

Living Things and Their Environment

Vocabulary



ecosystem all the living and nonliving things working together in an area



climate the kind of weather an area has over time



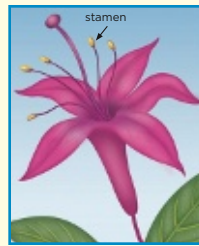
emergent layer the tops of trees in a rain forest



canopy the layer just under the tops of the trees in a rain forest, where most plants and animals live



pollen a powdery material that flowers need to make seeds



stamen the part of a plant where pollen comes from



pistil the part of a plant where seeds are made



pollination the movement of pollen to the seed-making part of a flower



How do living things depend on one another and the environment?



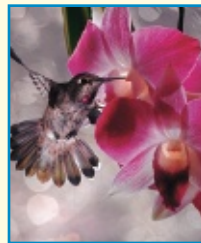
nectar a sweet liquid formed inside flowers



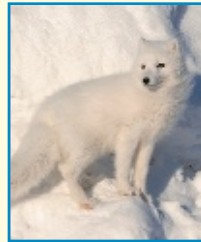
endangered few left of this kind of living thing



extinct none of this kind of living thing left alive today



adaptation a body feature or way of acting that helps a living thing survive in its environment



camouflage how a living thing might not be seen because it blends into its surroundings



mimicry how an animal may look like some kind of other living thing

What is an ecosystem?

Plants grow from the soil. They need water to grow. Some birds use plants to make nests. Some animals eat plants. Tiny living things, bacteria, may break down dead plants. These are ways plants, animals, bacteria, soil, and water *interact*. *Interact* means “one thing uses or needs another.”

All the parts interacting in any place make up an **ecosystem** (EK•oh•sis•tuhm). Some parts may be living. For example, plants are living. Some parts, such as water, are nonliving.

Pond Ecosystem

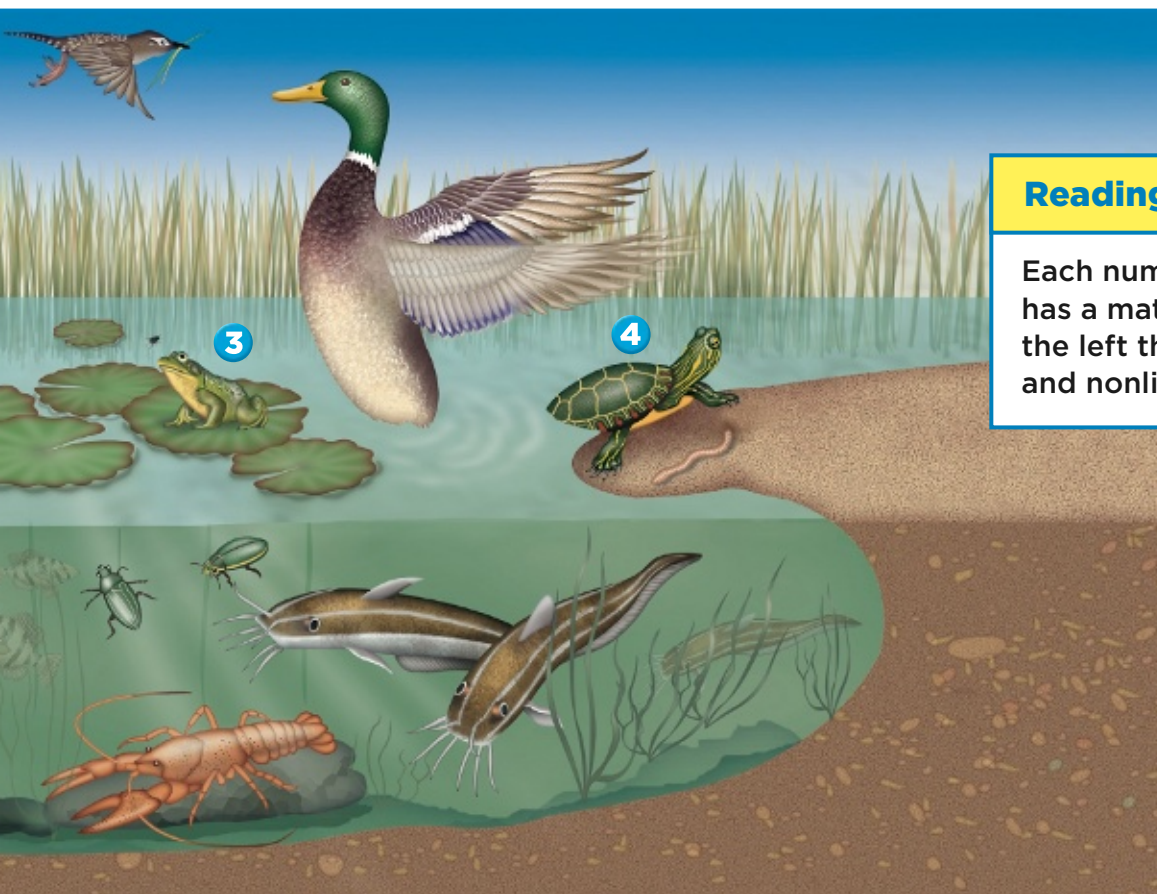
- 1 Many plants find space to live along the water's edge. They get water and nutrients from the soil.
- 2 Birds use pond plants to make their nests.
- 3 Frogs eat the insects they find around the pond.
- 4 Turtles come to the water's surface to get air and to feel warmth from the Sun.



