their calls can be confused with other species like silver-haired bat so acoustic evidence alone is not sufficient to confirm presence of big brown bats (Figure 8).

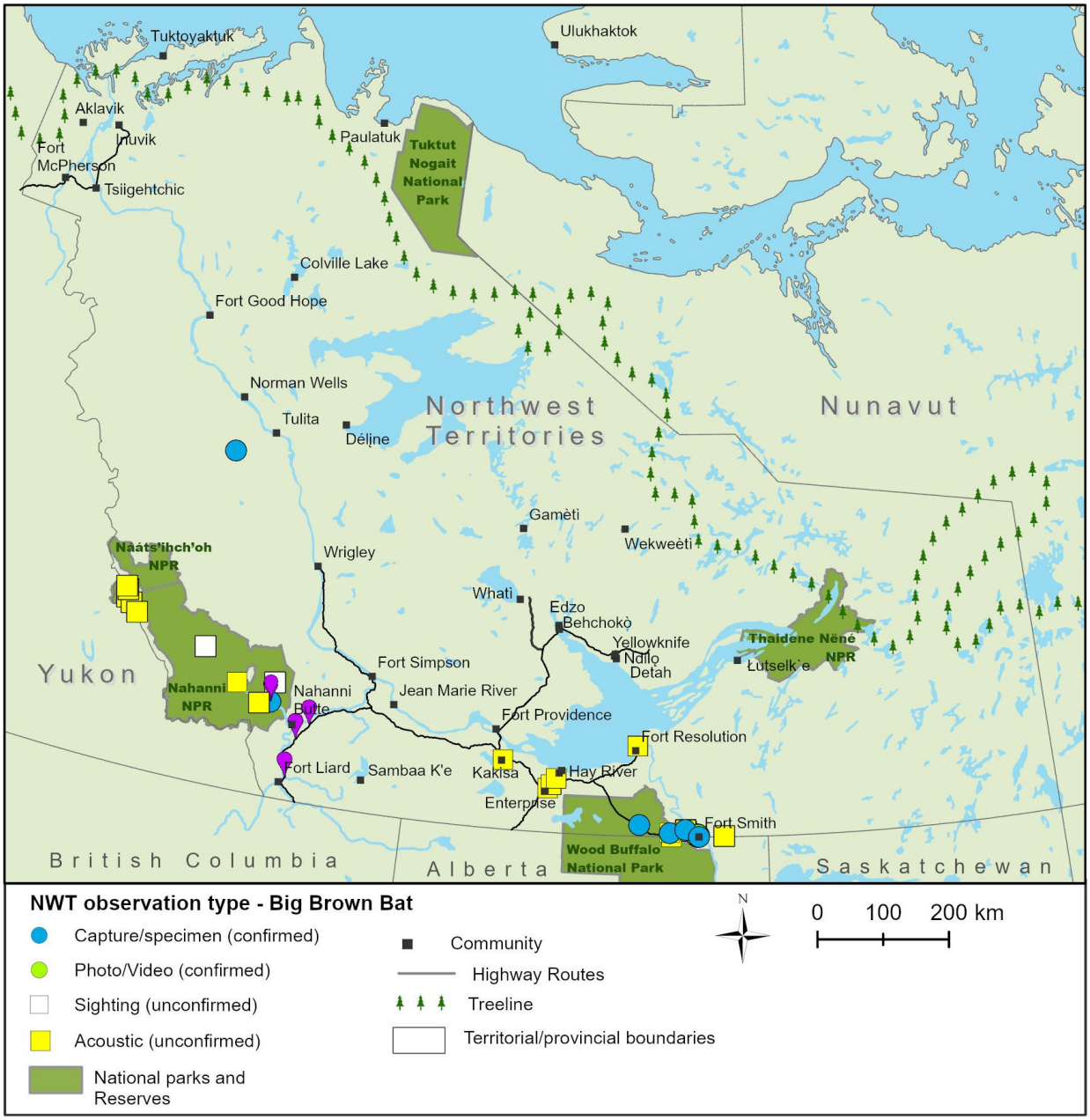

Figure 8. Big brown bat occurrences in the Northwest Territories using data available up to 2025. Map adapted from CMA 2020; see Appendix B for new data sources.

Silver-haired bat – Additional acoustic recordings have strengthened the evidence for the possible occurrence of this species between Fort Resolution and Fort Smith. They have also extended the area of possible occurrence further west: around the south side of Great Slave Lake to Fort Providence, as well as in the Nahanni area and Fort Simpson. However, these calls can be confused with other species like the big brown bat, and there remains only one confirmed record of silver-haired bat in the NWT (Figure 9).

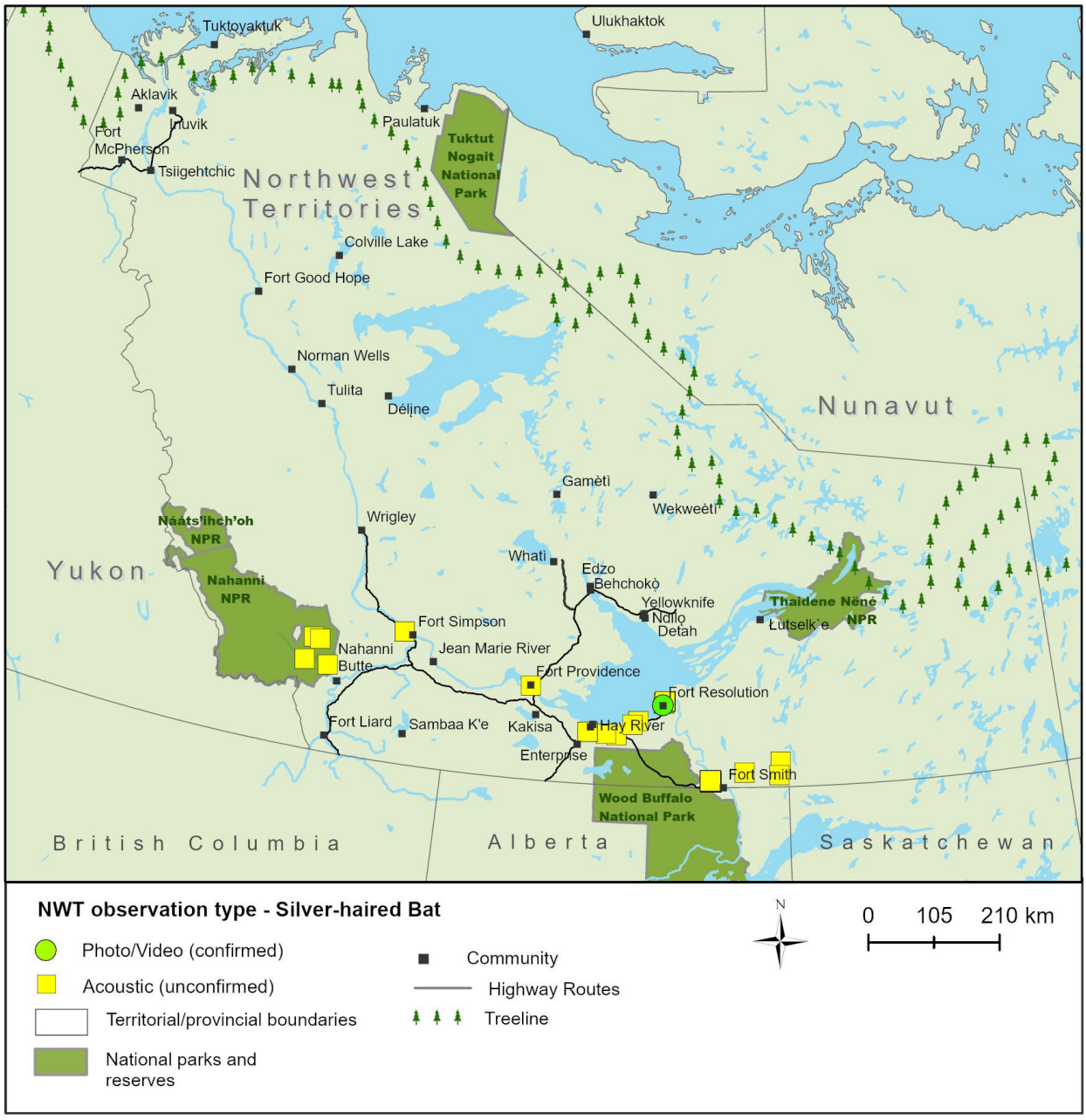

Figure 9. Silver-haired bat occurrences in the Northwest Territories using data available up to 2025. Map adapted from CMA 2020; see Appendix B for new data sources.

Hoary bat – Additional acoustic recordings confirmed regular presence of the species in the Mackenzie Mountains and around the south side of Great Slave Lake from Fort Providence to Fort Resolution. Hoary bat was also recorded at Tsu Lake (east of the Slave River) and near Whatì (Figure 10). Hoary bat echolocation calls are often distinguishable from other species and the potential for misidentification, although it does exist, is relatively low.

