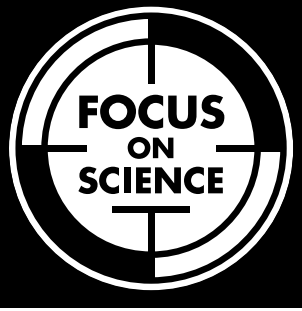

The Living Environment

Animals and Plants in Their Environment

Basic Level

Adapting to Survive

LOOK INSIDE FOR:

- Core Curriculum Covered
- Student Book
- Assessments and Reading Activities

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Adapting to Survive

What roles do plants and animals play in their environments?

CORE CURRICULUM STATEMENTS

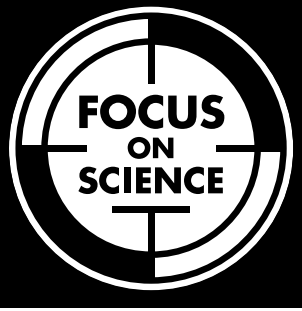
Individual organisms and species change over time.

Individuals within a species may compete with each other for food, mates, space, water, and shelter in their environment.

All individuals have variations, and because of these variations, individuals of a species may have an advantage in surviving and reproducing.

Organisms maintain a dynamic equilibrium that sustains life.

Senses can provide essential information (regarding danger, food, mates, etc.) to animals about their environment.



The Living Environment

Animals and Plants in Their Environment

Basic Level

Student Book

Adapting to Survive

BL

Adapting to Survive

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Adapting to Survive

by Linda Barr

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Curriculum materials for **your** content standards

Table of Contents

– Predict –
What do you think you will learn from this book?

Survivors!

Imagine you were going to live in the cold Arctic. The weather there is very different than here in New York. What changes would you have to make to survive there? Why is it that polar bears live well there?

Now imagine you are moving to the hot dry desert. What changes would you have to make to survive there? Why don't snakes or lizards mind the desert's heat and dryness?

These animals survive because plants and animals **adapt** to where they live. Their bodies and behaviors change to match the **ecosystem** they live in.

adapt: change in order to fit a certain purpose
ecosystem: all the living things that live in a certain area

What do plants and animals need to survive? To live and grow, plants need sunlight. Animals need food. All **organisms** also need water, gases from the air, and enough space to live.

In this book, you will learn how organisms adapt to meet these needs in their ecosystems.

– Apply –
What kind of ecosystem are you adapted to?
Where can you live most easily?

organisms: any living thing

CHAPTER 1

Adaptations for Climate

Adapting to the Arctic

Plants and animals adapt to the **climate** where they live in many ways. Polar bears have two layers of fur and a layer of fat to keep them warm. Penguins have a thick layer of fat as well. They can also fluff out their feathers to trap air to stay warm.

To survive in cold places, plants grow low to stay out of the wind. They tend to be small and grow quickly. That is because the soil is poor and the growing season is short.

climate: the weather year-round

Adapting to the Desert

Desert animals must survive high heat. Many live underground during the heat of the day. They come out at night, when it's cooler. The jackrabbit's very large ears lets its body release heat into the air.

Desert animals must also deal with little water. Snakes and lizards have scales that help reduce water loss from their bodies.

Desert plants store water in their leaves, stems, and roots. To reduce water loss, many plants have a waxy surface. This helps slow water **evaporation**.

– Infer –
Why do polar bears have small ears while jackrabbits have very large ears?

evaporation: changing from a liquid to gas

Adapting to the Rain Forest

Thousands of animals live in the warm, wet rain forest. Yet many never set foot on the ground. That's where many **predators** live. Food and safety are in the trees. So many animals are adapted to living in trees.

Daily rains wash most nutrients out of the soil. Plants adapted to quickly absorb the nutrients before they are gone.

Huge trees block the sunlight. To get enough sunlight, plants that grow close to the ground have very wide leaves. Vines climb up tree trunks to reach for sunlight.

predators: animals that get their energy by eating other animals

Migration

As fall arrives in many ecosystems, food and water become harder to find. Many types of birds, ducks, whales, and insects **migrate**. They head for warmer places with more food. Some monarch butterflies fly from Canada all the way to Mexico. Gray whales swim 6,200 miles from Alaska to Mexico.

