

# **ALBERTA & SASKATCHEWAN BATS**

**Beneficial Management Practices  
For Pest Control Operators**



WCS CANADA

**ALBERTA COMMUNITY  
BAT PROGRAM**

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# Bats and Buildings



*Little Brown Myotis maternity colony*

**B**ats are among the most common wildlife in our communities and some rely on buildings for shelter

## Why should we care?

- **Bats are valuable.** They are predators of biting insects and provide billions of dollars worth of free pest-control services each year to the North American forestry and agricultural sectors.
- **Most bats give birth to no more than one pup per year.** As a result, bat populations are slow to recover once they decline.

- **Bats affect large areas.** Some fly several kilometers from a roost to feed. The loss of a large maternity colony will have far reaching consequences on local ecosystems and will affect pest control services on neighboring properties.
- **Many bat species are at risk of extinction.** About 85% of the building roosting bats reported in Alberta are Little Brown Myotis, an Endangered species in Canada. Many building roosting bats in Saskatchewan are also Little Brown Myotis.
- **Bats are misunderstood.** Fear and misconceptions can lead to poor management decisions that harm bats. Most risks to human health can be managed with simple precautions.
- **Harming bats is not necessary or acceptable** to address issues with their use of buildings.

Bats reproduce slowly but have been documented living to at least 39 years old in Alberta

## Bat Facts

- Bats do not have gnawing teeth like rodents. They cannot chew through insulation, wiring or other building materials. They cannot create their own entrances into buildings. However, they are effective at crawling, can fit into tight spaces, and may push against loose building materials.
- Bats do not build nests or bring in nesting material. Mothers and pups stay warm by living in groups called maternity colonies.
- Bats in Canada only eat insects (and sometimes spiders). Bats eat about their body weight in insects each night. Buildings near lakes and rivers may be especially attractive because insects are abundant in these areas.

## Bats in Alberta and Saskatchewan

Alberta has at least nine species and Saskatchewan has at least eight species of bats. But most of these species rarely roost in buildings. Most building roosting bats are either Little Brown Myotis or Big Brown Bats. Long-eared Myotis and Long-legged Myotis may also form maternity colonies in buildings in some areas. Silver-haired Bats are commonly encountered around people's yards (such as in patio umbrellas) and occasionally enter buildings, especially during the fall.



*Little Brown Myotis*



*Big Brown Bat*



*Silver-haired Bat*



*Long-eared Myotis*

# Assessing Property

Some places bat guano can be found...



Bat guano and urine is often common at sites that bats use and provides among the best clues of how bats are using a property. Look for rice-sized black pellets that crumble easily into a dry powder when squished (mouse feces is hard and clay-like).

## Steps for Evaluating a Property

### 1. Assess the property carefully

- Look for bat guano stuck to interior and exterior walls, directly on or around windows, window shutters, eaves/soffits, vents, ducts, chimneys, flashing or trim, ridge caps, under roof tiles/wood shakes and in attics. Inspect crevices for roosting bats and listen for rustling and high-pitched sounds.
- Determine where bats are roosting. Are bats only using the building exterior or are they also entering the interior?
- Use a flashlight to carefully inspect the entire building. Identify and document ALL potential entry points for bats into the walls or roof of the building. If the hole is large enough to stick your pinky finger into ( $\geq 1.3$  cm), it is a potential entry point for bats.
- Wait outside the building starting at sunset and count bats exiting for at least an hour. Identify and record all exit locations. Multiple observers are typically required. A handheld bat detector is useful for signalling when a bat is about to exit. Two or more nights of observation between June and mid-July is recommended. Select warm, calm nights with no rain.
- If suspected roosting locations are accessible, inspect the site during different times of the year (spring, summer, fall, winter) to evaluate timing of use.

### 2. Determine the species

See our "[Building Bat Friendly-Communities Guidebook](#)" for help identifying bat species.

