

Jump, Slither, and Slide

Curriculum Guide

Pre-K

Goal: Students will be able to identify and describe the different ways in which animals move.

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:

While some animals—like barnacles and sponges—never move around on their own, most animals need to move in order to find food and escape from *predators*. Animals move in many different ways, and each species has specific *adaptations* for its type of movement.

Many animals move by using two or more legs to **walk** or **run**. Most mammals, reptiles, and amphibians move around on four legs. Some of these animals can move very quickly—cheetahs, the fastest land animal, can run over 60 mph when chasing their *prey*. But others, like tortoises, use their legs to slowly drag their bodies across the ground. There are also many kinds of animals with more than four legs—insects have six legs, spiders have eight, lobsters have ten, and some other invertebrates have even more. One rare species of millipede can have over 700 legs, more than any other animal. Having so many short legs so close together makes the millipede a relatively slow mover.

Some animals use their legs for **jumping** or **hopping** rather than walking and running. Animals like frogs, rabbits, and kangaroos push off with their powerful back legs to leap through the air. Some kangaroos can go 30 feet in one jump! Some types of insects, like grasshoppers and crickets, also use their leg muscles to hop away from predators. Fleas can jump 150 times their own length by storing up energy in their back legs and then releasing it to spring into the air.

Climbing is another way some animals use their arms and legs. Many arboreal (tree-dwelling) animals, like squirrels and koalas, have sharp claws that allow them to hold on to tree bark. Geckos have tiny hairs on their toes that allow them to climb up any surface and even walk upside down. Some kinds of primates get around by **swinging** through the trees. These animals have long, flexible arms and can grip things with their feet as well as their hands. Some climbers and swingers also have a *prehensile tail* which can wrap around and grip things.

Vocabulary

Adaptation – any physical or behavioral characteristic that makes an animal better suited to survive in its environment

Predator – animal that gets food by eating other animals

Prey – animal that is hunted by another animal

Wings – specialized body parts used for flying

Fin – specialized appendage used for propelling, steering, or balancing an animal in the water

Prehensile tail – tail that is able to grasp things

While some birds are excellent runners (like cassowaries and roadrunners), the majority do not need to be able to move quickly on their feet. This is because most birds are capable of a different kind of movement—**flying**. Birds' lightweight bodies and feathers aid in their ability to fly, but wings are their most important flight adaptation. *Wings* push against the air to give flying animals the necessary lift to take off and stay in the air. Birds are not the only animals that fly—numerous insects can also move around this way. Most flying insects have two pairs of wings. Long, thin wings allow insects like dragonflies to move and change directions quickly, while larger, wider wings are better adapted for carrying heavier bodies, like those of moths and butterflies. Bats are the only mammal capable of true flight, but some other mammals' bodies have special adaptations for **gliding** through the air. Gliding animals cannot thrust themselves into the air like flying animals, but they do have the ability to control their fall when they jump from a tall tree. Some animals, like flying squirrels and flying dragons, have thin flaps of skin that they can spread out to act as a parachute. Wallace's flying frogs have loose skin flaps between their toes that help them glide. Flying snakes don't have any extra skin flaps, but they can flatten their bodies out so that their belly becomes a concave surface to catch the air. They control their direction by moving their bodies back and forth, which makes it look like they are slithering through the air.

Another way animals get around is by **swimming**. Many animals that spend a lot of time swimming use their tails to propel them through the water. This is true for some kinds of reptiles, like crocodiles and marine iguanas, as well as fish. Fish also have specially adapted appendages called *fins* to help them steer through the water. A few mammals, such as dolphins and whales, also have fins instead of arms and legs. Animals that spend some of their time on land usually don't have fins, but some, like ducks and geese, have webbed feet that they use to paddle through the water. Penguins use their wings like flippers to "fly" through the water, and some mammals, like dogs and humans, swim by paddling with their arms and legs.

Some animals move without arms, legs, wings, or fins. Snakes **slither** across the ground by pressing their belly against it and pushing off. The large scales on their belly help them to grip the surface they're moving across. Some invertebrates also have ways of moving around without the help of any limbs—earthworms have tiny bristles on their bodies that they use as anchors while they push themselves forward or backward. If a predator tries to pick it up, a worm can use its muscles to wiggle and flop around, making it much more difficult to catch.

Many other invertebrates—some with legs and some without—have very unique ways of moving. Scallops propel themselves through the water by rapidly opening and closing their shells, while snails slide along on a slimy mucus secreted by their single foot. The Golden Wheeling Spider curls its legs and rolls down sand dunes to escape predators, and one species of mantis shrimp even uses somersaulting as a way to get where it needs to go.

Procedure (as presented by zoo instructor):

- Introduction (5 minutes)
- Define and give examples of animal movement using hands-on animal interaction and biofacts (15 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.