

The Little Brown Bat

“I spent most of my life working in the old logging camps where bats were looked upon kindly. During the night in the bunkhouses, when the men were just in bed, the bats would fly around inside the building, feeding on the multitudes of mosquitoes. Of course, this meant that the men could get a restful night’s sleep, instead of being constantly bitten. They were a friendly sight when the men would be working in the evening and would see them feeding over the bogs.”

Mr. Pat Mulrooney
Museum Interpreter
Beothuck Provincial Park

INTRODUCTION:

With nearly one thousand species worldwide, bats (order *Chiroptera*) make up almost one quarter of all mammal species. Bats are mammals because they give birth to live offspring and nurse their young, but bats are the only mammals that can truly fly. Their wings are membranes of skin, and their tiny bodies are covered with a soft fur.

Many think that bats are blind when in fact they can see quite well. Their

remarkable sense of hearing makes them incredible night hunters. When a bat hunts at night, it emits sound pulses produced in the voice box (*larynx*). These sounds, which come from the throat or nose, reflect off objects and return to the bat’s ears as echoes. Listening to the echoes, bats can then detect the exact location of their favourite food – flying insects. This built in sonar system, called “echolocation”, allows bats to navigate and feed in the dark. Even blindfolded little brown bats can find their way home.

Bats are good creatures to have around. They help farmers by eating insect pests in crops, thus reducing the need to use harmful pesticides that damage our environment. Around the world, bats also pollinate flowers and disperse seeds of many forest trees, shrubs, and tropical plants. Therefore bats will help to preserve our rainforests and maintain the earth’s endangered ecosystems.

Studying the unusual lives of bats has revealed information useful to people. For example, bat droppings (guano) in caves support whole ecosystems of unique organisms including bacteria useful in detoxifying wastes, improving detergents, and producing both gasohol (a fuel) and antibiotics.

In some areas guano is used as nitrogen rich, organic fertilizer. Research on the hunting habits of bats has been useful as well in the devel-

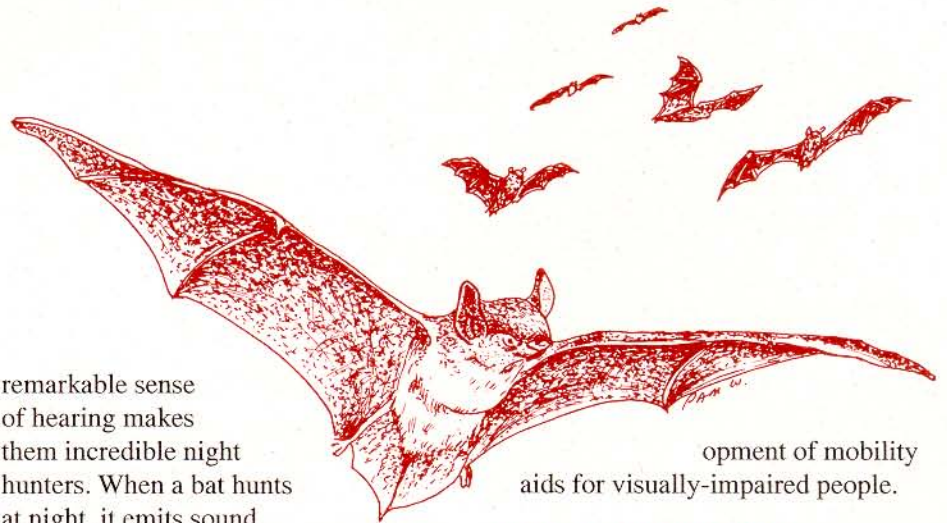
opment of mobility aids for visually-impaired people.

PRESENT STATUS:

Three species of bats have been confirmed to date on the island of Newfoundland and one in Labrador. These are the Little Brown Bat (*Myotis lucifugus*), the Northern Long-eared Bat [*Myotis keenii (septentrionalis)*], and the Hoary Bat (*Lasiurus cinereus*). The Little Brown Bat is the most common on the island and is the only species known to live in Labrador. It can be a challenge to locate, observe, identify and census bats because of their nocturnal and secretive nature. When you can find them, they are likely to be flying around, zigzagging and diving in the dark of the night.

There are special aids that help locate the bats. An electronic instrument, called the bat detector, enables humans to hear sound pulses emitted by the hunting bats. Bat researchers with experience using bat detectors can learn to identify many species of bats. Bats use certain frequencies, and every species has its own characteristic pattern, similar to the way each bird species has its own individual song.

