



ROYAL BC
MUSEUM



Fins, Feathers and Fur

Animals of British Columbia

HSBC  School Visits Programs

Teachers' Guide

Grade K/1



Feathers, Fins and Fur: Animals of British Columbia

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Program Level: Kindergarten & Grade 1

Program Length: 1 hour

Introduction

This program will introduce students to the great diversity of animals in British Columbia. Students will compare characteristics of some of the major groups of animals including mammals, birds, fish, insects and other invertebrates.

Prescribed Learning Outcomes

The program is designed to fulfill the following prescribed learning outcomes as stated in the Ministry of Education's Integrated Resource Package.

Kindergarten – Life Science

- Describe features of local animals
- Compare common animals

Grade 1 – Life Science

- Classify living and non-living things
- Describe basic needs of local animals
- Describe how the basic needs of animals are met in their environment

Grade 1 – Earth & Space Science

- Describe changes that occur in daily and seasonal cycles and their effects on living things

Pre-Visit Instructions

The students must be divided into 4 groups PRIOR to arriving at the museum. If possible they should also wear nametags. Each group of students will rotate through the following 4 stations where students will look at different groups of animals:

- Station 1: mammals
- Station 2: birds
- Station 3: marine life (fish and invertebrates)
- Station 4: insects and spiders

General Background

Animals

An animal is a living creature, which has any or all of the five senses of sight, hearing, smell, taste and touch, and which can move all or part of its body. Humans, insects, reptiles, birds and mammals are all animals. Animals are distinguished from plants by obtaining their nourishment from other living organisms or their remains.

People often forget that humans are animals, as are worms, sponges, spiders and jellyfish.

Mammals

Mammals are animals that have hair, are warm-blooded, breathe air, give birth to live young and nurse their young with milk. People often think of mammals when they hear the word animal, many use the two terms interchangeably although mammals are just one kind of animal. Examples of mammals are dogs, cats, bears, deer, whales, seals and human beings.



Mammals are warm-blooded and maintain their temperature at a relatively constant level regardless of the surrounding temperature. There are many behaviours and physiological adaptations that mammals use to maintain their body temperature. Behavioural ways of maintaining a constant temperature include seeking shade on a hot day or moving to a warm sunny spot on a cool day. Animals may enter the water in extreme heat to cool down or huddle together to keep warm. Physiological ways of maintaining a constant temperature include, panting when it's hot and shivering when it's cold. Mammals that live in cold climates tend to have thicker fur, and/or more body fat, to insulate them from cold.

ACTIVITIES

- Ask the students to name an animal. Record the responses and compare how many students name mammals compared to other animals. Ask them if a slug is an animal. A worm? A fly? A bird? A fish? Reinforce the idea that animals come in many shapes, sizes and life styles and that mammals are just one kind of animal. In fact mammals are hugely outnumbered by other animals – there are more crustaceans in one medium-sized lake than there are humans in the entire world!
- Ask students how a dog cools down on a hot day. (Pants, goes into the shade, drinks more.) How do people cool down when it is hot? (Sit in the shade, use a fan, have a cool drink, go swimming, run under a sprinkler etc.)

Birds

Birds are animals that are warm-blooded, lay eggs with hard shells, have feathers, a beak, wings and generally are capable of flight although there are some flightless birds. The one thing that distinguishes birds from all other animals is feathers. Other animals are warm-blooded (mammals), lay eggs (insects and fish), or have wings (insects and bats) but only birds have feathers and all birds have feathers. Feathers are used for flight, temperature control, and attracting a mate.



Most birds can fly but some like the Ostrich, Penguin and Emu cannot. Birds have a very strong heart and an efficient way of breathing – these are necessary for birds to fly. Birds use a lot of energy while flying and need to eat a lot of food to power their flight. Many British Columbia birds migrate great distances moving south in the winter to escape the cold, and north in the summer to breeding grounds where food is plentiful. Because flight requires so much energy birds must stop frequently on their migrations to feed. Habitat such as forests and wetlands are extremely important to migrating birds as feeding and resting stops.

ACTIVITIES

What makes a bird a bird?

