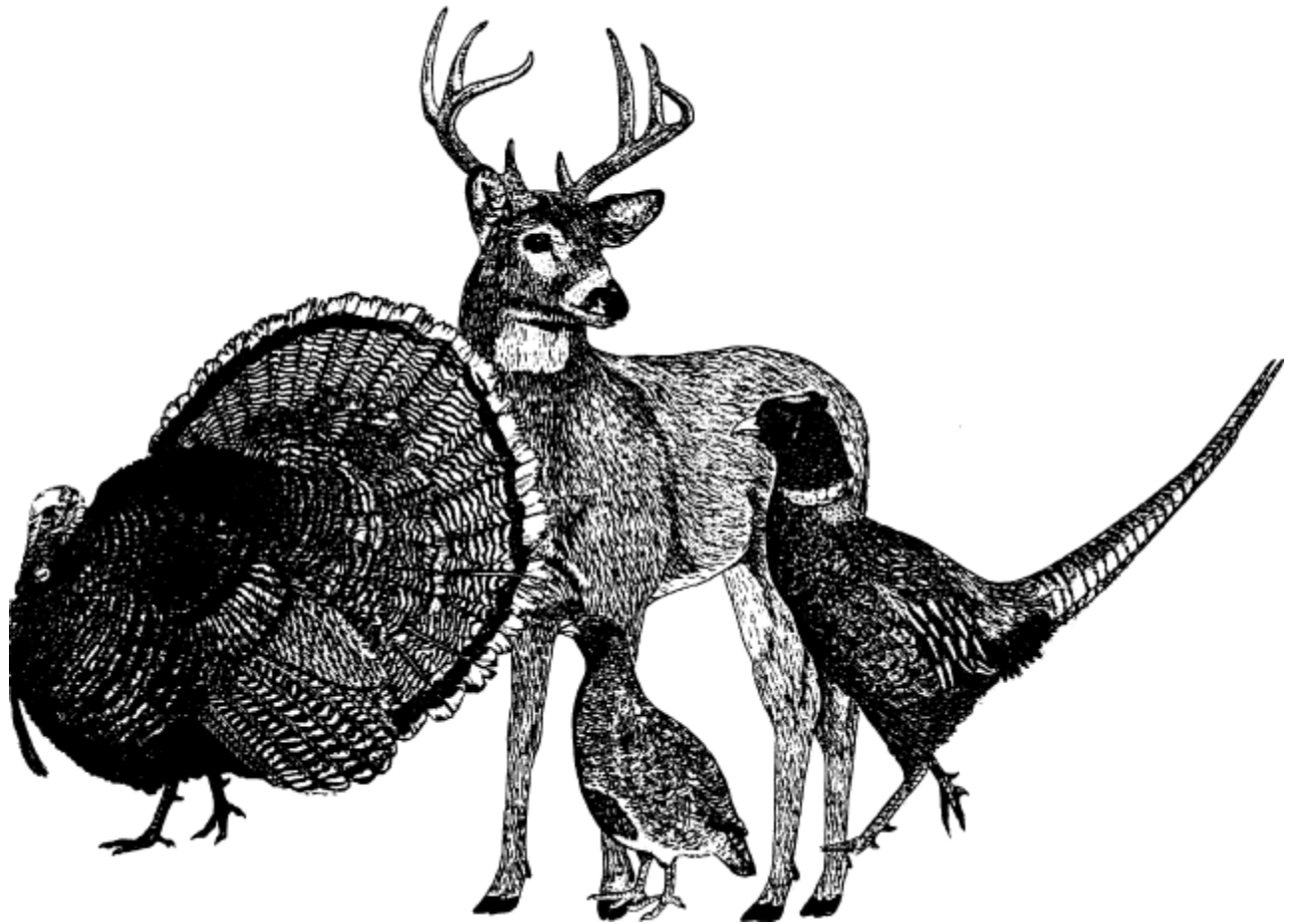


You CAN Judge an Animal by its Cover



National Mississippi River Museum and Aquarium Conservation Education Curriculum

Target Grades: Pre K – 3rd

Key Words: vertebrate, invertebrate,
warm-blooded, cold-blooded

Subject Areas: science, biology

Duration: 30minutes

Time can be extended by request

Title: *You CAN Judge an Animal by its Cover*

Program presented on site at Museum.

Summary:

Fur, feathers, skin and scales! Different groups of animals have different coverings on their bodies. Examine the different coverings of the animals living here at the aquarium and determine how each affects where they live, how they move and what they do. This activity allows students to investigate the similarities and differences between many animals. With the help of animal furs, parts and pictures, the students will also determine how these animals fit into the categories of mammals, birds, amphibians, reptiles, fish, vertebrates and invertebrates.

Objectives:

Students will be able to:

1. compare and contrast the different body coverings of animals
2. place animals within the correct category of animals based on the body covering
3. define vertebrate and invertebrate
4. explain why different body coverings are necessary for survival of various animals

Group Size:

15 – 30 students

Background for Educators:

The aquarium and the world are full of a variety of animals. While here, students will become better acquainted with these varied animals. They will learn to categorize these animals into groups such as vertebrate and invertebrate; mammal, bird, fish, amphibian and reptile.