Living Things	Nonliving Things
<ul style="list-style-type: none"> • animals—such as birds, frogs, turtles, fishes, crayfish, insects, earthworms • plants—such as lily pads on the water, cattails on the shore • tiny living things—such as algae and bacteria 	<ul style="list-style-type: none"> • sunlight • air • water • soil • climate (KLIGH•mit) Climate is the kind of weather an area has over time. The climate is the temperature and the amount of rain and snow the area has.

✓ Quick Check

1. Cross out any part that is not a living part of a pond.
 duck catfish beetle water sunlight frogs air
2. List two more parts of a pond. _____



Reading Diagrams

Each number in the diagram has a matching statement at the left that tells how living and nonliving things interact.

What is a desert ecosystem?

All deserts are dry. They get little rain. Some deserts are hot. Others are cold. Some deserts are almost lifeless. Some have many living things. Living things of the deserts have ways of surviving the little water and the hot or cold temperatures.



California's Mojave Desert is dry and hot. It gets about 13 centimeters (5 inches) of rain a year. Many plants and animals can live here.



The fennec fox lives without water for a long time. It stays underground in the day and looks for food at night when it is cool.



The desert tortoise spends much of the time underground. That keeps it safe when temperatures change from day to night.

Quick Check

3. How can deserts be different? _____

What is a coral reef ecosystem?

Coral reefs are warm ecosystems. They are found in shallow water. Their temperatures stay warm all year, from 70 to 85°F (21 to 29°C). The warm temperatures allow many ocean animals to live here.

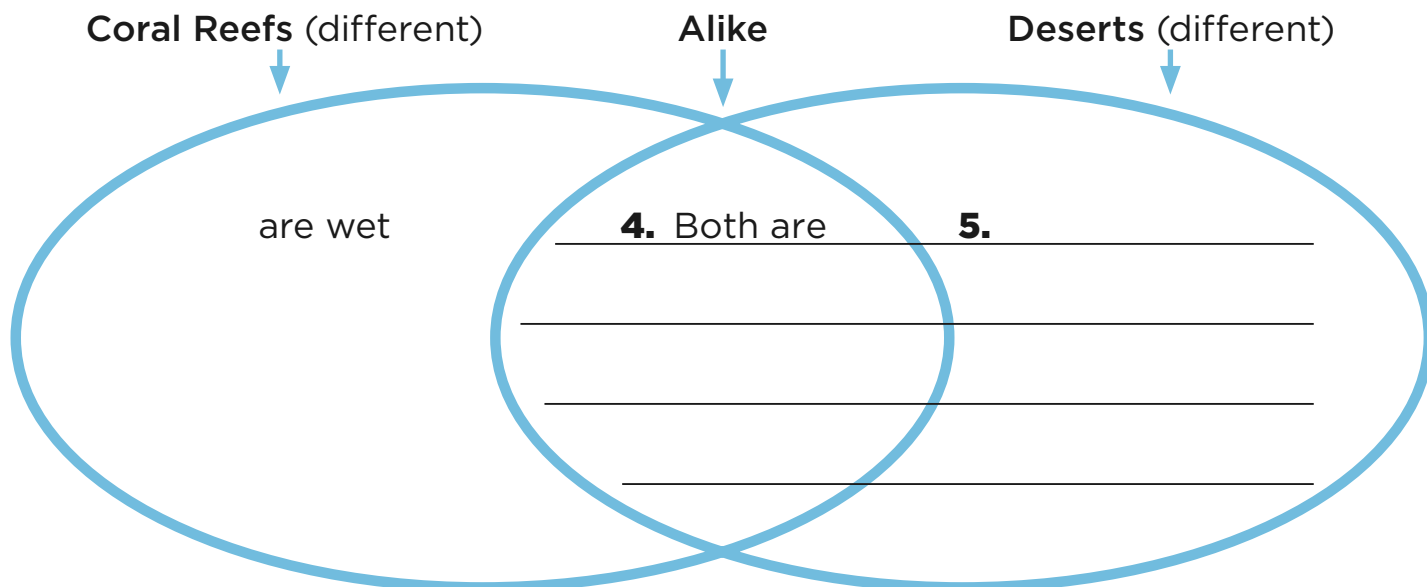
The reefs were made from the parts of tiny animals, coral polyps (POL•ips). After the animals die, their skeletons are left behind. The skeletons form the reefs.



