

Life in Ecosystems



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by Linda Cernak

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Ecosystems and Habitats

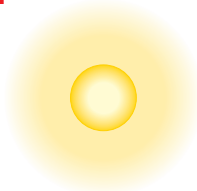
An **ecosystem** is made up of all the living and nonliving things in an area. Remember that living things are plants and animals, including people. Nonliving things include water, air, and soil. Weather and light are also nonliving things.

All these things work together in an ecosystem. They depend on each other. Plants need the Sun for energy. Energy gives them the ability to grow and change. Some animals could not live without plants. Some animals could not live without other animals to eat. Both animals and plants need water to live.

Parts of an Ecosystem

SUNLIGHT

All life on Earth needs sunlight.



PLANT

Plants use sunlight and water for energy.



WATER

All life on Earth needs water.



RABBIT

Some animals eat plants for energy.



FOX

Some animals eat other animals for energy.

The ecosystem where an animal lives is its **habitat**. A habitat gives animals the things they need to stay alive, or **survive**. Animals need air and water. They need energy to be active. Energy comes from the food that animals eat.

Animals also need **shelter**, a place to live. A shelter helps keep an animal safe from the weather and from other animals. Birds build nests for shelter. Bats find shelter in caves. Many animals dig holes in the ground called *burrows* for shelter. They live underground for much of the time. Chipmunks, groundhogs, and rabbits live in burrows.

Rabbits use their strong claws to dig a burrow for shelter.

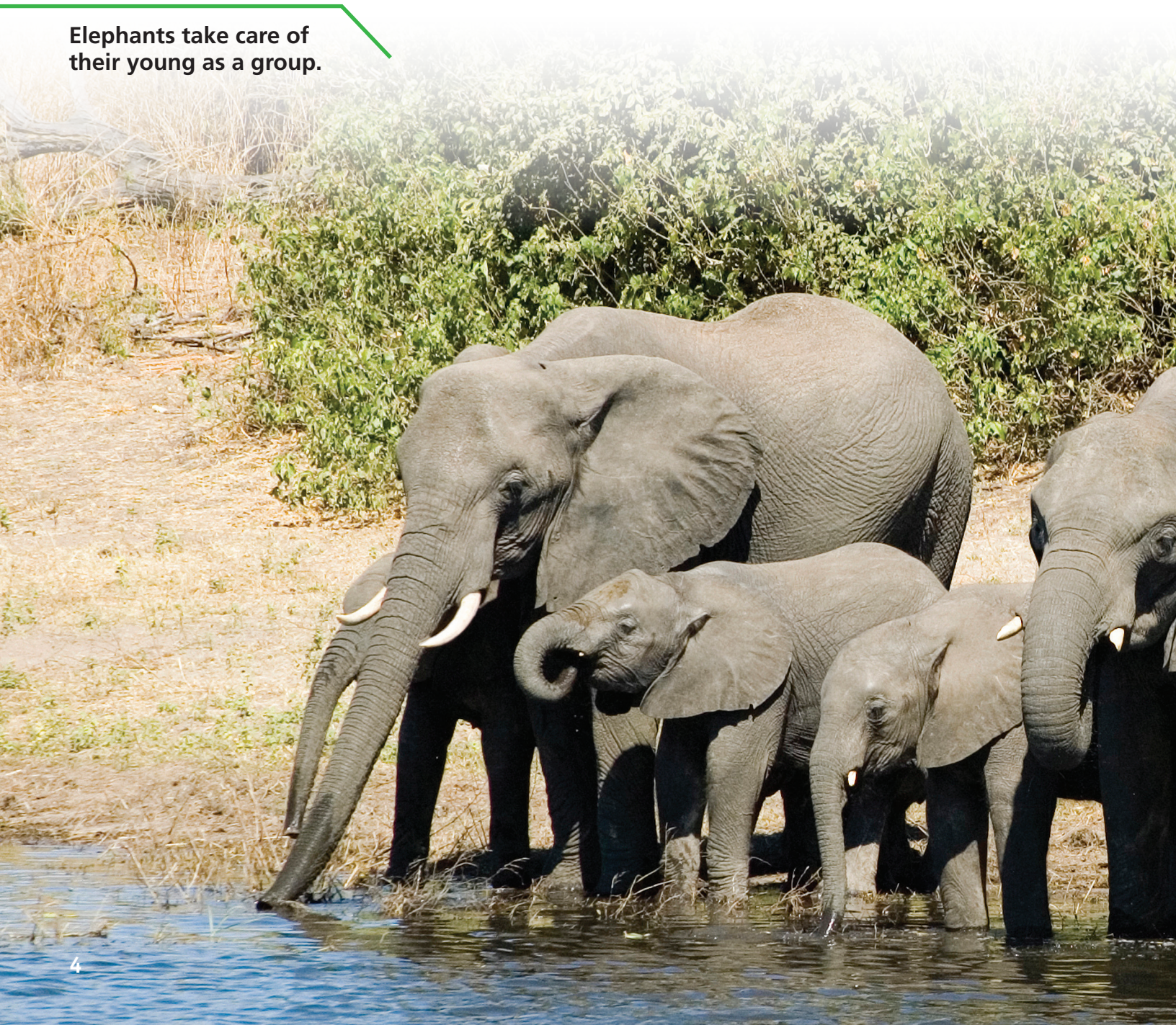


Adaptations: Behavior

There are many ecosystems on Earth. Each kind has different living and nonliving things. Each kind can have hard conditions. Some traits, or features, help animals survive these conditions. These traits make it easier for them to get shelter or meet other needs. An **adaptation** is a trait that helps an animal survive.

