SCIENCE • GRADE 3

On Level

California Content Standards
Life Sciences: 3.A
Life Sciences: 3.B

Adapting to Environments

LOOK INSIDE FOR:

- California's Academic Content Standards Covered
- Reproducible Student Book
- Reproducible English-language Arts Activities

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Adapting to Environments
California's Science Content Standards Met

GRADE 3 SCIENCE

LIFE SCIENCES: 3—Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:

a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.

b. Students know examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.

GRADE 3 ENGLISH LANGUAGE ARTS

1.0 WORD ANALYSIS, FLUENCY, AND SYSTEMATIC VOCABULARY DEVELOPMENT

***Vocabulary and Concept Development 1.4*—**Use knowledge of antonyms, synonyms, homophones, and homographs to determine the meanings of words.

***Vocabulary and Concept Development 1.5*—**Demonstrate knowledge of levels of specificity among grade-appropriate words and explain the importance of these relations (e.g., dog/ mammal/ animal/ living things).

***Vocabulary and Concept Development 1.6*—**Use sentence and word context to find the meaning of unknown words.

2.0 READING COMPREHENSION

***Comprehension and Analysis of Grade-Level-Appropriate Text 2.5*—**Distinguish the main idea and supporting details in expository text.

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On Level

Student Book

Adapting to Environments

Print pages 5–18 of this PDF for the student book.

How to Make the Student Book

- **The student book is contained on pages 5–18 of this PDF. It begins on the next page.**
- **To make one student book, or a two-sided master copy that can be photocopied, you will print on both sides of seven sheets of 8.5″ x 11″ paper.**
- **Do a test printout of one book first to familiarize yourself with the procedure.**
- **Follow these instructions carefully.**

First–Select the Paper

Since you will be printing on both sides of the sheets of paper, select a good quality white paper. We recommend using at least a 22lb sheet.

Second–Check Printer Settings

Be sure you have the correct page setup settings for your computer and printer. You will print these pages in landscape format.

Third–Print EVEN Pages

Open the PDF of the book you want to print. Select print from your file menu. In your printer's dialogue box enter pages 5–18 to print. Then select EVEN pages only. It is important to print only the EVEN pages first. Click "Print" to print the even pages. (**Important note**: The first page that prints will be blank. DO NOT discard this page. It will be needed to print the cover in the next step.)

Forth–Print ODD Pages

When the even pages have printed, flip the stack of pages over to print the odd pages. Place the stack back in your printer. Select print from the file menu again. In your printer's dialogue box, select ODD pages. Click "Print" to print the odd the pages.

Fifth–Fold the Book

You now have a complete book. Check to be sure the pages are in the correct order with the book's cover as the top page. Then fold the stack of paper in half.

Sixth–Staple the Book

Use an extended-length stapler to staple the pages together. Place three staples in the spine of the book.

Please note that printers vary in how they output pages. Do a test printing with one book and adjust the procedure as necessary.

If you want to make a one-sided master copy, print ALL pages 5–18 at once. Then select "one-sided to two-sided" on the copy machine.

Adapting to Environments

California's Science Content Standards Met

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FOCUS ON CALIFORNIA STANDARDS

SCIENCE • GRADE 3

California Content Standards
Life Sciences: 3.A
Life Sciences: 3.B

Adapting to Environments

by Linda Barr

SCIENCE • GRADE 3

California Content Standards
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Curriculum materials for **your** content standards

Table of Contents

INTRODUCTION

Living in a Habitat

The place where you live is your habitat. You meet your basic needs there. What are your basic needs? You and other animals need water, energy from food, and oxygen from the air. You also need space to move about and shelter from the weather and other animals.

Earth has many types of habitats or biomes. In this book, you'll learn about the plants and animals that live in many of them. They have found ways to meet their needs, no matter how hot, cold, wet, or dry their habitat is.

As you read, think about how you meet your needs in your habitat!

habitat: the place where an animal lives and has its needs met

CHAPTER 1

Types of Habitats

Deserts

Deserts are the driest, hottest habitats. The days can be very hot, over 100° Fahrenheit (38° Celsius). The nights can be nearly freezing. Desert plants and animals must be able to live with very little water. The plants include many kinds of cactus and bushes such as the creosote.

Desert animals get most of their water from the plants they eat. Some sleep in **burrows** all day. At night, they look for food. In the desert live mice, squirrels, foxes, and birds. There may also be bats, lizards, snakes, and insects.

California's deserts include the Mojave, the Colorado, and Death Valley.

burrows: holes or tunnels dug into the ground by an animal

Grasslands

Grasslands receive more rain than deserts, but less than most other habitats. Summers are warm. Winters can be cold and snowy.