Ask the students to name some things that birds have or things they do such as – they have feathers, wings and beaks, they lay eggs and build nests. Birds can fly, and sing. Then ask if only birds lay eggs (insects and fish also lay eggs) and build nests (some mammals, insects, & fish also build nests) or if only birds fly (bats & insects fly) and sing (people). Point out that the one thing that all birds have and only birds have is feathers. If an animal has feathers it is a bird.

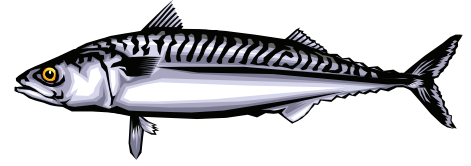
Marsh Hopscotch

Marshes are very important habitats for migrating birds. Throughout their long migrations, these habitats provide a resting and refueling stop. Unfortunately, these wetlands are disappearing due to development, overuse by livestock, and pollution.

- 1) Draw a hopscotch board on the ground with chalk.
- 2) Label each square as a marsh along a migration route, starting north and moving south.
- 3) Have a few students start their “migration” (square #1), and see if they can reach their breeding grounds (square #10).
- 4) Next cross out one of the marshlands, and give a reason why it has disappeared (reasons for disappearing wetlands: paved for a parking lot, new landfill, built a golf course, new farmland, re-routed waterways and land dried up, contaminated area, housing project, industrial development etc.). Have the students “migrate” again.
- 5) Keep removing squares until only a few remain. It should get very difficult to hop from #1 right to #10.
- 6) Relate this activity to the annual migration of birds. Discuss the consequences of losing the marshes. If all the marshes are wiped out, the birds will have no place to stop on their long journeys. If they cannot make it to their breeding or feeding grounds, then the birds are likely to go extinct.

Fish

Fish live in water, usually have scales, are cold-blooded and get their oxygen from water (breathe water). They have gills instead of lungs that extract oxygen from the water. Some fish give birth to live young like mammals while others lay eggs like birds. Fish have fins that they use to swim and steer with. There are approximately 400 different kinds of fish living in the marine and fresh waters of BC.



Fish come in many different shapes, sizes and colours. Some are streamlined for fast swimming while others are camouflaged for hiding from predators and ambushing prey. Some fish are small and would easily fit in the palm of your hand while others like the basking shark grow to a length of 12 metres.

ACTIVITY

How big is the biggest fish in BC?

Cut 12 pieces of string 1 metre in length. Ask the students how big they think BC's largest fish is. What kind of fish do they think the biggest fish is? Have two students stand one metre apart and hold either end of one of the metre-long strings. Ask if the largest fish is that big. Add one piece of string and one student at a time to the line and have students say stop when they think the line has reached the length of BC's largest fish. If students say stop before you have used all 12 pieces of string explain that the largest fish is bigger than the length of string you have. Not until you have 13 students standing in a line and holding the ends of all 12 pieces of string together so they span 12 metres will you have reached the length of BC's largest fish (you may have to move into the hallway to get enough room). This is the size of the Basking Shark. These sharks live along the coast of BC and are often seen by fishermen laying on the surface, as if they are basking in the sun. Basking sharks are filter feeders that scoop up and eat millions of tiny animals near the surface of the water. Despite their enormous size they are harmless to humans.

Using the pieces of string you can compare the size of the Basking Shark with other sharks found in BC such as the Sixgill Shark (8 m), the Blue Shark (4 metres), Dogfish Shark (2 m), Brown Cat Shark (68 cm).

Invertebrates

Invertebrates are animals without a backbone. Most animals on Earth, including insects, spiders, worms, slugs, crabs, snails and most marine life, fall into this category – there are far more animals without backbones than with.

Aquatic Invertebrates

Most of the animals that live in oceans and lakes are invertebrates – animals without backbones. The vertebrates, including fish, seals, whales, and sea birds make up a small fraction of the animal life in oceans and lakes. Aquatic invertebrates including, crabs, jellyfish, sea worms, sponges, sea anemones, shrimp, starfish, sea cucumbers, snails and clams, far outnumber birds, mammals and fish in both number of species and number of individual animals. In the marine waters of BC there are over 6500 different kinds of invertebrates and thousands more species in freshwater lakes, ponds and rivers.



ACTIVITIES

Walk like a crab

Have you ever seen a crab walk? If they are trying to move quickly they run sideways. Have students try to walk like a crab. Have them lay on their backs, then push themselves up on their hands and feet so their body is off the ground – now move sideways. Have a race and see who can crab walk the fastest.