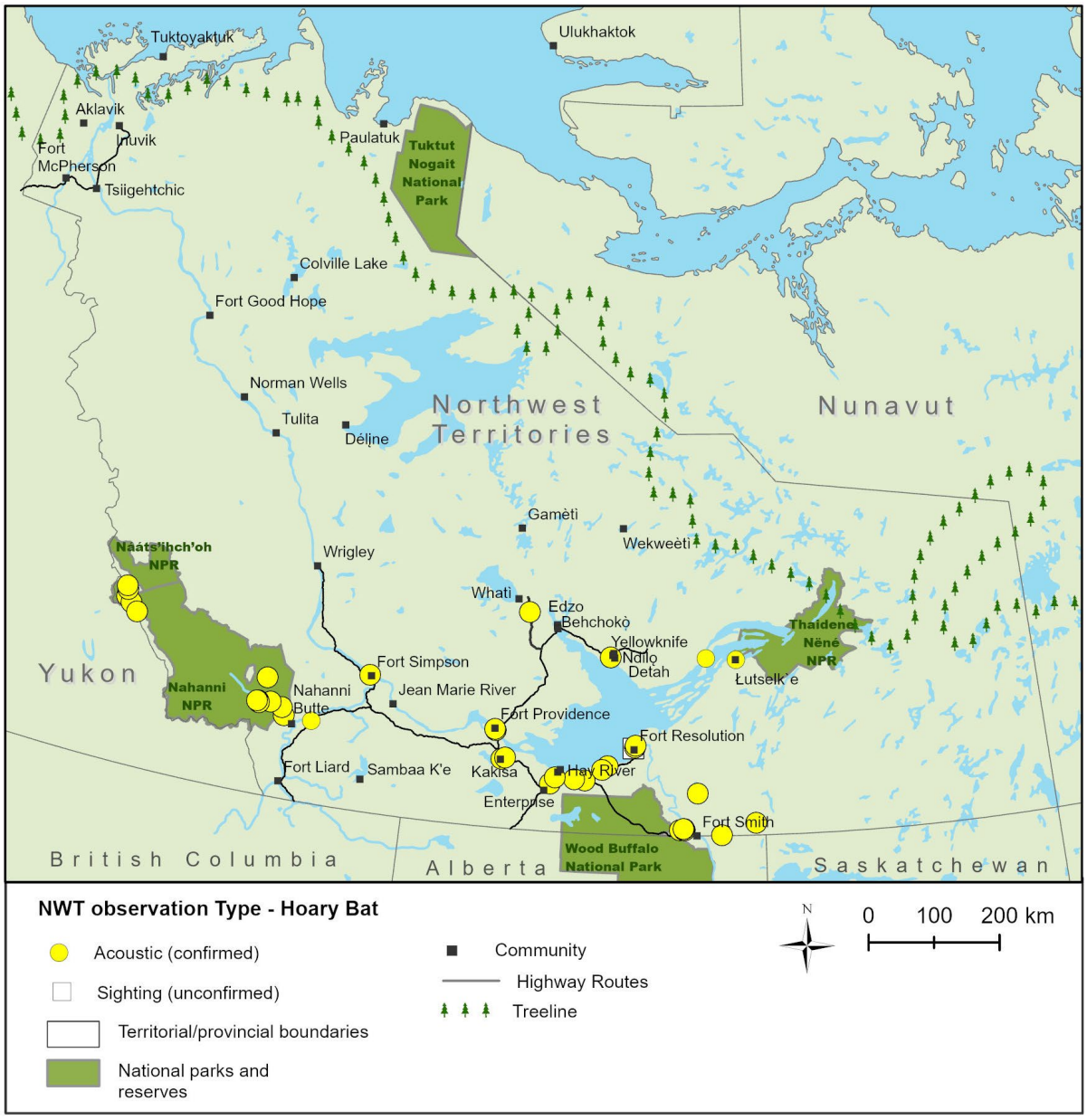

Figure 10. Hoary bat occurrences in the Northwest Territories using data available up to 2025. Map adapted from CMA 2020; see Appendix B for new data sources.

Eastern red bat – Although there are still no confirmed records of this species in the NWT, numerous acoustic recordings made south of Great Slave Lake have a high likelihood of being from eastern red bats. Additional acoustic recordings east of the Slave River, as well as in the Mackenzie Mountains and near Fort Simpson, support the possible presence of this species in those areas as well (Figure 11).

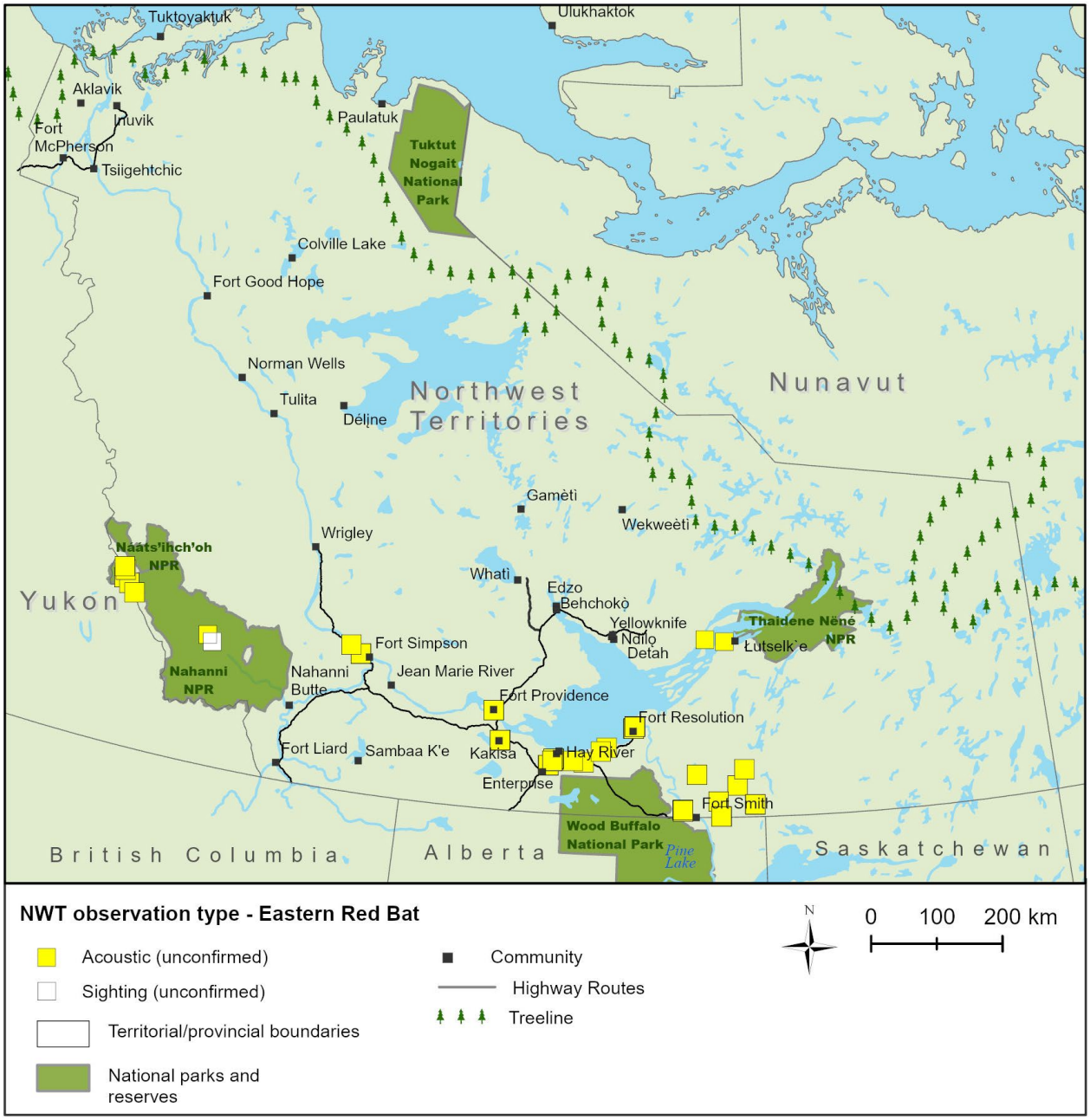

Figure 11. Eastern red bat occurrences in the Northwest Territories using data available up to 2025. Map adapted from CMA 2020; see Appendix B for new data sources.

Range limits of bats – Because it is possible to confidently identify images and ultrasound recordings as either bats or not bats, even when the species is uncertain, photographic evidence and acoustic monitoring can help to identify where bats as a group are present or absent on the landscape. Significant acoustic monitoring effort that took place in previously unsurveyed areas of the NWT during the reporting period, as well as information submitted by the public, have helped to refine our understanding of the range limits of bats. Figure 12 includes all bat occurrences that have been recorded or reported in the NWT to date, including those identified to species with varying levels of confidence (Figure 4 to Figure 11) as well as other occurrences where the species could not be determined.

Survey effort is also beginning to be sufficient to allow the identification of areas where bats are absent or are present only occasionally or in low numbers. For example, acoustic monitoring surveys along the Mackenzie Valley Winter Road and in the Norman Wells area did record bats in the Sahtú (Figure 4 and Figure 12). However, there were very few positive locations given the large search effort; and where bats were recorded, activity levels were very low. A video posted on social media provided the first physical evidence of a bat in the Gwich'in Settlement Area, however acoustic monitoring in the region has so far not produced any bat recordings (Figure 12). A few bats have been recently documented between Great Slave Lake and Whatì (Figure 10 and Figure 12); ongoing acoustic monitoring along the Tłı̨chǫ Highway will provide more information on bats in this area. Acoustic monitoring took place in Thaidene Nëné Protected Area during the reporting period but results are not yet available; these data will improve our understanding of bat distributions around the east arm of Great Slave Lake.

Figure 2. All occurrence records for bats in the Northwest Territories using data available up to 2025. Map based on data from maps in CMA 2020 as well as new data sources listed in Appendix B. Includes all bat occurrences that identified to species with varying levels of confidence (Figure 4 to Figure 11) as well as other occurrences where the species could not be determined.

Factors affecting bats

White-nose syndrome

White-nose syndrome (WNS) is a fungal disease associated with mass die-offs of hibernating bats across North America. Although it is spreading rapidly, WNS has not been detected in the NWT (or Yukon, Nunavut, or Labrador) as of 2025. However, due to this imminent and serious threat, two NWT bat species, little brown myotis and northern myotis, have been listed as Endangered in Canada and Special Concern in the NWT.

Over the last five years, the fungus has been detected in Manitoba, northern Alberta and northern Saskatchewan, as well as southern British Columbia. In 2025, it was detected in Fort McKay, Alberta, near Wood Buffalo National Park (see current map). WNS has been spreading at a rate of 200-250 km per year, suggesting the disease will probably arrive in the NWT in the next 1-4 years and may be present in Wood Buffalo National Park already (Olson pers. comm. 2025 *in* SARC *in prep.*).

Infection of the fungus at a hibernaculum usually results in severe decline or extirpation of the bat population. Rates of decline reported for *Myotis* bat species hibernating in eastern Canada range from 93% to 99.8% (COSEWIC 2013). However, there continue to be many unknowns about how the fungus is affecting (or will affect) bats in western Canada and in the north. For example, the cool pre-hibernation conditions and long winters that bats experience at northern latitudes would likely negatively influence their survival (Krueger *et al.* 2024). However, little brown myotis in the NWT (and northern Alberta) experience cooler hibernation conditions and have high levels of fat storage and efficient use of stored fat, which should promote a higher survival rate (Lausen *et al.* 2019). Genetic studies suggest that little brown myotis populations in the west (including the NWT) are smaller and more isolated than populations in the east (Wilder *et al.* 2015; Davy *et al.* 2017) which could potentially slow the spread of WNS. Although bats west of the Rocky Mountains have different hibernation behaviour and likely hibernate singly or in small groups rather than large hibernacula (e.g., Blejwas *et al.* 2023), which could further slow the spread, bat populations in the NWT do use large hibernacula and have strong gene flow with eastern populations (Alberta and Saskatchewan; Wilder 2014; Davy *et al.* 2017).

