Discover! 6

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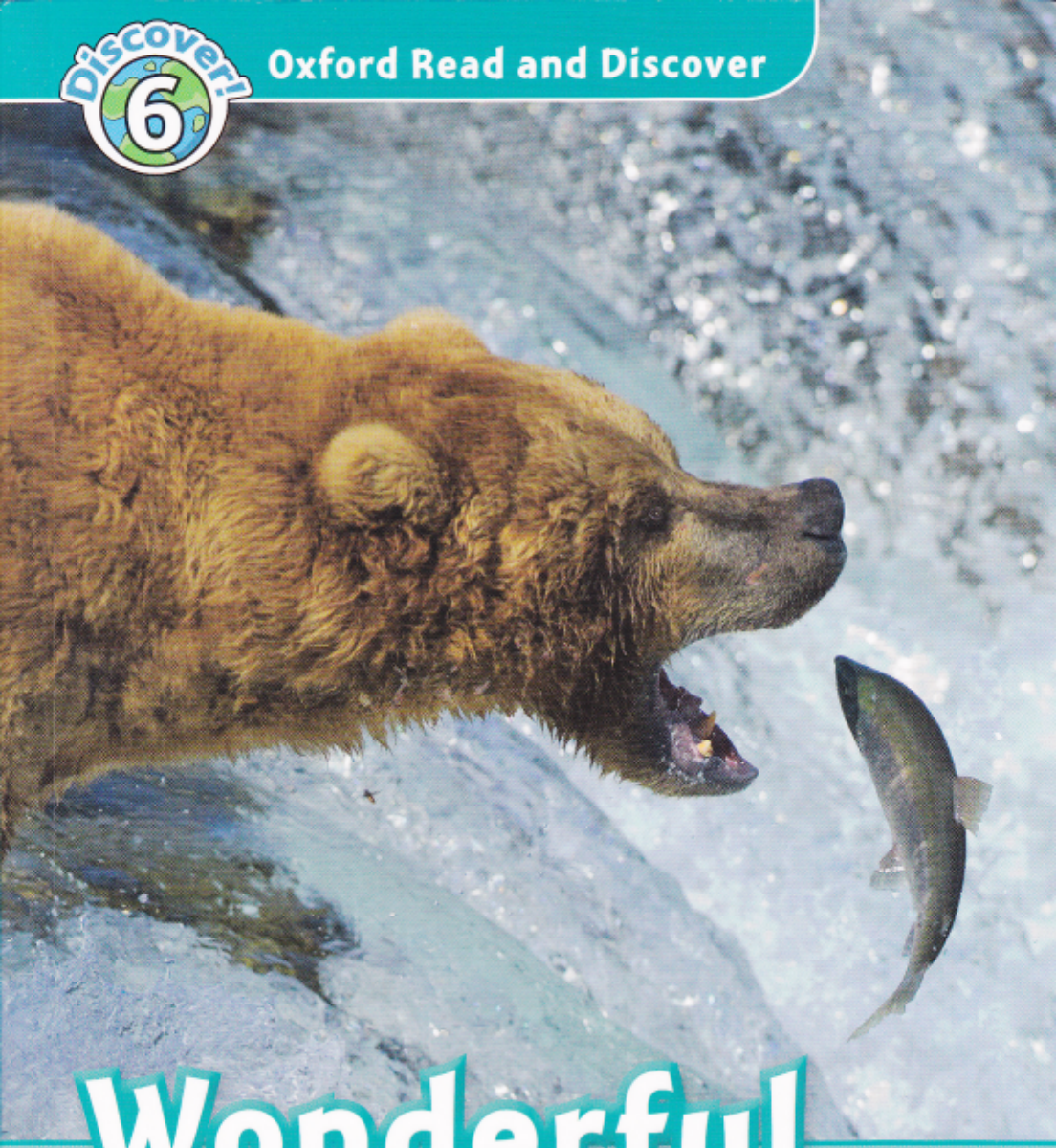

Wonderful Ecosystems

Oxford Read and Discover

Wonderful Ecosystems

Louise & Richard Spilsbury

Contents

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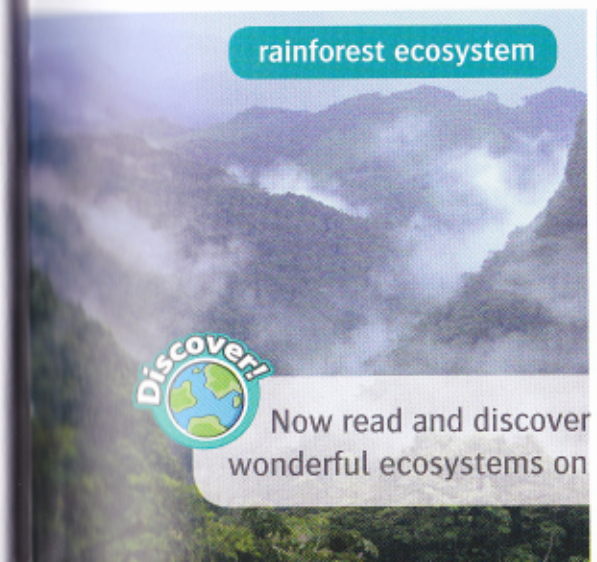
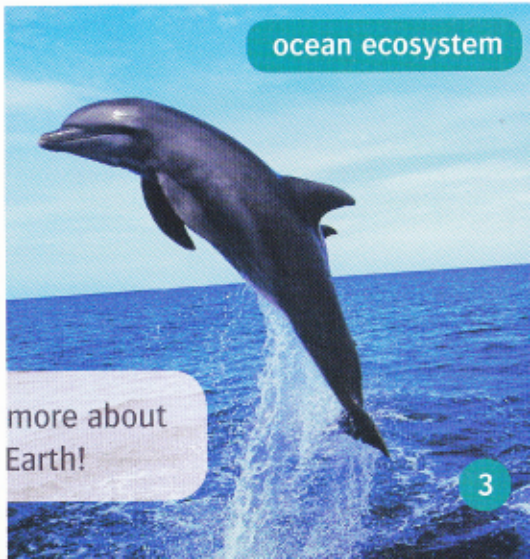
Introduction

There are millions of living things on Earth, from the smallest plants to enormous whales. These plants and animals live in different places, like oceans, rainforests, and deserts. These different places and all the things that live in them are called ecosystems.

What ecosystems are there where you live?
What ecosystems do you know?
What lives in these ecosystems?





1 What Are Ecosystems?

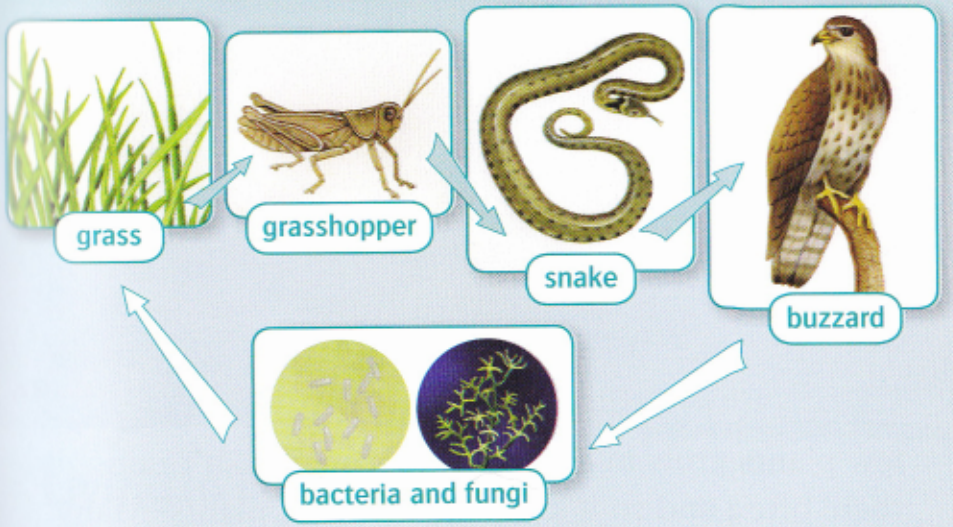
In an ecosystem there are living things, like plants and animals, and things that are not living, like rocks, water, and air. Together, these things make an ecosystem.

Living Together

The different parts of an ecosystem work together and use each other. For example, in a garden ecosystem, plants use the land, water, light, and air to live. Bees visit plants to drink nectar from their flowers. When bees do this, they also take pollen from one plant to another. Pollen helps flowers to make seeds that can become new plants.

A Bee Drinking Nectar

A Food Chain



Food Chains

All living things need food. In most ecosystems, plants use sunlight to make their food from carbon dioxide in the air and water. Animals eat plants or other animals that eat plants. Decomposers are living things that feed on things like dead leaves or dead animals. Food chains show us how plants and animals in an ecosystem work together. They show us what eats what in an ecosystem.

In the food chain above, a grasshopper eats grass, a snake eats the grasshopper, and a buzzard eats the snake. When the buzzard dies, its body falls onto the land. There, decomposers, like bacteria and fungi, feed on the buzzard. When they do this, some of the nutrients from the buzzard's body go into the land. Plants, like grass, then use these nutrients to help them to grow.

Different Ecosystems

Different ecosystems are different sizes. Some ecosystems are big, like an ocean or a forest. Others are small, like a pond or a tree. There are thousands of plants and animals in a forest, but a dead tree can be a busy ecosystem, too! Fungi and other plants grow on it and many small animals live in it and feed on it.

There are lots of different ecosystems because of the weather and the type of land in them. For example, few plants grow in deserts because it doesn't rain there often and so it's too dry for most plants. Many trees grow in rainforests because the weather there is rainy and warm.