If possible, determining species can help to evaluate:

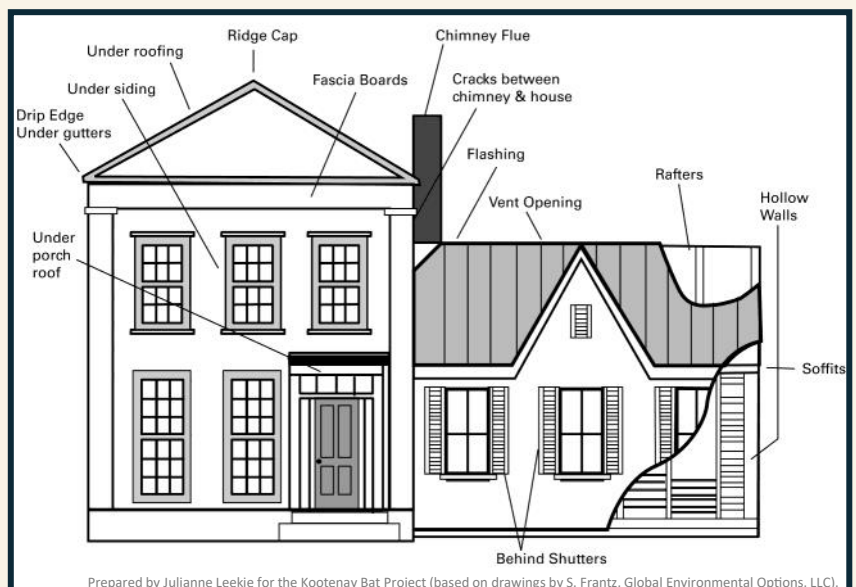
- The potential size of a colony.
- Whether there is potential for a maternity colony.
- The potential for having over-wintering bats.

### 3. Determine the roost type

Determining the type of roost is important for evaluating whether bats need to be managed, and what actions are going to be successful and cause the least harm to bats.

#### Maternity / Nursery Roosts

occur from about April to August but peak around the beginning of July. These are warm sites consisting of groups of females and their pups. Large groups of bats in buildings are usually maternity colonies. The presence of bats may be obvious because of noise, smell and abundant guano deposits, which may have accumulated over many years. Active maternity roosts are especially sensitive to poor management actions because it could lead to the death of bats and failed reproduction. Some maternity roosts in buildings are consistently active throughout the spring and summer, while others are used intermittently with the number of bats varying from day to day.



Common locations bats roost in buildings

**Adult males** typically roost alone or in small groups and often use colder locations than females. Roosts used by solitary bats often go unnoticed and rarely needs to be managed.

**Night roosts** are places bats rest during the night between feeding bouts. Guano, urine marks and discarded insect parts will indicate use but bats will not be seen during the day. These sites are often relatively open, such as on the exterior surface under the eaves. Brick, concrete and stucco may be attractive because it remains warm during the night. Exclusion of bats from night roosts is rarely necessary. Mess can be managed by regularly cleaning the area or placing a 'plant pot' to collect waste. Attaching smooth plastic panels (e.g., plexiglass) to problem areas may be useful to discourage roosting.

**Hibernation roosts (hibernacula)** are used by bats during the winter. Suitable hibernation sites are important habitat for bats and hibernating bats are especially sensitive to disturbance. Only Big Brown Bats appear to regularly hibernate in buildings in Alberta and Saskatchewan. Most bats likely hibernate underground, within deep rock crevices or caves. Knowing if buildings are used by Big Brown Bats will help determine the likelihood of having overwintering bats. If over-wintering bats are found, wait until the spring or fall before completing exclusions and ensure one-way exits are installed during the appropriate time of year—do not start an exclusion during the winter (see *Bat Calendar*).