Sea Shells

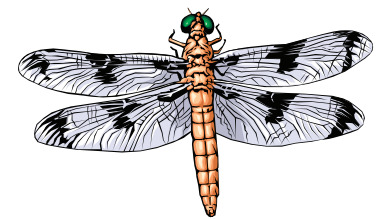
Have the students bring in collections of seashells to show the other students. Point out the differences in the shells. Some animals have two shells (clams, oysters) while others (snails) have only one. Some have ridges and lines and some are smooth. Reinforce the concept that these are animals.

Draw an underwater scene

Have the students draw and colour an underwater scene with fish, crabs, seashells, jellyfish etc. This could be done individually or groups of students could draw a mural.

Insects

Insects are the most diverse group of animals on Earth and the most abundant land animals. Insects have a hard external skeleton, six legs, are cold-blooded, breathe air and lay eggs. Most insects go through a series of stages in their life called metamorphosis. An insect that goes



through complete metamorphosis has four life stages, the egg, larva (e.g. caterpillar), pupa (cocoon), and adult. Each stage generally looks much different than the other stages. The caterpillar pictured here will build a cocoon and eventually emerge as a butterfly. Dragonflies develop from nymphs that live underwater in a pond or lake.

Spiders

Spiders are invertebrates with eight legs, and a hard external skeleton that breathe air and lay eggs. Spiders belong to a class of animals called arachnids, they are not insects as many people think. Most spiders have eight eyes, and do not have antennae or wings as insects do. Spiders are carnivores catching other animals – usually insects – and eating them. Most spiders have poison glands and fangs in their jaws, which they use to inject poison into insects. The venom paralyzes or kills their prey. Spiders are one of the most misunderstood groups of animals. Many people fear them and most kill spiders they find in their houses. Spiders are actually extremely important to the environment and to humans because they eat huge numbers of insects that would otherwise eat crops, damage buildings, or damage forests.



Spiders produce silk that is used to build webs to trap insects. Many spiders release long silken threads that float on the wind and carry the spider to new areas. This is called ballooning. Silk is also used to line burrows in ground-dwelling spiders and some spiders lay their eggs in silken sacs.

ACTIVITY

Comparing spiders and insects

Get pictures of spiders and insects (ants, grasshoppers etc.). Have students look at the pictures and point out differences - *eight legs in spiders, six in insects, spider's body has two sections and an insect's has three.*

- Have the students draw and colour a picture of a spider and an insect.
- Using the nursery rhymes on the following page, have the students role-play “Little Miss Muffet” and “Eensy, Weensy Spider.”

Spider Nursery Rhymes

Little Miss Muffet

Little Miss Muffet

Sat on a tuffet

Eating her curds and whey;

Along came a spider,

Who sat down beside her

And frightened Miss Muffet away.



Eencey Weencey spider

Eencey Weencey spider

Climbed up the waterspout;

Down came the rain

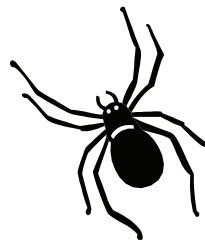
And washed poor Eencey out;

Out came the sun

And dried up all the rain;

And the Eencey Weencey spider

Climbed up the spout again.



Other Invertebrates

There are too many invertebrate groups to list here. Some familiar land invertebrates are worms, centipedes, slugs, snails and pill bugs, but soil and forest leaf litter are full of many kinds of tiny invertebrates that we can see only with magnification.



Activities

Slug Search

Collect some slugs or snails and bring them into the classroom to observe. To collect slugs and snails put a board, a piece of black plastic or the skin of half a grapefruit near a vegetable or flower garden and leave it overnight. This can be done as a class activity if you have a flowerbed on the school grounds. In the morning check for slugs, snails, pill bugs or other creatures. Bring animals you collected into the classroom and put them in a large jar or small terrarium. Put some plant material in the container with them and make sure you keep them slightly moist. Keep them away from direct sunlight as they may overheat. A good way to observe the movement of slugs and snails is through glass they are crawling on. Pill bugs can be observed with the aid of a magnifying glass.

When you are finished observing the animals you can release them near where you found them.