A Dead Tree Ecosystem

Pandas Eating Bamboo

Living in Ecosystems

Some animals live in only one ecosystem. Pandas live only in bamboo forests because bamboo is the only food that they eat. Other animals can live in different types of ecosystem, like bees that can live in forests, gardens, and other places. Many animals are adapted to their ecosystem. For example, monkeys have long arms and legs for climbing trees in a forest, and polar bears have thick fur to keep them warm in frozen ecosystems.

Discover!

Some living things share the same food in an ecosystem by feeding at different times. For example, owls hunt for rabbits at night, and hawks hunt for rabbits in the day.

Go to pages 36–37 for activities.

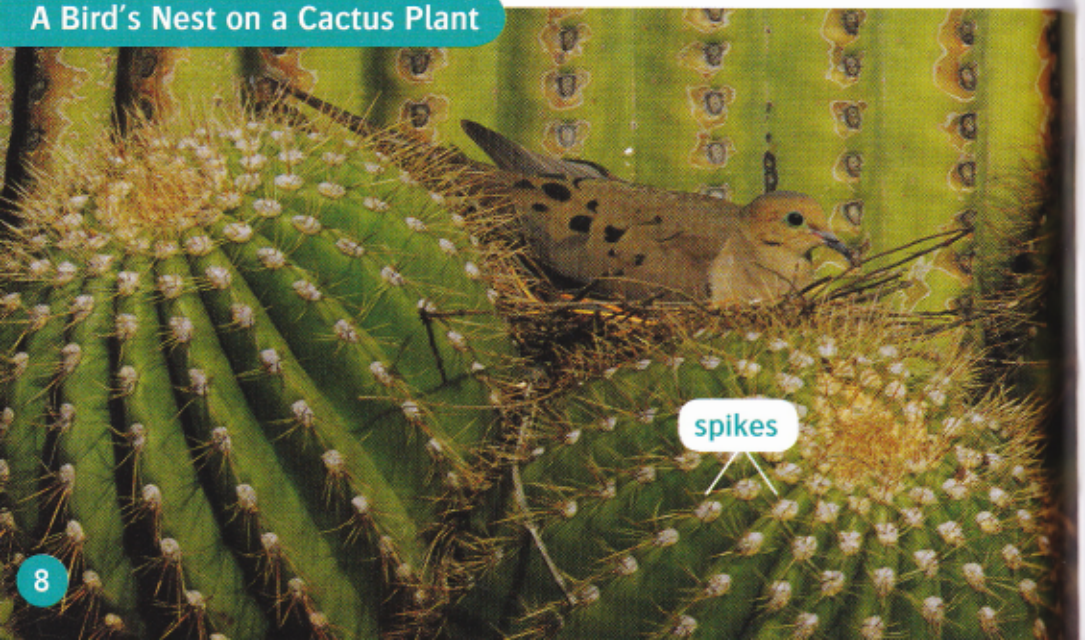
2 Hot Deserts

When we think of deserts, we imagine rocks and sand and a place that's very hot and dry. It's difficult to live in a hot desert, but some plants and animals are adapted to this ecosystem.

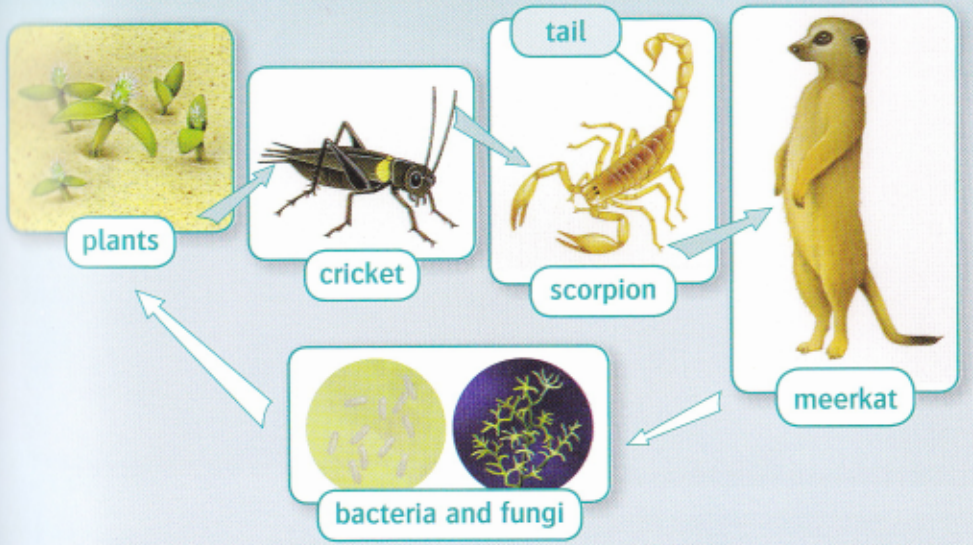
Desert Plants

Deserts are dry because it almost never rains. Desert plants collect the rain and store it so that they can live during the dry season. Cactus plants have stems that become fat when they are full of water. They also have sharp spikes to stop thirsty animals breaking the stems to drink the water inside. The spikes don't stop birds making nests on the cactus plants!

A Bird's Nest on a Cactus Plant



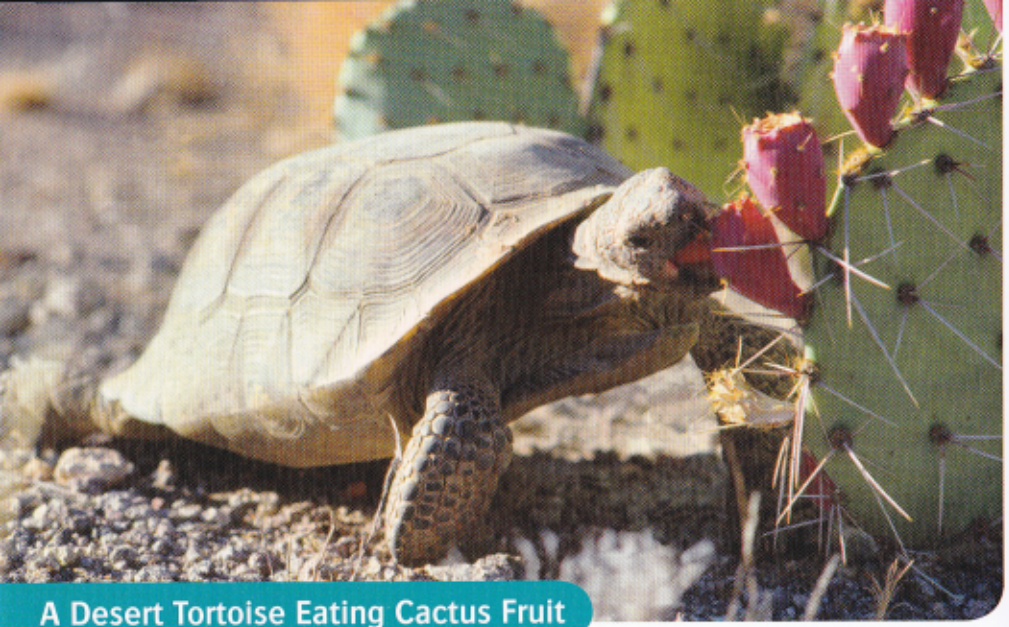
A Desert Food Chain



Desert Food Chains

Like other food chains, desert food chains start with plants. Desert bats drink nectar from cactus flowers, and insects and other small animals eat leaves or seeds from desert plants. Scorpions and lizards eat insects, like crickets, and other small animals. Animals that hunt and eat other animals are called predators. Some big predators in the desert are hawks, snakes, and foxes.

Meerkats are desert animals that eat plants and insects, but they also eat scorpions. In their tail, scorpions have venom – a juice that can kill other animals. So how do meerkats eat scorpions and live? They quickly break off the tail and throw it away. Then it's safe for the meerkat to eat the scorpion!



A Desert Tortoise Eating Cactus Fruit

Storing Water

People can take a bottle of water with them when they visit a desert, but how do animals get water in these hot, dry ecosystems? Most desert animals don't drink water, but they get water from their food. Lizards get water from the insects that they eat, and desert tortoises get water from the plants that they eat. Desert tortoises can also store water inside their body, so that they can use it later. Tortoises can live for about a year without drinking new water!

Discover!