In the spring, these animals head back north. Now food and water are easier to find there.

migrate: to move south for the winter and then return north in the spring

Hibernation

Others animals **hibernate** to survive the winter. First, they eat to store energy in their fat. Then they rest. Their body temperature and breathing rate drop. A woodchuck's heart rate falls from 80 beats a minute to 4 or 5. Other hibernators include squirrels and bats.

Bears, skunks, and raccoons go into a deep sleep. Their bodies slow down. Still, these animals are not hibernating. They wake up at times to eat.

– Differentiate –
Why aren't bears true hibernators?

hibernate: to become inactive, with much slower body functions

CHAPTER 2

Adaptations to Find and Eat Food

Body Parts

Sharp eyesight helps birds spot their **prey**. A falcon can see a chipmunk nearly a mile away. A box jellyfish has 24 eyespots to see predators and prey.

A strong sense of smell helps many animals find food. The part of your body that helps you smell covers less than one square inch. In dogs, this part covers more than 23 square inches! Who do you think has a stronger sense of smell?

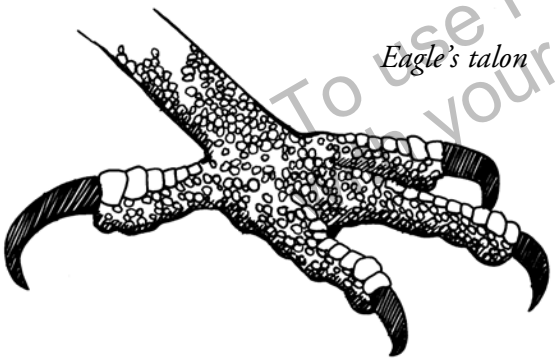
Catfish use their whiskers to find food. Earthworms are covered with taste buds.

prey: animals that are eaten by other animals

Cheetahs' long, strong legs help them run very fast to catch prey. Long legs help herons and other birds hunt for fish in shallow water.

Webbed feet help frogs and ducks swim faster than their prey. Most birds have wings to swoop down on their prey.

Eagles use **talons** to grab their food. Bears and other meat-eaters have strong claws and long, sharp teeth to catch and tear apart their prey.

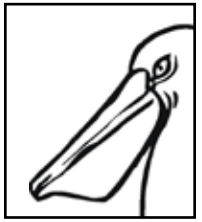


Eagle's talon

talons: claws on the feet of meat-eating birds

The shape of a bird's beak depends on what it eats. An eagle's sharp, curved beak helps it tear apart fish. Woodpeckers' short, thin beaks can reach insects in tree bark. Cardinals have short, thick beaks for cracking seeds. Hummingbirds sip nectar with long, thin beaks. Pelicans have large pouches for storing fish.

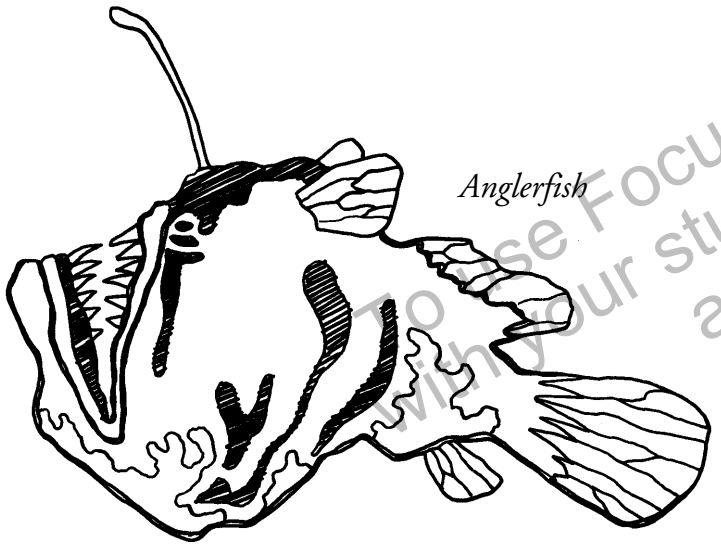
Eagles have sharp, curved beaks. These beaks help them catch and eat prey.



Pelicans store fish in the pouch of their large bills.

– Infer –
Birds have different kinds of beaks. Do you think animals have different kinds of teeth? Why or why not?

Fish in the deep, dark ocean have adaptations, too. Some make their own light to find food. The anglerfish has a fin that dangles lighted "bait" in front of its mouth. When a small fish comes to eat the "bait," the anglerfish eats the fish.