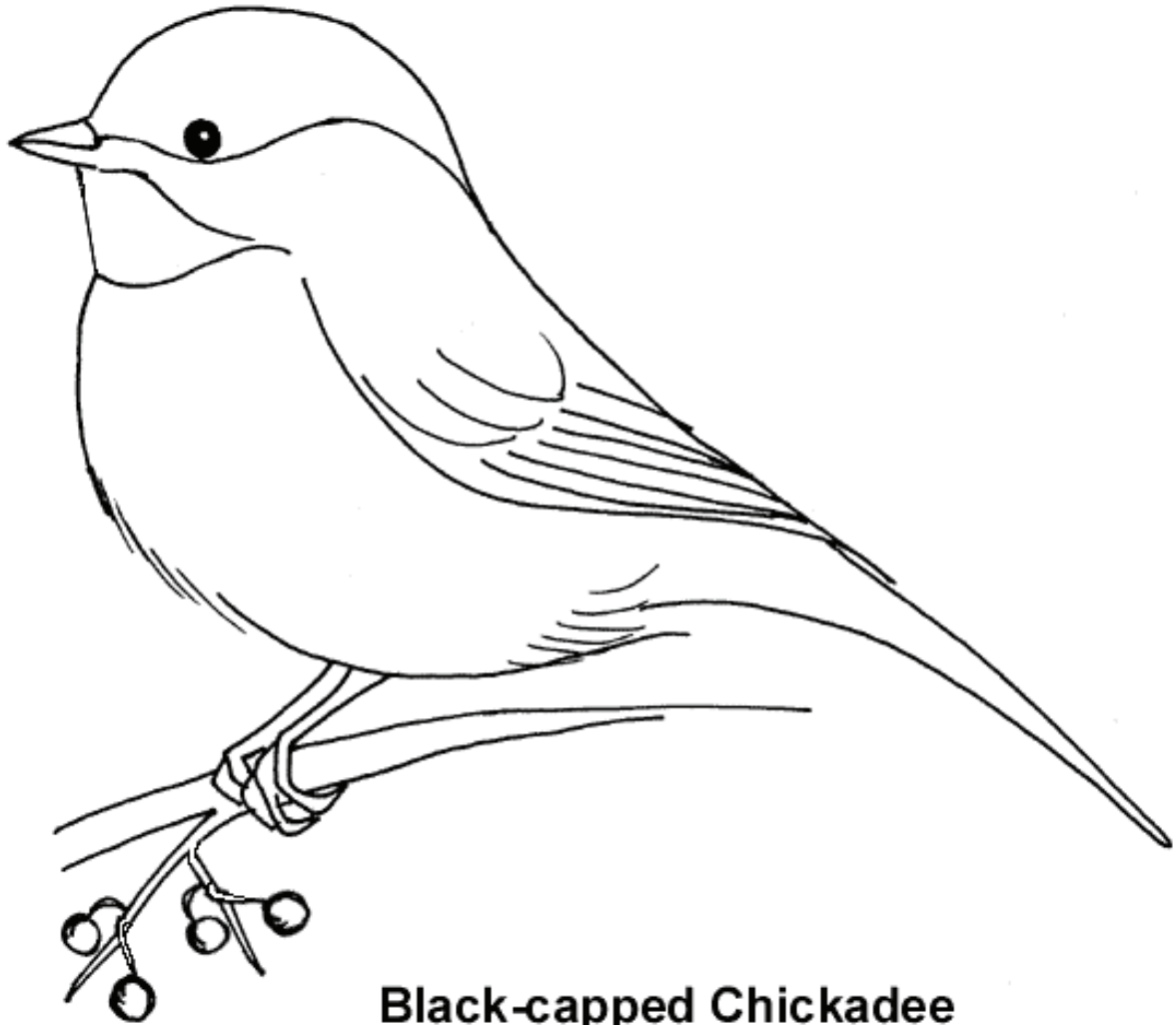
- Point out the tentacles that slugs and snails use to sense the world around them.
- Ask the students if they know why slugs and snails crawled under the traps you put out. – *Slugs and snails must keep moist or they will die. They feed mainly at night when it is cool and moist and seek shelter during the day when the heat would kill them. If it is raining, or cool and humid you will see slugs during the day. Salt kills slugs by drawing water out of them and dehydrating them.*

Pre-Visit and/or Follow Up Activities

Make copies of the animal drawings included with the guide and have students colour them.