Definitions/descriptions:

- vertebrate – animal with a backbone
- invertebrate – animal without a backbone
- mammal – any warm-blooded vertebrate having skin more or less covered with hair; young are born alive except for the small subclass of monotremes and nourished with milk
 - characteristics include:
 - + warm-blooded
 - + female ability to produce milk
 - + live birth – most mammals
 - + vertebrate
 - + hair or fur - for warmth, camouflage and protection
- amphibian – cold-blooded vertebrate typically living on land but breeding in water; aquatic larvae undergo metamorphosis into adult form
 - characteristics include:
 - + cold-blooded
 - + vertebrate

- + egg-layers – lay eggs in water; have no shell just a jelly-like egg; some laid in masses and some in strings
 - + undergo metamorphosis
 - + smooth and moist skin - to keep moisture in, secrete toxins and allow some oxygen in
 - + hibernate in winter
- reptile – cold-blooded, usually egg-laying vertebrates covered with scales or horny plates and breath with lungs
 - characteristics include:
 - + cold-blooded
 - + vertebrate
 - + egg layers - amniotic egg, leathery shell, laid on land in a nest; temperature of the nest determines the sex of the young
 - + molt/shed
 - + scales covering body
 - + hibernate in winter
 - + no metamorphosis
 - two types of scales
 - adjoining - turtles
 - overlapping – snakes and lizards
- bird – warm-blooded, egg-laying, feathered, vertebrates with forelimbs modified to form wings
 - characteristics include:
 - + warm-blooded
 - + feathers - for warmth, mobility, and gives coloration
 - + eggs - hard shell
 - + flight - most can fly
 - + beak or bill
 - + vertebrate
 - two types of feathers
 - down – small, fluffy feathers close to the body

- contour – cover most of the down feathers, determine outward appearance, assist in ability to shut out wind and repel water
- fish – cold-blooded aquatic vertebrates having fins and gills
 - characteristics include:
 - + cold-blooded
 - + vertebrate
 - + gills
 - + fins
 - + scales - for protection, most fish have scales
- warm-blooded – having a relatively high and constant body temperature relatively independent of the surroundings
- cold-blooded – having a body temperature not internally regulated but changes with the environment/surroundings

Materials Needed:

- cork board
- push pins
- key words to place on board
 - title card
 - vertebrate and invertebrate
 - no backbone, backbone, and exoskeleton
 - three warm-blooded, four cold-blooded
 - fish, amphibian, bird, reptile, mammal
 - coverings: skin and scales
 - outer coverings: fur, feather, hair, shell
- animal pictures to place on board
 - 32 of these are laminated for this use
- mammals of the Mississippi bin

Procedure:

Place the title piece on the top of the cork board. Hand a picture of an animal to each student. For larger groups, hand key words to each student as well.

Discussion: Discuss the two big groups animals fit into; vertebrate and invertebrate. Place these two words on the board, and discuss what these two words mean. Place the backbone/no backbone key words on the board under the correct category.

Begin with the invertebrate category. Talk about some of the animals that live life without a backbone. Talk about the covering they have and how it protects them from predators. Place the correct key words under this category (covering of shell or exoskeleton). Discuss that these animals are cold-blooded and what that means. Ask the students if any of them have a picture of an animal that fits into the invertebrate category. If they think they do, they should hold it up. If they are correct, they can come up and place it on the board under that category.

Use animal coverings from the mammal bin (i.e. feathers, furs, snake skin, fake toad, etc) to help students distinguish between the five groups of vertebrates (reptiles, amphibians, fish, birds and mammals). Place these group titles on the board under vertebrate category. Discuss each group individually. Discuss the covering of the body (scales or skin) then outer covering (fur/hair, feathers or shell). Place those key words under the correct category. Discuss each group as warm or cold-blooded. Place these key words on the board under each group. Once all five groups have been discussed, have the students place their animal pictures under the group they believe it to fit into. When all the pictures are on the board, discuss if they are correct or incorrect. This is a way to review the information and evaluate the students learning during the program. It is always a good idea to allow the students to feel the furs as well as look at them.

Evaluation:

Students will be evaluated on the discussion during the program. They will also be evaluated on their ability to place their animal picture in the correct group of animals (fish, birds, mammals, reptiles, amphibians and invertebrates) and the reasoning behind putting it there.

Additional resources:

Fur, fins and feathers; Museum of Natural History, University of Wisconsin Stevens Point

Creature Coats; Museum of Natural History, University of Wisconsin Steven Point

Extensions:

You Can Judge an Animal by Its Covering worksheet

Related programs available at the National Mississippi River Museum & Aquarium:

Wet and Wild Along the Mississippi River

Rockin' Reptiles and Awesome Amphibians

Mississippi River Nightlife

Mississippi River Life

On the Right Track

Mammals of the Mississippi

Credits:

Meggan Daniels - National Mississippi River Museum & Aquarium

Annette Wittrock - National Mississippi River Museum & Aquarium