Anglerfish

Behaviors

Some behaviors help animals get their food. Hyenas work together in groups to catch prey. Bats make sounds that echo back to them. They use these echoes like radar to find tiny insects up to 18 feet away.

Squirrels and other animals bury nuts. This makes sure they have enough to eat when nuts are no longer available.

– Analyze –
What behaviors help people meet their need for food?

CHAPTER 3

Adaptations to Escape from or Fight Predators

Some animals survive by using **mimicry**. The viceroy butterfly mimics, or looks like, a monarch. Birds think monarchs taste bad. They can't tell monarchs from viceroys, so they don't eat either one.

Other animals use **camouflage** to survive. They are the same color as their surroundings. For example, brown female birds blend in with the trees where they build their nests.

mimicry: behavior that copies another animal
camouflage: coloring that helps to hide an animal from predators

Animals can change their camouflage. In England in the 1850s, the peppered moths were white with black spots. Then smoke from industries darkened the tree trunks. Birds easily spotted the white moths. Only the darkest moths survived and reproduced.

Soon the "peppered" moths were mostly black. After new laws reduced air pollution, smoke no longer darkened the trees. After a while, the moths were peppered again. How do we know? Scientists kept careful records of the moths for many years.

– Restate –
How were the peppered moths camouflaged?

Body parts also help animals escape from or fight off predators. Long-legged antelopes can run 60 miles an hour. Sharp claws and teeth protect other animals from their predators. Ostriches and kangaroos can kick. Elk, moose, and sheep use their antlers or horns to fight off their enemies.

Skunks have a really bad smell. Bees and jellyfish sting. Predators—and people—soon learn to leave these animals alone.

– Explain –
Why does an antelope need to be able to run really fast?

CHAPTER 4

Adaptations to Reproduce

A **female** penguin lays one egg. The **male** penguin takes care of it for 65 days while the female leaves to find food. Most penguin eggs hatch because the male takes care of it.

A female frog lays hundreds of eggs, but then both parents leave. Most of those eggs die or are eaten by fish. Only a few eggs hatch into tadpoles.

Penguins and frogs **reproduce** in ways that are adapted to their needs. Both ways help them survive.

female: an animal or plant part that bears eggs or seeds
male: an animal or plant part that fertilizes the eggs or seeds
reproduce: to produce young or offspring

Many animals have ways to attract **mates**. Male fireflies flash so females will come to them. Male frogs croak.

Plants also have adaptations to help them reproduce. The seeds of desert plants wait until a rare rainstorm before they sprout. Dandelion seeds have "wings" that carry them away from the parent plant.

Many flowers are brightly colored and produce **nectar**. That attracts birds and insects. They spread **pollen** so the plants can produce seeds.

mates: a male or female of the same kind of animal; two mates join to reproduce
nectar: a sweet liquid found in many flowers
pollen: the male sex cell for plants

Plants and animals depend on adaptations. What if an Arctic fox were brown instead of white? A hungry predator could quickly spot it in the snow. The fox's prey could also see it coming.

Yet in the desert, this fox's white fur would lead to its death. Each living thing is adapted to its own ecosystem. What happens if that ecosystem changes? Read the next book in this series, *What Happens When Ecosystems Change?*, to find out!

– Summarize –
Why can organisms survive only in ecosystems in which their needs can be met?

Glossary

adapt—change in order to fit a certain purpose

camouflage—coloring that helps to hide an animal from predators

climate—the weather year-round

ecosystem—all the living things that live in a certain area

evaporate—to change from a liquid to gas

female—an animal or plant part that bears eggs or seeds

hibernate—to become inactive, with much slower body functions

male—an animal or plant part that fertilizes the eggs or seeds

mates—a male or female of the same kind of animal; two mates join to reproduce

migrate—to move south for the winter and then return north in the spring

mimicry—behavior that copies another animal

nectar—a sweet liquid found in many flowers

organisms—any living thing

pollen—the male sex cell for plants

predators—animals that get their energy by eating other animals

prey—animals that are eaten by other animals

reproduce—to produce young or offspring

talons—claws on the feet of meat-eating birds

To Find Out More . . .

Want to learn more ways that animals adapt to their ecosystems?

Try these books

Animal Adaptations by Elizabeth Rose. PowerKids Press, 2006.

Animal Planet: The Most Extreme Animals by Discovery Channel. Jossey-Bass, 2007.

