

The Skin They're In

Curriculum Guide

Pre-K



Goal: Students will be able to identify and describe the different kinds of skin coverings of major groups of vertebrates.

Association of Zoos and Aquariums Conservation Message:

All life on Earth exists within an ecosystem.

- a. Ecosystems are made of interdependent relationships between groups of living things (biodiversity) and their physical environment.

Human beings are an integral part of all ecosystems.

- a. Human activities within ecosystems affect these systems

Background Information:

Mammals, birds, and reptiles all have an outer layer of skin to protect their delicate insides. These animals also have different types of coverings over their skin to help keep them warm and dry, protect them from physical threats, and hide from **predators** or sneak up on their **prey**.

Hair/Fur: Mammals all have some hair on their bodies for at least part of their life. A coat of hairs that covers an animal is usually referred to as fur. Hair serves as an extra protection and also helps to insulate animals. Hairs grow up out of pits in the skin called follicles and are made up of keratin, a protein also found in fingernails, feathers, and scales. Many animals have different kinds of hairs on their body that serve specific purposes. The undercoat is made up of short, fuzzy hairs that insulate the animal. Guard hairs lay over the other fur and can sometimes be thick and bristly—porcupine’s quills are modified guard hairs. Whiskers are stiff hairs that animals can use to help them sense their surroundings. Many mammals have fur that helps them **camouflage**

with their environment. For example, the spots on a leopard’s coat help it to blend in with the shadows of the trees and grass where it stalks its prey. The color of an animal’s hair is determined by melanin, which also gives skin its color. Sometimes as animals shed their hair, the new hair grows in a different color. For example, the arctic fox’s brown summer coat is replaced by a white one in the winter. Young deer have white spots across their bodies, but as they get older, this hair is replaced by solid brown fur.

Feathers: Birds’ bodies are covered with feathers, which is one of the characteristics that distinguish them from other types of vertebrates. Like mammals’ hair, birds’ feathers help keep them warm and dry and provide the coloration that can allow them to hide from predators or find a mate. For many birds, feathers also aid in flight. Different kinds of feathers serve different purposes. Short fluffy down feathers provide insulation. Longer

Vocabulary

Mammal – an endothermic vertebrate that has hair and produces milk for its young

Bird – an endothermic egg-laying vertebrate that has wings and feathers

Reptile – an ectothermic (cold-blooded) vertebrate that has a covering of scales and reproduces on land

Amphibian – an ectothermic, smooth-skinned vertebrate that hatches from an egg laid in water

Hair – fine strands made up of keratin that grow from the skin of mammals

Fur – thick coat of hair

Feathers – light, flat structures that cover the skin of birds

Scales – dry, platelike skin covering of reptiles

Slime – a slippery or sticky mucous substance secreted by some animals

Predator – animal that gets food by eating other animals

Prey – animal that is hunted by another animal

Camouflage – blend in with surroundings

contour feathers have tiny hooks on each branch that hook on to each other to make a smooth surface. These feathers help protect the bird and keep it dry. Flight feathers are stiff and overlap to provide a surface that pushes against the air during flight. Tail feathers help birds balance and steer when flying. Many birds keep their feathers waterproof by using their bill to cover themselves with oil secreted by their preen gland.

Scales: Reptiles are covered in scales, which, like hair and feathers, are made of keratin. Scales are waterproof and keep reptiles' bodies from drying out. Some reptiles, like snakes and skinks, have smooth overlapping scales. Others, like turtles, have bony plates underneath non-overlapping scales. Some reptiles, like alligators and crocodiles, also have osteoderms, which are bony plates above the skin. As reptiles grow, they must grow new scales, and they usually shed the old ones. Some reptiles, like snakes, shed all of their skin in one big piece. Others, like most lizards, shed their skin in patches.

Amphibians, like frogs and salamanders, also have a special covering over their skin. It helps to protect them from predators, but unlike birds, mammals, and reptiles, an amphibian's covering does not keep it warm and dry.

Slime: Adult amphibian skin is covered in a layer of slimy mucus that protects it from drying out and helps to draw in oxygen. Some amphibians also have poison-producing glands that make their skin toxic to other animals. Because amphibians do not have a waterproof covering, they must stay in moist areas to keep their bodies from drying out.

Procedure (as presented by zoo instructor):

- Introduction (5 minutes)
- Define and give examples of animal coverings using hands-on animal interaction and biofacts (10 minutes)
- Check for comprehension (5 minutes)
- Allow for questions (5 minutes)

Evaluation: The zoo instructor will continually check for comprehension throughout the lesson by asking questions and reinforcing ideas.