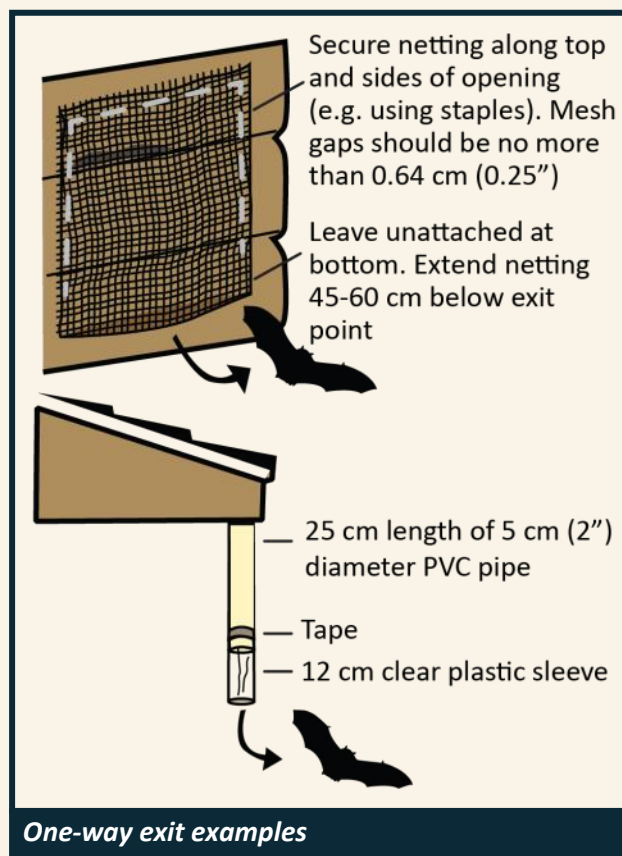
# Bat-Friendly Exclusions

## Exclusion Methods

**Excluding bats from buildings should be avoided unless there is a clear need for it.** Bats using exterior features (under roof structures, exterior chimney flashing or exterior shutters) may be “managed in place” with some simple strategies to keep surfaces clean. Care should also be taken to ensure that exclusion is going to be effective. Exclusion will not be successful without suitable repairs or renovations and can be extremely difficult for old or poorly maintained buildings.

The following steps are important for successful exclusions and ensuring bats are not harmed:

- Identify all entry/exit points that bats are using to access the building (see *Assessing Property*).
- Install one-way exit devices (see side image) during the appropriate time period (see *Bat Calendar*) to ensure no bats are left in the building. These devices allow bats to leave but prevent re-entry. Note: One-way exits should never be used while bat pups are present because pups cannot leave without their mother.
- Seal every entry/exit point or any opening larger than 1 cm wide **after you confirm bats are no longer present.** Before doing work, inspect the inside of the building to ensure there are no bats or new guano deposits, and watch exits for at least 1 hour after sunset to confirm bats are no longer using the building.



## Keeping Colonies in Buildings

In some cases, exclusion may be impossible or building owners might choose to keep a colony. To do so safely, the following actions may be required:

- Modify the space to keep bats isolated to one area; create a space that can easily be cleaned annually.
- Ensure bats cannot enter the living space of people.
- Ensure all pets, including both cats and dogs, have up-to-date rabies vaccinations.
- Teach children to never touch bats. Adults removing bats from a living space should always wear thick gloves.



Multi-chamber bat houses

# Installing Bat Houses

BEFORE you initiate any kind of exclusion, consider installing alternate bat-roosting habitat (such as a bat house). Large multi-chamber designs are recommended. Avoid single-chamber bat houses because they are prone to overheating and are less likely to support maternity colonies. Provide **at least two bat houses** within a 100 meter area, with one in a relatively sunny location and another in a more shaded location. Bat houses can be installed at any time of the year but are most effective for mitigating the impact of building exclusions if they are installed well in advance of the exclusion to allow time for bats to become familiar with their location. Bats almost never abandon a building for a bat house, so bat houses alone will not solve issues with bats getting into buildings. Read Alberta's guide on bat houses ([www.albertabats.ca/resources](http://www.albertabats.ca/resources)).

