



4th Grade - EdZoocalational Adventure Guide

Theme: Animal Adaptations – Body Coverings

Grade level: 4th

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 white-tailed deer here in Arkansas. This helps the caribou survive in the colder temperatures found in its northern 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, and some for displays. Reptile scales help 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 information 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 help 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.
- **Penguins:** 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 water. 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 feather pattern on their white bellies, these are unique to each penguin.
- **Reptile House:** Reptiles have unique skin that is 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, called an "eyecap".
- **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 them hide from prey while hunting. Tigers have striped fur to help break up their body shape and hide among trees and long grasses. African lions, like Amboseli, use their rich gold colors to hide within the savanna grass, while his thick mane protects his throat when fighting other males. A jaguar's spots, like those on Maddie and LeBron, helps them to camouflage in dense leaves and vegetation.
- **Colobus Monkeys:** Angolan 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 use their long hair and their long bushy tail to act as a parachute to slow down when jumping from high branches.
- **Porcupines:** Crested porcupine sisters 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. When the quills rattle together, they sound like a rattlesnake. These quills are very similar to the hairs on your head and are not able to be "shot out", they must stick into a predator's skin to penetrate it. Porcupines often back up into threats, quills first.
- **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 furs. 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 Farm:** Birds like the Sebastopol goose have very curly feathers that drape down their body. Unlike their barn owl neighbors who use their feathers for flight, Sebastopol geese cannot fly. The Barbados blackbelly sheep and the Katahdin sheep are known as hair sheep which means they have hair instead of wool. This also means these types of sheep will not need to be sheared and their hair is 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 green. As the sun shines down through the forest, the vegetation around them absorbs that light. Bandar, our male, has long and shaggy hair that he uses for intimidation against other male orangutans by making himself look larger.

Name: _____



Animals and Their Body Coverings

Instructions: Use this field journal to explore the ecology of the animal kingdom while on your visit to the Little Rock Zoo. Write or draw animal body coverings that you notice and the importance of them.

Animal:	Body Covering:	Importance:
Penguins 	4 layers of feathers 	insulation, waterproofing, swimming
Reptiles 		
Lions 		
Colobus Monkeys 		
Porcupines 		
Zebras 		
Otters 		
Orangutans 		

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