

BEST MANAGEMENT PRACTICES FOR BATS: AGRICULTURE



Long-legged Myotis

Bat-Friendly Farming

What is bat-friendly farming?

Bat-friendly farming means using techniques that provide or retain good habitat for bats, and avoiding practices that might harm bats and their habitats. To help bats you can:

- Retain habitat important for bats
- Eliminate hazards for bats
- Reduce pesticide use
- Follow Best Management Practices

This brochure provides Best Management Practices for B.C. bats to ensure bat-friendly farms can benefit from the services of bats.

Why should I be bat-friendly?

Bats provide pest control

Bats eat a lot of insects that damage field crops, orchards, and harass and sicken livestock. This natural pest control saves money for farmers. A single bat can eat its own weight in insects every night.

B.C. bats are a natural and important part of local ecosystems!

North American bats need help. Stewardship helps farms and bats!

VALUE OF BATS TO AGRICULTURE

\$23 billion/year
(U.S. estimate)

Bats benefit crops

(Field crops, orchards, vineyards, berries, etc.)

In a single summer, a colony of 150 big brown bats can consume 38,000 cucumber beetles (eliminating about 33 million larvae), 16,000 June bugs, 19,000 stinkbugs and 50,000 leafhoppers. These types of insects are agricultural pests in British Columbia.

Small bats, such as Little Brown or Yuma Myotis, can eat 600 mosquito-sized insects/hour. In four months, a colony of 100 bats can eat about 19kg (42lbs) of insects.

Bats disrupt moth egg-laying, reduce pest larvae and crop damage simply by being present and emitting high-frequency hunting calls.

Bats benefit livestock and humans

Bats benefit livestock and human health by consuming biting insects (such as biting flies and mosquitoes) reducing the potential of transmission of insect-borne diseases.

Biting insects can cause:

- Western Equine Encephalitis
- West Nile Virus
- Bovine Leukosis Virus
- Poor growth rates of calves, poor weight gain and milk output as a result of harassment by flies.

B.C. BATS



Little Brown Myotis

Legislation protecting bats and their habitat

- **The Wildlife Act** (Provincial) protects bats from being deliberately killed, captured, hunted, trapped or transported. All B.C. bats are legally listed as wildlife.
- **Species at Risk Act** (SARA, Federal) provides additional protections to bats and their habitat in specific areas. Current listings: Little Brown Myotis and Northern Myotis (Endangered); Pallid Bats (Threatened); Spotted Bats (Special Concern).
- Activities around important habitat for bats such as streams and wetlands are managed under the **Riparian Areas Protection Act** as well as the **Code of Practice for Agricultural Environmental Management** (under the **B.C. Environmental Management Act**).
- Following the legislation helps protect bats and their habitat. Following best management practices for agriculture will enhance your land for crop and animal production; consider and retain important habitat for bats and other wildlife.

Bat facts

- There are 15 species of bats in B.C. All of them eat insects, many of which are considered agricultural pests.
- Bats live in every part of B.C. and prefer areas where roosting, foraging and drinking habitats are close together.
- Roosting bats are found in warm spots such as low-elevation forests and south-facing cliffs. Bats use big, old, live or dead trees with peeling bark, cracks or cavities, warm rock crevices and several species will use buildings, bridges and bat boxes. Males use similar roost-types as females, but roost separately in cooler, shady sites.
- Females of most bat species have their pups in maternity colonies. These roosts often have internal temperatures of around 38°C and are used year after year.
- Open water and wetland habitats are important for bats and provide sites for both drinking and foraging.
- Foraging bats will hunt in agricultural areas. Organic farms have higher levels of bat activity than traditional farms. Habitat diversification helps bats by providing insect prey that hatch at different times in different areas.
- Winter hibernation roosts are found in mines, caves and deep rock crevices, deep in talus slopes, while some species may use woodpiles, buildings, or trees (in milder climates).
- Three species migrate; some may fly as far south as Mexico.
- Bat populations increase very slowly. Recovery from population losses can take decades. Most bats produce only one pup each year and only 50% of pups survive their first winter.
- Bats can live long lives. A Little Brown Myotis in Alberta was 39 years old! If a bat survives its first winter, it will likely live 20 years or more.

Potential farm-related threats to bats include:

- Habitat loss or degradation (loss of trees, ponds or wetlands)
- Eliminating roosting habitat in structures without providing alternate roosting habitat (e.g., bat boxes if natural roosts are lacking); this includes tearing down building roosts
- Poorly timed exclusions of bats from building roosts
- Hazards that cause entrapment or entanglement
- Cats (especially if cats find and target a roosting colony)
- Pesticides can affect non-target insects

Other threats include:

- White-nose syndrome (an invasive fungal disease that has resulted in the death of millions of bats across North America – this disease does not affect humans or other animals)
- Wind energy developments (primarily affects migratory bats and can affect resident bats too)
- Disturbance at hibernation sites (waking bats deplete fat reserves needed to survive the winter)

BEST MANAGEMENT PRACTICES FOR BATS



Townsend's Big-eared Bat



Provide natural habitats

Protect foraging habitat: insect prey is abundant in healthy wetlands and riparian areas. Protect these habitats by using fencing adjacent to wet areas to exclude livestock and encourage growth of vegetation such as cottonwood trees, and by minimizing exposure to contaminants. Restore wetlands and riparian areas. Retain wild and native habitat remnants on farms.