Studies have shown that some bat populations in areas first impacted by WNS, such as New York, are persisting at low levels and beginning to rebound (Langwig *et al.* 2017). Genetic studies have revealed selection for genes related to the immune system and changes in metabolism during hibernation (Lilley *et al.* 2020; Gignoux-Wolfsohn *et al.* 2021); bats that are able to carry more fat into hibernation, and bats that alter their hibernation behaviour and physiology (e.g., by choosing different microclimates within roosts) may have higher survival rates (Cheng *et al.* 2019; Cheng *et al.* 2024). In addition

to bat traits and behaviour, environmental conditions also affect a population's ability to persist (Grimaudo *et al.* 2022).

Supporting resilient, healthy bat populations in the face of white-nose syndrome goes beyond directly addressing the disease itself. Reducing other threats such as unnecessary human-caused harm will give NWT bat populations the best chance of surviving the disease and of recovering from population declines (Fontaine *et al.* 2024; Olson *et al.* 2025).

Human impacts at hibernation sites

Large, underground caves are of great interest to outdoor enthusiasts and explorers; however, human disturbance during hibernation can have negative impacts on bat health and survival. In the NWT, the precise locations of winter hibernation sites are considered sensitive, and in an effort to reduce human traffic, are not readily shared with the public (Wilson pers. comm. *in* SARC 2017). Hibernation sites in Nahanni National Park Reserve and Wood Buffalo National Park have additional protection from human impacts through *National Parks Act* regulations, as well as because they are remote and hard to access. Visits to known hibernacula for research and monitoring purposes are limited to ensure potential disturbance to hibernating bats is minimized, and GNWT shares public messaging encouraging people to avoid entering caves.

Exclusion and removal of maternity roosts

Many homeowners do not appreciate bats living in their buildings and will attempt to remove maternity colonies using non-lethal (exclusion) or lethal (extermination) methods. Inappropriate exclusion methods can harm or kill bats unintentionally. In the NWT, this threat is most relevant to little brown myotis and big brown bats which frequently roost in buildings. Public education can reduce this threat by promoting respect and appreciation for bats and informing people of the appropriate time and methods for excluding bats.

A lot of effort has gone into trying to mitigate these threats in the NWT. Several resources are now available and are regularly shared in the NWT, including the 'Got Bats?' NWT Guide for Managing Bats in Buildings. Public education efforts have also increased through regular public messaging (e.g., Bat Week campaigns), educational talks, and advice/best practices provided directly to building owners. This continued outreach has the potential to change people's attitudes, which should translate into less harm to bats; however, these outcomes are not easily tracked.

When bats are excluded or a building roost is removed, erecting well-designed, well-placed bat houses nearby to provide alternative roosts the year after exclusion can help bat colonies to relocate successfully (Brittingham and Williams 2000). In the NWT, several bat boxes have been built during the reporting period (2021-2025), and in some places

the installation of bat boxes prior to exclusion/loss of structures has provided bats with alternative roosts so the maternity colony continues to occupy the site. The potential for artificial roosts such as bat boxes to reach dangerously hot temperatures, causing bats to overheat and possibly die, is an emerging threat of concern that will be worsened by climate change (Flaquer *et al.* 2014, Martin-Bideguren *et al.* 2019; Rueegger 2019; Tillman *et al.* 2021). This can occur even in northern climates (e.g., Leung *et al.* 2022; de Mel *et al.* 2025). New best management practices for the use of bat houses (Holroyd *et al.* 2023) explicitly address this threat and should be followed to reduce the risk.

Loss of roosting and foraging habitat

For tree roosts, *Myotis* species prefer large standing dead or decaying trees located in old growth forests. Commercial timber harvesting has occurred in many locations in the NWT; typically, small harvest volumes by small-scale local businesses (500-10,000 m^3 per year). The total area harvested in the NWT has declined since the 1990s, although timber harvesting in the southern regions of the NWT could increase substantially if a wood pellet manufacturing facility goes ahead (ECC 2022). However, as of 2025, there is little movement on expanding the forestry industry in the NWT (Gravel pers. comm. 2025 *in* SARC *in prep.*).

Small scale timber harvesting can still impact maternity roost habitat for bats in the NWT; this is of particular concern for the northern myotis. For example, a maternity colony of northern myotis is known to roost in an area near Fort Smith that overlaps with planned fire-smarting activities. A reproductive female northern myotis captured near Fort Providence in 2025 suggests maternity tree-roosts nearby (ECC unpubl. data 2025a) and this location is part of a Timber Harvest Planning Area for a Regional Forest Management Agreement. It is important that foresters and machine operators can recognize highly suitable maternity roost trees to avoid the removal of potentially significant maternity roost habitat, both in forestry and fire breaks.

The extreme wildfire season experienced by the southern NWT in 2023 (Jain *et al.* 2024) highlighted changing wildfire regimes and the impacts that larger and more intense fires could have on bat habitat. Although fire can help to create roosting habitat for bats by damaging or killing large trees (e.g., Johnson *et al.* 2009), these trees must remain standing after fire to be available as roosts. In severe burns, accelerated tree fall combined with less residual vegetation may result in fewer roosts available on the landscape. *Myotis* species may also avoid severely burned areas due to reduced canopy cover and increased risk of predation (Jung 2019). Baltzer *et al.* (2025) describe impacts of changing fire regimes on boreal landscapes and the implications of these changes for terrestrial wildlife (including bats), using the NWT's 2023 wildfire season as a case study.

Wind turbines

Outside of the NWT, wind turbines are considered a threat to bats (migratory species in particular, but other bat species as well). Zimmerling and Francis (2016) found that as of 2013, about 47,000 bats were killed each year by wind turbines in Canada, of which about 13% were little brown myotis. As discussed earlier, migratory bats that spend part of their year in the NWT may encounter wind turbines outside the NWT during another part of their seasonal cycle.

To date, wind energy development is minimal in the southern NWT where most of the NWT's bats occur. Currently, the only large-scale wind energy development in the NWT is at the Diavik Diamond Mine—which is slated to close in 2026. The Inuvik High Point Wind Project, developed by NT Energy, brought an additional turbine online in 2023. The impact on birds and bats was an important part of the regulatory approval process for this project with the Gwich'in Land and Water Board (NTPC 2023). The NWT 2030 Energy Strategy includes the proposed expansion of wind energy into northern regions of the territory, include the Sahtú, North Slave, and Beaufort-Delta Regions, but there are no formal proposals at this time.

Mortality from cat predation and other unintended human-caused injury

Cat predation, accidental catch in glue traps (for rodent/pest control), and other unnecessary human-induced trauma are believed to be underreported and poorly understood causes of mortality (Segers *et al.* 2024). Numerous cat-related bat fatalities have been reported in the NWT, and samples have been submitted to GNWT-ECC in Fort Smith (Kelly pers. comm. *in* SARC 2017). Bat species that live in human structures or near human populations, especially reproductive females, are most at risk (Ancillotto *et al.* 2013), including little brown myotis. However, cat-related bat fatalities are not formally tracked or quantified. Poor understanding of bats, the important roles they play in the ecosystem, and the population status of at-risk bat species, may also lead to the unnecessary killing of bats when encountered by members of the public. Accidental injury or mortality of bats roosting in roll-up blinds and awnings is an emerging threat that occurs elsewhere but has not been investigated in the NWT (Rodriguez de la Vega 2024).

Other threats

The NWT is experiencing long-term drought conditions (began in 2022), particularly in southern regions, contributing to low lake and river levels (Agriculture and Agri-Food Canada 2025). Across the entire southern portion of the territory, drought intensity is classified as severe or extreme as of November 30, 2025. Periods of drought occur naturally; however prolonged drought conditions may negatively affect bats through declines in insect abundance and dehydration (in particular, among lactating female bats) (Adams 2010; Cappelli *et al.* 2021).

Mercury and other environmental contaminants, such as pesticides, remain a potential threat to bats in the NWT through toxic exposure and by reducing prey availability (insects) (Cable *et al.* 2021). Historically, agriculture has been a minor economic sector in the NWT, playing a relatively limited role in northern food systems and the regional economy (Lemay *et al.* 2021). To advance the growth of the sector, in 2017, the GNWT introduced the NWT's first-ever commercial agriculture strategy, and in 2020, the Territorial Agrifood Association was formed to facilitate the growth of the agri-food value industry in the territory.

As of 2025, rabies has not been detected in bats in the NWT (SARC *in prep.*); however, rabies can persist at low levels in some bat populations. Although rabies is unlikely to pose a major threat to bats in the NWT, it is a preventable human health concern and should be considered in public messaging about bats, research, and monitoring activities.

During the reporting period, the SARS-CoV-2 (COVID-19) pandemic triggered concerns about transmission of the virus from humans to bats and prompted research on its potential effects (Damas *et al.* 2020; Olival *et al.* 2020; Goldberg *et al.* 2024; Hall *et al.* 2024). In the NWT, biologists followed national guidance to reduce the risk of transmission, for example modifying their planned monitoring activities in 2020 to avoid handling bats. New hygiene protocols for handling bats (Patriquin *et al.* 2023) were developed which include wearing masks to provide additional protection to bat and human health. These protocols have become standard practice in the NWT. There remains a possibility that humans could transmit the virus that causes COVID-19 to bats through bat handling. The risk of transmission is low, particularly in open air space, and the ongoing use of face masks while handling bats can reduce the risk of transmission by 65-88% (Cook *et al.* 2021).

5. MANAGEMENT

Management Goal and Objectives

> **Management Goal**
>
> To **maintain self-sustaining, resilient populations** for each bat species across their range in the NWT.

The overall goal of this management plan is for each bat species to maintain self-sustaining, resilient populations across their range in the NWT. This will ensure that bats continue to be an important part of our ecosystem.

The management plan recommends the following objectives to meet the management goal for bats:

Objective 1: Fill knowledge gaps and enhance understanding of NWT bats, using traditional, community, and scientific knowledge, to inform sound management decisions.

Objective 2: Monitor, mitigate, and manage white-nose syndrome.

Objective 3: Prevent or reduce harm to bats associated with human activities.

Objective 4: Increase awareness, acceptance, and stewardship of bats and their habitats.

Objective 5: Manage bats using an adaptive and collaborative approach, and best available information.

Approaches to Achieve Objectives

Twenty-six (26) approaches are recommended in the management plan to achieve these five objectives. The approaches are relevant to all bats, but some are noted to be especially important for the designated species at risk. As of 2025, this includes little brown myotis and northern myotis, but the list of bats at risk in the NWT could change in the future.

Each approach is assigned a relative priority (critical, necessary or beneficial) and relative timeframe (short-term, long-term or ongoing).