For more activities check out the museum's web site at www.royalbcmuseum.bc.ca

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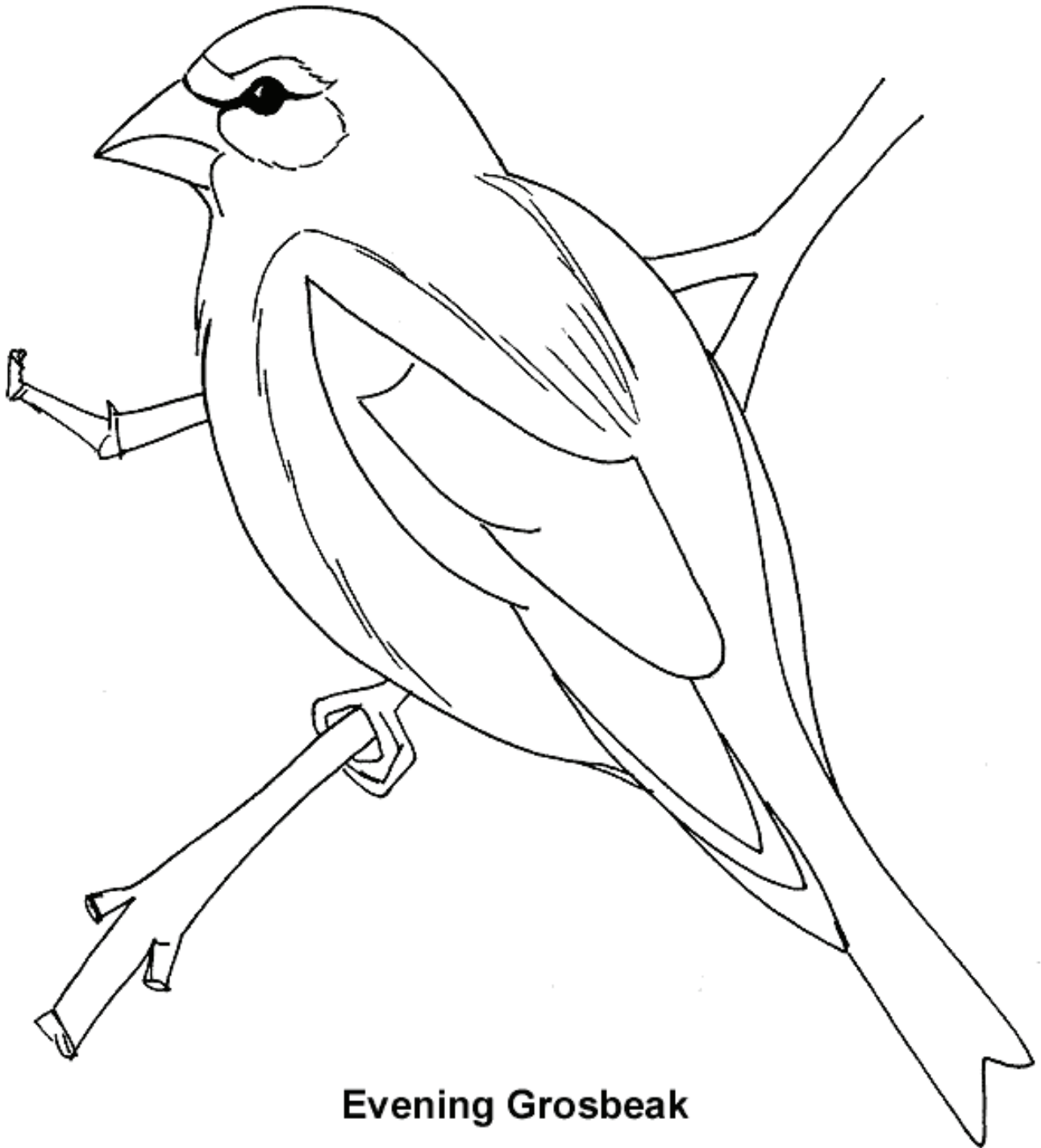
Black-capped Chickadee