Another monitoring aid is the Tuttle trap (it looks like a bed spring). This is a trap that allows researchers to capture bats without harming them. The captured bats are identified, banded, counted, and released unharmed. More study is needed so that we may learn more about this fascinating creature.



Searching for food –

Bats emit high squeaking sounds, which bounce off objects in front, and come back to the bats’ ears.

Little Brown Bat: *Myotis Lucifugus*

GENERAL DESCRIPTION:

The scientific name of the Little Brown Bat is *Myotis lucifugus*. *Myotis* means mouse + ear and *lucifugus* means shunning the light. The name can be misleading, as the little brown bat is not a relative of the mouse family.

The little brown bat's fur colour can range from pale tan to reddish or dark brown, and its ears and wings are dark brown to black. The little brown bat reaches a maximum length from nose to tail-tip of approximately 9 centimetres. An adult weighs only 8 grams and can crawl through an opening about 1 centimetre wide. The wingspan is about 22-27 cm. The wings are membranes of skin, supported by forearms and elongated fingers that have evolved to form the support structure. The wings extend down the sides of the body to the legs. Besides flying, bats use their wings for crawling, catching prey and grooming. Little brown bats also have a membrane between their hind legs (interfemoral) which helps them to manoeuvre in flight and to scoop up insects. Pregnant females also catch their newborns in this membrane.

The little brown bats' ears are very large when compared with the head size. When laid forward, the ears reach the nose. Little browns have strong jaws and teeth, and short necks. The hind legs are used for perching and climbing, and have become adapted for hanging around (upside down) using little muscular effort. The toes have sharp claws that curve under to hook onto rough surfaces.

Bats often live for more than 10 years. Other equally small mammals such as shrews have a very short life span of a year or two. Two little brown bats were recaptured 29 and 30 years after banding! The thirty-year-old bat did not appear fragile or have worn teeth, the tell-tale sign of being old.

HABITAT:

In Newfoundland little brown bats are found virtually anywhere there are trees, buildings, or caves. During the year the bats will use two different types of roosts (places to rest or sleep). In the summer they will roost in buildings or trees. In many parks bats can be seen especially around your campfire. In winter, the bats need to find frost-free places in which to hibernate, such as caves, mineshafts, cellars, tunnels, or unoccupied buildings.

FOOD:

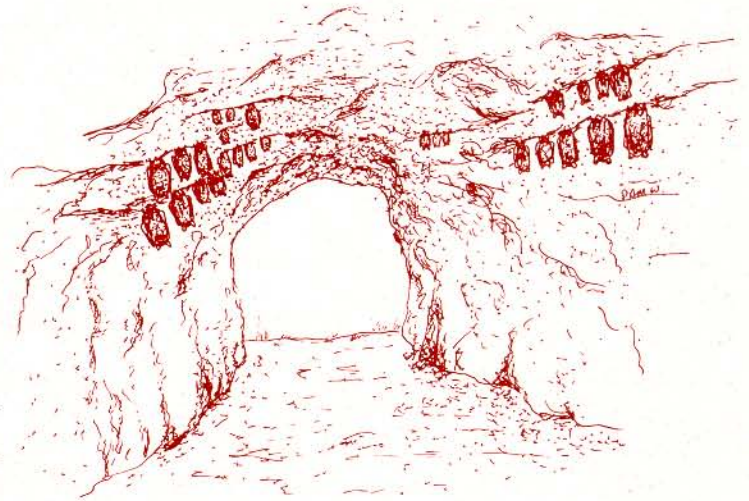
Little brown bats feed on insects such as moths, beetles, mosquitoes, and flies. A single little brown bat can catch 600 mosquitoes in just one hour. Bats hunt for about two hours after sunset and two more hours just before sunrise. Between hunts, the bats rest in roosts – often crevices – where they form tight clusters. During the summer months, the bats consume about half their weight in insects each night. This enables them to put on the body fat needed to survive months of hibernation.

BEHAVIOUR:

Female little brown bats usually reach sexual maturity by the end of their first summer and males mature at the end of their second summer. The bats mate in the fall while they are in peak physical condition. Fertilization and development do not begin until after hibernation.

When the weather turns cold and insects are scarce, the little brown bat goes into hibernation. The bat needs to find a place where the temperature will remain constant at approximately 10 degrees Celsius, and where the humidity is 78% or more. The high humidity helps to prevent water loss from the body surface (dehydration). Bats are our only true hibernator on the island of Newfoundland!

