

Tour of the Toronto Zoo for Grade Two: “Growth & Change in Animals”

Grade 2: “Growth and Changes in Animals” (Simple Classification)

Background

In this tour we will combine a look at **growth & adaptations** with **classification** of the various vertebrate classes using their body coverings as our main classification aid. Changes animals go through as they mature will also help with classification. Students at this level need to be able to distinguish only the major classes of vertebrates and distinguish invertebrates from vertebrates. One tour is suggested but other areas of the Zoo may be suitable. Keep in mind you should encounter an example of each vertebrate class; mammal, bird, reptile, amphibian and fish (as well as a couple of invertebrates for contrast) to teach the important characteristics and later in the tour another example of each to draw responses from the students. For grade 2 it is best to use only one essential characteristic for each class (body covering and backbone) as in the tour script below . However you should also mention important obvious characteristics as well where relevant (e.g. Fish breath water with gills. Birds have wings.) For grade 2 it is best to avoid reference to exceptions to the rule such as lung fish which are partial air breathers or whales which have very few visible hairs, although if the questions come from the students you should explain it.

Tour

Introduction

We often group things together or classify things to help us understand them or put them into groups that seem to go together. Today we are going to talk about how we classify animals.

- **Feel that bumpy bone in the middle of your back. Does anyone know what it is called?** Spine or backbone. This bone bends because the spine is actually made up of many bones joined together and each bone is called a vertebrae. All the animals that have a backbone are called 'vertebrates' and most of the animals we will see today will be vertebrates like us.

- **Can anyone think of an animal that does not have a backbone?** Insects, worms, snails etc. Did you know that most kinds of animals are invertebrates or animals without backbones? (Only 3% of animals have backbones and 97% do not.) Today we are going to look at different kinds of animals with backbones and learn how to tell them apart. We are also going to look at how animals change as they grow and how they change with the seasons.

The Americas pavilion

Birds

Choose anyone of Great horned owl, Scarlet-headed black bird, St. Vincent parrot, Turquoise tanager etc. to cover the characteristics of birds.

- **How can we tell if an animal is a bird?** Birds have back bones and their bodies are covered with feathers.
- **Instead of arms like we have birds have...?** wings.
- **Instead of a mouth and nose birds have...?** beaks. Birds keep their bodies warm even when the weather is cold (warm-blooded). Baby birds look like small versions of adult birds. Just remember that birds have feathers. If it has a backbone and feathers, its a bird. Baby birds look like the adults. They are smaller and they may be a different colour but the body shape and limbs are the same.

Mammals

Choose from : Pygmy marmoset, Common marmoset, Lion tailed tamarin, White faced saki.

These animals are mammals.

- **What do they have covering their bodies?** Hair or fur. Mammals have backbones and hair. Mammals also feed their babies with milk from mammary glands. They are also warm-blooded and breath air.
- **We have hair and a backbone so what does that make us?** Mammals. Mammal babies look like their parents, only smaller or perhaps a different colour. Mammals have backbones and hair.

Reptiles

Choose from: Plumed basilisk, Boa constrictor, Tiger ratsnake. These animals are reptiles.

- **What do they have covering their bodies?** Scaly skin. Even though it may look shiny, reptile skin is dry and not slimy. (This would be a good time to pull out a touchable snake shed or reptile skin). Some reptiles have legs and some do not. Most of those that do not are called snakes. Reptiles are cold-blooded. Their body temperature changes with the outside temperature. Reptile babies are hatched from eggs. (Some snakes retain the eggs in the mother's body and hatch just as they are laid.) Baby reptiles look like their parents, only smaller. They breath air. Reptiles have a backbone and are covered in dry scaly skin.

Invertebrates

Choose from: Giant Pacific octopus, Pink star, Bat star, Hermit crab, Strawberry anemone etc.

- **Do these animals have backbones?** No.

- **Can anyone tell me what we call animals without backbones?** Invertebrates. Some of them have hard outside shells but none of them have a backbone. Many invertebrates change as they go through several life stages. So the babies often do not look like the parents (some, such as spiders look like tiny versions of the adult). If it is an animal and does not have a backbone it's an invertebrate.

Fish

Choose from: Arowana or Red-breasted piranha.