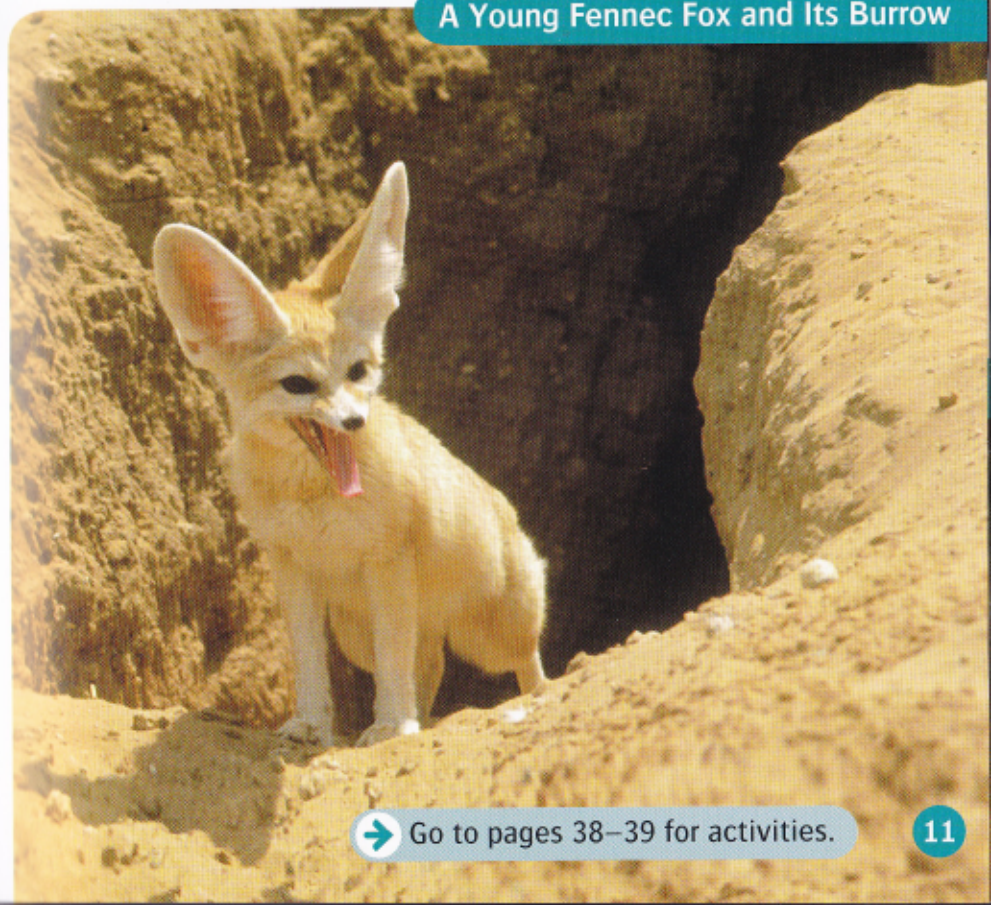
A camel stores food as fat in its hump. Camels use this food later, and they can also get water from it. When the fat is all used up, the hump becomes smaller!

Busy at Night

A nocturnal animal is an animal that's busy at night and sleeps in the day. Most desert animals sleep or hide from the heat in the day. Some animals, like desert squirrels, rabbits, and foxes, go into burrows underground. Some animals hide in caves. Then at night, when it's cool, they come out to feed or hunt.

Many nocturnal animals, like fennec foxes, have large eyes to help them to see at night. Fennec foxes also have big ears so they can hear small animals, like lizards and rabbits, that they hunt in the dark.

A Young Fennec Fox and Its Burrow



Go to pages 38–39 for activities.

3 Grasslands

Grasslands are places with many types of grass and few trees. In grasslands it doesn't rain very much. If it rained more, more trees would grow and grasslands would become forests. If it rained less, grasslands would become deserts. Grasslands are often found between deserts and forests.

Grasses

Grasses can live in hot, dry places because they have lots of long roots that go down into the soil and collect water. Grasses have long, thin leaves that lose less water than big leaves. The leaves also grow from the bottom of the plant, not the top. So when animals eat grass or walk on it, new grass leaves soon grow from the bottom of the plant.

Grassland Animals

Small grassland animals, like butterflies and grasshoppers, eat grass and other plant leaves. They also eat seeds, flowers, and roots. Most big grassland animals, like gazelles, kangaroos, and zebras, eat grass.

Discover!

We think that all zebras in a herd look the same, but their striped bodies are as different as fingerprints are in people!

Many big grassland animals feed and live together in herds. Animals live in herds to be safe. If a lion, cheetah, or other dangerous predator comes near, there are more eyes to see it. When one animal starts to run, all the other animals in the herd run, too.

A Lion Hunting Gazelles

Living Together in Grasslands

The soil, plants, and animals in grasslands live and work together. Prairie dogs are a good example of this. Prairie dogs are a type of squirrel. They eat plants and they live in burrows in grassland soil. When they eat tall plants, sunlight can reach the ground and it can help small plants to grow. Prairie dog droppings add nutrients to the soil, and when prairie dogs make burrows, they help to mix the soil. The tunnels that they make also let more air and water into the soil. This is good for soil.

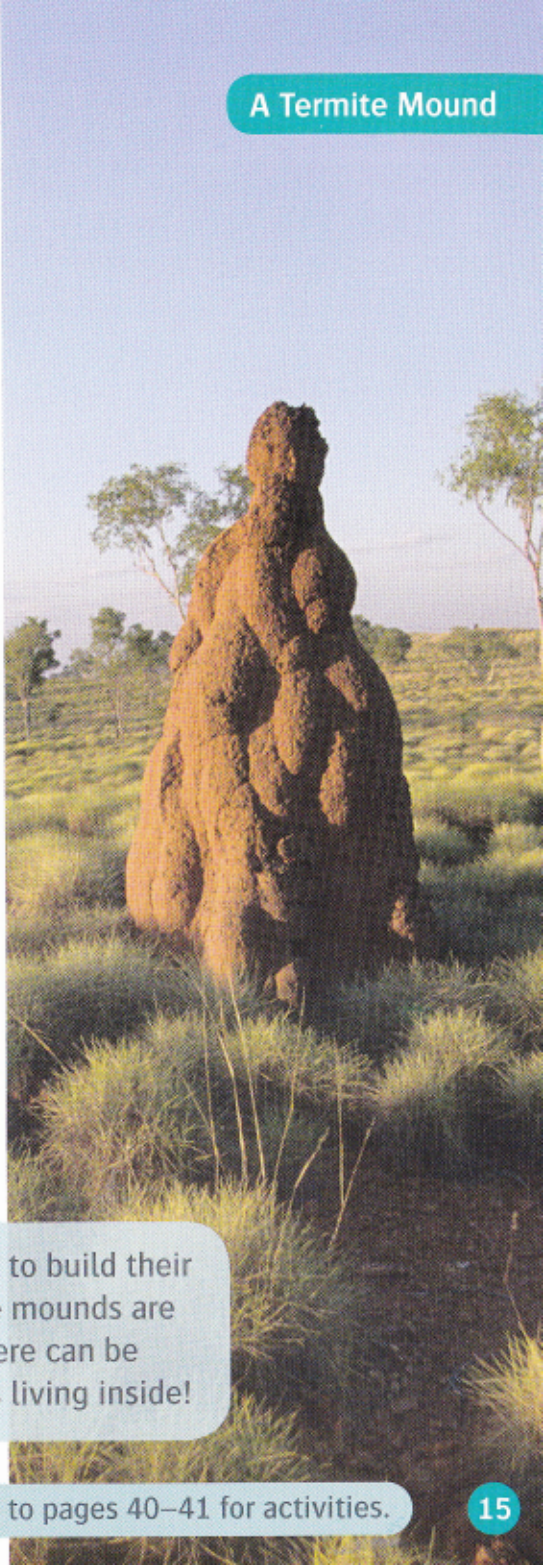
When prairie dogs leave a burrow, other animals, like rabbits and snakes, live in it. Prairie dogs are also food for many other grassland animals, like snakes, foxes, and hawks.

Prairie Dogs

Termites

Termites are insects, and they are important decomposers in some grassland ecosystems. They take leaves and roots from dead grass plants to their nests, or termite mounds. When old termite nests break and rot, nutrients from the plant parts in the nests go back into the soil. These nutrients help new plants to grow. Termites also help to clear dead plants off the grassland. If more and more dead plants stayed on the land, no new plants would be able to grow!

A Termite Mound



Discover!

Termites use mostly soil to build their mounds. The highest termite mounds are about 13 meters tall, and there can be more than a million termites living inside!

Go to pages 40–41 for activities.

4 Forests

Forests are large areas of land that are covered in trees. There are different types of forest around the world because different places have different climates.

Forests in Cold Places

In very cold places, water is frozen into ice or snow so plants can't use it. Conifer trees grow in forests in cold places. These trees have green leaves that look like thin, hard spikes. Leaves like this don't lose as much water as flat leaves do, and ice and snow can't break them. Most conifer trees have leaves all year long, so it's usually dark on the forest floor and few plants grow there. Birds and squirrels eat seeds from cones that fall from conifer trees, and animals like wolves hunt on the forest floor.

A Bird Collecting Seeds

A Squirrel Collecting Nuts

Forests in Mild Places

Some forests grow in places with mild climates that have warm summers and cold winters. Many trees in these places have large, flat leaves that drop off in fall so that the trees stop growing in winter. The dead leaves give back nutrients to the soil. Then in spring, sunlight reaches the forest floor, so spring flowers grow there.

Many animals in this ecosystem eat leaves or other parts of the trees. In winter, many insects sleep under rocks or dead leaves. They come out in spring to eat the new leaves on trees. Squirrels collect and store nuts to eat in winter when trees have no seeds or fruit.

Tropical Rainforests

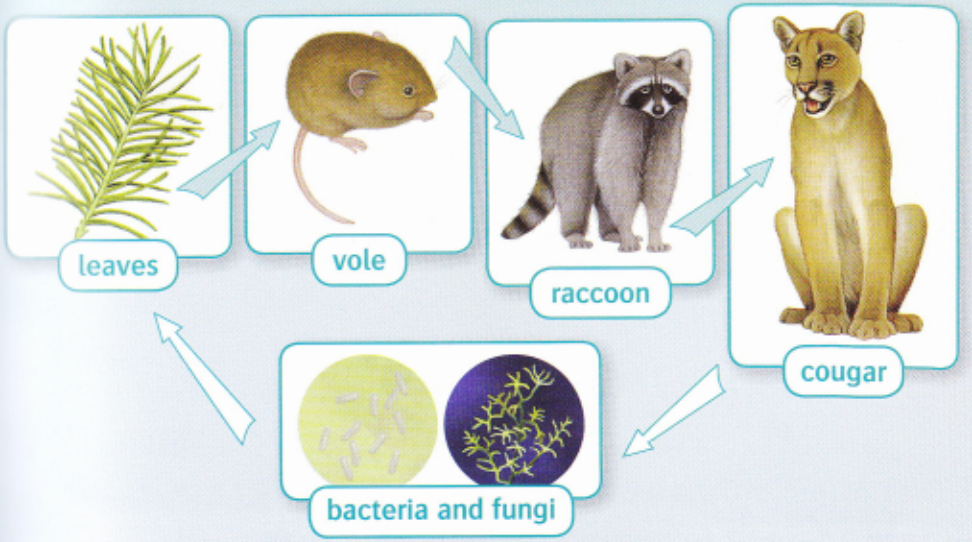
Tropical rainforests grow in hot, rainy places. Rainforest trees grow very tall because they get lots of water, sunlight, and warm air. Some rainforest trees have enormous roots that grow above the soil to help the trees to stand up.