Fishes swim across the reef. Many colorful sea animals grow attached to the reef. They may look like plants, but they are animals.

✓ Quick Check

Show how deserts and coral reefs are alike and different.



What is a rain-forest ecosystem like?

Rain forests are hot and wet. They can get up to 457 centimeters (180 inches) of rain a year. Compare that to only 13 centimeters (5 inches) of rain a year in the Mojave Desert.

Although the soil is thin, these forests are thick with tall trees. Rain forests are filled with many kinds of life. Different living things make their homes at all parts of the trees, from the tops to the bottom.

squirrel monkeys



iguana



▲ The rain forest is made of different layers, from the sunny tops to the shady bottom.

Layers of the Rain Forest

layer	location	description
emergent layer (ee•MER•jent)	tops of tallest trees	<ul style="list-style-type: none"> • very sunny • high temperatures • strong winds
canopy (kan•UH•pee)	just below the tree tops	<ul style="list-style-type: none"> • sunny • most crowded with life, including snakes, tree frogs, and toucans
understory	beneath the canopy	<ul style="list-style-type: none"> • shady • home of jaguars, leopards, frogs and many insects
forest floor	bottom of the trees	<ul style="list-style-type: none"> • dark, little sunlight • filled with decomposers—living things that break down dead plants and animals

The forest floor is filled with dead leaves and other once-living things. Decomposers work quickly breaking them down and returning the remains to the soil.

Quick Check

Write the letter of the living things for each layer.

- | | |
|------------------------------|---------------------------|
| 6. _____ canopy | a. decomposers |
| 7. _____ understory | b. snakes, toucans |
| 8. _____ forest floor | c. leopards |

How do animals depend on plants?

Plants can trap energy from the Sun. They use that energy to make their own food. As they make food, they also give off oxygen.

Plants as Food

Animals cannot make their own food. One way or another, animals depend on plants for food. They also depend on plants for oxygen.

Some animals eat plants directly. For example, rabbits eat leaves. Some beetles eat roots and stems. Monkeys and birds eat fruits and seeds. Snails and earthworms feed off dead plants.

Some animals are meat eaters. However, even meat eaters depend on plants because they may eat animals that are plant eaters.



▲ Squirrels use nuts for food. The nuts are seeds, parts of plants.