Animal Sharpshooters by Anthony D. Fredericks. Franklin Watts, 2000.

Animals Under the Ground by Phyllis J. Perry. Franklin Watts, 2002.

Curious Critters of the Natural World: Reptiles & Amphibians by Ready-Ed Publications. Zephyr Press, 2004.

Access these Web sites

Find out more about how animals adapt at the Online Learning Haven.
www.learninghaven.com/science/articles/animals_and_adaptation.htm

Go to the "Earth Floor" and check out the information about diversity, adaptation, and the different biomes or ecosystems on our planet.
www.cotf.edu/ete/modules/msese/explorer.html

Index

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The Living Environment

Animals and Plants in Their Environment

Basic Level

Assessments

Adapting to Survive

Print pages 20–22 of this PDF for the assessments.

Adapting to Survive

Check Understanding

Shade the circle next to the correct answer or write your answer on the lines provided.

1. Growing thicker fur in winter helps some animals

Ⓐ find food

Ⓑ protect their young

Ⓒ hide from danger

Ⓓ keep warm

Note that question 2 has only three choices.

2. Which adaptation often helps an animal attract a mate?

Ⓐ hibernation

Ⓑ camouflage

Ⓒ coloration

3. Which physical change would most likely help an animal survive during summer?

Ⓐ ears get smaller

Ⓑ fur is shed

Ⓒ feathers get longer

Ⓓ teeth get shorter

4. Animals have body parts that have adapted over time to help them find and eat food. Identify one adaptation of a body part.

_____

Explain how that adaptation helps the animal.

_____

_____

_____

_____

_____

_____

Adapting to Survive

Check Understanding

Shade the circle next to the correct answer or write your answer on the lines provided.

5. In the winter, Gray whales swim from Alaska to Mexico in search of a warmer climate. Which statement explains one reason the whales migrate?

Ⓐ There are too few places for the whales to hibernate.

Ⓑ There are too many predator of whales in Alaska.

Ⓒ The whales have difficulty finding food.

Ⓓ The whales lay their eggs in rivers in Mexico.

6. What is one way desert animals have adapted to their environment?

Ⓐ They live underground during the night to stay warm.

Ⓑ They tend to be small and grow quickly.

Ⓒ They have thick layers of fur to protect them from the hot sun.

Ⓓ They get water from the plants they eat.

7. Plants and animals adapt to the climate where they live. Identify two ways plants or animals adapt to the climate.

1) _____

2) _____

Explain how both adaptations help them survive.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Adapting to Survive

Assessment Scoring Guidelines

1. Answer D is correct.

2. Answer C is correct.

3. Answer B is correct.

4. Possible answer may include:

Sharp eyesight
Helps animals spot prey

Strong sense of smell
Helps animals find food

Whiskers
Helps animals find food

Birds beak
Shaped according to what the bird eats

Webbed feet
Helps animals avoid prey

Talons
Helps animals grab prey

5. Answer C is correct.

6. Answer D is correct.

7. Possible adaptations to climate may include:

Thick fur
Hold heat in the body

Layers of fat.
Hold heat in the body

Feathers
Can fluff out to trap air like a blanket

Live underground
Escape the heat during the day

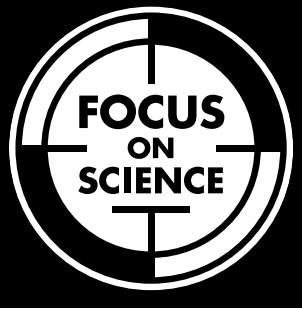
Eat plants
A way for animals to get water

Store water
Able to use water when none is available

Waxy surfaces
Slows water evaporation

Wide leaves
Able to capture limited sunlight

Live in trees
Avoid predators



The Living Environment

Animals and Plants in Their Environment

Basic Level

English Language Arts Activities

Adapting to Survive

Print pages 24–28 of this PDF for the reading activities.

Context Clues

In this book, you learned some new words. You can use what you learned to figure out the meaning of related words used in a different situation.

For example, you learned that *camouflage* means "coloring that helps to hide an animal from predators." However, people use camouflage, too. For example, soldiers often wear clothing covered with dark green and light green spots. It helps hide them in a forest. In the desert, they wear camouflaged clothing that matches the sand.

Think about the meanings of the words below. Look back at the Glossary if you need to review the meanings of related words.

migratory	**mimic**	**pollination**
predatory	**adaptable**	**ecology**

TRY THE SKILL

Read each sentence. Then write a word from the box to complete it. Use clues from the sentence to make your choice.