> **Relative priority** can be *critical, necessary* or *beneficial*. Critical approaches are the highest priority for the conservation of bats and should be implemented sooner rather than later. Necessary approaches are important to implement for the conservation of bats but with less urgency than critical. Beneficial approaches help to achieve management goals but are less important to the conservation of the species compared to critical or necessary.
>
> **Relative timeframe** can be *short-term, long-term* or *ongoing*. Short-term approaches should be completed within five years (2026) and long-term approaches require more than five years to complete. Ongoing approaches are actions carried out repeatedly.

6. PROGRESS OVERVIEW

Table 2. Progress on approaches for the management of bats in the Northwest Territories, 2021-2025.

Completed	In progress	Not started	Not pursuing

Management Goal: Maintain self-sustaining, resilient populations for each bat species across their range in the NWT.			
Objective	**Management Approaches**	**Relative Priority/Time Frame**	**Progress**
Objective #1: Fill knowledge gaps and enhance understanding of NWT bats, using traditional, community, and scientific knowledge, to inform sound management decisions.	**1.1:** Identify knowledge gaps and encourage research and monitoring on bats, including collecting information on distribution, abundance and trends, health, biology, physiology, genetics, habitat, threats, and cumulative effects.	Necessary/ Ongoing	• **See also 1.2 and 1.3.** **Acoustic monitoring** • **Ongoing** – GNWT-ECC collaborates with many partners on the NWT Biodiversity Monitoring Program (NTBMP). This includes deploying and retrieving acoustic recorders/bat detectors in various areas of the NWT to learn about bat presence/absence and species distributions. During the reporting period, the NTBMP deployed bat detectors near Norman Wells, east of the Slave River, in the Fort Smith area, in Thaidene Nëné Protected Area, along the Mackenzie Valley Winter Road, in the Sambaa K'e area, along the Tłı̨chǫ Highway, in the Gwich'in Settlement Area, and in the Hay River area. In 2024, GNWT-ECC worked with a contractor to complete the analysis of audio recordings retrieved to date. ECC continues to work on analyzing data and reporting results of acoustic monitoring for bats. • **2021-Ongoing** – Systematic acoustic monitoring of bats has been conducted in the NWT since 2021 as part of the North American Bat Monitoring Program (NABat). NABat is a standardized long-term approach to monitoring bat distributions and indices of abundance at range-wide, regional, and local scales. It was designed to gather information pertinent to the impact of white-nose syndrome (WNS) and other threats on bat populations. In the NWT, GNWT-ECC monitors eight NABat grid cells in South Slave, Dehcho and Yellowknife using stationary point surveys. Parks Canada monitors two grid cells in Wood Buffalo National Park near the NWT border, which includes both stationary and mobile surveys. Parks Canada has also initiated stationary point monitoring in 14 grid cells in

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			Nahanni National Park Reserve and is developing an ecological integrity monitoring measure for Nahanni's forest ecosystem based on NABat monitoring protocols. • **2013-2024** – Parks Canada has been monitoring bat activity at a bat hibernaculum (Walk-in Cave) in Wood Buffalo National Park just south of the NWT-Alberta border **(see 1.3 for details**). Activity was not monitored in 2025 as the structural integrity of the cave was put into question and it was deemed unsafe to carry on work at that location. • **2021** – GNWT-ECC collaborated with GRRB, SRRB, RRCs, and a University of Alberta researcher (Camila Hurtado) to deploy bat detectors (also known as autonomous recording units, or ARUs) in the Sahtú and Gwich'in regions to improve information on bat distribution. • **2021** – EDI Environmental conducted acoustic monitoring for bats in the Howard's Pass area (Mackenzie Mountains) as part of baseline studies for Selwyn Chihong Mining) (EDI 2021). • **2021-2022** – ARUs were deployed within the boreal portion of Thaidene Nëné as part of the NWT Biodiversity Monitoring Program, a partnership between GNWT-ECC, Parks Canada, and Łutsël K'é Dene First Nation. Recordings are being analyzed. • **2022-2024** – GNWT-ECC worked with a bat biologist (Ed West) who conducted acoustic monitoring for bats along the Dempster and Tuktoyaktuk highways in 2022. Results were shared with wildlife management partners in the Gwich'in Settlement Area (GSA) and Inuvialuit Settlement Region (ISR) in 2024. ECC also shared the information with local HTCs. • **2024** – GNWT-ECC prepared and shared acoustic data from maternity colony monitoring with Aurora College. The dataset was analyzed by a student as part of a course project. • **2024-2025** – NSMA deployed bat ARUs as part of a bat acoustic monitoring program at Old Fort Rae. GNWT-ECC provided advice and support for this project. • **2024-2025** – WRRB deployed four ARUs along the Tłı̨chǫ Highway to monitor for bats. GNWT-ECC provided advice and support for this project.

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			• **2025** – Following an unconfirmed sighting of a bat in Thaidene Nëné in summer 2024, Parks Canada deployed two bat ARUs in summer 2025 to gather more information on bats in the area. • **2025** – Following the first documented sighting of a bat in the GSA in September 2024, GRRB initiated an acoustic bat monitoring program in the GSA for 2025-26 with support from the NWT Species Conservation and Recovery Fund. The goal of the project is to monitor potential bat distribution in the GSA through habitat mapping, data collection, and community engagement. In 2025, the GRRB deployed 14 bat ARUs across the GSA in strategic potential habitat locations. • **2025** – Researchers (Reimer and Kaupas) working with Canadian Zinc deployed bat ARUs near the proposed Prairie Creek All Season Road (Nahanni area), as part of a habitat assessment study. **Other research and monitoring** • **2018-Ongoing** – GNWT-ECC monitors four little brown myotis maternity colonies roosting in human-made structures in Fort Smith, Kakisa, Hay River, and Fort Providence (**see 1.3 for details**). • **2021** – Hranac *et al.* 2021 created models of little brown myotis pre-hibernation body mass and fat, as well as hibernation duration, across their distribution (including the NWT). The results are useful for predicting the impacts of WNS in different parts of the range. • **2021-2024** – GNWT-ECC and Parks Canada collaborated with Wildlife Conservation Society Canada on the Bats and Bridges project, investigating habitat use, bat health and species distributions (**see 1.2 and 2.1**). DNA metabarcoding from bat guano collected in southern NWT as part of the Bats and Bridges project revealed over 200 different invertebrate species eaten by the bats - including 17 species of mosquito and 18 species of caddisfly. Vertebrate DNA was also detected in the guano (western toad, yellow-rumped warbler, Swainson's thrush, deer mouse, red squirrel, and moose), presumably from animals whose blood was eaten by mosquitoes that were then eaten by bats. • **2022-2025** – Data from NWT bats were included in a study of how bat abundance is changing across Canada and across years to try and better understand potential impacts of climate change and prey abundance on bat populations (e.g., Laursen 2025).

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			• **2023** – National guidelines for bat capture and handling were finalized in 2023 (Patriquin *et al.* 2023). GNWT-ECC provided input into this document. • **2023-2024** – GNWT-ECC shared NWT data as part of research regarding bats' use of unusual roosts (e.g., umbrellas, woodpiles) across Canada (Phinney *et al. in prep.)*. • **2023-Ongoing** – GNWT-ECC and University of Calgary researchers (Kaupas, Reimer and Barclay) are collaborating on a paper investigating the rates of banding injury in little brown myotis using the long-term banding dataset from the NWT. They are also investigating recapture rates of bats at maternity colonies in the NWT. Little brown myotis bats are long-lived and females typically return to the same maternity roosts year after year to birth and raise their young. For example, in Fort Smith, a female little brown myotis was recaptured in 2024 after being banded there in 2012; this bat is at least 13 years old. • **2023-Ongoing** – GNWT-ECC is collaborating with researchers (Jesika Reimer and others at University of California, Davis) who are conducting a genetic analysis to assess the gene flow and connectivity of little brown myotis populations across the north. Results of the study may provide insight into the potential spread of white-nose syndrome. The first phase of analysis focusing on Alaska was completed in 2025 (Reimer *et al.* 2025). The next phase will include samples from the NWT, Yukon, Alberta and B.C. From 2023-2025, GNWT-ECC staff collected and submitted samples from NWT bats for analysis. NWT analysis is supported with funding from the NWT Species Conservation and Recovery Fund (SCARF). • **2024** – Researchers published results from their study on the behaviour and timing of little brown bat activity in the Fort Smith and Kakisa areas in 2011-2012. The publication was shared with Parks Canada, Fort Smith Métis Council, Ka'a'gee Tu First Nation, Salt River First Nation, and Tthebatthı Dënesųłiné Nation (formerly Salt River First Nation) (Reimer and Barclay 2024). • **2024** – Researchers published a study on bats' use of building roosts to understand how this behaviour varies by latitude, geographic area, and habitat condition (Lucan *et al.* 2024). • **2024-2025** – GNWT and ECCC staff collaborated with researchers on a study of changing wildfire behaviour in the northern boreal forest. The study examines recent fires in southern NWT as a case

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			study and develops predictions about the implications of novel fire behaviour on wildlife and their habitats, including bats (Baltzer *et al.* 2025). • **2025** – Parks Canada conducted research on bat habitat by investigating cave and karst features in the eastern part of Nahanni National Park Reserve, including in the vicinity of the proposed Prairie Creek All Season Road. **See 1.2** for details. Canadian Zinc also worked with bat researchers (Reimer and Kaupas) to assess potential winter and summer habitat along the proposed road and around the Prairie Creek mine. **See 3.5** for details. • **2025** – A University of Alberta graduate student defended her Master's thesis on how bat behaviour changes relative to sunset and sunrise along a latitudinal gradient (Hurtado 2025). • **2025** – NSMA conducted a field survey for bats at Old Fort Rae, on the north arm of Great Slave Lake. GNWT-ECC participated in the survey and provided support. • **Ongoing** – The Canadian Wildlife Health Cooperative (CWHC) publishes an annual National Bat Health Report which analyzes cause of death for reported bat mortalities in Canada. Causes of accidental mortality that have been emerging as important for bats include predation by pet cats and dogs, crushing in roll-up blinds or awnings, and bycatch in glue traps. • **Ongoing** – NWT Species Conservation and Recovery Fund (SCARF) is a source of funding for research and monitoring projects that support the conservation of bats (e.g., 2025-26 projects on bat prevalence in the GSA and population structure of little brown bats in the NWT). Funding of up to $60,000 is available per year. • **Ongoing** – Knowledge-sharing and research is fostering a growing understanding of the importance of addressing multiple threats to bats – including but not limited to white-nose syndrome – in order to promote healthy, resilient, diverse, and self-sustaining bat populations (e.g., CWHC National Bat Health Program; Fontaine *et al.* 2024; Olson *et al.* 2025).

