



Making a difference...together

MARVELOUS MAMMALS

Educators Guide

Program at a Glance

On this fun and engaging program, we introduce children to the marvelous world of mammals. Our program begins with introducing the characteristics of mammals and discuss whether humans are also mammals. Students will learn the differences between the skulls of herbivores, carnivores, and omnivores. As we explore an old Douglas-fir forest, we use inspiring nature activities to learn about predator-prey relationships, sounds of mammals, and how mammals move. We look at some mammal species that live on Vancouver Island and learn about the features and behaviors they use to survive. We conclude the program with learning about tracks and a challenge to help protect mammals and their homes.



In this program, your students will...

- Foster an appreciation of mammals
- Explore the marvelous diversity of mammals in an engaging and educational way
- Have an opportunity to make their own discoveries about mammals
- Describe two characteristics of mammals
- Use their body to imitate a type of mammal movement
- Appreciate the diversity of mammal adaptations

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:

- Living things have features and behaviors that help them survive in their environment (Grade 1)
- Living things have life cycles adapted to their environment (Grade 2)
- Living things are diverse, can be grouped, and interact in their ecosystem (Grade 3)

Curricular Competencies from BC Curriculum:

- Demonstrate curiosity and a sense of wonder about the world
- Observe objects and events in familiar contexts
- Ask simple questions about familiar objects and events
- Make simple predictions about familiar objects and events
- Make exploratory observations using their senses
- Make observations about living and non-living things in the local environment
- Make simple measurements using non-standard units or informal methods
- Experience and interpret the local environment
- 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
- Share observations and ideas orally
- Express and reflect on personal experiences of place

Content from BC Curriculum:

- Structural features of living things in local environment (Grade 1)
- Behavioral adaptations (Grade 1)
- Names of local plants and animals (Grade 1)
- Similarities and differences between offspring and parent (Grade 2)
- Metamorphic and non-metamorphic life cycles of different organisms (Grade 2)
- Biodiversity in the local environment (Grade 3)

Suggested Pre-Trip Activities

- Draw pictures about your field trip and make predictions about what they might see
- Read stories to introduce the important roles mammals play in ecosystems, including the role of humans
- Share personal stories and experiences about mammals

Follow-up Activities

- Start a nature log book for your classroom about mammal sightings
- Create mural featuring mammals in their home environment

- Make a list describing how to protect mammals and their homes
- Walk your school neighborhood looking for mammals or signs of mammals
- Plant a Douglas-fir tree (food or shelter for small mammals) on your school grounds

Background Information on Mammals

Scientists have classified about 6,400 species as mammals. Around 50 species of mammals live on Vancouver Island. Mammals are warm-blooded (homeothermic), vertebrate animals (with backbones) that breathe air. They belong to the class *mammalia*. Mammals evolved from small shrew-like insect-eating creatures approximately 200 million years ago that lived alongside the dinosaurs. These small animals most likely continued to evolve into mammals after the dinosaurs died out.

The mammal group is one which is very complex and diversified ranging from the tiny pygmy shrew that lives predominantly underground to the large marine mammals such as the blue whale. They have complex behaviour and greater intelligence than other animal groups. Mammals are still the dominant animals positioned on top of the food chain. They can live in a variety of habitats providing there is food, shelter, space and a place to raise their young. They survive in winter by either staying active (beavers, foxes), becoming dormant or semi-dormant (bears, skunks, some ground squirrels) or migrating to more favorable climate (caribou, whales, seals).

Their reproductive cycle is timed to raise young during seasons when food is available. Most give birth to live young and in comparison to other creatures spend more time raising their young. Mammary glands produce milk to feed their young which may nurse for a few days (shrews) or several months (squirrel) or even several years (whales). Mammals young can develop in 3 different ways:

- placental – young are attached to placenta inside the uterus, i.e. wolves, mice
- marsupial – embryo expelled from the uterus, develops in the pouch where it is attached to the nipple for milk, i.e. opossum, kangaroo
- monotreme – young develop in a shelled egg, i.e. platypus, echidna.

All mammals have true hair or fur, though some species have very little hair remaining. Hair has helped the mammalian group to survive, as it keeps them warm and protected. Fur enables mammals to hunt when it is cold giving them an advantage over cold blooded animals, insects,

reptiles and amphibians that cannot move as quickly during these times. Some mammals have specialized hairs around their eyes – eyelashes and eyebrows to keep foreign objects out and to decrease the amount of light reflected into their eyes. The amount and type of hair varies from species to species. Some whales have lost their hair through evolution. There are 2 types of hair – guard hair and underfur.

- Guard hair is the longer, thicker hair that protects the animals from moisture and can change colour more readily for camouflage.
- Underfur is dense, shorter hair that lies closer to the animal's skin to insulate and keep the animal warm and dry.

Mammals have a unique lower jaw composed of two bones that are fused into one solid jawbone. Most mammals have 3 different kinds of teeth:

- canines – sharp pointed teeth for tearing meat
- incisors – flatter front teeth for cutting vegetation and meat
- molars – larger flatter back teeth for grinding food into smaller pieces

Mammals' main senses are concentrated in the head where they are protected by the bony cavity called the skull. Most mammals have highly evolved senses: - smell, sight, hearing and touch. Each sense has been molded by evolution to fit its owners way of life, i.e. the mole has poor eyesight yet has a very sensitive muzzle that combines touch and smell to find its food.

It can be difficult to directly observe many mammals or to follow them as they move from place to place. Many animals are secretive, out at night, or move over very large areas. But all animals that move on the ground have the potential to leave tracks. Tracks can sometimes be seen long after an animal has left the area. Not only can you identify an animal by its track, you can also tell whether an animal was running or walking, whether it was injured, or whether it was traveling with another animal.

Animals also leave behind other markings in addition to tracks. Fur, tree scratches, chewed leaves, and trampled grasses are all signs that an animal has passed by. Scat, or droppings, can also hint at what animal is in the area. By examining scat scientists are able to find out what animals eat, and deduce if they are finding enough resources in the wild.

Resources

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