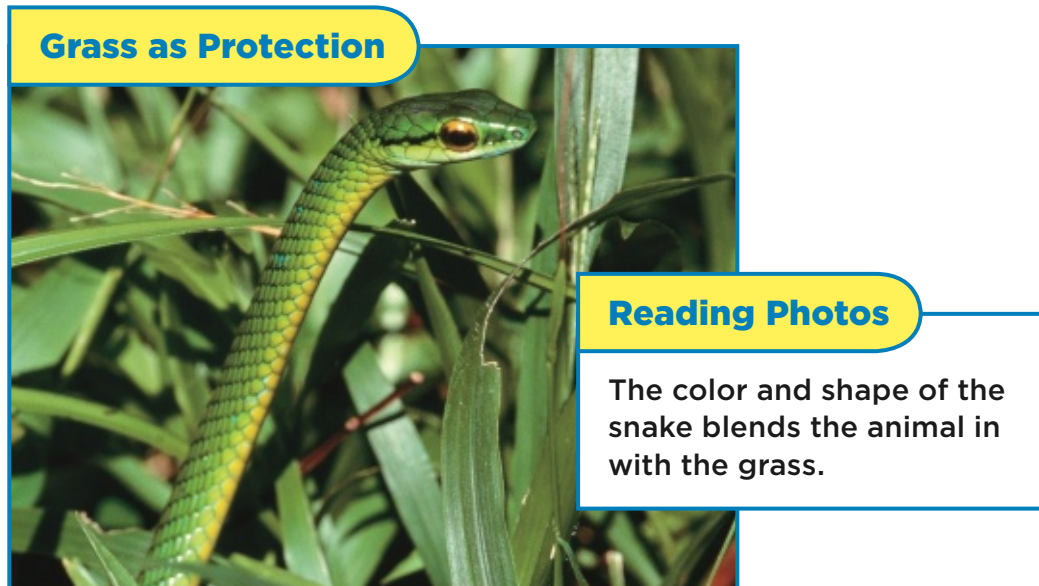


◀ Caterpillars eat leaves as a source of food energy.

Plants as Shelter

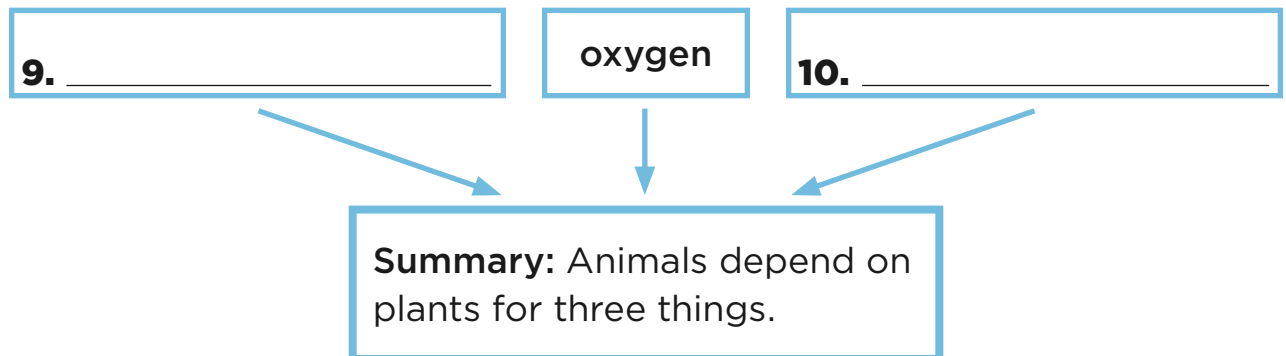
Many animals depend on plants for shelter. Many squirrels, for example, may live in tree holes. They line the holes with leaves. Many birds build nests in trees. They use twigs and leaves for the nests. They use the nests to keep their young safe.

Many animals hide in plants to stay safe. For example, a rabbit jumps into bushes if danger is near. Leafhoppers hide in grass.



✓ Quick Check

Fill in one idea in each empty box to explain the summary.