Objective	Management Approaches	Relative Priority/Time Frame	Progress
	1.2: Identify, describe, and map key bat habitats (such as hibernacula and maternity roosts).	Critical/ Ongoing	• **Ongoing** – GNWT-ECC maintains the NWT Species and Habitat Viewer and its data, maps and reporting tools. The Species at Risk Report tool allows users to generate reports showing which species at risk ranges overlap with their area of interest, and their status - this includes northern myotis and little brown myotis. Precise locations of hibernacula are considered sensitive but areas containing critical habitat (known hibernacula) are shared in these reports. Ecoregion-based range maps for all bat species are also shared as part of the Biodiversity layer for species distribution. • **Ongoing** – GNWT-ECC maintains records of known bat maternity roosts in the NWT Wildlife Management Information System (WMIS). • **2021-2024** – GNWT-ECC, WRRB and Parks Canada collaborated with Wildlife Conservation Society Canada on the Bats and Bridges project. A total of 57 bridges in the southern NWT were surveyed to investigate the use of bridges as roosting habitat for bats. 17 of the bridges had evidence of being used by bats for roosting, two of which are highly likely to be maternity roosts. Guano from the bridges was collected for DNA analysis and tested as part of white-nose syndrome (WNS) surveillance (**see 2.1**). New occurrences for four different bat species were detected in the Liard Valley (little brown myotis, northern myotis, long-legged myotis and big brown bats) and range extensions were documented for little brown myotis (to Willowlake River, in the Mackenzie Valley) and northern myotis (to Fort Resolution area), improving knowledge of species distributions in the NWT. Research on the use of bridges by bats in western Canada and their applications for wildlife health monitoring was presented in 2023 at Alberta Chapter of the Wildlife Society Conference (Calgary) and the Western Bat Working Group Conference (Victoria). • **2022-2025** – GNWT-ECC participated in the national Bat Maternity Roost Working Group. The working group led by CWHC was active from 2022 to 2025. It was formed to identify and centralize data on bat maternity colonies to help better manage and protect these important sites across Canada. In 2024, the group published a guidance document (CBMRPWG 2024) on how to define, characterize, and locate bat maternity roost habitat. • **2023** – GNWT-ECC and SRRB staff retrieved bat ARUs from Grotto cave (Mackenzie Mountains, west of Tulita). They were deployed there in 2018 as part of efforts to learn whether bats were

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			overwintering in the cave; big brown bat guano was collected there in 2018 (Critchley and Horne 2018). No bat activity was recorded on the ARUs, indicating that the cave is not used as a hibernaculum. • **2024** – Researchers in the Yukon published a study examining the habitat characteristics that make certain ponds important feeding and drinking habitat for little brown myotis at high latitudes (Kukka *et al.* 2024). • **2025** – Wildlife Conservation Society Canada published guidance for conducting bat surveys to locate roosts (Lausen *et al.* 2025). • **2025** – Bat researchers (Reimer and Kaupas) working with Canadian Zinc conducted summer field work to assess potential winter and summer habitat for bats around Prairie Creek mine and the proposed Prairie Creek All Season Road. **See 3.5** for details. • **2025** – Parks Canada conducted summer field work investigating cave and karst features in the eastern part of Nahanni National Park Reserve, including in the vicinity of the proposed Prairie Creek All Season Road. Over 60 caves were visited, and signs of bats (primarily guano) were detected at 23 caves, 21 of which had no previous records of bat use. Guano was collected for species identification. Bat ARUs and temperature and humidity sensors were deployed in select caves to further investigate their potential use as overwintering habitat for bats.
	1.3: Monitor population and distribution trends.	Necessary/ Ongoing	• **Ongoing** – Acoustic monitoring programs (such as NABat), the Bats and Bridges project, other surveys, and reports from the public have produced new information on NWT bat species distribution (**see 1.1, 1.2, and 1.4** for details on those programs). GNWT-ECC periodically updates NWT range maps for bat species when new information is available (e.g., range map for northern myotis was updated in 2022 based on new occurrences recorded in the Mackenzie Mountains). Updated information on bat species occurrences from 2020-2025 was compiled for this progress report and is shown in Figures 4-12. • **2013-2024** – Parks Canada monitored bat activity at the Walk-in Cave bat hibernaculum in Wood Buffalo National Park just south of the NWT-Alberta border. Winter bat activity (Nov-April)

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			decreased steeply following the winter of 2016-2017 and reached a low in 2018-2019. Activity slowly increased after that until 2024. • **2018-Ongoing** – GNWT-ECC monitors four little brown myotis maternity colonies roosting in human-made structures near Fort Smith, Kakisa, Hay River, and Fort Providence. These colonies have been counted annually since 2018, with additional data going back to 2011 for Fort Smith and Kakisa. Banding of bats takes place at these sites, which can provide information on the population such as age, survival rate, reproduction, and movements. As of 2025, colonies appear healthy with no signs of white-nose syndrome (WNS). Despite the severe wildfires of 2023, the number of adult female bats in the colonies in 2024 was comparable to previous years. From 2021-2025, the range in the estimated number of adult bats at each of the four colonies was: Thebacha (127-303), Hay River (92-170), Lady Evelyn Falls (143-300), Fort Providence (86-223). • **2021-Ongoing** – Systematic acoustic monitoring of bats conducted by GNWT-ECC and Parks Canada as part of the North American Bat Monitoring Program (NABat) (**see 1.1**) contributes to continental-scale population and distribution trend monitoring and analyses. • **2023-2024** – The North American Bat Conservation Alliance published a State of the Bats Report, based on expert elicitation, which characterizes the current conservation status and top threats facing North American bats and provides a baseline assessment for future efforts to assess the status and trends of bats. The scientific/technical paper behind this report was released the following year (Adams *et al.* 2024). • **2024** – Researchers published a study about bat colony monitoring methods (Barclay *et al.* 2024).
	1.4: Encourage people to report observations of bats and keep compiled records.	Beneficial/ Ongoing	• **Ongoing** – GNWT-ECC encourages the reporting of all bat observations and maintains a database of NWT bat records in WMIS. People are encouraged to report unusual bat observations, such as bats flying during the day and/or in winter, bats emerging early from hibernation, or sick or dead bats. These messages are shared in various ways including publications, websites, social media, meetings and presentations.

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			• **Ongoing** – WRRB provides information about reporting bat observations in Wek'èezhìı through WRRB website and social media. • **Ongoing** – TG promotes the reporting of any unusual sightings of wildlife. • **Ongoing** – GNWT-ECC delivers regular presentations and shares information on species at risk, including bats (e.g., 2022 Dehcho Regional Wildlife Workshop; 2024 South Slave Regional Wildlife Workshop; 2025 Dehcho Regional Wildlife Workshop). Attendees are encouraged to report bat observations to WildlifeObs@gov.nt.ca or to use iNaturalist. • **2023** – GNWT-ECC developed a guidance document for ECC renewable resource officers in the NWT on how to respond to reports of bats in buildings, or other bat encounters - including reporting observations. This was presented at a meeting of the territory's officers and is periodically shared with new officers. • **2024** – A video of a bat near Aklavik, posted on social media in September 2024, provided an opportunity to share information with the public about bats, GRRB's monitoring efforts, and the importance of reporting bat sightings. GNWT-ECC staff did media interviews (Facebook post, CBC North 2024a, CBC North 2024b). • **2025** – GNWT-ECC published materials to encourage public reporting of bat observations and support the collection of samples (e.g., bat guano): Fact sheet - White-nose syndrome and How to collect guano (bat poop) samples for DNA testing.
	1.5: Encourage the collection and recording of traditional and community knowledge about bats.	Beneficial/ Ongoing	• Implementation action is not underway due to lack of funding and staff capacity. However, community knowledge has been used to identify areas for scientific monitoring (ARU placement) in Wek'èezhìı and the GSA.
	1.6: Participate in collaborative research and monitoring for bats and white-nose syndrome in Canada.	Necessary/ Ongoing	• **See also 1.1 and 1.3.** • **Ongoing** – GNWT-ECC participates in the Canadian Inter-Agency Bat Health Working Group, Canadian Wildlife Health Cooperative (CWHC), Western Canada Bat Working Group, Northern Bat Working Group, and the North American Bat Monitoring Program. These groups share information

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			about bat health and help coordinate conservation, monitoring and surveillance efforts across jurisdictions. • **2024-2025** – GNWT-ECC swabbed live bats and submitted them to a research project that is exploring the use of healthy bacteria on bat's skin (probiotics) to fight white-nose syndrome (Insuk *et al.* 2024; Insuk *et al.* 2025). Partners are exploring the potential expansion of the probiotic treatment project to the NWT. The work was featured in an online media article in 2025 (Cabin Radio 2025).
Objective #2: Monitor, mitigate, and manage white-nose syndrome.	**2.1:** Develop and maintain an effective and coordinated surveillance program to monitor for white-nose syndrome, including timely collection, diagnosis, and reporting of test results.	Necessary/ Ongoing	• **Ongoing** – Dead bats submitted to GNWT-ECC are tested for disease. When live bats are handled during research and monitoring activities, they are swabbed (to test for WNS fungus), visually inspected (for visible fungal growth) and their wings are checked for ultraviolet fluorescence (a possible sign of lesions caused by WNS). Bat guano and environmental swabs are collected and tested for WNS fungus as part of research and monitoring. All surveillance results are shared with the CWHC. • **Ongoing** – As of 2025, all samples that were collected in the NWT and tested were negative for Pd (the fungus that causes WNS) and no signs of WNS were observed in the NWT. The fungus continues to spread and has been detected in every Canadian province (not Labrador). In 2025, the Pd fungus was detected in northern Alberta close to the NWT, just south of Wood Buffalo National Park. The latest continental WNS surveillance maps are available here. • **2021-2024** – WNS surveillance was augmented with the Bats and Bridges project, by surveying bridges for use by bats and collecting guano under bridges for Pd testing. See 1.2 for details. • **2025** – As part of efforts to strengthen WNS surveillance in the NWT, GNWT-ECC published materials to encourage and support the collection of samples (e.g., bat guano): Fact sheet - White-nose syndrome and How to collect guano (bat poop) samples for DNA testing.
	2.2: Encourage reporting of unusual bat behaviour, such as flying outside during	Necessary/ Ongoing	• **See 1.4.**

