

Landowner's Guide Helping Bat Species on PEI

PEI Watershed Alliance

The purpose of this guide is to provide island landowners with a source of information on identifying, protecting, preventing harm, and actively stewarding bat habitat on PEI.

Introduction

The PEI Watershed Alliance is a non-profit cooperative association of 25 watershed management groups across PEI, covering approximately 95% of the island. Our goal is to improve and protect the environmental quality of our island watersheds for the benefit of all Island residents by supporting our constituent watershed groups. We do this by promoting cooperation, providing training opportunities and resources, administering large-scale environmental projects, and acting as a strong, united voice in addressing Island-wide watershed issues. One example of large-scale, island-wide projects that we coordinate is our bat monitoring program, which has been in effect since 2020.

In 2018, we began discussions with watershed groups, the Canadian Wildlife Health Cooperative (CWHC) and the PEI Government regarding a collaborative, comprehensive bat monitoring initiative. We started this initiative through various funding streams, to purchase acoustic detectors, and provide training, monitoring guides, and information on resources such as CWHC's Bat Hotline. In August 2020, the Alliance began a larger-scale collaborative monitoring project through Environment and Climate Change Canada's Habitat Stewardship for Species at Risk Program. The goal of this project is to better understand the current population status of our target bat species, Little Brown Myotis and Northern Myotis, while also creating a network sharing information that can be used in future conservation and recovery actions in accordance with official Recovery Strategies. Our objectives include:

1. Implementing a standardized bat monitoring program on PEI that uses the NABat study design and protocols, and engages PEI watershed groups in completing these protocols.
2. Establishing a PEI Bat Advisory Committee to guide monitoring efforts and future conservation initiatives.
3. Educating watershed groups and communities about bats and highlighting ways the public can engage in bat recovery activities.

We work with several partners as part of our Bat Advisory Committee, sharing expertise and resources to ensure our monitoring program is as effective as possible and that watershed groups and the public have up to date knowledge. Our committee partners include Canadian Wildlife Health Cooperative, Parks Canada Agency, Native Council of PEI, Abegweit Conservation Society, the Canadian Wildlife Service, and the Province of PEI's Forest, Fish, and Wildlife Division. We work with biologists, ecologists, and other specialists to ensure that our population monitoring data is collected properly, shared widely, and contributes to the goals laid out in the recovery strategies for our two target bat species: Little Brown Myotis and Northern Myotis.

Species at Risk on PEI: Little Brown Myotis and Northern Myotis

In February 2013, a dead bat was found in the Bonshaw area and diagnosed with White-nose Syndrome (WNS). Until this discovery, it was not known that bats over-wintered on PEI. There are currently two species of bat known to breed on the Island (targeted species):

- Little Brown Myotis (*Myotis lucifugus*); a hibernating bat species which is currently listed as endangered. This is the most common species on PEI. The Little brown myotis tends to roost in tree cavities or human-made cavities such as attics, basements, barns or bat boxes. They spend most of their time in low-clutter habitats such as over water, forest edges or forest clearings.

- Northern Myotis (*Myotis septentrionalis*); a hibernating bat species which is currently listed as endangered. The second most common species found on PEI, the Northern myotis is a forest dwelling species that tends to roost in tree cavities and spends most of their time in high-clutter, heavily forested areas.

The primary threat to Little Brown Myotis and Northern Myotis is White-nose Syndrome.

White-nose Syndrome (WNS): A deadly disease affecting North America's Hibernating Bat Populations

Caused by a fungus that grows on bats during winter hibernation, WNS poses no threat to the health of humans, pets, or other animals, but is responsible for the death of over six million bats across North America. This fungus was first discovered in North America in upstate New York in 2006. Since then, WNS has killed up to 99% of bats within specific bat colonies along the east coast.

The fungus has been found on bats that use caves in Europe, although bats in that area appear to have adapted to the fungus and WNS does not seem to be an issue. Because bats do not migrate between North America and Europe, it is believed the fungus was accidentally transported to North America by spelunkers (people who visit and explore caves) via gear or clothing.