Grasslands are too dry for trees. Most of the plants are grasses. The animals are grass-eaters, such as bison, zebras, and kangaroos. Animals that eat the grass-eaters include hawks and cheetahs.

In North America, grasslands are also called prairies. Much of California's grasslands are now used for farms or towns. Many of the plants that first grew in these grasslands have been replaced by plants from other places. Some of these plants were brought here by the Spaniards long ago.

How does the amount of rainfall affect the plants in each habitat?

Forests

Deciduous

The trees in deciduous forests, such as oaks, lose their leaves every fall. These forests have warm summers and cold winters. The animals include deer, bears, foxes, hawks, snakes, squirrels, and many insects.

Evergreen

The trees in evergreen forests, such as pines, have needles that stay green all year. Summers are warm or cool, and winters are very cold. Moose, beavers, owls, and rabbits live here.

Rain Forests

Rain forests are always warm and wet. More kinds of living things are found here than in any other habitat. The plants include tall trees and vines. In the trees are monkeys, birds, jaguars, snakes, insects, and many other animals.

California has all three types of forests.

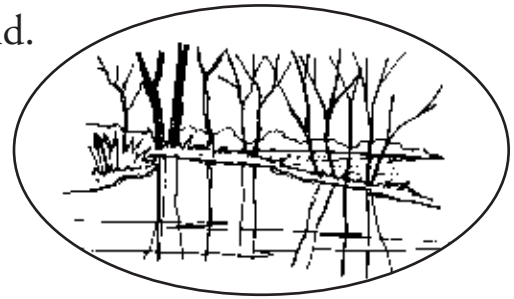
What kind of forest grows closest to your home?

Wetlands and Marshes

Wetlands and marshes lie near rivers, lakes, and the ocean. They are also called swamps. Wetlands are covered with shallow water all or part of the time. During heavy rainstorms, they soak up the extra water like a sponge. Wetlands also help clean pollution out of water.

Many birds, frogs, and fish lay their eggs in wetlands. Other animals here include turtles, ducks, otters, muskrats, and raccoons. Wetland plants are mostly grasses and bushes. Few trees can live with their roots under water.

Many wetlands in California and other states were drained and filled. Houses were built on the land.



How is a wetland different from a river?

Tundra

The tundra is Earth's coldest habitat. Summers are cool and short, with little rain. Few plants can grow there. Tundra animals include caribou, rabbits, sheep, wolves, and bears. When summer arrives, so do many birds and insects. They leave when fall comes. As you might have guessed, California has no tundra!

Few trees grow on the tundra. Trees are not able to send roots into the frozen ground.

Oceans

The oceans are Earth's largest habitat. Millions of tiny plants float on the water. They produce much of the oxygen you breathe. Seaweed grows near the shore. No plants grow in the deepest part of the ocean. The ocean has fish of all sizes. It also has air-breathing animals such as whales.

CHAPTER 2

Ways That Plants Survive

Adapting to Climate

Plants must find ways to meet their needs in very cold, hot, dry, or wet climates. Small plants survive in the windy tundra by growing low to the ground. They grow slowly because the soil is frozen and rocky with few nutrients. The growing season is very short.

Whenever it rains on the desert, the plants quickly soak up all the water. They store it in their needles, stems, and roots. Needles, not wide leaves, help cactus reduce water loss. Cactus use both their needles and stems to produce energy from sunlight. Most desert plants have a waxy surface that helps keep water inside. This helps slow water **evaporation**.

evaporation: the process of a liquid changing into a vapor or gas

Even in the rain forest, plants must struggle to survive. This forest has a thin layer of soil. Plant leaves decay there and turn into nutrients to help more plants grow. Yet daily rains wash most of these nutrients out of the soil. Rain forest plants must quickly soak up the nutrients before they are gone.

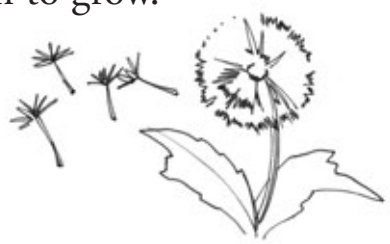
Few plants can survive on the floor of the rain forest. The trees grow so close together that they block sunlight from reaching the forest floor. To get enough sunlight, plants grow very wide leaves. Vines climb up tree trunks to reach the light.

Adapting for Reproduction

To survive, most plants produce seeds. Seeds sprout when there is enough warmth and moisture for seedlings to grow. For example, the seeds of desert plants sprout after a rare rainstorm. Then they grow quickly. They must produce more seeds before the dryness kills them.