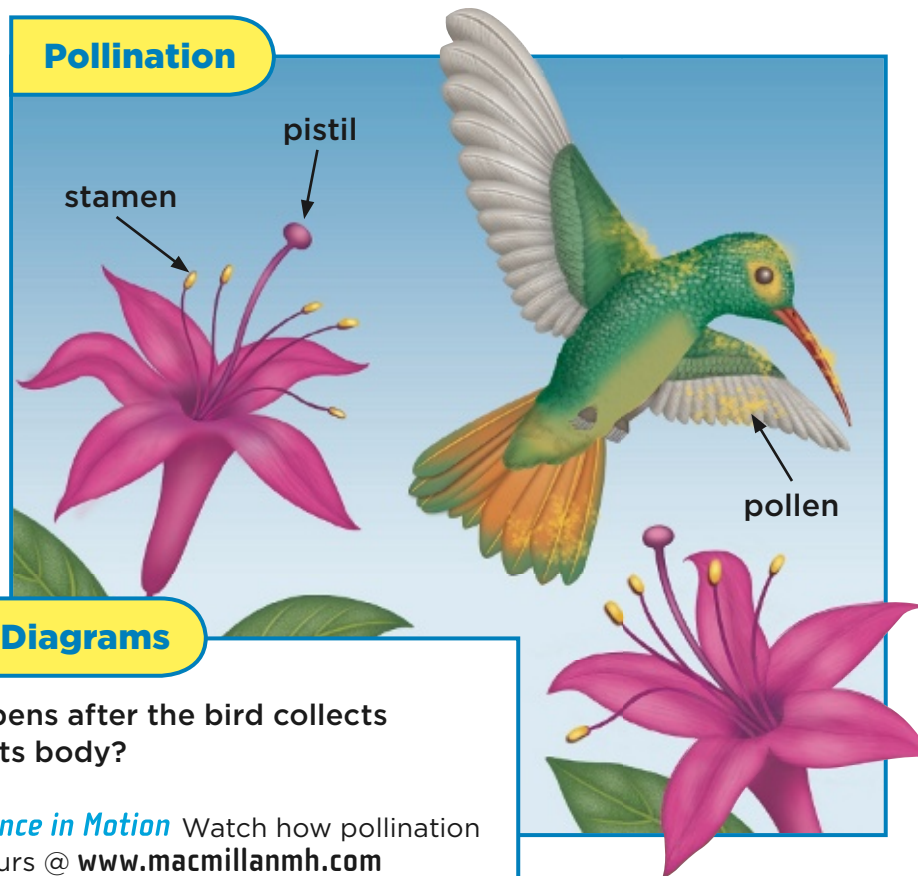


How do some plants depend on animals?

Flowering plants make seeds when they reproduce. Animals can help the plants make seeds.

A flowering plant needs **pollen** (POL•uhn) to make seeds. Pollen is like a fine powder. The diagram shows what happens to pollen.

- Find the **stamen** (STAY•muhn) in the diagram. The stamen is the part of a flower that makes pollen. Pollen collects at the tip.
- Find the **pistil**. The pistil is where seeds are made.
- A flower can make a seed only if pollen reaches the pistil. The diagram shows one way pollen reaches a pistil.



Pollination (POHL•uh•nay•shuhn) is the movement of pollen to the pistil. Wind can blow pollen from a stamen to a pistil.

Also, animals can move pollen:

- Birds, bats, and many insects travel from flower to flower. They collect a sweet drink from flowers called **nectar** (NEK•tar).
- When an animal visits a flower to collect nectar, pollen can rub onto its body.
- When the animal visits another flower, the pollen drops off.

Animals carry seeds to places where seeds can grow. Some animals carry seeds on their fur. In time the seeds fall onto the ground.

Plants store seeds inside fruits. Animals may eat a fruit that has seeds inside. The seeds are left on the ground when animals leave waste.



Pollen from the flower collects on the bee's body as the bee looks for nectar.



This iguana eats a fruit with seeds in it.

Quick Check

Fill in the blanks to tell two ways how plants depend on animals.

Animals can move **11.** _____ and carry

12. _____.

How can ecosystems change?

Remember, an ecosystem is made up both of living and nonliving things working together. Living things, like plants, need nonliving things, like soil, water, and sunlight. When one part of an ecosystem changes, such as the amount of water, all parts of the ecosystem can change.

Ecosystems can change over time. They can become wetter or drier. They can become colder or warmer. A lake can dry up or fill in. Any kind of change can make it harder for living things to survive.



- ▲ Lake Tahoe in California has changed slowly over thousands of years to look the way it does today. It also changes from season to season.



▲ Cars give off wastes that causes pollution.

Natural Events

Changes in weather can affect ecosystems. Storms, like hurricanes, can destroy ecosystems. Lightning can start a fire and turn a forest to ash.

The climate may change. Climate is the weather over time. An area may become drier, for example. A grassland can dry up.

Humans

People can cut down forests to make farms or build towns. Entire ecosystems can be destroyed. People can cause pollution (pol•LEW•shuhn). Pollution means putting materials to the air, land, or water that can make it harder for plants and animals to live.

Quick Check

Two ways ecosystems can change are:

13. _____ and

14. _____.

What happens when ecosystems change?

A fire destroys a forest. What happens to the living things that are left?

- Some living things change the way they live. They may find new kinds of food. They may find new ways to build homes.
- Some animals move to other places.
- Some kinds of animals may slowly die out.