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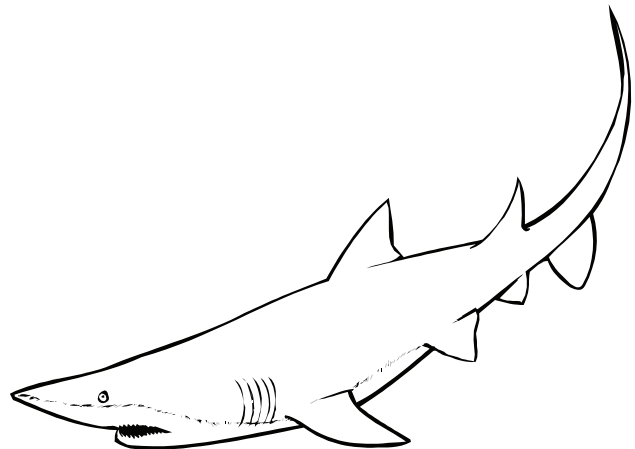
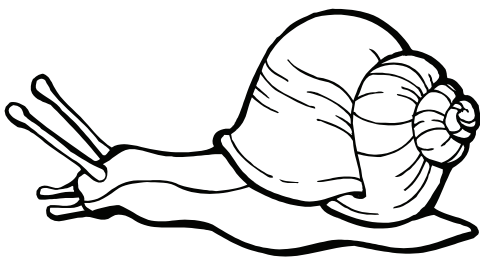
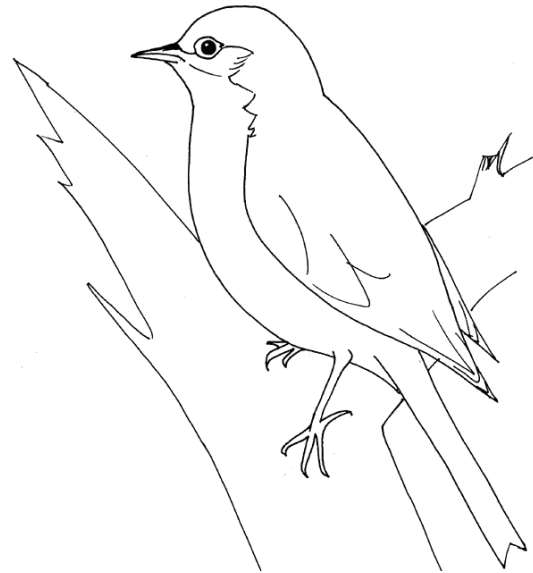
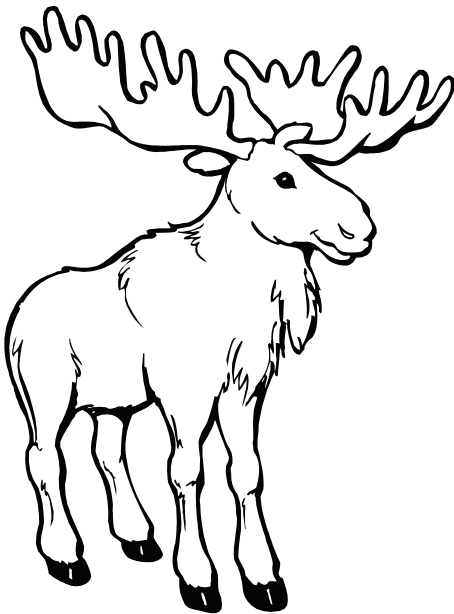
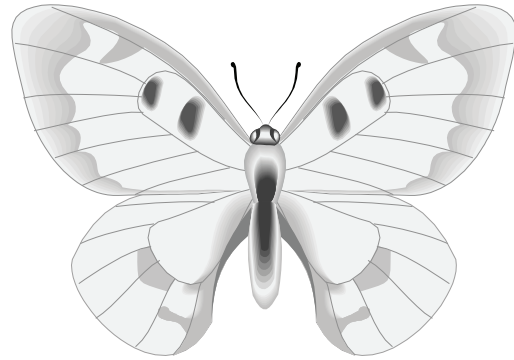
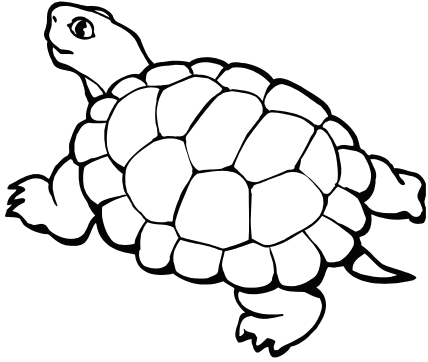
Mountain Bluebird