1. Gangs that beat up people are _____.

2. People who travel to Florida for the winter are _____.

3. The science that studies how plants and animals live together is called _____.

4. If you copy someone, you _____ him or her.

5. Bees move from flower to flower, helping with _____.

6. Someone who changes when conditions change is _____.

Choose the Correct Spelling

TRY THE SKILL

Some words sound the same but have different spellings. They also have different meanings. You can use the rest of the sentence to decide which spelling is correct.

For example, these two spellings sound the same—*rose* and *rows*.

Does that rose smell good?
Rose means "a flower."

The children stood in rows.
Rows means "lines."

These three spellings also sound the same—*pair, pare,* and *pair*.

The pair of cardinals made a nest.
Pair means "two of a kind."

Do you pare peaches before you eat them?
Pare means "peel."

I like pears better than peaches.
Pears are a kind of fruit.

Read each sentence and the spellings below it. Then shade in the letter of the spelling that will complete the sentence correctly.

1. Animals are adapted to _____ ecosystem.

Ⓐ there Ⓑ their Ⓒ they're

2. Dogs have a strong _____ of smell.

Ⓐ cents Ⓑ sense

3. Hyenas try to separate young antelopes from their ____.

Ⓐ herd Ⓑ heard

4. Predators quietly sneak up on their _____.

Ⓐ prey Ⓑ pray

5. You are adapted to _____ ecosystem, too.

Ⓐ your Ⓑ you're

Make Inferences

To make an inference, you think about what you read and ask yourself a question about it. Then you think about what you already know and answer your question.

To practice, read this paragraph from the book.

Daily rains wash most nutrients out of the soil. Plants must quickly absorb the nutrients in decaying matter. Thick trees block the sunlight. To get enough sunlight, plants grow very wide leaves, and vines climb up tree trunks to reach for sunlight.

Why must plants absorb the nutrients in decaying matter quickly? What happens if they do it slowly?

To infer the answer, re-read the first sentence of this paragraph. Now you know the answer—if plants do not absorb the nutrients quickly, the rain will wash them away. If plants are too slow, the nutrients will be gone.

TRY THE SKILL

You read that cheetahs can run up to 70 miles an hour—for short distances. Antelopes, a favorite prey of cheetahs, can run only 60 miles an hour.

How could the slower antelope get away from a cheetah? Make an inference and provide a justification for it.

My inference:

_____

_____

_____

_____

My justification:

_____

_____

_____

_____

Question and Answer

Before you read a passage, you can ask yourself questions that will help you remember what you are about to learn. These questions will help you locate important facts in the passage. After you read, see if you can answer your own questions.

For example, before you read a passage about how penguins and frogs reproduce, you might ask yourself:

- What is the same about how these two kinds of animals reproduce?
- What is different?
- Which way of reproducing is most successful?

Now read the passage below and find the answers to your questions.

A female penguin lays one egg. The male penguin takes care of it for 65 days while the female leaves to find food. Most penguin eggs hatch into chicks.

A female frog lays hundreds of eggs, but then both parents leave. Most of those eggs die or are eaten by fish, so only a few hatch into tadpoles.

Penguins and frogs reproduce in ways that are adapted to their needs. Both ways help them survive.

TRY THE SKILL

Now you are going to read a passage about migration. Write two important questions about this topic. Then read the passage and answer your questions.

Question 1: _____

_____

Answer: _____

_____

Question 2: _____

_____

Answer: _____

_____

As fall arrives in many ecosystems, food and water become harder to find. Many kinds of birds, ducks, whales, and insects migrate. They head for warmer places with more food. Some monarch butterflies fly from Canada all the way to Mexico. Gray whales swim 6,200 miles from Alaska to Mexico.

Answer Key

Context Clues

1. predatory
2. migratory
3. ecology
4. mimic
5. pollination
6. adaptable

Choose the Correct Spelling

1. B
2. B
3. A
4. A
5. A

Make Inferences

To get away, an antelope has to run as fast as possible for as long as possible. The cheetah can reach its top speed only for short distances. Then it will tire and give up.

Question and Answer

1. Possible question: Why do animals migrate?
Answer: They go to warmer places so they can find food and water during winter.

2. Possible question: What kinds of animals migrate?
Answer: birds, ducks, whales, butterflies and other insects