Within WNS-affected areas, the short-term population objective for both Little Brown Myotis and Northern Myotis is to stop the declining population trends, or if feasible, achieve increasing population trends. The long-term (many generations) population objective is a self-sustaining, resilient, redundant and representative population by continuing to investigate habitat use across PEI, identifying migratory routes and important stopover locations, investigate factors affecting reproductive output, survival, and fidelity to breeding sites. Continued efforts to investigate best techniques to reduce disturbance (e.g., protecting roosts and hibernaculum), alleviate landowner safety concerns, and determine the importance of anthropogenic habitats are key to the survival or recovery of the species.

Protecting open wells as hibernaculum

Hibernating bats typically use underground caves or mines for their hibernation sites, however, in PEI, areas like these are relatively non-existent. Researchers have identified a handful of old wells as places where bats are already hibernating on PEI. It is suspected that bats are hibernating in other old wells across the island, and information on where these old wells are located is important in protecting bats. It is crucial to have the support of landowners in protecting PEI's hibernating bat species, as 88% of land on PEI is privately owned.

PEI Watershed Alliance: Habitat Stewardship Program for Species at Risk (Bats) with ECCC

The NABat (North American Bat) Monitoring Program is an international program that aims to provide standardized bat survey data across North America. The PEI Watershed Alliance initiated this project in July 2020 when we undertook 11 acoustic survey GRTS (10x10km) using the NABat monitoring protocols. Subsequently the PEI Watershed Alliance received funding from Environment and Climate Change Canada (ECCC) through the Habitat Stewardship Program for Species at Risk (HSP) for bat monitoring activities. This funding enabled the Alliance to continue monitoring from 2021 to 2023, then an extension of the program allowed monitoring from 2023-2025. By the summer of 2022 we had added 4 more NABat GRTS for a total of 15 acoustic survey GRTS. Each GRTS was subdivided into 5x5km quadrants, with different types of bat habitat targeted in each quadrant. The four most common types of habitats monitored are: large ponds and wetlands, open fields, wooded secondary roads, and small bodies of water or streams with canopy coverage. Habitats were chosen to target multiple species of bat, based on suspected feeding areas, commuting corridors, or roost sites. Sites within these quadrants were chosen with the help of local watershed groups, who also assisted with deployment of the acoustic detectors.

The Generalized Random Tessellation Stratified (GRTS) design is a method to draw points randomly across a stratified polygon or line. NABat monitoring GRTS are divided into 10x10 kilometer squares all across North America.

Figure 1. NABat Monitoring GRTS claimed by PEI Watershed Alliance & Bat Activity



Most of the monitoring is completed between June and July as this is the best time of year to collect consistent data on adult bat populations. In the summer, watershed groups monitor each site for 4-7 days using specialized autonomous recording units (ARUs) purchased from Wildlife Acoustics. All acoustic data is analyzed manually, submitted online to NABat annually and is also shared with partners. By 2024, the Alliance and watershed groups were monitoring a minimum of 60 NABat sites across the island.

Figure 2. Bat monitoring equipment used: Song Meter Model SM4Bat-FS and Microphone Model SMM-U2.



In-depth Acoustic Results by Species, (public record):

- [2024 NA Bat Data & Fall Monitoring](#)
- [2023 NA Bat Data & Fall Monitoring](#)
- [2022 NA Bat Data & Fall Monitoring](#)
- [2021 NA Bat Data & Fall Monitoring](#)
- [2020 NA Bat Data & Fall Monitoring](#)

Harm Prevention

If a bat ends up in your living space, chances are that it is lost. Don't panic! Bats are seasonal residents and are rarely present in buildings beyond the summer months, and bats will not cause any structural damage to your home. These unexpected visits happen most frequently in August when their pups are learning how to fly.

Some bats may live in a structure for summer but will usually leave in fall and spend the winter in areas outside of PEI. If the presence of bats is concerning, just wait for them to leave in winter, and take that opportunity to make repairs and prevent bats from returning next year.

Bats occupying an attic, barn, or other unlivable-in structures on your property pose little risk to you or your family if the bats are unable to access the living space inside your home. To protect bat populations, bats should be left undisturbed in their roosts whenever possible. It is completely safe to observe bats from a distance, but bats should never be handled because like with any wild mammals, a small percentage of bats can have rabies.

If it is necessary to evict bats from a structure, it should be done in a way that is safe for both people and bats. Bats are protected wildlife, and it is illegal to kill or harm them, or to keep them in captivity. Both bat species on PEI, the Little Brown Myotis and Northern Myotis are listed federally as endangered. They are very difficult to tell apart but if it's in a building, it's most likely a Little Brown Myotis.