Many flowers use bright colors and **nectar** to attract birds and insects, which spread **pollen** from flower to flower. Pollen allows the flowers to produce seeds.

Dandelion seeds float on the air. Other seeds stick to animals and people. In these ways, the seeds are carried to places where they will have room to grow.



nectar: a sweet liquid produced by some flowering plants
pollen: a fine powder produced by flowers that fertilizes other flowers of the same kind

CHAPTER 3

Ways That Animals Survive

Body Coverings

Body coverings help animals in many ways. In cold climates, many animals have layers of thick fur. Walruses and seals also have a thick layer of fat under their fur. Birds fluff up their feathers to trap air. Their bodies warm that air, which then helps keep the birds warm. In the desert, the scales on snakes and lizards help keep water in their bodies.

Body covering also helps animals hide from **predators**. Many birds and insects are green or brown. They blend in with their surroundings. That makes it harder for hawks and other predators to spot them.

predator: an animal that eats other animals such as a lion, wolf, or hawk

Wolves and other predators are also colored like their surroundings. That makes it harder for **prey** to see them coming.

A hard body covering protects some animals. An armadillo is covered with bony plates. Porcupines have sharp quills. A turtle has a hard shell. Insects, snails, clams, lobsters, and other animals also have hard body coverings.

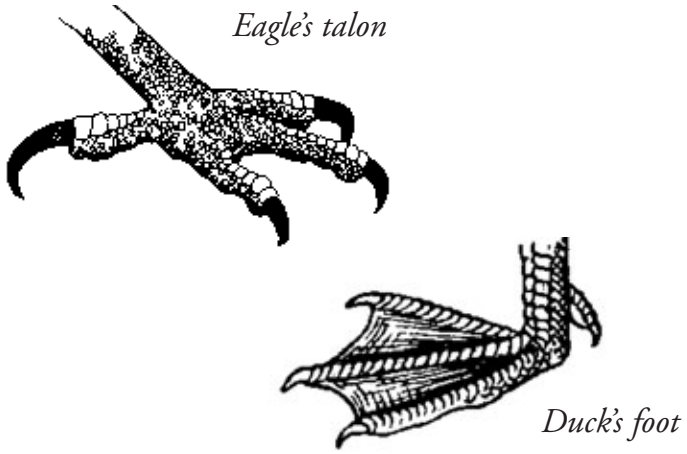
Some body coverings fool predators. The monarch butterfly tastes bad to birds, but the viceroy butterfly tastes good. A viceroy looks like a monarch. Birds cannot tell them apart, so they learn not to eat either kind. The body covering of both butterflies helps them survive.

prey: an animal that is eaten by other animals such as a mouse, rabbit, or bird

Body Parts

Body parts help both prey and predators survive. Flippers help whales and sea lions dive deep. Webbed feet help frogs and ducks swim fast. Long toes help birds hold on to branches. An eagle's talon helps it capture prey. Special hooves help bighorn sheep scramble up cliffs. Large back legs help rabbits and kangaroos out-hop their predators.

With its long neck, the giraffe can eat leaves that other plant-eaters cannot reach. Anteaters use long, sticky tongues to capture ants.



Eagle's talon

Duck's foot

Sharp eyesight helps predators find food. It also helps prey spot those predators. Many animals can hear really high or really low sounds. For example, mice can hear the whoosh of a hawk's wings. The hawk can hear mice try to scamper away.

Some animals can feel prey or predators getting closer. For example, ants can feel movement through two inches of soil. Hairs on grasshoppers help them feel movement in the air.

Claws and teeth help animals protect themselves and eat their food. Wolves have sharp teeth for catching and eating their prey. Cows have strong, flat teeth for grinding up grasses.

Sharks have super-sharp teeth that fall out easily. Then they grow new ones. One shark might have 20,000 teeth during its life. Birds have many different kinds of beaks. These beaks help them eat different types of food.

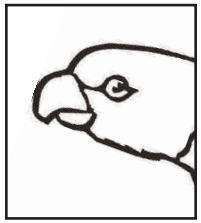
How do your eyes, ears, and teeth help you survive?

Beaks and Bills

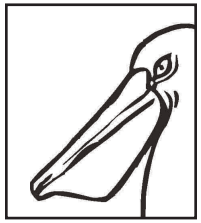
Eagle
Eagles and hawks have strong, sharp beaks. These beaks help them catch and eat small prey.

Woodpecker
Woodpeckers and many other birds eat insects. They need pointed beaks to reach the bugs crawling under tree bark.

Parrot
The parrot's strong, curved bill helps it open seeds and nuts.