Objective	Management Approaches	Relative Priority/Time Frame	Progress
	the day, and investigate these observations promptly.		• **Ongoing** – GNWT-ECC encourages people to report unusual bat observations, such as bats flying during the day and/or in winter, bats emerging early from hibernation, or sick or dead bats, and investigates reports of unusual bat behaviour when feasible. • **Ongoing** – TG and WRRB promote the reporting of any unusual sightings of wildlife. • **2022** – GRRB discussed bat sightings and reporting sightings at meetings with RRCs.
	2.3: Implement precautionary measures to reduce the spread of WNS, including preventing accidental human-caused spread.	Critical/ Ongoing	• **Ongoing** – Researchers in the NWT are required to follow established protocols and best practices to protect the health of bats (and people) by preventing spread of pathogens such as coronavirus (which causes COVID-19) and white-nose syndrome fungus. This includes decontamination protocols, masking, and risk assessments for handling bats. • **Ongoing** – GNWT-ECC promotes public messaging to avoid entering caves where bats may be hibernating. This message is shared in various ways including publications, websites, social media, meetings and presentations. In response to community feedback, GNWT-ECC developed a poster in 2024-2025 to encourage people to avoid entering caves and describing measures to prevent the spread of WNS. The poster was distributed in the South Slave and Dehcho regions, including national parks. • **Ongoing** – The precise locations of NWT hibernacula are kept confidential to manage human visitation, which helps reduce the risk of introducing WNS as well as disturbance to hibernating bats. • **Ongoing** – Entering caves in national parks is prohibited under the *Canada National Parks Act*. • **Ongoing** – Under the NWT *Wildlife Act*, the possession, transportation and importation of bats is prohibited unless certain conditions are met. This is to reduce the risk of introducing WNS by translocating bats from one place to another. • **2024** – CWHC published updated WNS decontamination guidelines to incorporate new information on the effectiveness of chemical products in killing Pd: Recommendations for decontamination during summer activities & Canadian National White-nose Syndrome Decontamination Protocol for entering bat hibernacula (updated March 2024).

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			• **2024** – The IUCN Bat Specialist Group published updated guidelines for field hygiene when working with bats (Shapiro *et al.* 2024).
	2.4: Support national/international efforts and research in disease prevention and mitigation.	Necessary/ Ongoing	• **See 1.6.** • **Ongoing** – GNWT-ECC staff attend the White-Nose Syndrome Response Team Meeting annually in June and work to stay up to date on developments in the rapidly evolving field of white-nose syndrome research (e.g., Fischer *et al.* 2025; Gagnon *et al.* 2025; Kaarakka *et al.* 2025; Krueger *et al.* 2025; Isidoro-Ayza *et al.* 2024; Vanderwolf *et al.* 2025). • **Ongoing** – GNWT-ECC shares bat data and samples upon request and provides in-kind support to researchers. • **2025** – GNWT-ECC staff attended the annual symposium for the North American Society on Bat Research (NASBR) in Edmonton, AB.
	2.5: Implement measures to prevent the spread and mitigate the impacts of white-nose syndrome should they become available and feasible.	Critical/ Ongoing	• Implementation action is not underway. Although there is currently no program to directly mitigate WNS in the NWT, partners are exploring the potential expansion of a probiotic treatment project to the NWT (see 1.6). As of 2025, WNS has not been detected in the NWT. GNWT-ECC staff work to stay informed of new developments in the rapidly evolving research field of WNS mitigation. Additionally, efforts are ongoing to reduce other threats to bats (as described in objectives 3 and 4) to support resilient bat populations as WNS approaches the NWT.
Objective #3: Prevent or reduce harm to bats associated with human activities.	**3.1:** Complete and implement measures to prevent and mitigate negative human impacts at hibernacula, such as a Cave Management Plan.	Critical/ Ongoing	• **See 1.2 and 2.3.** • **Ongoing** – Entering caves in national parks is prohibited under the *Canada National Parks Act*. • GNWT-ECC did preliminary work to draft a Cave Management Plan for hibernacula in the South Slave region in the 2010s, but renewed effort working with landowners would be required to move it forward. • **Ongoing** – GNWT-ECC promotes public messaging to avoid entering caves where bats may be hibernating. This message is shared in various ways including publications, websites, social media,

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			meetings and presentations. In response to community feedback, GNWT-ECC developed a poster in 2025-2026 encouraging people to respect underground habitat such as caves. The poster was shared in the South Slave and Dehcho regions, including national parks.
	3.2: Prevent destruction of critical habitat for bats identified under the federal *Species at Risk Act*.	Critical/ Ongoing	• **See 1.2** for information on how critical habitat locations are shared. • **See 2.3** for information on how cave locations are protected, and visitation is managed. • **Ongoing** – GNWT-ECC participates in the regulatory process on an ongoing basis and provides advice regarding bat habitat as appropriate. • **Ongoing** – As Endangered species under the federal Species at Risk Act, little brown myotis and northern myotis, their residences, and their critical habitat (i.e. hibernacula) are legally protected on federal lands. As of 2025, all known hibernacula in the NWT are on federal lands. Parks Canada uses regulations under the *Canada National Parks Act* and federal *Species at Risk Act* to protect critical habitat in national parks, including Wood Buffalo National Park and Nahanni National Park Reserve. In 2019, Parks Canada published critical habitat descriptions in the Canada Gazette (p.49), which describe critical habitat of little brown myotis, northern myotis, and tri-colored bat in several national parks of Canada, and a Legal Protection Statement for the Critical Habitat of Little Brown Myotis in Nahanni National Park Reserve.
	3.3: Develop, promote, and implement best management practices to conserve maternity roosts, including appropriate methods for managing bats in buildings.	Necessary/ Ongoing	• **2022-2025** – GNWT-ECC participated in the national Bat Maternity Roost Working Group. The working group led by CWHC was active from 2022 to 2025. It was formed to identify and centralize data on bat maternity colonies to help better manage and protect these important sites across Canada. In 2024, the group published a guidance document (CBMRPWG 2024) on how to define, characterize, and locate bat maternity roost habitat. **Buildings** • **Ongoing** – Got Bats? NWT Guide for Managing Bats in Buildings is available online and in print. When contacted by wildlife officers or landowners about bats in buildings, GNWT-ECC provides advice on how to manage the situation without harming the bats. Public messaging about managing bats in buildings appropriately is shared in various ways including publications, websites,

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			social media, meetings and presentations (e.g., in 2024, GNWT-ECC provided advice and offered support to Fort Providence housing authorities). • **2023** – GNWT-ECC developed a guidance document for ECC Renewable Resource Officers in the NWT on how to respond appropriately to reports of bats in buildings, or other bat encounters. **Bridges** • **2022** – The Government of British Columbia published Best Management Practices for bats in bridges (B.C. Ministry of Environment 2022). GNWT-ECC shared this document with Department of Infrastructure (GNWT-INF) and other GNWT staff as advice for the NWT. • **2022-2025** – GNWT-ECC shared information with GNWT-INF about the Bats and Bridges project and the specific bridges now known to be used by bats, along with advice on applying the best management practices. • **2025** – A brochure was developed for bridge workers and wildlife managers, which includes information on how bats use bridges and how to mitigate risks to bats. **Trees** • **Ongoing** – Public messaging about considering bats before removing large aspen trees is shared in various ways including publications, websites, social media, meetings and presentations. • **2025** – Wildlife Conservation Society Canada published guidance for conducting bat surveys to locate roosts (Lausen *et al.* 2025). **Bat boxes** • **2023-2025** – Best Management Practices for the Use of Bat Houses were published in 2023 (Holroyd *et al.* 2023). GNWT-ECC provided input into this document. In 2025, the Wildlife Conservation Society Canada produced a short brochure that summarizes the guidelines. • **Ongoing** – GNWT-ECC's bat webpage includes a link to the new guidance from the Best Management Practices for the Use of Bat Houses (Holroyd *et al.* 2023); GNWT-ECC continues to

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			respond to inquiries about bats in buildings and bat habitat, and to refer people to the appropriate information and resources.
	3.4: Promote and implement forestry best management practices that maintain trees suitable for roosting.	Necessary/ Ongoing	• **Ongoing** – Public messaging about considering bats before removing large aspen trees is shared in various ways including publications, websites, social media, meetings and presentations. • **2024** – GNWT-ECC initiated discussions with the Town of Fort Smith regarding best practices for vegetation management, in particular for the forest stand adjacent to town that northern myotis are using for maternity roosts, where fire-smarting activities are planned.
	3.5: Identify and avoid or mitigate human impacts on key bat habitats through the regulatory process (permitting, screening, and environmental assessment), legislation, land administration and land use planning, conservation areas, stewardship, or other effective mechanisms.	Necessary/ Ongoing	• **See 3.4.** • **See 1.2** for information on how bat distributions and critical habitat locations are shared. • **Ongoing** – GNWT-ECC participates in the regulatory process, conservation area planning and land use planning on an ongoing basis. • **Ongoing** – GNWT-ECC provides comments on regulatory reviews about summer maternity roosts for bats and other advice regarding bats and bat habitat as appropriate. For example, in 2023, GNWT-ECC provided information and advice to the Li-FT Yellowknife Lithium project regarding protocols for acoustic surveys for bats, to inform their plans for a monitoring program. In 2024, GNWT-ECC provided information and advice to the Giant Mine remediation team regarding bats and planning for building demolition in the old townsite; GNWT also provided information to researchers assessing potential bat habitat around Prairie Creek Mine (Nahanni). • **Ongoing** – TG considers all wildlife and habitat when reviewing land use applications or water licensing and WRRB considers key bat habitat in regulatory reviews. • **2025** – Canadian Zinc worked with bat researchers (Reimer and Kaupas) to assess potential winter and summer habitat (e.g., tree roosts, foraging sites, possible hibernacula) along the proposed Prairie Creek All Season and around the Prairie Creek mine. The goal is to assess if there are important habitat sites that may be impacted by road development, identify impacts, and recommend mitigations. GNWT-ECC provided information to support the study.

