

Lesson 1: How are ecosystems balanced?

Needs of Living Things

The Eastern American chipmunk lives in the Great Smoky Mountains. It needs living and nonliving things in the forest. The chipmunk gets food from plants. Plants also give the chipmunk oxygen. It needs oxygen to breathe. The chipmunk drinks water from puddles and streams. It digs its hole near the bottom of a tree. The hole protects the chipmunk from cold weather and other animals.

All plants and animals need food, water, space, shelter, light, and air to grow and be healthy. Organisms also need the right soil and weather. Living things get what they need from their environment.

A Balancing Act

An ecosystem is made of organisms that live in the same environment. The organisms need each other to live. What happens to one population affects the community.

An ecosystem is healthy when it is balanced. An ecosystem is balanced when all the animals living in it have food. When the population increases, food may run out. There will not be enough food if there are too many animals. This means the ecosystem is not balanced.

An ecosystem of plants can be balanced too. The ecosystem is balanced when each plant gets what it needs. Plants need minerals from the soil, water, and sunlight. Plants also need space. If you plant tree seeds close together, many of the seeds will not grow. They will not have enough space to grow into trees. The ecosystem is out of balance when plants don't get what they need.

All organisms help keep an ecosystem balanced. For example, rabbits eat grass. This keeps the grass from taking space other plants need. Red foxes eat rabbits. The foxes keep the number of rabbits from getting too large. It also keeps too much grass from being eaten. The grass creates oxygen. Animals need the oxygen to breathe.

For full credit you must
CLOSE READ!
 circle important words & phrases
 underline things you don't understand
 ! * * important details
 write your thoughts

Welcome Work packet due
 Friday, November 21st

Name _____

Use with pp. 111–113

Lesson 1 Checkpoint

1. What do all plants and animals need to live and grow?

2. What happens when the number of organisms in a population increases?

3. What are two things that might prevent a plant population from growing in size?

Lesson 2: How do organisms interact?

Vocabulary

competition when two or more species in an ecosystem must use the same limited resources

parasite an organism that lives on or in another organism, helping itself but hurting the other organism

host an organism that is harmed by a parasite

Change in Ecosystems

Changes help keep ecosystems in balance. For example, animals use the oxygen in an ecosystem. But new plants put oxygen back into the ecosystem.

Populations in an ecosystem change. Organisms need resources, like food and water. Think about the chipmunk at the beginning of the chapter. Chipmunk populations grow where there is a lot of food. More food, water, and space are needed when a population grows. A larger chipmunk population may use up many of these resources.

Each chipmunk gets less food, water, and space when there are fewer resources. Some chipmunks will die. Others will move to a new place. This means there are more resources for the chipmunks that stay. Then the population increases.

Competing and Sharing

Populations can grow when they get what they need. But populations that live in the same ecosystem may need the same resources. This is called **competition**. Organisms have to compete for resources. Organisms that compete well live longer and have offspring.

Populations compete for living space. Different plants compete for light and water. Birds compete for the same place to build a nest. Foxes and owls compete for animals to eat.

Animals also behave in ways to avoid competition. For example, both hawks and owls eat some of the same animals. Hawks and owls hunt for food at different times to reduce competition. Hawks hunt during the day. Owls hunt at night.

Living in groups can make it easier for animals to get food or stay safe. Wolves hunt for animals like deer. Wolves work together to hunt a deer. Deer travel in groups to protect themselves. This makes it hard for wolves to attack any one deer.

Living Side by Side

Two different organisms can live together. Sometimes living together can help both organisms. For example, fungi and algae live together on rocks. The algae give sugar, food, and water to the fungi. The fungi protect the algae. They guard the algae from too much sun and very warm weather.


Sometimes living together helps one organism but hurts the other. The organism that is helped is called a **parasite**. Parasites live on or in another organism, called the **host**. The host is harmed by the parasite. A parasite uses its host for food. For example, mistletoe is a parasite plant. It grows on oak trees. Mistletoe takes food and water away from its host tree.

Name _____

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Lesson 2 Checkpoint

1. What are two behaviors that help animals to avoid or reduce competition?

2.  **Cause and Effect** Identify the cause and effect of deer traveling in groups.

3. What is a parasite?

4. What might happen to the parasite if its host were to die?

Lesson 3: How do environments change?

Vocabulary

succession gradual change from one community of organisms to another

extinct an entire species is extinct if it has died out and is gone forever

endangered a species is endangered if it is in danger of becoming extinct

The Process of Change

Thousands of years ago, a forest may have been a lake. After many years, the lake dried up and became a marsh. Then trees grew where the marsh used to be. These changes from one kind of environment to another are called **succession**. Succession happens as the environment changes.