The bats crawl into small crevices or hook their claws into ceilings. Then they hang upside down, and go into a state of deep hibernation. While in this deep sleep, all body func-



At Day –

Bats asleep inside cave, hanging onto crevices in the cave wall.

tions are affected; the heart rate slows to 20 beats per minute, respiration decreases, and the body temperature drops to within one degree of the surrounding air temperature. The little bats can now survive six to eight months on very little energy. Bats wake up from time to time to urinate, drink and mate. Uninterrupted sleep for little brown bats averages between 12 and 19 days but may last as long as 83 days. Moisture from cave walls and condensation droplets on their fur are the usual source of water during hibernation.

Little brown bats can save energy during heavy summer rainstorms, high winds, or cool temperatures by going into “torpor”, a physiological state similar to hibernation, during which metabolic body functions decrease.

In Newfoundland, in early April, the pregnant females begin their spring migration to summer roosting sites where they establish maternity colonies. The males either roost alone or form small separate colonies by themselves. The gestation period is two months or so, depending on available food and climate. Most little brown bats produce only one young or pup a year, usually in June or July. A pup may weigh as much as

30% of the mother's weight; that's like a 120-pound woman giving birth to a 36-pound infant. For the first three or four days of its life the pup hangs on to its mother, even when she is searching for food. The young bats fly on their own in about three weeks.

THREATS:

One great threat to bats is the loss or disturbance of their habitat. Traditionally, bats have roosted in trees and caves. They have adapted to living in buildings because fewer and fewer trees and caves are available to them.

Bats and people are not always compatible when it comes to sharing living space. Harmful chemicals have been used in trying to eliminate bats from attics but this can be harmful to humans as well. Local wildlife officials can advise and help with removing bats without harming them, you or your property.

When bats are disturbed during their winter hibernation, they use up vital energy reserves. The food supply of the little brown bat consists of insects which are available only in the spring and summer months. Without being able to replenish the lost energy, the bats could die.

Some people harass or even kill bats out of fear and ignorance. They may think that bats are diseased and dirty. While bats are not as dangerous as portrayed in the past, they are wild animals and therefore should be treated with respect.

Nearly 40% of North American bat species are threatened or endangered. Around the world, many more bat populations are declining at alarming rates. Four Canadian bat species have been listed as vulnerable by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC); namely, Fringed Myotis (*Myotis thysanodes*), Keen's Long-eared (*Myotis keenii*), Pallid (*Antrozous pallidus*) and Spotted (*Euderma maculatum*).

The loss of food supply is another threat to the bat population. The disruption of natural habitat reduces the numbers and varieties of insects that the little brown bat feeds on. Pollution and pesticides can also reduce the food supply for bats, and pesticides can potentially poison the bats themselves.

The little brown bats have some natural predators such as hawks and owls that can harm them as well. Even trout will prey on hunting bats while they are flying low over the water! Small carnivores (meat eaters), such as cats, rats, weasels, mink and squirrels, can enter the bats' roosting areas and prey upon the bats.

MYTHS:

Bats have long been associated with vampires, Halloween, and things that go bump in the night. Most fear of bats is based not on fact but on myths, legends, and superstition. Fear of bats subsides with knowledge and accurate information.

Myth: Bats are birds.

Fact: Bats are not birds but flying mammals.

Myth: Bats are blind.

Fact: Bats can see quite well.

Myth: Bats always get tangled in human hair.

Fact: Bats do not become entangled in human hair deliberately, though they may dive for flying insects near a person's head.

Myth: All bats bite and carry rabies and diseases.

Fact: Not all bats bite and carry diseases. Bats seldom transmit disease to other animals or humans, but bats are wild animals and should not be disturbed, in case they are carrying certain diseases.

Myth: All bats drink blood.

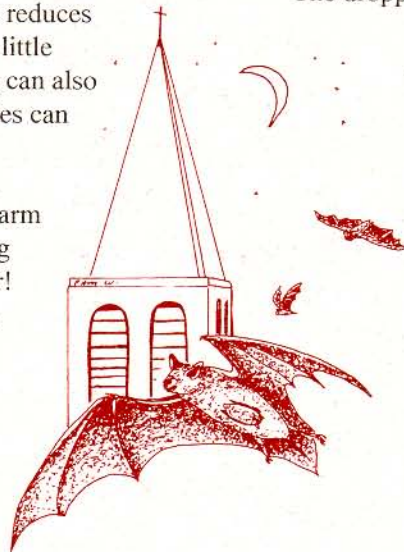
Fact: The bats of Newfoundland and Labrador do not feed on the blood of people or animals. The little brown bat is a harmless insect eater. With the exception of the tropical Vampire bat (not found in Canada), most bats feed on insects or fruit. Soon an anticoagulant (a substance that hinders the clotting of blood) found in the saliva of the vampire bat may be used to treat heart patients.