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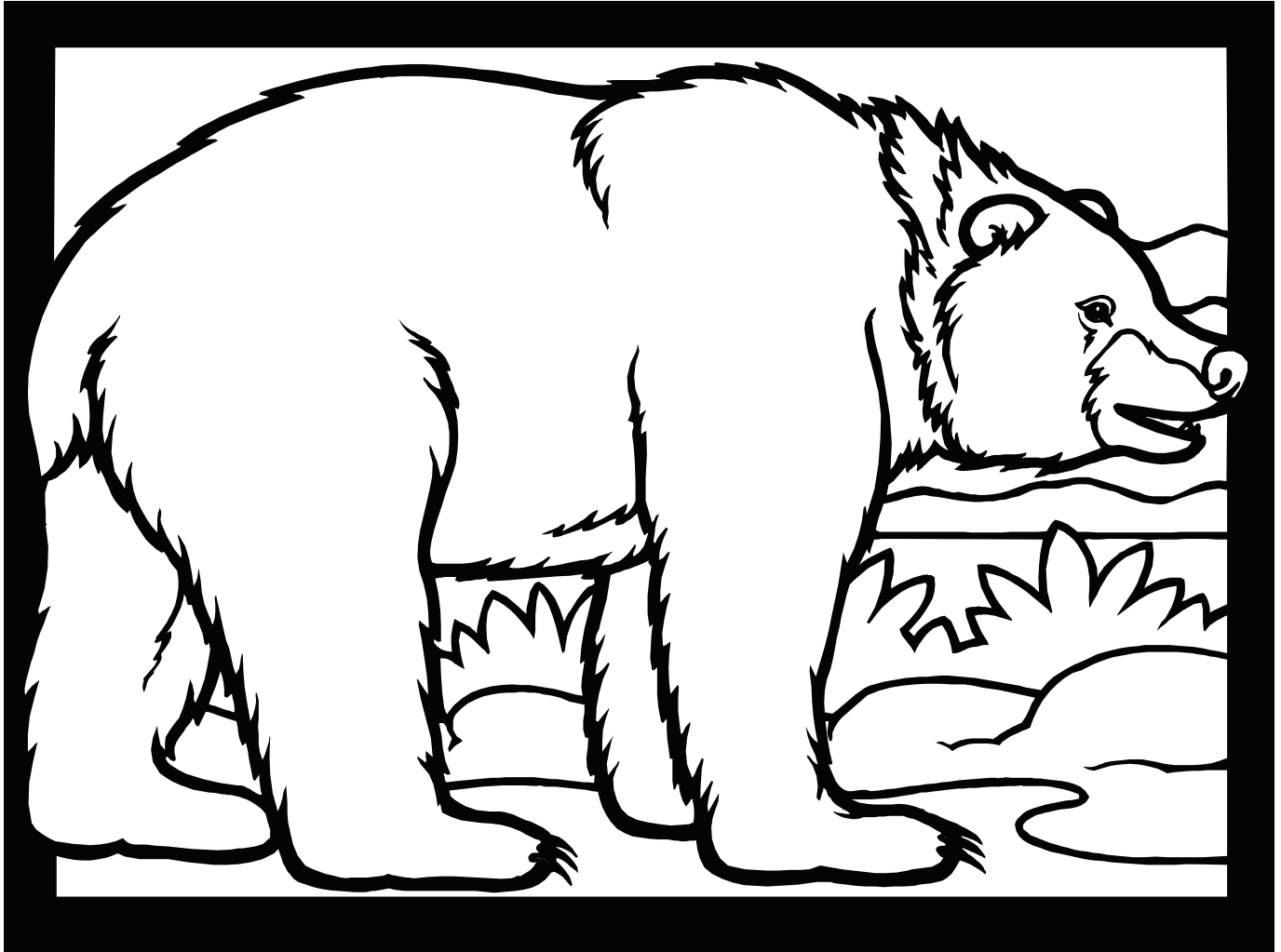