Retain trees for roosting: keep large (>30 cm diameter) trees with defects (peeling bark, cracks, cavities); plant and retain young trees to provide future roost trees bats. Dangerous trees can be de-limbed or topped to retain the standing trunk (3 m or taller) to provide bat roosting habitat.

Provide water sources: ponds and water troughs can provide water for bats who drink while flying. Avoid stringing wire fences across water features. Ensure livestock do not damage vegetation adjacent to wetlands and riparian areas while they are accessing drinking water.

Retain hedgerows/connectivity: promote habitat connectivity. Bats use lines of vegetation along field and orchard margins as cover during flights between roosting and foraging or drinking habitats. These features also provide roosting habitat when large trees are included. Use native plants in hedgerows to provide habitat for other species-at-risk.

Diversify habitats: large monocultures have fewer bats. Increase the complexity of the landscape by planting different crops or intersperse crop areas with areas of natural, native vegetation. Avoid cultivating ephemeral wetlands.



Buildings and bat boxes

Maintain bat colonies in buildings and bat boxes: Three of B.C.'s 15 bat species commonly use buildings or bat boxes, including Little Brown Myotis (a federally Endangered species). Buildings are often preferred by bats and support larger colonies than natural roosts. See how to safely and easily maintain these sites in the B.C. Community Bat Program's "Living with bats" Guidebook. By installing a suitable bat box on a pole or on the side of a building, you can attract more bats and their built-in pest-control abilities. Follow the plans and guidelines available on the B.C. Bats' website (<https://www.bcbats.ca/attachments/BMPS-for-Bat-Boxes-in-BC-2019.pdf>). Bat colonies in buildings are an important part of local bat populations.



Manage hazards

Remove or minimize hazards for bats: ensure bats have a way to escape entrapment if they fall into deep, smooth-sided features (such as rain barrels, watering troughs, unlidded irrigation valve boxes, metal vents, chimney stacks, buckets) – prevent access or add a piece of wood or a climbable surface. Place sticky tape traps for insects or rodents inside cages to prevent any access by bats or birds to prevent entrapment. Use smooth wire on the top line of fencing to avoid snagging bats on barbs. Remove invasive burdock, which can entangle bats.

Pesticides

Minimize/target pesticide use: instead of spraying fields for pests on a standard schedule, spray only when the pest is present and control is necessary. Use the minimum effective amount of pesticide. Consider wind conditions when spraying and planting to prevent spray and dust. Ensure that pesticides do not enter waterways or wetlands. Observe or exceed recommended buffers beside wetland features. Retain pesticide-free areas within your farm to maintain insect populations. Consider implementing organic farming practices on some or all of your land – organic farms have been shown to have higher numbers and diversity of bats. Pesticide use can affect non-target insects, reducing overall prey availability in an area.

YOU CAN HELP

Bats represent a real economic asset on the farming landscape. Acting as a steward for bats and bat habitat will protect your local, natural capital.

- Incorporate bats into your Environmental Farm Plan www2.gov.bc.ca/gov/content/industry/agriculture-seafood/programs/environmental-farm-plan
- Cooperate with adjacent landowners for a local strategy for bat conservation.
- Look for overlaps in conservation strategies with other wildlife species.
- Report dead bats to www.bcbats.ca to help with disease surveillance
- Participate in the BC Annual Bat Count

Additional resources for learning about bats or how to enhance habitat and/or minimize impacts are available at:

- British Columbia Community Bat Programs www.bcbats.ca (with Guidebooks on building and installing bat boxes, bat-friendly communities and managing bats in buildings)
- B.C. Ministry of Environment – Best Management Practices for Bats <http://a100.gov.bc.ca/pub/eirs/viewDocumentDetail.do?fromStatic=true&repository=BDP&documentId=12460>
- A Farmers Toolkit: Managing bats on farms <https://scbats.org>
- The Farmland Advantage Program www.farmlandadvantage.com
- Delta Farmland and Wildlife Trust – Hedgerow Stewardship Program: Planting Native Trees and Shrubs <https://deltafarmland.ca/wp-content/uploads/2019/11/2011-Hedgerow.pdf>



Big Brown Bat

What about disease?

Rabies is present in B.C. bat populations at extremely low rates. It is estimated that less than 0.5% of bats are infected with rabies. However, the sample of bats that are sent in for testing have a higher rate of infection (8%). This is because infected bats, that often have altered behaviour, are more likely to come into contact with people or animals and are then sent for testing.

Any bare skin contact with a bat should be considered as a rabies exposure. If you have been bitten or scratched by a bat you should:

1. Wash the wound well with soap and warm water under moderate pressure for at least 15 minutes. This greatly reduces the chance of any type of infection.
2. Seek medical care from your health care provider or local public health unit right away (see HealthLink BC - Rabies).

To minimize the chance of exposure, ensure pets are vaccinated against rabies. Never handle bats, or any wildlife, with bare hands.

There are no health risks associated with bat guano in B.C.