Most animals in this ecosystem, like birds and monkeys, live in the trees. They feed on fruits, nuts, and leaves. Some animals eat nuts and fruits that fall from trees or that monkeys drop! Predators, like ocelots and snakes, eat other animals that live in the forest.

Discover!

People damage rainforests by cutting down trees so that farmers can use the land. Every second, an area of rainforest the size of a soccer field is cut down.

A Temperate Rainforest Food Chain



Temperate Rainforests

Temperate rainforests grow in places where it's cool and rainy most of the year. Conifers and some trees that have flat leaves grow in these forests, and bushes grow on the forest floor, too. Because of all the dead wood and leaves, the soil has lots of nutrients. Conifers use the nutrients and rain to grow very tall – they can be as high as a building that's 30 storeys high!

Most animals live on or near the forest floor. There's lots of food there and tall trees protect them from the sun, wind, and rain. Some food chains start with dead leaves that voles eat from the forest floor. Raccoons eat voles, and cougars eat raccoons.

Go to pages 42–43 for activities.

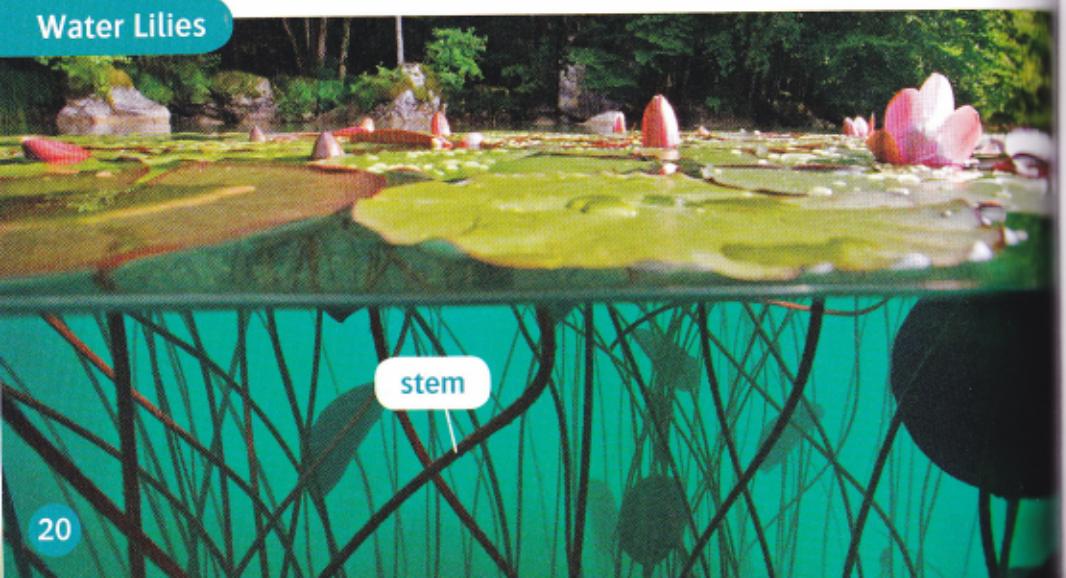
5 Freshwater Ecosystems

Ponds, lakes, and rivers are freshwater ecosystems. Lakes are large areas of water with land around them. Rivers are areas of moving water. They usually go across the land from mountains or hills to the ocean.

Plants in Water

Plants that grow in freshwater ecosystems get lots of water, but it can be dark underwater so they are adapted to getting the light that they need. Some plants float on top of the water and have small roots under them that take nutrients from the water. Some plants, like water lilies, have roots in the soil at the bottom of a pond, and long stems to hold their leaves and flowers above the water!

Water Lilies



An Adult Dragonfly

Insects

Many insects, like dragonflies, start life in freshwater ecosystems. They hatch out of eggs and then they stay underwater until they become adults. Most young insects eat little pieces of plants and they hide in plants or under stones.

Many insects leave the water and live in the air when they are adults, but some stay on or near the water and dive underwater to hunt for food.

Discover!

The diving beetle is an insect that takes bubbles of air underwater, so that it can breathe when it swims to hunt other insects and tadpoles!

Fish

Fish are perfectly adapted to living underwater. For example, they have parts called gills that they use to get oxygen from the water, and they have tail fins to help them to swim. Some fish eat plants, but many fish feed on insects and other minibeasts in the water.

Discover!

The archer fish shoots water at minibeasts on plants near rivers. When the minibeasts fall, the archer fish quickly eats them!

Some large fish catch and eat other fish. Piranhas also use their large, sharp teeth to cut up and eat dead animals. Nutrients from the dead animals then go back into the freshwater ecosystem.

Piranhas

Hippos

Animals That Visit Water

Some animals use freshwater ecosystems, but they live on land, too. Birds visit water to feed on insects, plants, and fish. Amphibians, like frogs, start life underwater and later they grow legs so that they can live on land!

All animals are important to their ecosystem. For example, when hippos visit lakes to eat grass, they leave droppings in the water. Nutrients from the droppings help small plants to grow. Little fish eat the plants. Larger fish eat the little fish, and other animals visit the lake to eat the larger fish.

In many lakes in Africa, fish are dying because hippos that visit the lakes are being hunted by people. Without hippo droppings, there aren't enough nutrients in the water to help plants and fish to grow.

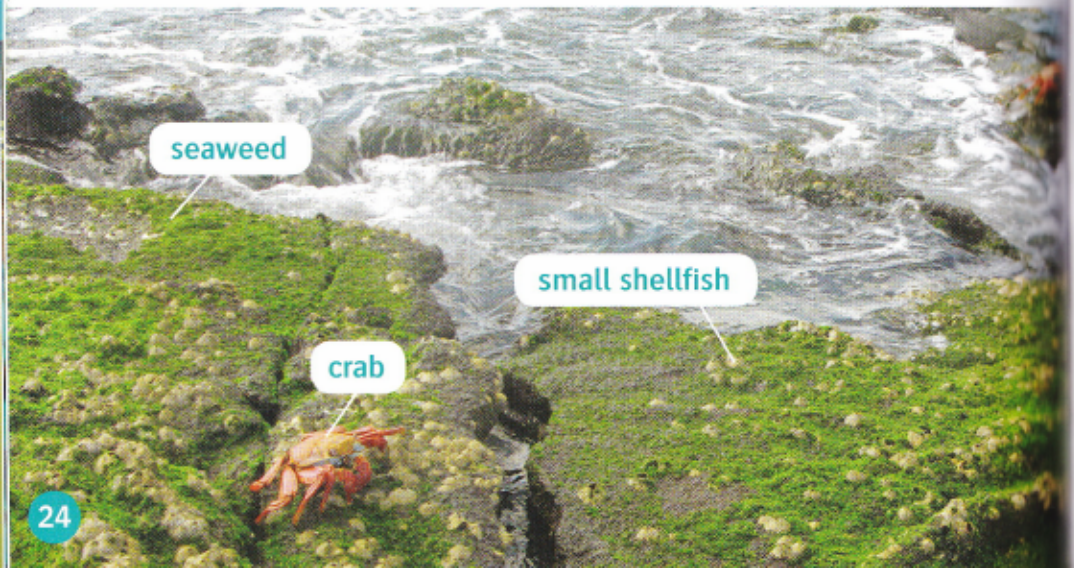
Go to pages 44–45 for activities.

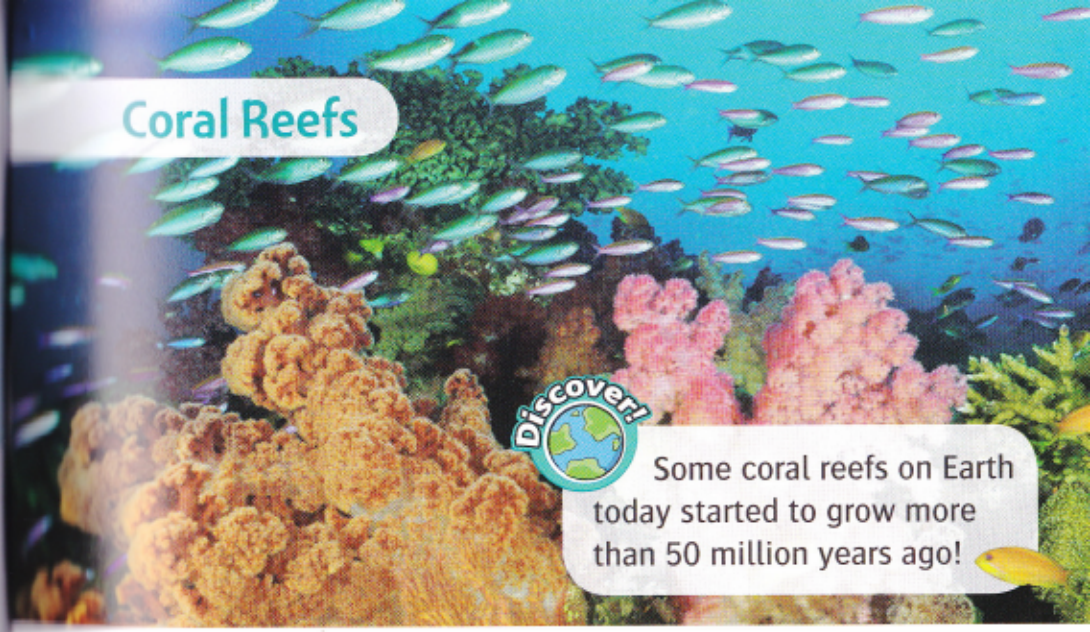
6 Oceans

The water in the oceans is salt water not fresh water. Almost 75% of Earth is covered by oceans. Ocean ecosystems are very important because ocean plants make about 50% of the world's oxygen!