A living thing that has few of its kind left is **endangered** (en•DAYN•juhrd). A living thing is **extinct** (ek•STINGT) when it dies out and there are none of its kind left.

Quick Check

Fill in the “effect” side to tell two ways the deer can keep alive after a fire destroys their home.



Cause → Effect

Fire → 15. _____

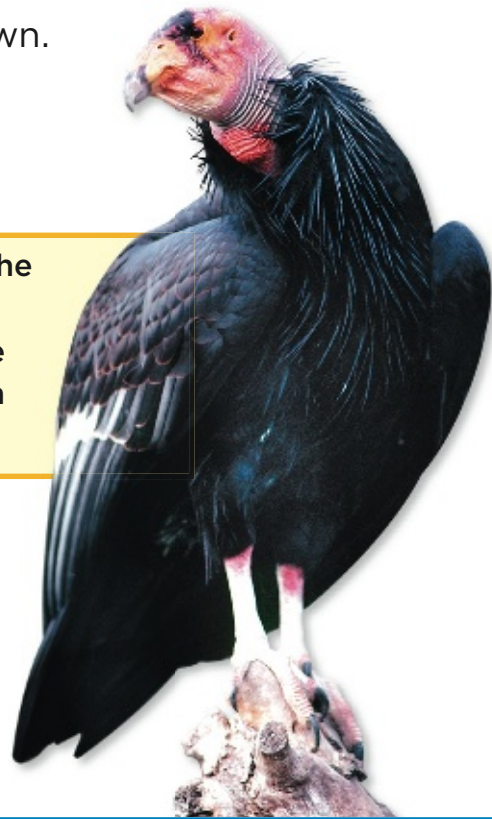
Fire → 16. _____

How can people protect ecosystems?

People are finding ways to protect ecosystems. For example they are finding ways to cut down on pollution. People are looking for new fuels and passing laws against polluting the land, water and air.

Laws are also being passed to protect forests from being cut down. Laws can protect animals from being hunted.

People had destroyed the homes of the California condor. Now people are carefully raising them in safe environments.



Quick Check

Fill in the right side of the table.

Saving Ecosystems	
What Can I Do?	How It Helps
Turn off water while brushing teeth.	to save water
Do not litter.	17. _____
Walk or ride a bike instead of riding a car.	18. _____

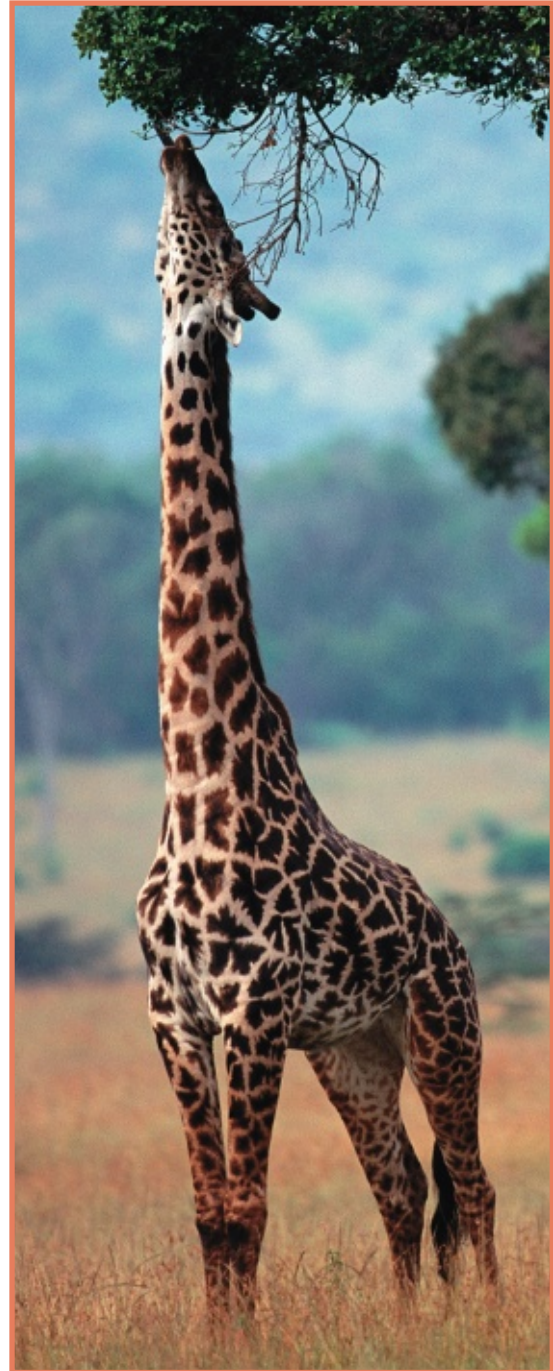
What is an adaptation?