## BEFORE YOU START



Big Brown Bat

### Ensure you **DO** the following:

- Check that you have the appropriate federal or provincial permits. A homeowner generally does not need a permit to remove the occasional bat from the living space of an occupied building (or human-occupied space). Anyone performing bat exclusions in Saskatchewan requires a Nuisance Wildlife Permit and should review the Saskatchewan Bat Exclusion Policy. Regulations are undergoing change in Alberta so those working with bats should check current permitting requirements. A permit is required for work in National Parks regardless of the province.
- Fully assess the situation and identify every access point (mark or photograph). Multiple observations of the colony exiting the building may be required to identify all exits.
- Check the *Bat Calendar* to determine appropriate timing of bat exclusion activities.
- If there is a risk of trapping bats in a building, then one-way exits should be installed in advance of the exclusion and during an appropriate time of year (see *Bat Calendar*). Ensure bats are effectively using the one-way exits and confirm all bats have exited the building before doing work (see *Exclusion Methods*).
- When releasing a bat that gets into a living space, ensure it is placed up high in a protected location (not on the ground). Choose a nearby location away from people and pets.
- Alleviate fear and misconceptions about bats. Misunderstanding actual risks often drives poor decision making—take sensible precautions but don't use fear to sell services.

### Ensure you **DO NOT** do the following:

- Do not seal off exits while bats are still using a roost (see *Bat Calendar*). Never use one-way exits while pups are present in a roost. Pups cannot leave the roost without their mother until they are able to fly.
- Do not capture or trap bats as a way of excluding a bat colony (but the occasional bat entering the living space of a building can be removed). Some jurisdictions require special permitting for capturing bats. Never release bats far from their original capture location (this risks spreading disease).
- Never use lethal trapping or poison—sticky traps and glue boards should be kept away from areas with bats. Deliberately killing bats is illegal in many jurisdictions. Insecticides should not be used if bats are still present in the roost.
- Do not use spray foam if bats are present in a roost—bats can easily become embedded in wet spray foam.
- Do not rely on ultrasonic rodent repellents for bat control. Most studies have found these ineffective for bats.
- Do not use small multi-chamber or any single-chamber bat house for mitigation—use large multi-chambered bat houses instead. Most hardware store bat houses have negligible value for mitigating the loss of a maternity roost.
- Do not allow bats to enter the inside of a home where people live, regardless of the time of year. Access to the interior of an occupied building should be blocked while ensuring bats can still exit to the outside of the building.

# ALBERTA & SASKATCHEWAN

# BAT CALENDAR



JANUARY  
FEBRUARY  
MARCH  
APRIL  
MAY  
JUNE  
JULY  
AUGUST  
SEPTEMBER  
OCTOBER  
NOVEMBER  
DECEMBER

## BAT USE OF BUILDINGS

Bats present in maternity roosts

Potential winter use  
by Big Brown Bats

Potential winter use  
by Big Brown Bats

### Exclusion Timing

**POSSIBLE**  
(under certain conditions)

**NO**  
(young cannot fly)

**POSSIBLE**  
(under certain conditions)

AVOID NEW ONE-WAY  
EXITS

ONE-WAY  
EXIT  
INSTALLATION  
PERIOD

**NO EXCLUSIONS OR  
ONE-WAY EXIT  
INSTALLATIONS**

ONE-WAY  
EXIT  
INSTALLATION  
PERIOD

AVOID NEW ONE-WAY  
EXITS

Note: One-way exits need to be installed for a minimum of 5-7 nights; with at least 4 nights of low wind and sunset temperature above 10°C. See provincial guidelines for more information on conditions for bat exclusions.

## SEASONAL BAT ACTIVITY

Hibernation

Hibernation

Arrival at  
summer habitats

Mating

Pregnancy

Birth and  
Nursing

Pups flying

Move to  
winter habitats

The timing of events will vary by a few weeks among individual bats, and in response to factors such as latitude, altitude, weather, and the quality of available resources.