At the Coast

The coast is the area of land next to an ocean. At the coast, water moves onto a beach and covers it for part of the day, and then it goes out again because of the tides. Many food chains at the coast start with seaweed that grows on rocks. Like most plants, seaweed uses light to make its food. Small animals that eat seaweed have shells that protect them from predators, sun, and wind when the tide is out. Animals, like crabs and birds, eat these small shellfish.





Coral Reefs

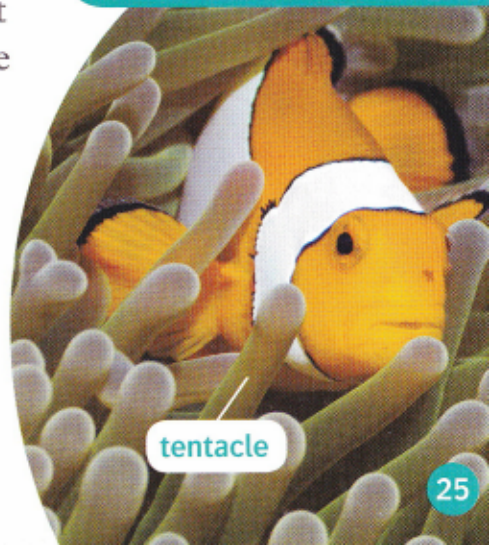
Discover!

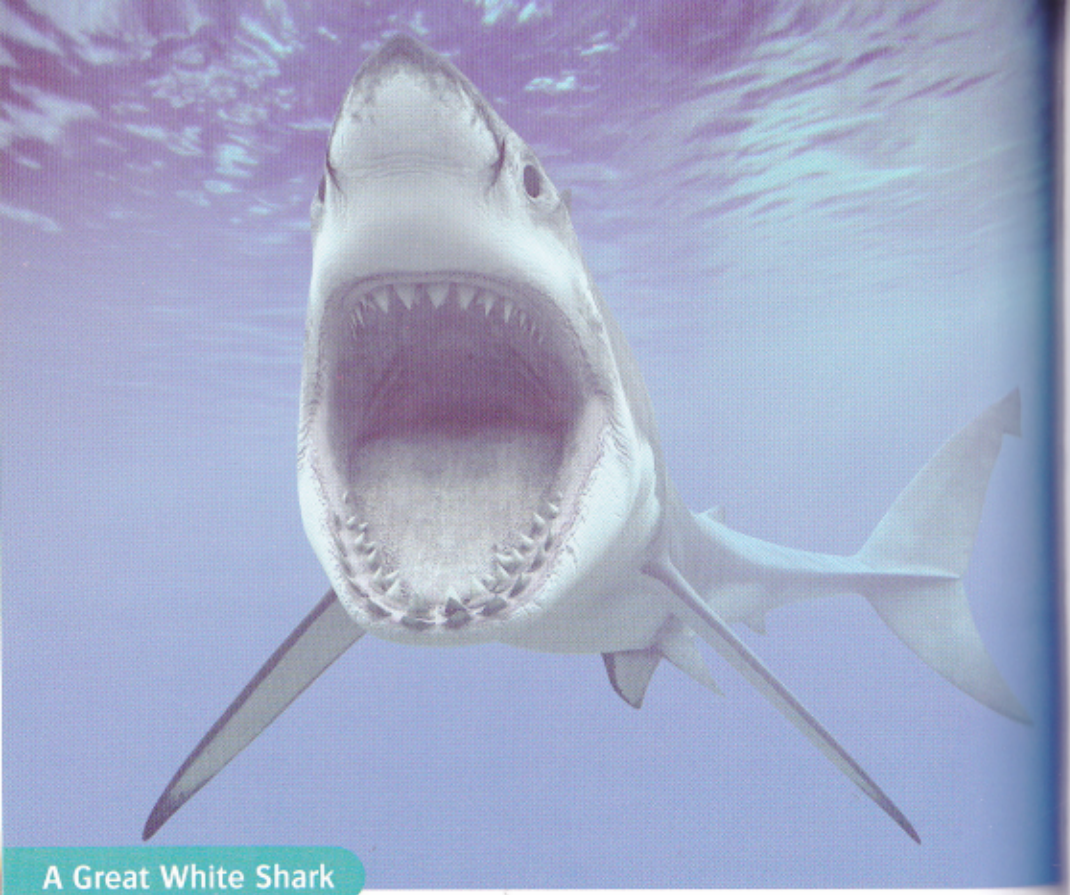
Some coral reefs on Earth today started to grow more than 50 million years ago!

Most coral reefs grow near coasts in tropical places where the ocean is always warm. Corals are small, soft animals that have a skeleton that's as hard as rock. Many corals grow together. After they die, their skeletons become a coral reef. Many colorful animals, like clownfish and anemones, live together on a coral reef.

Anemones have tentacles that sting animals, so most fish are scared of them. Anemones don't hurt clownfish, so clownfish live near anemone tentacles where they are safe from predators. Clownfish help the anemones because they drop tiny pieces of food that the anemones can eat!

A Clownfish in Anemones





A Great White Shark

In the Ocean

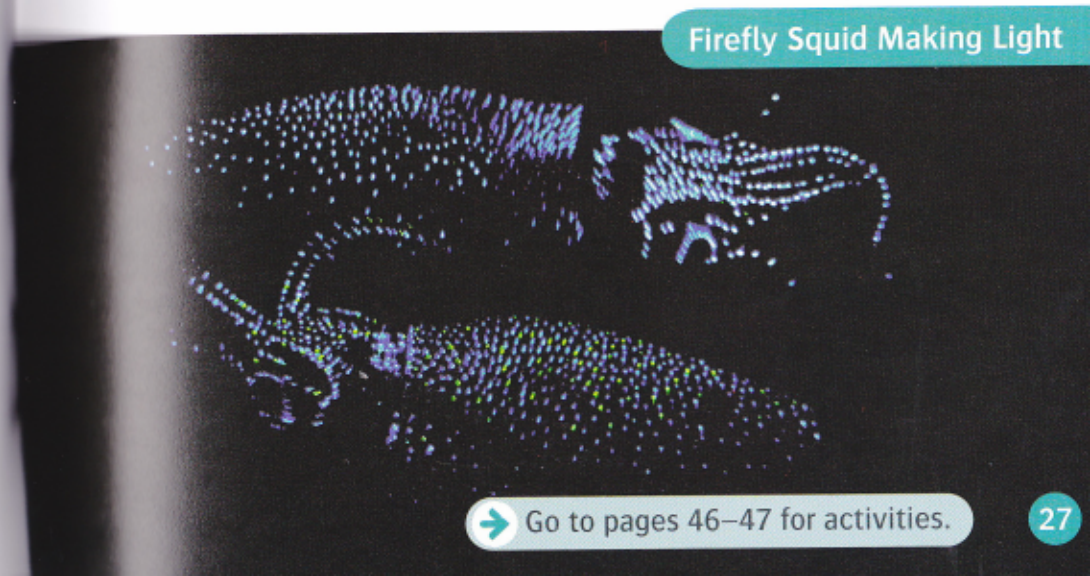
Tiny plants called plant plankton start most food chains in ocean ecosystems. These very small plants float near the top of the water, so they can use sunlight to make food. Plant plankton are eaten by tiny ocean animals like shrimps, and the shrimps are eaten by small fish. Small fish are eaten by larger fish, like mackerel, and the larger fish are eaten by even larger fish like tuna, or by dolphins. Tuna and dolphins are eaten by great white sharks, the largest fish predators in the ocean!

In Deep Water

The biggest animals in the ocean live in water that's very, very deep. The blue whales that swim in deep oceans are the largest animals that have ever lived. One blue whale is longer than three school buses!

Blue Whales

In very deep water there's no light, so some animals make light. The anglerfish has a part above its head that looks like a fishing rod. This part makes light. When small fish swim to the light to see what it is, the anglerfish eats them. Firefly squid are covered with lots of little lights that can turn on and off like a flashlight. Squid use the lights to send messages to each other!



Firefly Squid Making Light

Go to pages 46–47 for activities.

7 Frozen Ecosystems

The frozen ecosystems in polar areas are cold and dry. Any water there is frozen into snow and ice all year long, so there are few plants. Tundra ecosystems near the North Pole are places that have long, cold winters, but summers are a little warmer.

Living in Polar Areas

Some animals are adapted to living in frozen ecosystems. Polar bears grow very fat in fall to keep them alive when they hibernate in winter. They stay in a den under the snow when there's less food around and they don't come out until spring. Seals have flippers to help them to swim under the ice and they catch fish with their sharp teeth. Seals also use their teeth to make holes in the ice, so that they can come up to breathe.