A giraffe's long neck helps it reach high branches. A dolphin's tail and fins help it swim quickly in the ocean. An eagle's keen eyesight helps it spot food. These body features are adaptations (a•dap•TAY•shuhnz). **Adaptations** are body features or ways of acting that help living things survive in their environment.

Adaptations can help animals move and catch food. Adaptations can help animals and plants live in hot or cold climates.



▲ A dragonfly's wings help these insects fly fast so they can catch food and escape danger.



A giraffe's long neck helps the animal reach leaves to eat. It also gives the animal a view of danger that may be coming, such as a lion.

Some adaptations help living things stay safe. **Camouflage** (KAM•uh•flahzh) is an adaptation that helps a living thing blend into its environment. For example, if a deer stays still against a brown background, it may not be seen.

Some animals hide by looking like other living things. This adaptation is **mimicry** (MIM•i•kree).



The Indian leaf butterfly is an example of mimicry. Its color may help you spot the insect. However, its shape makes it look like a leaf.

 **Quick Check**

Two adaptations that help this eagle catch a fish are



19. _____

20. _____

barrel cactus



Storing water The barrel cactus has a thick, waxy skin and thick, round stem. These adaptations help it store water in its stem. The prickly spines keep animals from biting into the plant to get the water.

What are some adaptations in a desert?

Deserts get less than 25 centimeters (10 inches) of rain a year. Some places get more than that in a month. Adaptations help desert plants survive dry conditions.

wildflowers



Seeds Desert plants bloom quickly after a sudden rain. The bright colors attract insects. The insects help in pollination.

More Desert Plants

Creosote (KREE•oh•soht) bushes have shallow roots. These roots help the plant take in water from the little rain that falls.

Ocotillo (oh•koh•TEE•oh) plants drop their leaves during very dry times to keep from drying out. Leaves grow back after the next rainfall.

kangaroo rat



Storing water Many animals have kidneys. Kidneys help the body get rid of liquid wastes. However, the kangaroo rat's kidneys also help store water in the animal's body

chameleon



Temperature control A chameleon (kah•MEE•lee•uhn) raises its belly off the hot desert ground as a way of cooling down.

Desert animals have adaptations that help them survive with little water. In hot deserts, animals have adaptations to help them stay cool.

More Desert Animals

Many desert animals, including the great horned owl are active at night when it is cooler. They rest or sleep during the day.

The jackrabbit has very long, thin ears to help keep cool. The blood carries body heat into the ears. The blood loses heat as it flows through the ears.

Quick Check

Two living things that have adaptations for storing water are:

21. _____ 22. _____

Two animals that have adaptations for surviving in heat are:

23. _____ 24. _____

What are adaptations in the arctic and in oceans?

In the arctic and the oceans, living things have ways of surviving the most harsh conditions.

The Arctic

polar bear



Skin and fur The outer fur of a polar bear is waterproof. The thick inner fur keeps the bear warm. Black skin beneath the white fur helps the bear take in heat from the Sun.

arctic fox



Camouflage The arctic fox in winter has a white coat. The coat helps it blend in with the snow. In summer its coat is brown.

Other Arctic Animals and Plants

The large size of a musk ox and polar bear helps them to keep warm.

Arctic plants grow low near the ground. This adaptation protects them from the wind. They often have bright flowers. The colors attract animals that help in pollination.

The Oceans

whale



Blubber A whale has blubber, a thick layer of fat. Blubber helps keep a whale's body warm in cold ocean water.

