



Making a difference...together

HA-BAT-ITAT

Educators Guide

Program at a Glance

On this fun and informative program, we will explore the fascinating world of bats in our region. We will dispel some myths about bats, talk about local species and the unique adaptations they use to survive. There will be an opportunity for an up close and personal look at some mounted bat specimens and other bat-related material. As we wander through their ancient forest home students will learn to appreciate bats and discover why they are so important to local ecosystems and us! Students will discover what they can do to help bats on Vancouver Island and foster a sense of stewardship for these flying mammals.



In this program, your students will...

- Identify bats as belonging to a group of animals known as mammals
- Understand that myths and fears about bats are unfounded
- Explore a diversity of bats that need this old forest habitat to survive
- Discover the unique value that bats have here in the forest ecosystem
- Evaluate the impact of our actions on bats and their forest home

Curriculum Connections

Our place based school programs directly relate to the K-5 science curricula. Below you will find some big ideas, curricular competencies and content that will be addressed on your program.

Big Ideas from BC Curriculum:

- Life cycles adapted to their environment (grade 2)
- Water is essential to all living things and, it cycles through the environment (grade 2)
- Living things are diverse, can be grouped, and interact in their ecosystems (grade 3)

Curricular Competencies from BC Curriculum:

- Demonstrate curiosity and sense of wonder about the world
- Observe objects and events in familiar or unfamiliar contexts

- Ask questions about familiar objects and events
- Make predictions about familiar objects and events
- Safely manipulate materials to test ideas and predictions
- Make observations about living and non-living things in the local environment
- Experience and interpret the local environment
- Compare observations with predictions through discussion
- Identify simple patterns and connections
- Transfer and apply learning to new situations
- Compare observations with those of others
- Consider some environmental consequences of their actions
- Make simple inferences based on their results and prior knowledge
- Demonstrate an understanding and appreciation of evidence
- Represent and communicate ideas and findings in a variety of ways
- Express and reflect on personal or shared experiences of place

Content from BC Curriculum:

- Water sources including local watersheds (grade 2)
- Biodiversity in the local environment (grade 3)

Suggested Pre-Trip Activities

- Read Silverwing, Sunwing, or Firewing by Kenneth Oppel. Discuss as a class, which parts of the books do you think are made up and which are not.
- As a class, create a “bat beliefs” list of things that you have heard or read about bats. Bring any questions your list generates to the park and see if you can discover the answers on the program.
- Visit Bat Conservation International Website. There are videos, slideshows, books and other teaching materials about bats that you can order.

Follow-up Activities

- Revisit your class “Bat Beliefs” list and discuss what was true and what was false
- Compare Silverwing, Sunwing or Firewing to the CRD bat program
- Create a mural for your classroom of an ideal habitat for coastal bats
- Write a short story about a real animal, based on your own library research, read it to the class and see if they can guess what you made up and what you based on science
- Have students write a story about a bat that lives in Francis/King Regional Park

- Look for suitable bat habitat in and around your schoolyard, or at home
- Build a bat box for your school or with your family at home
- Borrow a bat specimen from the Royal British Columbia Museum
- Invite a bat expert to visit your class, The Ministry of Environment can provide a list of bat experts

Background Information on Bats

Myths and Fears

Bats have fascinated and terrified people for centuries. In China they are believed to bring good luck, however in western culture they are connected to myths about vampires and entanglement in human hair. Though vampire bats are real (there are three species), they do not live in Canada and prefer cattle blood to human blood. Also, do not fear bats becoming tangled in your hair. Their senses are so finely tuned, a U.S. research facility recorded a bat escaping through a moving laboratory ventilation fan - unscathed! Accordingly, bats are similarly adept at avoiding human hair. Bats are not blind. Our coastal bats can see quite well, though they rely on echolocation for flight navigation.

Adaptations

Adaptations are the special features and behaviours a species has or uses to survive. Bats are fun to learn about because they have so many bizarre adaptations (bizarre to us!). For one, they are the only flying mammal. If you look closely at their wing structure, you can see bats don't fly with their arms the way birds do; they fly with their hands and their great, long fingers. Because bats hunt for insects at night (i.e. they are nocturnal - another adaptation) they have developed an acute sensory system called echolocation or sonar (the same behaviour some species of whales and dolphins display). Echolocation involves emitting high-pitched sounds that echo back to the animal's ears when the sound strikes an object. From this information the animal can then decipher where the object or prey is and determine exactly how large it is.

Habitat

Roosts are places where bats find safety from predators and shelter from weather conditions. Some examples of roosting sites are: spaces under bark, leaves, caves, rock crevices, animal burrows, abandoned mines, building roofs and balconies and wildlife trees. A wildlife tree is any standing dead or living tree that provides habitat for wildlife. There are four general types of roosting sites. Site types are categorized according to when they are used by bats; there are day roosts, night roosts, maternity colonies and hibernation sites. Day and night roosts are used by bats in the summer when they are not in hibernation. Day roosts are safe places to sleep away the day in preparation for a busy night of

feeding. Night roosts are safe places to recuperate between energetic flights looking for insect meals. Maternity colonies provide safe shelter for hundreds of mothers and their offspring. When young are present, males roost elsewhere. Hibernacula, or winter hibernation sites, are for inactive bats during the winter and provide safe shelter from late summer to early spring for an entire bat colony.

Conservation

Bat numbers are intimately connected with the availability of suitable habitat. Parks provide a much needed source of bat habitat in a time of increased urbanization. Older growth forests are essential to the continued survival of bat species within BC. Bat boxes are a relatively cheap and easy method for homes and schools to provide suitable roosting sites for some local bats when natural habitats are lost.

Bats found on Vancouver Island

Big Brown Bat (*Eptesicus fuscus*)

Yuma Myotis (*Myotis yumanensis*)

Little Brown Myotis (*Myotis lucifugus*)

Silver-haired Bat (*Lasionycteris noctivagans*)

Long-legged Myotis (*Myotis volans*)

California Myotis (*Myotis californicus*)

Western Long-eared Myotis (*Myotis evotis*)

Keen's Long-eared Myotis (*Myotis Keenii*)

Hoary Bat (*Lasiurus cinereus*)

Townsend's Big-eared Bat (*Plecotus townsendii*)

Online Resources

Bat Conservation International

BCI is an organization that works to conserve the worlds bat populations and ecosystems. Lots of great resources, video and photos

<http://www.batcon.org/>

E-Fauna

This is an electronic atlas of the wildlife of British Columbia

<http://ibis.geog.ubc.ca/biodiversity/efauna/>

Habitat Acquisition Trust

Habitat Acquisition Trust is a regional land trust that conserves nature on south Vancouver Island. Learn more about how you can help to conserve local bat populations.

<https://www.hat.bc.ca/bats>

NatureWatch

NatureWatch is a community that engages all Canadians in collecting scientific information on nature to understand our changing environment. Find out how you can be a citizen scientist in your local area.

<https://www.naturewatch.ca/>

Royal BC Museum

The RBCM's learning portal is a great resource on bats, learn how to make a bat box, listen to bat sounds and more.

<https://learning.royalbcmuseum.bc.ca/playlist/bats-of-bc/>

Additional Resources

Oppel, Kenneth. Silverwing Series. Harper Collins, 1997.

Nagorsen, David W. & R. Mark Brigham. Bats of British Columbia. University of Toronto Press, 1993.

Fenton, M. B. Just Bats. University of Toronto Press, 1983.