



## 4th Grade - EdZoocalational Adventure Guide

**Theme:** Animal Adaptations – Body Coverings

**Grade level:** 4<sup>th</sup>

**DESE Standard:** 4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

**Overview:** Skin, scales, furs, blubber, and feathers vary greatly within the animal kingdom. Variations include color, thickness, patterns, structure, and function. The fur of a caribou is much thicker than the fur of our white-tailed deer here. This helps the caribou survive in the colder temperatures found in its home. The black and white patterning of a skunk serves as a warning to predators of its smelly response when stressed. Bird feathers are shaped differently depending on their placement on the body: some are used for flight, some for warmth, some for displays. Reptile scales help them to retain moisture as well as heal surface injuries more quickly with each shed. Our own skin helps to protect our internal organs, retain moisture, and sense the world around us.

**Activity:** Spend a few minutes reviewing the definition of *adaptation*. Discuss how to quietly observe an animal species noting its various body coverings. As a group, choose an animal to discuss its body covering and how it helps the animal to survive and thrive within its individual environment. Provide students with the “field guide”. Explain to the students how to document their observations during their visit to the Little Rock Zoo. Using their observations and the information they find at the various exhibits, students should be able to provide possible reasons for the development of certain body coverings.

**Activity Extension:** Have students focus only on animals from a specific region or habitat type (like rainforest or African savannah). Note and document interesting body coverings for animals within this region and discuss how different body coverings on various animals helps them within the same environment.

# 4th Grade Tour Guide

This self-guided tour takes your class along a path to exhibits with animals that have distinctive adaptive body coverings. This path does not cover the entirety of the zoo, but is meant to accentuate the lesson narrative.

- As you enter, head toward the right. You should see a sign for Penguin Pointe.
- Remind students that calm, quiet guests see more animals. Loud noises send them into hiding making them harder to find.
- **Penguin Pointe:** Penguins have very small feathers covering their body. They have a distinct coloration known as countershading. This pattern helps them to camouflage in the water. When you are in the water and looking up, the water shimmers silver and white. The white belly of a penguin floating above you would blend into the reflection of the waters. When looking down on the water from above, it is dark; so the back of the penguin is dark to blend in. Also, look for the tiny black feathers on their white bellies, these are unique to each penguin.
- **Reptile House:** Reptiles have very unique skin; very different from ours. Our skin grows and stretches as we age, but reptiles get an all-new skin every few months. They grow another skin beneath the old one and when it is ready, they shed the old one. There is even a scale on their eye which they lose with each shed.
- **Big Cats:** Big cats are covered from head to toe in fur. Depending on the environment around them, each type of big cat uses different colors or patterns to help it hide from prey while hunting. Asmara and Jaya (our tigers) have striped fur to help break up their body shape and hide among trees. African lions, like our Amboselli, use their rich gold colors to hide within the savanna grass, while that thick mane protects his throat when fighting other males.
- **Colobus Monkeys:** Colobus monkeys are covered in a very distinguished black and white fur. When they're born they are completely white, and develop color over several weeks. Colobus monkeys also use their long hair with their long bushy tail to act as a parachute to slow down when jumping from high places. The members of this group are difficult to tell apart.
- **Porcupines:** Indigo and Iris are covered in very coarse hollow quills that are anywhere between 1-13 inches long. When a predator approaches, they will raise these quills into a crest that makes them look larger and intimidating. These quills are very similar to the hairs on your head which means they can't shoot them anymore than we can!
- **Zebras:** Zebras are covered in stripes that are used to protect themselves from predators. When zebras are grouped together in a herd, it's very difficult for a predator to pick where one zebra ends and another zebra begins. Scientists have also found that the stripes deter biting insects.
- **Otters:** Otter fur is one of the densest and thickest. Otters have a very short, dense undercoat in which air gets trapped helping to keep them warm. This fur is overlaid with longer guard hairs which they rub oil onto from a gland in their skin which waterproofs them. This is one of the biggest reasons otters are always cleaning their fur to keep it in pristine condition.
- **Heritage Barn:** Birds like the Sebastopol Goose have very curly feathers that drape down its body. Unlike their barn owl neighbors who use their feathers for flight, Sebastopols Geese cannot fly. The blackbelly sheep and the Katahdin sheep are known as hair sheep which just means they have more hair than wool. This also means these types of sheep will not be sheared and their hair/wool are unsuitable for wool spinning.
- **Orangutans:** Orangutans use their reddish-orange fur to help them stay hidden in the canopy as most animals see orange and red as the color green. As the sun shines down, the vegetation around them absorbs that light. Bandar has long and shaggy hair that he uses for intimidation against other male orangutans by making himself look larger.

# Field Guide

Animal	ENVIRONMENT	BODY COVERING	IMPORTANCE
<b>Mallard Duck</b>	Arkansas wetlands year round temperate weather	Feathers of various sizes Feathers of various colors	Flying and waterproofing Distinguishes males from females

## INSTRUCTIONS

Use this guide during your tour of the zoo. Observe six different creatures and identify their body coverings, unique adaptations, and its importance.

## QUESTIONS TO CONSIDER

- How does this animal use this covering?
- How does this covering help the animal?
- Is this covering specific for the environment?

## CONNECTIONS

Have you considered why humans have various types of body hair?