Changes in climate may affect ecosystems. Climate is the average temperature and rainfall in an area over many years. Climates change slowly. Over 15,000 years ago, snow and ice covered parts of North America. Trees and plants could not grow. Then the climate became warmer. Plants and animals moved in. This formed today's forest communities.

Changing Species

In the 1800s and early 1900s, there were many passenger pigeons. By 1915, all the passenger pigeons had died. The passenger pigeon was **extinct**. This means the entire species died out and was gone forever. Species become extinct because they cannot adapt to changes in Earth's environment. Climate changes, volcanoes, and meteors have caused extinction. Now humans are the main reason a species becomes extinct. People hunt animals and destroy their habitats.

The populations of some species have become very small. They are called **endangered** species. They are in danger of becoming extinct. Species that may soon become endangered are called threatened species.

Species Then and Now

Scientists study the remains of animals and plants from long ago. These remains are called fossils. Scientists compare fossils of organisms that lived long ago to organisms that are alive today. Scientists learn how species have changed or adapted to the environment and climate.

Fossils tell us about the environment long ago. Scientists have found the fossils of water organisms in dry climates. This means that long ago, shallow water covered the area where they were found.

Rapid Changes

Hurricanes, floods, fires, volcanic eruptions, and earthquakes are natural events. They quickly change the land. These changes may force species to leave the area because they cannot get the resources they need.

Rapid events also help ecosystems stay balanced. For example, fires clear away dead plants. This leaves room for new plants.

Natural Disasters

In 1993, rain caused the Mississippi and Missouri Rivers to overflow. Some areas were flooded for almost 200 days. Many acres of land were covered with sand and mud.

The floods affected many plants and animals. Grasses and trees died because there was too much water. Many birds had fewer babies because their nests were destroyed. Some fish could not eat and reproduce in the flooded areas. Their populations grew.

Lesson 3 Checkpoint

1. What is succession?

2. When are species considered threatened?

3.  **Cause and Effect** Why do organisms become extinct?

4. Name two processes that change an environment over a very long period of time.

5. What are two events that change an environment very quickly?

Lesson 4: How do people disturb the balance?

Vocabulary

hazardous wastes substances that are very harmful to humans and other organisms

People and the Environment

Humans get food, shelter, and water from the land. Humans can also change the environment to meet their needs. For example, we cut down trees to get wood. This also gives us space to build houses. We clear fields to plant crops or build roads. These changes can upset the balance of ecosystems.

Products we make and use also affect ecosystems. Wastes from these products can pollute the air and water. For example, harmful chemicals from automobiles and factories pollute the air. These chemicals can hurt plants. Animals that eat these plants lose food. Animals that live on or near these plants lose shelter.

Wastes and chemicals get into rivers, lakes, and oceans. This pollutes the water. Some wastes come from sewer systems. Other chemicals are used on land. They help plants grow or kill bugs. Rain washes these chemicals into the water. Some of these chemicals can hurt or kill fish, plants, and animals. Another pollutant is oil. Sometimes oil spills when it is shipped or drilled. The oil covers algae, plants, mollusks, and fish. This makes them die. Birds covered in oil often drown.

Land Pollution

Garbage can pollute the land. Humans make a lot of garbage. Most trash is taken to a landfill and covered with dirt.

Hazardous wastes are also pollutants. They can be very dangerous to animals and humans. They can also start fires or cause diseases. Hazardous wastes used to be buried in the ground. They hurt nearby habitats.

Stripping Away the Land

Coal is a valuable substance. It is under the Earth's surface. Strip mining is one way to get coal. Huge machines used to dig large holes in the soil. The land around the holes washed away. Soil and rock were washed into ponds and rivers. Nearby ecosystems were greatly affected.

Land Reclamation

Now mining companies must replace the rock and soil they take away. They must also replant trees and grasses. This helps animals return to their habitats. Crops can be planted.

Preserving the Environment

The United States has created National Parks to protect land. These parks also protect the habitats of many plants and animals.

Yellowstone National Park was the first national park in the world. It is mostly in Wyoming. You can see geysers in Yellowstone. Geysers are springs that shoot hot water high into the air.

The Saguaro National Park is covered with cactuses. It is a home for many desert plants and animals. This park also protects very old villages.

Lesson 4 Checkpoint

1. Why do humans have a great impact on the environment?

2. What human activities damage the environment?

3. What are some of the effects of habitat destruction?

4. What are some things people have done to protect the environment?