A Seal

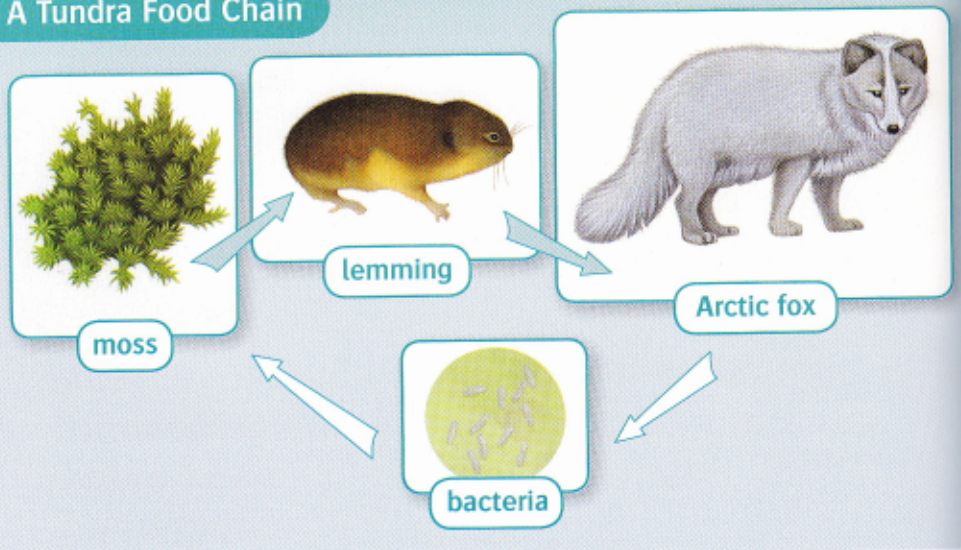
A Polar Bear Hunting Seals

Food Chains in Polar Areas

In polar areas where there's ice and snow all year long, most food chains start in the ocean. Animals, like shrimps, small fish, and squid, eat plankton from the water. These small ocean animals are eaten by bigger fish, seals, and birds. In the ocean, these animals are eaten by giant killer whales.

Some animals live on the ice, too. Penguins eat fish in the ocean and they come onto the ice near the South Pole. They are safe from most predators on ice because no other big land animals live there. Near the North Pole, polar bears sleep and eat on the ice. They hunt seals that come up from their holes to breathe.

A Tundra Food Chain



On the Tundra

On the tundra there's never enough water for trees to grow. Most plants grow in summer when temperatures are warmer and some of the snow melts. At the end of summer, the top parts of plants die, but the parts under the ground stay alive. The plants stop growing in winter. When they start growing again in summer it's still very cold and windy, so they grow small and near the ground. Many tundra food chains start with small plants like moss.

Discover!

Lemmings stay in burrows all winter to keep warm. They survive by eating fruits and roots that they collected in summer.

Changing with the Seasons

Some animals that live on the tundra change color in different seasons! Snowshoe hares have a thick coat of white fur in winter when there's snow everywhere. After winter, the white fur falls out and the hares grow gray or brown fur. In summer there's no snow and snowshoe hares live on soil and rocks. They change color for camouflage. When snowshoe hares are the same color as the land around them, it's easier for them to hide from predators. Arctic foxes also change color, so they can hide when they hunt animals like snowshoe hares!

A Snowshoe Hare in Winter

A Snowshoe Hare in Summer

Go to pages 48–49 for activities.

8 Protect Our Ecosystems!

Most ecosystems are balanced – their different parts work together well. When people change one part of an ecosystem, they can damage other parts of it. Sometimes they damage the whole ecosystem. It's important to protect our ecosystems.

People Change Ecosystems

People change ecosystems in different ways. They cut down trees for wood, and they clear grassland to build streets and homes. Without plants to use for homes and food, animals in an ecosystem move away or die. People also pollute ecosystems and this is dangerous for the plants and animals that live there.

In 2010, in the Gulf of Mexico, a giant oil rig broke, and it put lots of oil into the ocean. Oil pollution is dangerous for ocean ecosystems.

Oil Pollution in the Gulf of Mexico

When people catch animals for food, they change ecosystems, too. When fishermen take too many fish from the ocean, they damage ocean food chains. If new animals are brought into an ecosystem, they can kill animals that already live there. For example, when farmers put herds of cows or goats on grassland, these animals eat the grass and wild grassland animals starve.

Taking Fish From the Ocean

Global Warming

Global warming is the way temperatures on Earth are very slowly becoming warmer. Many scientists say that this is because gases like carbon dioxide from factories, cars, and machines are changing Earth's atmosphere. When temperatures change, this can change ecosystems. For example, when ocean temperatures get too warm, corals slowly die.

Protecting Our Ecosystems

We should protect ecosystems to keep animals and plants safe, and because ecosystems are important for us. For example, coral reefs contain many different species of animal that will die if we destroy the corals. Rainforest plants give people food, medicines, and oxygen. By protecting ecosystems we are also protecting ourselves!

Some people help to protect ecosystems near where they live. Volunteers plant new trees or they collect waste from a beach or an ocean. Conservation groups help ecosystems around the world. They teach people about what's happening to ecosystems and they work with countries to make laws to protect ecosystems.

Planting New Trees

The Great Barrier Reef

In some places, areas of land are carefully protected. For example, some rainforests are protected and there are guards to stop people cutting down trees or hurting animals. Parts of the ocean are also protected, for example, there are areas of water where fishermen can't go fishing. The Great Barrier Reef in Australia is the largest coral reef in the world. There are rules to protect the coral reef, so people can't damage it by using too many fishing boats or tourist boats at one time.

If you want to help to protect Earth's ecosystems, use the Internet to learn more, or join a conservation group. Maybe you could volunteer to help to protect an ecosystem near where you live. Ecosystems are wonderful. Remember – always care for the ecosystem that you are in!

Go to pages 50–51 for activities.

1 What Are Ecosystems?

Read pages 4–7.

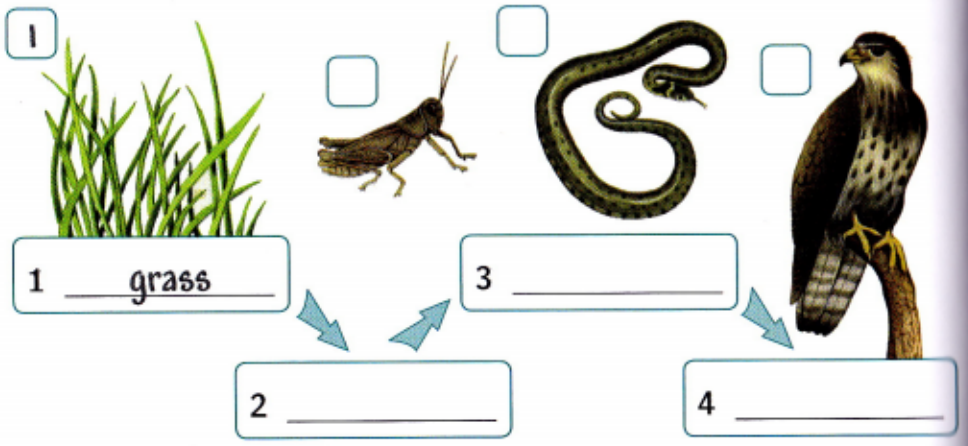
1 Complete the sentences.

decomposers air ~~living~~ animals ecosystem sunlight

1 In an ecosystem there are living things and things that are not living.
2 Plants and _____ are living things.
3 Rocks, water, and _____ are not living.
4 Food chains show us what eats what in an _____.
5 Plants use _____ to make their food.
6 Living things that feed on things like dead leaves and dead animals are called _____.

2 Write the words to make a food chain. Then write the numbers.

buzzard ~~grass~~ snake grasshopper



3 Circle the correct words.

1 Different ecosystems are the same size / (different sizes.)
2 Some ecosystems are big, like an ocean / a pond or a forest.
3 Some ecosystems are small, like an ocean / a pond or a tree.
4 Different ecosystems have the same / different types of land and weather.

4 Answer the questions.

1 Why do pandas live only in bamboo forests?
Because bamboo is the only food that they eat.
2 Can some animals live in different types of ecosystem?
_____
3 How are monkeys adapted to forest ecosystems?
_____
4 How are polar bears adapted to frozen ecosystems?
_____

5 Write about an ecosystem in your country. What lives there?

_____
_____
_____
_____

2 Hot Deserts

Read pages 8–11.

1 Correct the sentences.

1 A desert is a place that's very wet.
A desert is a place that's very dry.

2 A hot desert is an easy place to live in.
_____

3 No plants or animals are adapted to desert ecosystems.
_____

4 Cactus plant stems become thin when they are full of water.
_____

5 Desert food chains start with animals.
_____

6 Animals that hunt and eat plants are called predators.
_____

2 Find and write the animals from pages 8–11.

1 three animals that eat desert plants
_____ _____ _____

2 three animals that eat other desert animals
_____ _____ _____

3 Write *true* or *false*.

1 Most desert animals get water from their food. true

2 Lizards get water from the camels that they eat. _____

3 Desert tortoises get water from the plants that they eat. _____

4 Desert tortoises can't store water inside their body. _____

5 Tortoises can live for about a year without drinking new water. _____

6 A camel stores food in its hump. _____

4 Answer the questions.

1 What is a nocturnal animal?
_____

2 Why do some desert animals feed or hunt at night?
_____

3 How do meerkats eat scorpions?
_____

4 Where do desert squirrels hide from the heat in the day?
_____

5 Why do fennec foxes have large eyes?
_____

6 Why do fennec foxes have big ears?
_____

3 Grasslands

Read pages 12–15.