BATS AND PEOPLE:

With less and less natural habitat (old-growth forests, wetlands, and caves) available to them, bats turn to buildings as roosting sites. When bats occupy a human dwelling, the smell, sight, and sounds from the colony are sometimes considered a nuisance. Bats do not gnaw wood, build nests, or cause damage to buildings.

The droppings of bats consist of insect "skeletons" and dry to a powder. Histoplasmosis, a fungal respiratory disease associated with birds and other animals, may be found in the guano where bats roost. Infection can occur when the fungus is inhaled while collecting dry bat droppings. If droppings accumulate in lofts, sheets can be placed to collect them for use as fertilizer. Care should be taken to wear a protective mask when collecting bat droppings. Although very serious, this illness is rarely fatal.

Rabies in bats is very uncommon however the few cases of rabies reported in the Atlantic provinces are mostly attributed to bats. In 1989 one case of rabies in a fox on the south coast of Newfoundland was thought to be due to contact with a rabid bat. This does not suggest that people should be afraid of bats but rather they should treat bats with respect and caution. Any bat or other wild animal found under unusual circumstances (brought in by the cat, or



Flying at night catching food –

Young bat attached to its mother. They roost inside the church steeple.

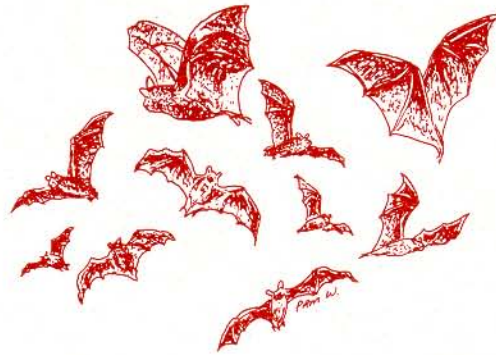
seeming to be sick i.e. flapping around on the ground during the daytime) should be reported to local wildlife officers. If the bat must be handled do so with gloves and place in a protective container.

Occasionally a bat, usually young and inexperienced, enters through a window. Leaving doors and windows open will allow it to escape. If you need assistance in removing bats from any buildings, contact your nearest wildlife office to help you. To clear a building of bats, it is best to wait till all the bats are out in the autumn, and then seal up all possible entrances and exits. Then provide bat houses as alternative accommodations. Never disturb bats that are hibernating. Increased energy demands created by frequent arousal may stress the bats to the point where they may die of starvation. Any human activity in bat

caves during winter reduces the bat's chances of surviving until spring.

BAT CONSERVATION:

We are just beginning to investigate and learn about bats in Newfoundland. There is very little information about their distribution, population size, or habits. We aren't even sure where they go in winter! A small, informal group was formed in 1992 to try to collect information. We called it THE BAT AWARENESS TEAM (BAT). Participants in BAT have compiled information packages, observed bats, conducted research, and even assisted in the creation of Newfoundland's first "Bat Protected Area"! Internationally, Bat Conservation International (BCI) strives to promote conservation of the world's many bat species.



***Zig-zagging in the dark –
Catching insects.***

WHAT YOU CAN DO:

- Improve public awareness of bats and the problems they face.
- Replace old myths and misunderstanding about bats with tolerance, understanding, and knowledge.
- Organize conservation measures and protect important bat sites.
- Use safe chemicals for treating timber in buildings.
- Consult with local wildlife experts for humane methods of controlling roosting bats in homes and outbuildings.
- Build a bat house and attract bats to your property.
- Report roosting, maternity and overwintering sites to the Wildlife Division.

For more information about bats in your area call or write:

Parks and Natural Areas Division
Tourism, Culture and Recreation
Government of Newfoundland and Labrador
P.O. Box 8700
St. John's, Newfoundland
A1B 4J6
Tel: (709) 729-2431

Wildlife Division
Department of Natural Resources
Government of Newfoundland and Labrador
P.O. Box 8700
St. John's, Newfoundland
A1B 4J6

For more information on bats:

Bat Conservation International
P.O. Box 162603
Austin, Texas
78716

Acknowledgements

Parks and Natural Areas Division would like to thank those who participated in the research and writing of this brochure; The Bat Awareness Team – Doug Ballam, Joe Brazil, Ralph Jarvis, Cathy Knox, John Maunder, Lucy O'Driscoll, Vickie Walsh, Jerry Yetman; the 1993 Green Team and many others for their comments and suggestions.

Illustrated by Pam Williams, designed by Desktop Design.