- **What kind of animals are these?** Fish.
- **How do fish breathe?** They breathe water through their gills.
- **What is their body covered with?** Scales.
- **Has anyone ever held a live fish? What was your hand like when you put it down?** Wet or slimy. Fish are covered in slimy scales. The slime protects them from germs in the water.
- **Do fish have legs?** No. What do they have instead? Fins.

Fish are also cold-blooded. Fish babies usually look like their parents. Fish are animals with backbones that breath water with gills and are covered in slimy scales.

Amphibians

Choose from: Surinam toad or Arrow poison frogs.

- **What do these animals have covering their bodies?** Moist skin.
- **Does anybody know what we call this kind of animal?** Amphibian.

Amphibians are animals that live part of their life in water breathing with gills and part of their life breathing air with lungs. Their bodies have to go through some big changes.

Amphibian babies do not look like their parents.

- **What do we call baby toads and frogs?** Tadpoles. Amphibians have soft wet skin and spend part of their life in water breathing with gills and part of their life breathing air with lungs.

In the following locations review classification learned so far, focusing on body covering as a guide and bring in changes that animals go through seasonally and in life cycles.

Black-footed ferret & Black-tailed prairie dog

- **What class are these animals in?** Mammals
- **What makes you think they are mammals?** because they have backbones and are hairy

Cuvier's smooth fronted caiman, Mata mata turtle, Wood turtle

- **What class of animals are these?** Reptiles. They have dry scaly skin.
- **But what about the turtle? Do they have a backbone?** Yes. The shell is made of the backbone fused or joined to scutes or large hard scales on the turtle's back. It also has scutes on the underside.

Invertebrates: Southern crayfish, Pink-toed tarantula, Brazilian giant cockroach etc.

- **Do these animals have backbones?** No.
- **So what does that make them?** Invertebrates. Point out the 2 life stages that are often visible in the Brazilian giant cockroach, the nymph, which is wingless and the adult. The young do not look like the adults and must go through body changes (metamorphosis) as they grow. The body is completely supported by the hard outside

shell called an exoskeleton. These must be shed and replaced by new ones as the insect grows.

Butterflies

- (If there are butterflies present...) **Can any one tell me what life stage the butterfly is?** Adult .
- **What are the other stages this invertebrate goes through?** Egg, larva (or caterpillar) and pupa (cocoon or chrysalis).

Florida gar, Spotted gar

- **What is the class of these animals?** Fish.
- **What makes you think it is a fish?** Backbone, scales, fins and breathes with gills.

Electric eel

- **How about this one?** Fish.

Even though it has a very unusual shape, it has a backbone and fins. Its body is covered with very fine, slimy, wet scales, and it breathes with gills, therefore it is a fish.

This is a very special fish because it can produce electricity.

Beaver

- **What kind of animal is the beaver?** Mammal. The beaver is a Canadian animal.
- **How does it stay warm in the winter?** Lives in a lodge and grows thicker warmer fur. Many mammals that live where winters are very cold grow long warm fur to stay warm in the winter.

Bull frog

- **What kind of animal is the bull frog?** Amphibian.
- **Do baby frogs look just like the adults?** No.
- **What do you call a baby frog?** Tadpole.
- **Can you remember how baby frogs breath?** With gills.
- Name 3 different kinds of animals in this exhibit.

Amphibian: Bull frog

Fish: Sunfish

Reptile: Turtle (Stinkpot, Eastern painted).

Conclusion:

(The following guessing game can help you check how much of the essential classification information the students have absorbed)

- I am an animal with a tough outer shell and no backbone. I lay eggs and my babies grow through stages in which they don't look like me at all. What am I? Invertebrate (crab, snail, crayfish, cockroach)
- I live in the water and swim with fins. When I grow up I will have legs and lungs and can live on the land. What am I? Amphibian
- I live mostly in the water but come onto land to have my babies. My babies are covered in soft fur and drink milk from special glands on my body. What am I? Mammal (seal)
- I breathe water through gills and swim with strong fins, my skin is covered with slimy scales for protection. What am I? Fish

- My body is covered with dry scales, my babies develop in eggs and my body temperature is the same as my surroundings. I breathe air. What am I? Reptile
- I fly with wings and my body is covered with feathers. My body temperature is always warm. What am I? Bird