1 Match.

1 Grasslands are places with	go down into soil and collect water.
2 Grasslands are often found	bottom of the plant, not the top.
3 Grasses have long roots that	many types of grass and few trees.
4 The leaves of grasses grow from the	between deserts and forests.

2 Find and write the words.

g	r	a	s	s	h	o	p	p	e	r	a
a	k	b	z	a	a	x	u	q	e	k	e
z	e	b	r	a	b	y	w	e	c	a	c
e	n	e	a	g	y	g	b	s	e	n	h
l	q	w	b	d	l	i	o	n	l	g	e
l	f	g	b	t	s	n	a	w	l	a	e
e	r	e	i	t	h	i	n	g	s	r	t
l	b	u	t	t	e	r	f	l	y	o	a
e	r	s	n	a	k	e	t	r	d	o	h
t	e	r	m	i	t	e	s	i	o	n	z

1 grasshopper
2 z _____
3 c _____
4 s _____
5 b _____
6 g _____
7 r _____
8 t _____
9 k _____
10 l _____

3 Order the words.

1 The soil, / live and work together. / plants, and animals / in grasslands

The soil, plants, and animals in grasslands live and work together.

2 eat tall plants, / sunlight can help / small plants / to grow. / When prairie dogs

_____

3 add nutrients / Prairie dog / to the soil. / droppings

_____

4 let air / tunnels / Prairie dog / into the soil. / and water

_____

4 Complete the sentences.

nutrients decomposers plants nests grassland

1 Termites are important _____ in some grassland ecosystems.

2 Termites take leaves and roots from dead grass plants to their _____.

3 When old termite nests break, _____ from the plant parts go back into the soil.

4 Nutrients help new _____ to grow.

5 Termites clear dead plants off the _____ .

4 Forests

Read pages 16–19.

1 Correct the sentences.

1 Conifer trees have blue leaves that look like thin, soft spikes.

_____

2 Conifer leaves don't lose as much heat as flat leaves do.

_____

3 Most conifer trees only have leaves for part of the year.

_____

4 It's usually light on the forest floor and many plants grow there.

_____

5 Wolves eat seeds from cones that fall from conifer trees.

_____

2 Write sentences with these words.

~~nutrients~~ leaves ecosystem insects predators

1 Dead leaves give back nutrients to the soil.

2 _____

3 _____

4 _____

5 _____

3 Answer the questions.

1 Where do tropical rainforests grow?

_____

2 Why do tropical rainforest trees grow very tall?

_____

3 Why do tropical rainforest tree roots grow above the soil?

_____

4 Where do most tropical rainforest animals live?

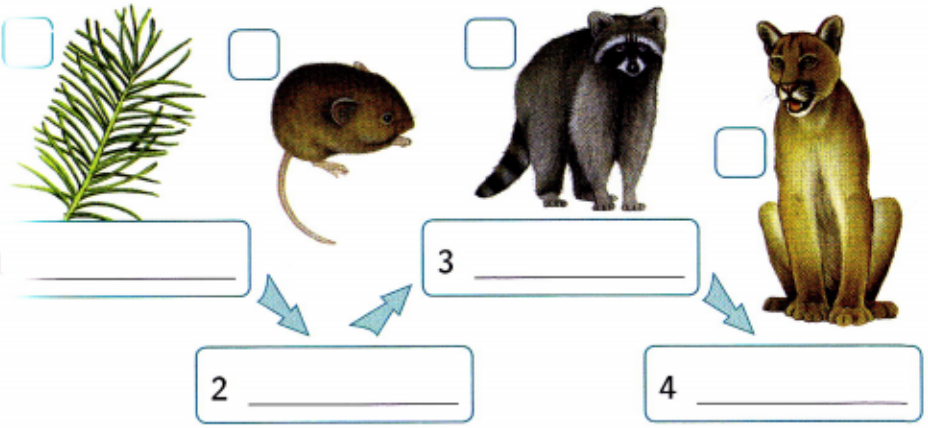
_____

5 What do birds and monkeys eat?

_____

4 Write the words to make a food chain. Then write the numbers.

vole leaves
cougar raccoon



5 Freshwater Ecosystems

Read pages 20–23.

1 Circle the correct words.

1 Ponds, lakes, and rivers are **freshwater** / **forest** ecosystems.

2 Plants that grow in fresh water are adapted to getting the **light** / **heat** that they need.

3 Some plants have **roots** / **flowers** in the soil at the bottom of a pond.

4 They have **long** / **short** stems to hold their leaves above the water.

2 Match. Then write the sentences.

Fish are perfectly adapted	get oxygen from the water.
Fish have gills that	eat other fish.
Fish have tail fins to	go back into the freshwater ecosystem.
Many fish feed on insects	to living underwater.
Some large fish catch and	and other minibeasts.
Nutrients from dead animals	help them to swim.

1 Fish are perfectly adapted to living underwater.

2 _____

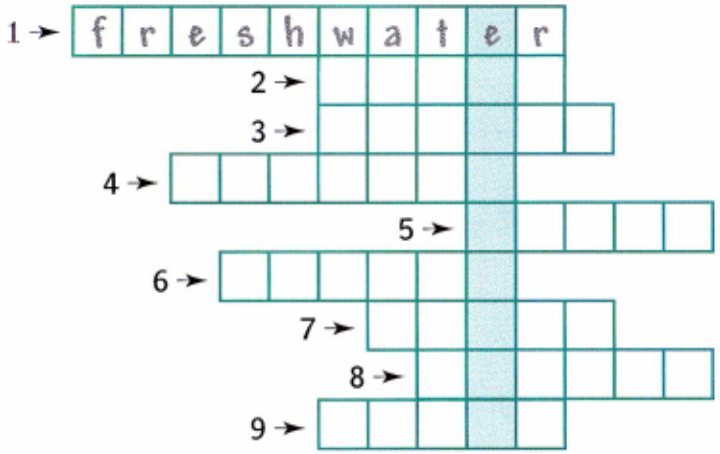
3 _____

4 _____

5 _____

6 _____

3 Complete the puzzle. Then write the secret word.



1 Many insects start life in ___ ecosystems.

2 They ___ out of eggs underwater.

3 They stay underwater until they ___ adults.

4 Young ___ eat little pieces of plants.

5 ___ insects hide in plants or under stones.

6 Many insects leave the water and live in the air when they are ___.

7 Some stay on or near the ___ and dive underwater to hunt for food.

8 The diving ___ takes bubbles of air underwater, so that it can breathe.

9 The diving beetle ___ to hunt other insects and tadpoles.

The secret word is: _____

4 Write about why hippos are important to some freshwater lake ecosystems.

_____

_____

_____

6 Oceans

Read pages 24–27.

1 Correct the sentences.

1 Ocean ecosystems are not important.

_____

2 The coast is the area of water next to an ocean.

_____

3 Water moves onto a beach and goes out again because of the seaweed.

_____

4 Some animals have hats that protect them from predators.

_____

2 Order the words. Then write *true* or *false*.

1 grow near / in cold places. / Coral reefs / coasts

Coral reefs grow near coasts in cold places. false

2 soft plants / hard / Corals are / a / skeleton. / that have

_____ _____

3 die, / coral reef. / become a / coral / skeletons / After they

_____ _____

4 50 million years old! / Some / are / more than / coral reefs

_____ _____

3 Complete the chart.

plankton blue whale anglerfish shrimp ~~firefly squid~~

At the Top of the Ocean	In Deep Water
_____	firefly squid
_____	_____
	_____

4 Answer the questions.

1 What starts most food chains in the oceans?

_____

2 What eats plant plankton in the ocean?

_____

3 What eats small fish in the ocean?

_____

4 What eats larger fish, like mackerel?

_____

5 What is the largest fish predator in the ocean?

_____

6 Why do some animals in very deep water make light?

_____

7 Frozen Ecosystems

Read pages 28–31.

1 Correct the sentences.

1 Frozen ecosystems in polar areas are cold and wet.

_____

2 Tundra ecosystems near the South Pole are places that have long, cold winters.

_____

3 Polar bears grow very thin in fall and then they hibernate.

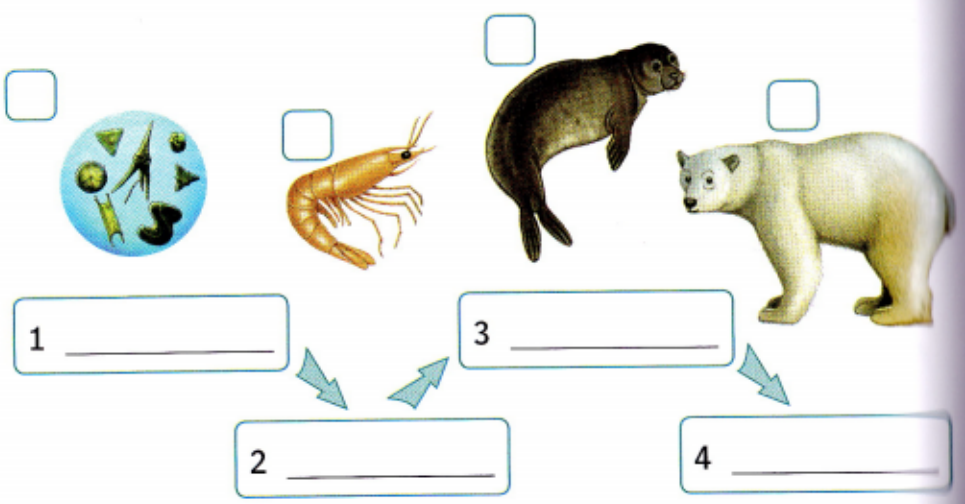
_____

4 Seals have arms to help them to swim under the ice.

_____

2 Write the words to make a food chain. Then write the numbers.

polar bear seal
plant plankton shrimp



3 Circle the correct words.

1 On the tundra there's **always** / **never** enough water for trees to grow.

2 Most plants grow in **winter** / **summer** when some of the snow melts.

3 When the plants grow in summer, they grow **tall** / **small** and near the ground.

4 Small plants, like moss, **stop** / **start** many tundra food chains.

4 Write *true* or *false*.

1 Some animals that live on the tundra change color in different seasons. _____

2 Snowshoe hares have a thin coat of brown fur in winter. _____

3 After winter, the hares grow white fur. _____

4 Snowshoe hares change color to hide from predators. _____

5 Arctic foxes change color, so they can hide when they hunt animals. _____

5 Write about the changes in an ecosystem near you in different seasons. How do plants and animals in that ecosystem change?