Evening Grosbeak

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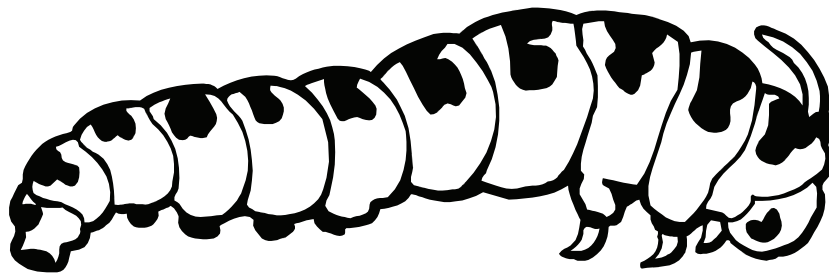
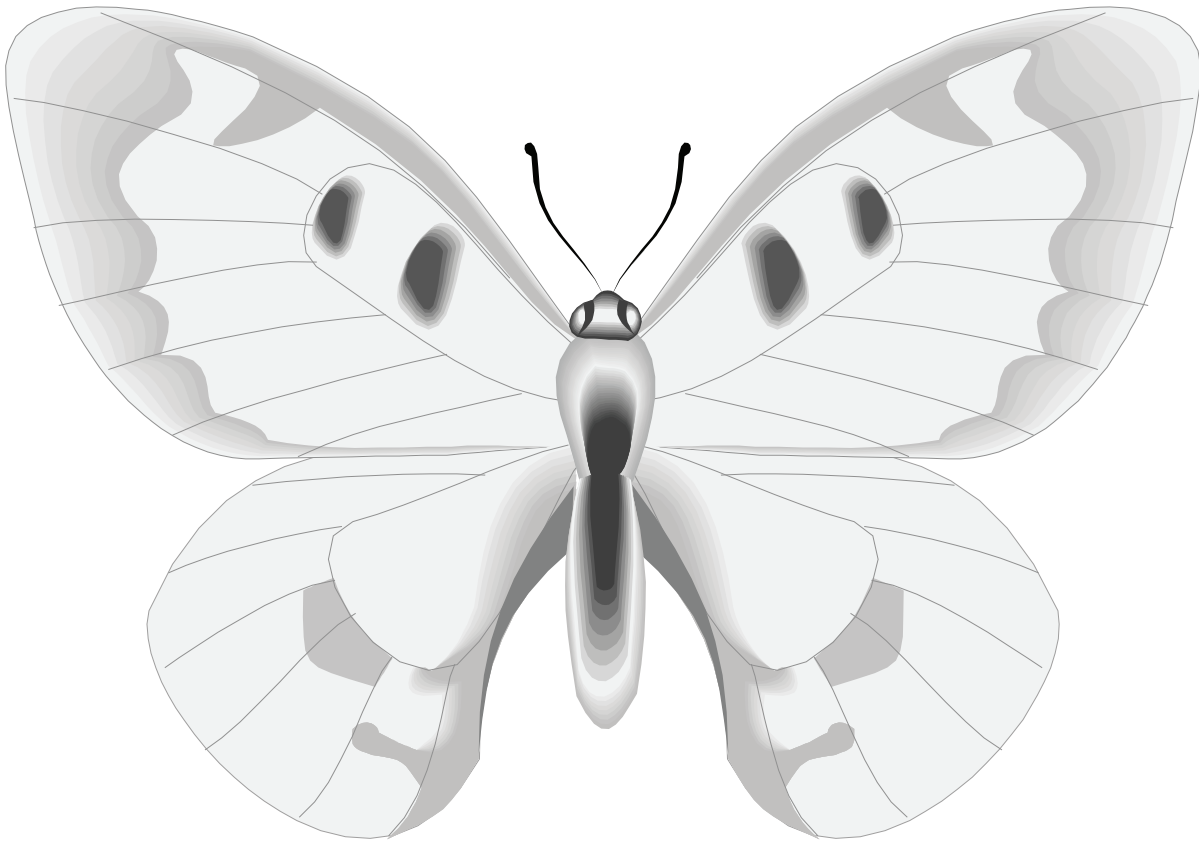


Name: _____



Butterflies start off as caterpillars.

Name: _____



Name: _____

All the animals on this page are mammals except one. Colour all the animals on this page and circle the one that is not a mammal.