For the reasons above, contact the wildlife professionals at PEI's Forest Fish and Wildlife Division 902-368-4683, if you think you need bats removed from a building on your property.

For general questions about bats, call the Canadian Wildlife Health Cooperative (CWHC) **BAT HOTLINE 1-833-434-2287** to speak with a bat expert.

Tips for managing bats in buildings

- Prevent a build-up of guano (bat droppings) by laying down plastic sheets to protect surfaces and assist in guano collection for annual disposal.
- Prevent bats from entering the living space by sealing openings with wire mesh.
- For more information on how to manage bats in buildings, please visit CWHC's website: www.cwhc-rccsf.ca/bat_health_resources.php#bats-in-buildings

Building Bat Boxes

A bat box is a shelter that bats can use to sleep during the day in the summer months and can provide crucial shelter for bats if they were recently evicted from a nearby building. However, the success of bat boxes varies and there is no guarantee that bats will adopt any given bat box. There are limited situations in which bat boxes are recommended.

The advantages of bat boxes:

- Offers an alternate roost for bats if you must displace a colony from your home.
- Encourages bats to stay nearby - and hungry bats provide natural and effective insect control.

Recommendations for bat boxes:

- Install bat boxes at a minimum height of 10 feet from the ground and clear space around the bat box, making sure there are no obstacles in front of the entrance.
- Larger multi-chamber bat boxes, paired with the use of multiple bat boxes, can support variable microclimates and offer the important ability to switch roosts depending on different weather, temperature and humidity conditions. The more roosting options bats have, the better.
- Maintain natural roosts (e.g. standing dead trees) and foraging habitat in the surrounding area.

- Avoid disturbing any occupants of the bat box and ensure it is located away from predators.
- Be patient; it may take several years for bats to inhabit a bat box. Consider adding more bat boxes instead of moving an existing box.
- Register your bat box on the Canadian Wildlife Federation’s website:
<https://cwf-fcf.org/en/explore/bats/bat-survey-1.html>

Bat Habitat Stewardship “How Can I Help on My Property?”

Bats are nocturnal and spend winter months in hibernation; because of this, bats can be quite challenging to monitor! Any sightings reported by the public are extremely beneficial to wildlife biologists and researchers as they can help locate maternity colonies, hibernation sites, and important bat habitats that may otherwise go undetected.

***Please report bat sightings to PEI Fish and Wildlife: 902-368-4683, Canadian Wildlife Health Cooperative
BAT HOTLINE: 1-833-434-BATS (2287), or your local watershed group.***

Inform your neighbours and other members of the public on the importance of bats to our ecosystem:

- Bats have a vital role in our ecosystems as well as our economies! Because bats eat so many insects, they decrease the need for use of chemical pesticides in agriculture; they can also pollinate crops and produce guano (bat droppings) that is rich in nitrogen and can act as a natural fertilizer for lawns and gardens.
- Bats are the only flying mammals! A flying squirrel can glide for a short distance, but bats are the only true flying mammal. However, bats can’t take flight by running or leaping off the ground like a bird. Instead, bats use the same maneuver as the flying squirrel and climb up to a certain height then drop— using gravity to gain enough speed for successful lift-off.
- A bat’s wing is its hand (think of a human hand with longer, thinner fingers connected by a skin). The extended skin between each long finger bone, along with many movable joints, make bats agile fliers. Bats are fast, too – new research shows some bats can reach speeds over 160 kilometers per hour!
- Did you know? Bats are inspiring medical marvels! Despite the rumors, there is no evidence to date that eating bats caused the SARS-CoV-2 pandemic in humans. Research on bats has led to advances in vaccines, and about 80 medicines come from plants that rely on bats for their survival.
- Bats are not blind but studying how bats use echolocation to hunt at night has helped scientists develop navigational aids for the visually impaired!

Links to Resources Used to Make this Guide:

- www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/little-brown-myotis-2018.html
- www.princeedwardisland.ca/topic/fish-and-wildlife
- www.cwhc-rcsf.ca/bat_health_resources.php#bats-in-buildings
- https://www.cwhc-rcsf.ca/bat_health.php

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