Objective	Management Approaches	Relative Priority/Time Frame	Progress
	3.6: Participate in initiatives aimed at addressing threats that may affect bats at a continental scale, such as climate change and contaminants.	Beneficial/ Ongoing	• **Ongoing** – GNWT participates in many initiatives aimed at addressing climate change. Information on the GNWT's response to climate change is available here. • **2021** – GNWT-ECC published a report that summarizes and assesses the risks of climate change to little brown myotis and northern myotis in the NWT (Singer and Lee 2021). • **2021-Ongoing** – GNWT-ECC is developing a Climate Change Adaptation Plan for wildlife in the NWT. In 2024, GNWT-ECC released a discussion paper entitled Adapting Wildlife Conservation and Management to Climate Change in the Northwest Territories. It presents ideas, considerations and possible approaches to adapting wildlife management and conservation in the NWT to a rapidly changing environment. A public engagement opportunity was conducted in February-March 2024. • **2024** – GNWT launched a new online NWT Climate Change Library. It houses scientific information, research papers, technical reports and innovative tools from government and beyond in one central location. The platform aims to provide climate research, information and knowledge to those who are working to find solutions to mitigate and adapt to climate change in the NWT. • **2024** – GNWT released the first NWT Climate Change Risks and Opportunities Assessment, which aims to provide a shared understanding of the biggest climate change challenges that people and communities in the NWT will face over the next 10 years. • **2024** – GNWT-ECC commissioned an assessment of projected changes to conditions in the NWT in response to climate change, and their potential impacts to species at risk including little brown myotis and northern myotis (Smith *et al.* 2024). • **2024** – GNWT-ECC is developing spatial data products to support climate-informed landscape planning for wildlife and wildlife habitats, including predictions of *climate change refugia* across the NWT. Climate change refugia are areas that may be more resistant to impacts of climate change, including fire, drought, and temperature (i.e. areas where temperature increases more slowly). Refugia analyses are being led by NRCAN's Canadian Forest Service with financial support from GNWT-ECC. Preliminary fire refugia products can be viewed here.

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			• **2024-2025** – GNWT and ECCC staff collaborated with researchers on a study of changing wildfire behaviour in the northern boreal forest. The study examines recent fires in southern NWT as a case study and develops predictions about the implications of novel fire behaviour on wildlife and their habitats, including bats (Baltzer *et al.* 2025).
	3.7: Ensure that beneficial management practices are used for wind energy development in the NWT to avoid harm to bats.	Necessary/ Ongoing	• **Ongoing** – GNWT-ECC and other management partners participate in the regulatory process on an ongoing basis and provides advice regarding bats and bat habitat as appropriate. For example, impact on birds and bats was an important part of the Gwich'in Land and Water Board's regulatory approval process for the Inuvik High Point Wind Project (NTPC 2023). Best management practices from other jurisdictions are often referenced in the absence of NWT-specific guidance; in 2025, the Government of British Columbia published updated Best Management Practices for bats and wind power developments (B.C. Ministry of Environment 2025). • **2023** – COSEWIC assessed three migratory bat species as Endangered in Canada. Collisions at wind farms are one of the most important threats (COSEWIC 2023). • **2023-Ongoing -** The Canadian Migratory Bat Conservation Working Group was formed in 2023 to help Canadian jurisdictions harmonize their approach to managing migratory bats and wind energy. GNWT-ECC participates in this group.
	3.8: Work with agricultural producers, gardeners, and others to promote responsible pest control and avoid the use of pesticides and herbicides.	Beneficial/ Ongoing	• Implementation action is not underway. In the NWT, a permitting system is in place for non-domestic pesticide or herbicide use.
	3.9: Promote and implement best management practices for closing or reactivating underground mines that may be used by bats.	Beneficial/ Ongoing	• **Ongoing** – GNWT-ECC participates in the regulatory process on an ongoing basis and provides advice regarding bats and bat habitat as appropriate. • **2021** – GNWT-ECC provided information to mine remediation projects in 2020-2021 about how to mitigate potential impacts on bats (B.C. Ministry of Environment 2016).

Objective	Management Approaches	Relative Priority/Time Frame	Progress
	4.1: Encourage communities to participate in bat monitoring projects.	Beneficial/ Ongoing	• **Ongoing** – Bat acoustic monitoring and maternity colony monitoring (**see 1.1 and 1.3**) take place in collaboration with various partners. For example, FSMC frequently participates in colony emergence counts and mist-netting at Thebacha. Many partners have participated in bat detector deployments and retrievals, including Indigenous governments and Indigenous organizations, renewable resource boards and renewable resource councils, federal and territorial governments, and academic partners. • **2021**– Indigenous Guardians in the Sahtú participated in a virtual training session on bat ARU deployment, with support from University of Alberta (Camila Hurtado), the SRRB and GNWT-ECC. • **2021-2025** – Partners in the NWT (Indigenous governments and Indigenous organizations, renewable resources boards, federal and territorial governments, and academic partners) worked together to develop training materials on how to use wildlife cameras and acoustic recording units, including bat detectors. The project was overseen by an advisory committee and funded by GNWT to meet a growing community interest in using remote cameras and ARUs for wildlife monitoring. The materials are now being adapted into a certifiable training course (Eco Canada BEAHR training program). • **2024** – Tłı̨chǫ Highway monitors were involved in the WRRB's installation of ARUs along the highway in 2024 and 2025. • **2025** – As part of efforts to strengthen WNS surveillance in the NWT, GNWT-ECC published materials to encourage and support the collection of samples (e.g., bat guano) by members of the public: Fact sheet - White-nose syndrome and How to collect guano (bat poop) samples for DNA testing.
	4.2: Develop education initiatives to promote public knowledge, understanding, and acceptance of bats.	Necessary/ Ongoing	• **Ongoing** – GNWT-ECC shares messaging about the importance of bats and promotes bat stewardship and conservation in various ways, including publications (NWT species at risk booklet, NWT bat brochure, NWT bat poster, NWT bats in buildings guide), websites, social media, meetings and presentations. • **Ongoing** – GNWT-ECC carries out an annual social media campaign during Bat Week (the last week of October) and provides media interviews to promote appreciation of bats and raise

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			awareness about the need for bat conservation. Topics include facts about NWT bat species and current monitoring activities. In 2023, GNWT-ECC also shared information on social media about bats displaced by wildfires. • **Ongoing** – GNWT-ECC delivers public presentations and provides information about bats upon request. In May 2021, ECC gave a presentation about bats and white-nose syndrome at the National Invasive Species Awareness Week webinar hosted by the NWT Council on Invasive Species, Pests and Pathogens. In 2021-2023, GNWT-ECC staff developed and delivered a guest lecture on bat research and monitoring techniques to students in the Aurora College ECC Technology Program. ECC provided information on bats and bat monitoring to the 2022 Dehcho Regional Wildlife Workshop, the 2024 South Slave Regional Wildlife Workshop, and the 2025 Dehcho Regional Wildlife Workshop. ECC staff also presented at the Northern Whooping Crane Festival in Fort Smith in September 2024 about species at risk research and monitoring programs, including bats. • **2021** – Ecology North conducted a social media information campaign about species at risk. Northern myotis was one of the featured species. This campaign was part of a project funded by the NWT Species Conservation and Recovery Fund. • **2022** – GNWT did a mailout of the NWT Bats poster to regional offices, schools, libraries and visitor information centres. • **2023** – GNWT supported the refresh and relaunch of the updated NWT Species at Risk website. • **2023** – Northern bat researchers launched the NWT Bats Facebook group; GNWT-ECC staff provide input and support to this social media page. • **2023** – Cory Olson (Wildlife Conservation Society Canada) delivered a presentation about bats, white-nose syndrome, and the Bats and Bridges program at the NWT Council on Invasive Species, Pests and Pathogens webinar for National Invasive Species Awareness Week. • **2024** – GNWT-ECC and partners updated and published a new edition of Species at Risk in the Northwest Territories. New text was added about three migratory bat species assessed as Endangered by COSEWIC (hoary bat, eastern red bat and silver-haired bat). Printed copies of the

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			booklets were provided to Indigenous governments and Indigenous organizations, co-management boards, schools, libraries, and communities. • **2024** – A video of a bat near Aklavik, posted on social media in September 2024, provided an opportunity to share information with the public about bats, GRRB's monitoring efforts, and the importance of reporting bat sightings. GNWT-ECC staff did media interviews (Facebook post, CBC North 2024a, CBC North 2024b). • **2024-2025** – Researchers published studies linking declines in bat populations to negative human health outcomes (Frank 2024; CBC News 2024; Medcalfe *et al.* 2025; Silva 2025). • **2025** – WRRB delivered a public presentation on bats at Ecology North's Moth Ball event in Yellowknife to celebrate and learn about nocturnal species of the NWT, including bats and moths. • **2025** – Local news media published an article (Cabin Radio 2025) about the threat of white-nose syndrome to NWT bats, research on probiotic treatments to reduce bat mortality, and the potential expansion of probiotic treatments to the NWT. Probiotics researchers and GNWT-ECC staff were interviewed for the article. • **2025** – Bat Conservation Trust released a communications toolkit to help conservationists and researchers in preparing public communications about bats, people and health.
	4.3: Promote stewardship activities relating to bats and/or bat habitat, such as strategic use and appropriate placement of bat boxes.	Beneficial/ Ongoing	• **See 3.1** for information on mitigating human impacts at hibernacula. • **Ongoing** – GNWT-ECC shares resources for constructing bat boxes suitable for the NWT on its bat webpage and regularly shares advice about bat boxes when contacted for information. ECC has also supported stewardship activities including the construction and deployment of bat boxes in various southern NWT communities. **See 3.3** for details on how best management practices for using bat boxes and for managing bats in buildings are shared. • **2023** – In October, GNWT-ECC, Aurora College and Thebacha Makerspace co-hosted a 'Build a Maternity Bat Box Workshop' in Fort Smith, where interested members of the public learned about

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			bats while making their own bat box. Guidance from the Best Management Practices for the Use of Bat Houses (Holroyd *et al.* 2023) was integrated into the workshop. • **2024** – GNWT-ECC supported the construction of bat boxes at the little brown myotis maternity colony near Hay River where long-term monitoring occurs but the building bats roosted in was being demolished. Bats have been using the boxes successfully, and the colony remains on-site. At the Thebacha maternity colony near Fort Smith, monitoring revealed that bat boxes installed in 2019 helped mitigate issues with bats in the buildings and provided alternative maternity roosting habitat on-site.
Objective #5: Manage bats using an adaptive and collaborative approach, and best available information.	**5.1:** Collaborate with co-management partners, other jurisdictions, and researchers on management and conservation efforts for NWT bats.	Necessary/ Ongoing	• **Ongoing** – Many of the actions in the management plan are collaborative; **see other approaches** for details. • **Ongoing** – Co-management partners in the NWT and beyond collaborate and share advice on bat management, monitoring, and conservation efforts (e.g., GNWT-ECC provides advice and support to WRRB and NSMA in carrying out their bat monitoring programs). **See other approaches**. • **Ongoing** – GNWT-ECC participates in various multi-jurisdictional working groups on management and conservation of NWT bats (**see 1.6**). • **Ongoing** – GNWT-ECC provides input into national guidance and reporting on bats (e.g., Patriquin *et al.* 2023; Holroyd *et al.* 2023; Segers *et al.* 2024; Adams *et al.* 2024; CBMRPWG 2024). **See other approaches** for details on these documents.
	5.2: Encourage flow of information among researchers, co-management partners, regulatory boards, and the public.	Necessary/ Ongoing	• **See 4.2 and 5.1.** • **Ongoing** – TG works with other agencies (including WRRB and GNWT-ECC) to support research and encourage co-management of wildlife. • **Ongoing** – GRRB and GNWT-ECC have been actively coordinating bat monitoring programs in the GSA and share information when available.