_____

_____

_____

_____

8 Protect Our Ecosystems!

Read pages 32–35.

1 Match.

1 When people change one part of an	animals in an ecosystem move away or die.
2 People cut down trees for wood, and they	for ocean ecosystems.
3 Without plants to use for homes and food,	ecosystem, they can damage other parts of it.
4 Oil pollution is dangerous	clear grassland to build homes.

2 Answer the questions.

1 What happens when fishermen take too many fish from the ocean?

_____

2 What can happen when new animals are brought into an ecosystem?

_____

3 What is global warming?

_____

4 Why do scientists think global warming is happening?

_____

5 How can temperatures change ocean ecosystems?

_____

3 Order the words.

1 will / of animal / Many species / if we / destroy / coral reefs. / die

_____

2 food, medicines, / give people / Rainforest plants / and oxygen.

_____

3 help / groups / Conservation / around / ecosystems / world. / the

_____

4 guards / have / Some / people / to / trees. / rainforests / cutting / stop / down

_____

5 can't go fishing. / There are / where fishermen / areas of water

_____

4 What could you do to help an ecosystem near where you live?

_____

_____

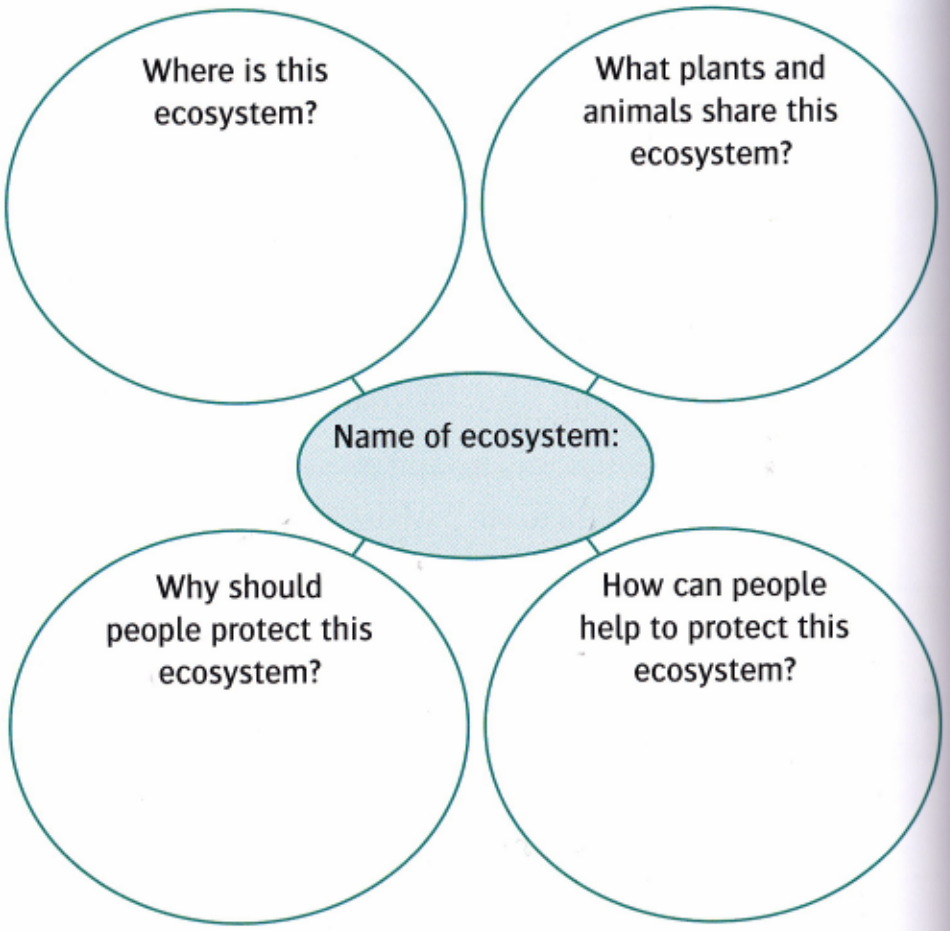
_____

_____

_____

Project 1 Design a Poster

1 Complete the diagram. Write notes about an ecosystem. Write about why and how people should protect it.



2 Make a poster using the information from your diagram. Write sentences and draw or paste pictures to decorate the poster.

3 Display your poster.

Project 2 A New Ecosystem

1 Imagine a new type of ecosystem. Write notes.

What is the land like? _____

What is the climate like? _____

What types of plant grow there? _____

_____

_____

What types of animal eat the plants? _____

_____

_____

What types of predator eat the other animals? _____

_____

_____

Are there any nocturnal animals? _____

_____

_____

What decomposers feed on dead plants and animals?

_____

_____

Glossary

Here are some words used in this book, and you can check what they mean. Use a dictionary to check other new words.

above on top of or higher than something else
adapt to change
adult a person or animal that has finished growing
alive living
amphibian an animal that lives in water and on land
area a part of a place
atmosphere the gas and clouds around a planet
bacteria very simple living things
bat a small, nocturnal animal that can fly
breathe to take in and let out air through your nose and mouth
bubble a ball of air
burrow a place where animals live underground
camouflage hiding by looking like what is around you
carbon dioxide a gas in the air
change to become different; to make something different
climate the usual type of weather in a country
coast the land next to the sea or ocean
conservation something that is done to protect plants, animals, and ecosystems
contain to have something inside
coral reef a long line of small, bright animals that look like rocks in the ocean
cover to put something over something; to be over something
damage to make something bad or weak
dead not living any more
decomposer a living thing that breaks something down into smaller parts
deep going a long way down
den an animal's home
destroy to damage something very badly
die to stop living
droppings solid waste that animals make after eating
ecosystem living things and all of the parts of the place where they live, like water and air
enormous very, very big
enough how much we want or need
flipper a flat part of a sea animal's body that it uses for swimming
float to move slowly on water or in the air
food chain when animals eat other animals or plants, they become part of a food chain
forest a place with a lot of trees
full when something, like a bottle, holds as much or as many as it can
fungus *(plural* **fungi***)* a plant that does not have leaves or flowers and is not green
gas *(plural* **gases***)* not a solid or a liquid; like air
gazelle an animal like a deer
gill a part of an animal's body that helps it to breathe underwater
global warming the way parts of Earth are becoming warmer
grass a green plant
grassland an area of land where mostly grasses and a few trees grow
group a number of people or things that are together
grow to get bigger; to make or produce
hatch to come out of an egg
herd a group of animals that live and feed together
hibernate to go into a special, long sleep
hole a space in something
hurt to give pain
ice frozen water
imagine to think of a possible situation
insect a very small animal with six legs
kill to make someone or something die
lake a big area of water
law something that everyone in a country must do or not do
leaf *(plural* **leaves***)* the flat, green part of a plant
lemming a small animal that lives in the Arctic
low not high
medicine something that you take when you are sick, to make you better
melt to become liquid because of being hot
moss a small, green plant that has no flowers
nectar a sweet liquid produced by flowers
nocturnal animals that sleep in the day and feed and hunt at night are nocturnal
nutrient something that we get from food to live and grow
oil a smooth, thick liquid that we use for cooking or to make gasoline
oil rig a building that people use to collect oil from under the ocean
once one time
oxygen a gas that we need to breathe
plankton very small animals and plants that live in the ocean
polar near the North Pole or the South Pole
pollen a yellow powder in flowers
pollute to make land, water, or air dirty
pollution something that makes air, land, or water dirty
predator an animal that hunts and eats other animals
protect to keep safe from danger
reach to get to
river water on land that goes to the ocean
root the part of a plant that holds it in the soil
rot to become old and go bad and break into little pieces
rule something that you must or must not do
sharp with a point that cuts easily
shell the hard outside part of some animals
shellfish an animal with a shell that lives in water
size how big or small someone or something is
skeleton the hard part that grows inside or over an animal
soil the ground that plants grow in
species a group of the same type of plant or animal
spike a long, thin, sharp thing
starve to become sick or to die because you do not have enough to eat
stem the part of a plant that holds it up
sting to hurt someone or something
store to keep something to use later
storey the floor of a building
sunlight light from the sun
survive to live
tadpole a small animal that lives in water and grows into a frog
tail a long thing behind an animal
tail fin the thin, flat part at the end of a fish's body
temperature how hot or cold something is
tentacle a long, thin part of the body of some animals, like octopuses
termite an insect that eats wood
thick not thin
tide the movement of the ocean toward land and away from land
tiny very, very small
tropical from the Tropics
tundra frozen land near the North Pole
venom a liquid that one animal uses to kill another animal
waste things that we throw away
whole all of something
without not having something; not doing something

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