Some adaptations are behaviors. One important adaptation is living in a group.

Elephants take care of their young as a group.



Animals in a group help each other find food. They help protect each other from other animals. They help each other care for their young.

Some animals adapt by migrating. They move from one area to another during different times of the year. Gray whales migrate many miles in the winter. They swim from the cold Arctic Ocean to warmer waters. They have their young in warmer waters. Then they swim back to the Arctic Ocean, where there is plenty of food for them. Some birds, fish, and insects also migrate.



Some birds migrate when the weather changes.

Adaptations: Physical

Body Systems of Animals in the Arctic

An adaptation can also be a physical trait. Animals that live in the Arctic must adapt to survive in a very cold climate. Temperatures there are below freezing for much of the time.

Snowy owls live in the Arctic year round. These owls have thick outer feathers from head to toe. They even have feathers on their feet. Snowy owls also have thick inner layers of down feathers. Down feathers trap air close to their bodies. The trapped air **insulates** them, or keeps the heat close to their bodies.

Snowy owls have two layers of thick feathers that insulate them.



Crosscutting
Concept



Many people live in cold places.
How do people protect themselves
from the cold?

Blubber is an adaptation for Arctic animals that go in the water. **Blubber** is a layer of fat under their skin. This layer helps insulate them from the icy water. Whales, walruses, and seals have blubber. These animals dive into the water to find food.

Polar bears also have blubber, along with thick, waterproof fur. This fur comes in handy when they are diving for food. Polar bears are especially good swimmers because of their strong muscles. Their front paws have webbing that also helps them swim. These large paws act as snowshoes as well. Polar bears can walk over ice easily. Fur on their feet acts as socks. The bottoms of their paws have thick pads with small bumps. These prevent them from slipping on ice.

Polar bears are adapted to Arctic ice and cold temperatures.



Science and Engineering Practices

Make and Use a Model!

You can make a model of camouflage. You will need a large sheet of green paper. It will represent the habitat. You will need small squares of paper in different colors: 5 red, 5 yellow, 5 green.

1. Place the large sheet of green paper on the floor.
2. Place the squares of colored paper into a cup. Shake the cup. Then pour the squares onto the green paper.
3. Have a partner time you for 10 seconds. Pick up as many squares of paper as you can.
4. Count the number of each color square you picked up.
5. How many squares of paper did you pick up of each color?
6. Repeat steps 2 through 5 with you timing your partner.
7. Did you find that one color was easier to spot than the others? Which one and why? Which color was the hardest to spot? Why was it harder to spot?



The frog's color helps it hide on the forest floor.

Careers

Animal Ecologist

Animal ecologists study how animals live in their habitats. They study what animals eat. They study how they behave. They study how things in the habitat affect animals, like climate and other animals.

Would I like this career?	<p>You might like this career if</p> <ul style="list-style-type: none">• you like to do research.• you like animals and nature.
What would I do?	<ul style="list-style-type: none">• You would study animal habitats.• You would research animal patterns.
How can I prepare for this career?	<ul style="list-style-type: none">• Study science and nature.• Learn to observe things closely.



An ecologist studies ecosystems.



Glossary

adaptation	<p>a trait that helps an organism survive in its habitat</p> <p>Wings and feathers are adaptations that help birds fly.</p>
blubber	<p>a layer of fat in the body of an animal that keeps it warm in cold water</p> <p>The blubber under a polar bear's skin keeps out the cold.</p>
camouflage	<p>an animal's color or pattern that helps it blend into its habitat</p> <p>A zebra's stripes are camouflage that help hide it from predators.</p>
ecosystem	<p>all the living and nonliving things in a large area</p> <p>The rain forest is an ecosystem.</p>
habitat	<p>an area where an animal lives</p> <p>A habitat provides an animal with all of its needs.</p>
insulates	<p>protects from the loss of heat</p> <p>The layer of fat in a seal's body insulates it from the cold.</p>
predators	<p>animals that eat other animals</p> <p>Lions are predators that hunt zebras and impalas.</p>
prey	<p>an animal that is eaten by a predator</p> <p>A hawk catches its prey with sharp talons.</p>
shelter	<p>a place where an animal can go to get out of extreme weather</p> <p>A rock provides shelter for a lizard in the desert heat.</p>
survive	<p>to stay alive</p> <p>An animal must have food, air, water, and a place to live in order to survive.</p>

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