Objective	Management Approaches	Relative Priority/Time Frame	Progress
			• **Ongoing** – GNWT-ECC staff attend the White-Nose Syndrome Response Team Meeting annually. In 2025 GNWT-ECC staff attended the North American Symposium on Bat Research (NASBR).
	5.3: Conduct periodic co-management reviews of new information, management actions, and progress made toward meeting management objectives.	Necessary/ Ongoing	• **Ongoing** – Co-management partners are adapting their work on an ongoing basis to respond to new information and arising management needs. • **Ongoing** – Reviews of new information, management actions and progress towards management objectives are conducted annually at the February CMA meeting. • **2023** – COSEWIC assessed the status of eastern red bat, hoary bat, and silver-haired bat in Canada. Their assessments identified and assessed changes in populations and potential changes in management that may be needed for these three migratory bat species (COSEWIC 2023). GNWT-ECC and other partners provided information to support these assessments. • **2025-Ongoing** – NWT Species at Risk Committee (SARC) is preparing to reassess little brown myotis and northern myotis in the NWT (scheduled for 2027). Work has begun on a status report for these species. CMA and other partners are providing information to support these assessments. • **2025** – CMA conducted a 5-year review of the *Management Plan for Bats in the Northwest Territories*, as required under the *Species at Risk (NWT) Act*. The review determined that the plan continues to meet the needs of Management Authorities to achieve the management goal for the species and should continue to provide guidance for the conservation and management of bats in the NWT through its goal, objectives and approaches.

7. MANAGEMENT PLAN REVIEW

The CMA is required under the *Species at Risk (NWT) Act* to review a management plan or recovery strategy every five years. The first review of the *Management Plan for Bats in the Northwest Territories* took place on November 21, 2025.

The review determined that the *Management Plan for Bats in the Northwest Territories* continues to meet the needs of Management Authorities to achieve the management goal for these species, which is "for each bat species to maintain self-sustaining, resilient populations across their range in the NWT," such that bats continue to be an important part of our ecosystem.

Bat populations continue to decline across Canada and North America due to white-nose syndrome and wind energy, as well as other threats like climate change and habitat loss. As there is no indication the threats facing bats have been reduced, there is a continued need for the management plan to provide guidance for NWT management partners.

The review looked at the goal, objectives and approaches of the management plan and determined they are still appropriate for the conservation and management of bats in the NWT. There are no changes to the management plan recommended by Management Authorities at this time.

Success in bat management in the NWT can be measured through population trends (population stable, increasing, or not indicative of ongoing decline), species distributions (species continue to be found in their historical ranges and range recession has not occurred), and species status (have improved, have not become at risk, or have not become further at risk when assessed/reassessed).

Overall, the management plan has generated the expected outcomes in the first five years of implementation. Management partners continue to support the *Management Plan for Bats in the Northwest Territories* and the guidance it provides to the CMA towards meeting the objectives of the *Species at Risk (NWT) Act*, including species stewardship and the preservation of biological diversity.

8. NEXT STEPS

Progress has been made over the last five years towards maintaining self-sustaining and resilient populations of bats across their ranges in the NWT.

With information submitted by the public and increased monitoring using acoustic bat detectors (ARUs), together with ongoing research, we have improved our understanding of bat habitat, distributions and threats. Work is underway to minimize detrimental effects

of human activities on bats and their habitat, and information-sharing on bats is ongoing with annual reviews of new information and progress among co-management partners.

However, there remain major knowledge gaps for bats in the NWT. Management Authorities have identified opportunities for future work, including further acoustic monitoring programs around communities. More research and monitoring is required to understand bat abundance, long-term population persistence, and trends. There are a lot of unknowns about how Pd/WNS will affect bats in the north once it arrives here; there will be an opportunity for us to learn about this in real time as it happens, through monitoring and research. There is also a need to collect and analyze Indigenous and community knowledge on bats in the NWT to ensure bat management is based on the best possible information.

The *Management Plan for Bats in the Northwest Territories* will continue to guide management of these species. The management plan will be reviewed again in five years and progress on its implementation (2026-2030) will be reported in 2031.

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APPENDIX A – MANAGEMENT PARTNERS

The following management partners were primarily responsible for developing this progress report on bats. See *Section 2 – Management Partners for Bats* (page 13) for more information on other organizations that contributed to the progress report.

Gwich'in Renewable Resources Board

The Gwich'in Renewable Resources Board is the main instrument of wildlife management in the Gwich'in Settlement Area. Its powers include approving plans for the management and protection of particular wildlife populations (including endangered species), particular wildlife habitats, and forests (Gwich'in Comprehensive Land Claim Agreement, sections 12 and 13). The Gwich'in Renewable Resources Board works collaboratively with renewable resources councils and government in research, monitoring, and management of wildlife and habitat. The Gwich'in Renewable Resources Board consults regularly with the renewable resources councils, and its management authority may be delegated to renewable resources councils.

ʔehdzo Got'ı̨nę Gots'ę́ Nákedı

ʔehdzo Got'ı̨nę Gots'ę́ Nákedı (the Sahtú Renewable Resources Board) is the main instrument of wildlife management in the Sahtú Settlement Area. Its powers include approving plans for the management and protection of particular wildlife populations (including endangered species), particular wildlife habitats, and forests (Sahtú Dene and Metis Comprehensive Land Claim Agreement, sections 13 and 14). The Sahtú Renewable Resources Board works collaboratively with renewable resources councils and government in research, monitoring, and management of wildlife and habitat. The Sahtú Renewable Resources Board consults regularly with the renewable resources councils, and management authority may be delegated to renewable resources councils.

Wek'èezhìı Renewable Resources Board

The Wek'èezhìı Renewable Resources Board is the wildlife co-management authority responsible for managing wildlife, wildlife habitat, forests, plants, and protected areas in Wek'èezhìı as set out in the Tłı̨chǫ Agreement (Tłı̨chǫ Agreement, sections 12-14 & 16). Responsibilities include making determinations or recommendations on management proposals for activities that may affect wildlife and wildlife habitat. The Wek'èezhìı Renewable Resources Board works collaboratively with the Tłı̨chǫ communities and Tłı̨chǫ, territorial, and federal governments in research, monitoring, and management of wildlife and habitat.

Tłı̨chǫ Government

The Tłı̨chǫ Government has powers to enact laws in relation to the use, management, administration, and protection of lands and renewable resources on Tłı̨chǫ lands. This includes laws relating to the management and exercise of harvesting rights for wildlife, plants, and trees (Tłı̨chǫ Agreement, section 7). The Tłı̨chǫ Government has prepared the Tłı̨chǫ Land Use Plan to assist in managing approximately 39,000 km^2 of Tłı̨chǫ lands. The Plan provides a guide for future development by outlining how Tłı̨chǫ land will be protected and how activities and development on Tłı̨chǫ lands should occur.

Government of the Northwest Territories

The Government of the Northwest Territories (GNWT), represented by the Minister of Environment and Climate Change (ECC), has ultimate responsibility for the conservation and management of wildlife, wildlife habitat and forest resources in the NWT, subject to land claims and self-governance agreements. It is the Minister of ECC's ultimate responsibility to prepare and complete management plans and recovery strategies under the *Species at Risk (NWT) Act*. ECC engages with other GNWT departments on species at risk issues through the Inter-departmental Species at Risk Committee, inter-departmental committees of Directors and Deputy Ministers, and Executive Council.

Government of Canada

The Government of Canada has ultimate responsibility for the management of migratory birds (as described in the *Migratory Birds Convention Act*, 1994), fish, marine mammals, and other aquatic species (as described in the *Fisheries Act*). It also has responsibilities for the implementation of the federal *Species at Risk Act*, including enforcement of the general prohibitions and critical habitat prohibitions where listed species occur on federal lands that belong to his Majesty, in Right of Canada, or under the direct authority of the Minister of Environment and Climate Change (national wildlife areas and migratory bird sanctuaries) and the Minister responsible for the Parks Canada Agency (national parks, national park reserves and national historic sites). Although identified as a Management Authority in the *Species at Risk (NWT) Act*, the Government of Canada has chosen not to be a signatory to CMA consensus agreements.

APPENDIX B – DATA SOURCES FOR MAPS

Figure 4 to Figure 12 in this report were adapted from maps in the Management Plan for Bats in the NWT (CMA 2020) to include new bat occurrence data available up to 2025.

These new data include recordings from several acoustic monitoring programs: for NABat from 2021 to 2023 (ECC unpubl. data 2026; Parks Canada 2024); at Pine Point in 2018 (Golder Associates 2018); around Howard's Pass in 2019 (EDI 2021); at Old Fort Rae in 2024 (NSMA unpubl. data 2026); along the Tłı̨chǫ Highway in 2024 (WRRB unpubl. data 2026); for the NTBMP east of the Slave River in the Fort Smith area and along the Mackenzie Valley Winter Road, both in 2023 (NTBMP unpubl. data 2025); and opportunistic monitoring at various locations in southern NWT and the Sahtú region from 2021 to 2023 (ECC unpubl. data 2026).

New data also include bat captures, specimens and guano collected through various studies: the Bats and Bridges project conducted from 2022 to 2024 (WCS Canada and ECC unpubl. data 2025); monitoring at little brown myotis maternity colonies up to 2025 (ECC unpubl. data 2025a); cave and karst surveys in Nahanni National Park reserve in 2016 and 2019 (Horne and Critchley 2019; Parks Canada unpubl. data 2025); and observations submitted to GNWT-ECC and compiled for the Wildlife Management Information System (WMIS) (ECC unpubl. data 2025b).

Additional studies were checked for potential occurrences but do not appear in Figure 4 to Figure 12 because no bats were recorded during these surveys. These include a field capture survey for bats at Old Fort Rae in 2025 (NSMA unpubl. data 2026) as well as the following acoustic monitoring programs: for the NTBMP in the Norman Wells area in 2023 (NTBMP unpubl. data 2025); by Ed West along the Dempster and Tuktoyaktuk highways in 2022 (West Ecosystems Analysis unpubl. data 2024); in the Gwich'in Settlement Area from 2019 to 2021 and in 2025 (GRRB unpubl. data 2022; GRRB unpubl. data 2026); and in collaboration with SRRB, RRCs, University of Alberta and GNWT-ECC in the Sahtú region in 2021 (Hurtado unpubl. data 2024).