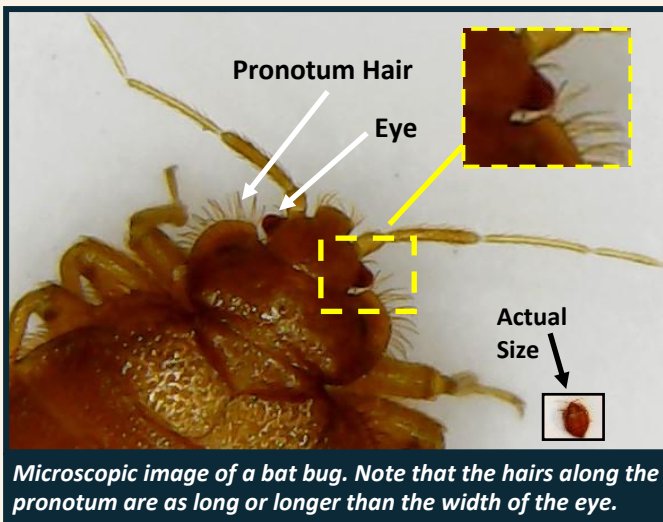
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# Bat Health

## Parasites of Bats

Like other animals, bats have parasites that are specialized to their unique biology. These include various types of mites, fleas, and a cimicid bug that we typically refer to as a 'bat bug'. While unnerving to some people, there are a few things to remember:

- Parasites of bats specialize on bats; they cannot subsist on people and will eventually disappear without bats.
- There are no serious health consequences known to be associated with bat parasites in Alberta or Saskatchewan.
- Exclusion of bats from a building may temporarily increase the occurrence of bat parasites traveling into living spaces.
- Sometimes harmless bugs (e.g., pseudoscorpions, larder beetles) are attracted to guano or prey upon other bugs in the guano. These will go away once the guano is cleaned.



Microscopic image of a bat bug. Note that the hairs along the pronotum are as long or longer than the width of the eye.

**Bats do not spread bed bugs!** Bat bugs (*Cimex pilosellus* / *adjunctus*) are similar in appearance to bed bugs (*Cimex lectularius*) and are closely related but they are unique species. Bat bugs are occasionally seen by homeowners, especially after bats are excluded. Bat bugs cannot live off people so will eventually die without bats. When viewed under a microscope, bat bugs will have hairs along their pronotum that are as long or longer than the width of their eye.

## What about disease?

Rabies is present in western Canada's free-flying bat populations at very low rates (less than 0.5% of bats are estimated to have rabies). Bats sent for testing often have a higher rate of infection (closer to 8%) but this is a biased sample; grounded bats may be ill. Any bare skin contact with a bat, or bats being found where someone is sleeping, should be considered as a potential rabies exposure—bats rarely leave visible bite marks. Never handle bats, or any wildlife, with bare hands. People who work with bats should have rabies pre-exposure vaccinations and regular titre testing (at least every two years). Although rabies is rare, it is fatal. Always seek medical treatment soon after exposure. **Remember, no touch means no risk.**

**Pest control professionals should ensure the information they give the public is accurate and balanced.** Bats in Canada do not have Ebola, Nipah, Hendra viruses, or lyssaviruses other than rabies. Bats also do not have COVID-19 (SARS-CoV-2), but those handling bats should take precautions to ensure people do not transmit the virus to bats (wear a mask, avoid handling if possible). Histoplasmosis—caused by inhalation of the spores of a fungus that may grow in areas rich in nitrogen from bird or bat droppings—is uncommon in Alberta and Saskatchewan but has been documented. Caution and appropriate personal protective equipment are recommended when disturbing the feces of any wild animal (especially in closed spaces). See [www.albertabats.ca/help](http://www.albertabats.ca/help) for more information on disease and precautions when working around bats.

Visit our webpage for updates and to access additional resources



[www.canadabats.org](http://www.canadabats.org)