Pelican
Pelicans store fish in their large bills so they can feed their babies.



A scientist finds a new kind of bird. Why must this scientist describe the bird's beak very carefully?

Behaviors

Thick fur helps some animals through the winter. However, other animals must change their behavior to survive. As fall turns into winter, the food they eat becomes harder to find. They also cannot keep warm in icy weather, so they migrate to a warmer place. Many kinds of birds **migrate**. Whales and other animals migrate partly to have their babies in warm places.

Some animals survive winter by sleeping through it. First, they eat a lot to store fat in their bodies. Next, they find a hole in a tree or the ground. Then they **hibernate**, or go into a deep sleep.

Do people migrate? Why?

migrate: to travel from one place to another and back again in order to survive changing weather conditions
hibernate: to go into a very deep sleep-like state for a long while

As an animal hibernates, its heart slows way down. Its body gets cooler, just above freezing. It breathes less often. It uses energy from the stored fat to stay alive. True hibernators include chipmunks, ground squirrels, and bats.

Some animals seem to hibernate. Instead, they go dormant. This group includes most bears, frogs, and some snakes. While animals are dormant, their bodies slow down and cool off. Still, their bodies do not slow as much as hibernating animals. Dormant animals might wake up and eat on warm days.

Some desert animals also go **dormant**. That helps them survive the hottest, driest weather.

What is the difference between hibernating and being dormant? Why don't all animals hibernate during the winter?

dormant: a state of being alive but not moving or growing

You know that body coverings help animals **camouflage** themselves. They blend in with their surroundings. Behaviors help them blend in, too. For example, chameleons can change color. Their skin has four colors of "paint" cells in it: red, yellow, blue, and white. These cells can get smaller or bigger. They let chameleons change color in 20 seconds!

Other animals hide by standing still. Then many predators do not see them. Opossums and many kinds of snakes pretend to be dead. They lie very still. They let their mouths fall open. After the predator leaves, the animal quickly hurries to safety.

What is an animal's risk of pretending to be dead?

camouflage: to disguise in order to hide

Many animals survive by fighting their predators. They use their teeth, claws, wings, or feet. Sheep and goats use their horns, while moose and elk use their antlers. Wasps and jellyfish sting. Skunks, weasels, and some snakes use smell to chase predators away. Porcupines shoot quills at predators.

Some animals, such as the puffer fish, make themselves look larger to scare off predators. Others, such as cats, make a lot of noise to scare each other.

Like you, animals must meet their basic needs to stay alive. Like you, they use their body coverings, body parts, and behaviors to survive.

Moose use their antlers to defend themselves.

Glossary

burrows—holes or tunnels dug into the ground by an animal

camouflage—to disguise in order to hide

dormant—a state of being alive but not moving or growing

evaporation—the process of a liquid changing into a vapor or gas

habitat—the place where an animal lives and has its needs met

hibernate—to go into a very deep sleep-like state for a long while

migrate—to travel from one place to another and back again in order to survive changing weather conditions

nectar—a sweet liquid produced by some flowering plants

pollen—a fine powder produced by flowers that fertilizes other flowers of the same kind

predator—an animal that eats other animals such as a lion, wolf, or hawk

prey—an animal that is eaten by other animals such as a mouse, rabbit, or bird

To Find Out More . . .

Want to learn more about different habitats and how animals survive in them?

Try these books

Animal Habitats by Michael Chinery. Southwater, 2004.

The Arctic Habitat by Molly Aloian and Bobbie Kalman. Crabtree, 2006.

Claws, Coats, and Camouflage by Susan E. Goodman. Millbrook Press, 2001.

A Desert Habitat by Kelley Macaulay and Bobbie Kalman. Crabtree, 2006.

A Forest Habitat by Bobbie Kalman. Crabtree, 2006.

A Rainforest Habitat by Molly Aloian and Bobbie Kalman. Crabtree, 2006.

What Are Camouflage and Mimicry? by Bobbie Kalman. Crabtree, 2001.

Access these Web sites

What's It Like Where You Live?
www.mbgnet.net/sets/temp/index.htm

Learn about different habitats
www.nationalgeographic.com/geographyaction/habitats

Amazing Animal Senses
http://faculty.washington.edu/chudler/amaze.html

Index

ENGLISH-LANGUAGE ARTS • GRADE 3

On Level

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English-language Arts Activities

Adapting to Environments

Print pages 20–24 of this PDF for the reading activities.

Homographs

Some words have several meanings. You can use context clues to decide which meaning is being used in a certain sentence.

For example, the word *spot* can mean "a mark," and *spot* can mean "to notice something."

Read the sentence below and decide which meaning is used here.