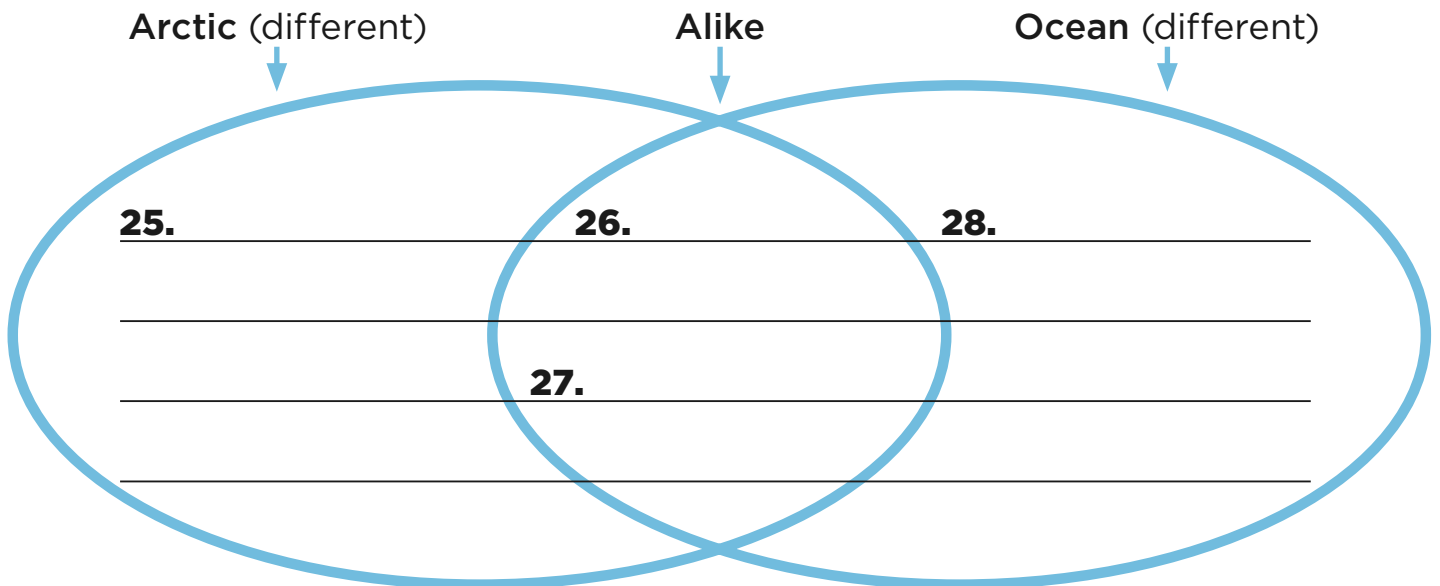
leafy seadragon



Mimicry The leafy seadragon is a kind of fish. However, it looks like the seaweed that surrounds it.

Quick Check

In "Alike," list 2 animals from the arctic and the oceans that have a similar adaptation. In "Different," list an arctic animal and an ocean animal that have different adaptations.



Living Things and Their Environment

Fill the missing words in the blanks below. Then find and circle those words in the puzzle at the bottom.

1. The layer just under the tops of the trees in a rain forest, where most plants and animals live _____
2. The part of a plant where seeds are made _____
3. A sweet liquid formed inside flowers _____
4. The kind of weather an area has over time _____
5. A living thing that has died out and there are none of its kind left today _____
6. A living thing that has few of its kind left _____
7. The part of a plant that makes pollen _____

T R C S C N Z D T M T U E M Y
M N E F E C G K J N M N X V P
C A E C Y O R X F D B Q T O O
S L T M R Z F Z O P T K I F N
U A I W A I Z L H U L N N Z A
R H L M G T Q C D E H I C E C
Y I B M A V S U S W A P T Q H
K M B E T T U F U W S S I C W
E N D A N G E R E D I V B T N
P T Z B Q V G B L I T S I P S

a. camouflage c. mimicry e. pollination g. ecosystem
b. emergent layer d. adaptation f. pollen

Match the correct letter with the description.

1. _____ The movement of pollen to the seed-making part of a flower
2. _____ The tops of trees in a rain forest
3. _____ How a living thing might not have been seen because it blends into its surroundings
4. _____ A powdery material that flowers need to make seeds
5. _____ All the living and nonliving things working together in an area
6. _____ How an animal might look like some kind of other living thing
7. _____ A body feature or way of acting that helps a living thing survive in its environment

Answer the question. Use at least one word from the box in your answer.

8. What are some ways that animals protect themselves?