The spots on a giraffe help it blend in with its surroundings.

The rest of the sentence tells you which meaning is being used for spots.

In this sentence, the word spots means the marks on a giraffe.

Read each word and its meanings. Then read each sentence and write the letter of the correct meaning on the line.

stick **A**. a short, thin piece of wood
B. to attach something to a surface

1. The body covering of one insect makes it look like a _____.

TRY THE SKILL

right **A**. correct **B**. the opposite of left

2. Years ago, people thought that filling in wetlands was the _____ way to use land.

long **A**. tall **B**. a lot of time

3. An animal that cannot find enough food will not live _____.

fly **A**. to travel through the air **B**. an insect

4. A _____ has many lenses in its eyes to help it see predators.

case **A**. a condition **B**. a container

5. Before winter, some animals store extra food in _____ they will need it to survive the cold months.

Use Specific Words

Some words describe a huge group of things. One example is *animal*. This word includes things as different as giraffes, mosquitoes, and dinosaurs.

Other words, such as *dog*, describe just a few things. When you say that something is a dog, readers know that it is not a cat, a dinosaur, or a sunflower. When you say that the dog is a boxer, readers can clearly picture what you mean. The word *dog* is more specific than animal. The word *boxer* is more specific than *dog*.

These words are in order by how specific they are:

boxer
dog
mammal
animal
living thing

Knowing which words are specific can help you be a better writer.

TRY THE SKILL

Read each group of words. Then write them in order, starting with the most specific word.

1. home, shelter, tent

_____

2. breakfast, food, eggs

_____

3. Mr. Hunt, man, teacher, person

_____

4. book, entertainment, fiction, *The Snowy Day*

_____

5. animal, butterfly, insect, living thing, monarch

_____

Find the Main Idea

Good readers identify main ideas as they read. This helps them understand and remember what they read. Read this paragraph:

With a thick coat of fur and fat, some animals can live through the coldest weather. Polar bears are one example. Yet few animals can do this. Instead, when fall turns into winter, those animals must do something. They must change their behavior. If not, they will not survive the cold days ahead.

Is this sentence the main idea of the paragraph?

Polar bears can survive the coldest weather.

No, this is not the main idea of the paragraph. The sentence below is the main idea:

Some animals must change their behavior to survive cold winters.

TRY THE SKILL

Read the paragraphs. Shade the letter next to the main idea.

1. Why do giraffes have such long necks? That way, they can reach the highest leaves on the trees. Antelopes and other plant-eaters cannot reach those leaves.

Ⓐ Giraffes can reach the highest leaves on the trees.

Ⓑ Giraffes have long necks to help them get enough food.

Ⓒ Antelopes need to have longer necks.

2. Giraffes also have long tongues. Their tongues let them reach even farther. An octopus doesn't have a tongue. It can taste things with its tentacles. It does not have to get close to see if something is good to eat—or dangerous.

Ⓐ Different body parts help animals get food.

Ⓑ An octopus can taste things with its tentacles.

Ⓒ An octopus does not need a tongue.

Use Context Clues

You can often figure what a new word means by reading the sentence or paragraph it's in. For example, read the paragraph below. Think about the meaning of the word *survive*. Look for clues.

It almost never rains in the desert. During the day, it can be 100° Fahrenheit (38° Celsius) or hotter. The nights are nearly freezing. Few living things can survive there.

What are some clues to help you determine the meaning of *survive*?

The paragraph says that the desert gets little rain. The days are really hot, but the nights are really cold. That sounds like a hard place for plants and animals to live. You guess that survive means "to live" or "to stay alive." You are correct! Clues in the paragraph helped you figure out the meaning of this word.

TRY THE SKILL

Read the paragraph and then explain what the word *bog* means. Tell which clues you used.

Wetlands and marshes are near rivers and lakes. Some are called swamps or bogs. Shallow water covers them all or part of the time. During floods, wetlands soak up extra water like a sponge.

The meaning of *bog* is:

_____

_____

_____

I know that because:

_____

_____

_____

Answer Key

Homographs

1. A

2. A

3. B

4. B

5. A

Use Specific Words

1. tent, home, shelter

2. eggs, food, breakfast

3. Mr. Hunt, teacher, man, person

4. *The Snowy Day*, fiction, book, entertainment

5. monarch, butterfly, insect, animal, living thing

Find the Main Idea

1. B

2. A

Use Context Clues

The meaning of bog is a kind of wetland or marsh.
I know that because the paragraph says, "Wetlands and marshes are near rivers and lakes. Some are called swamps or bogs." That means that bogs, swamps, wetlands, and marshes are pretty much the same.