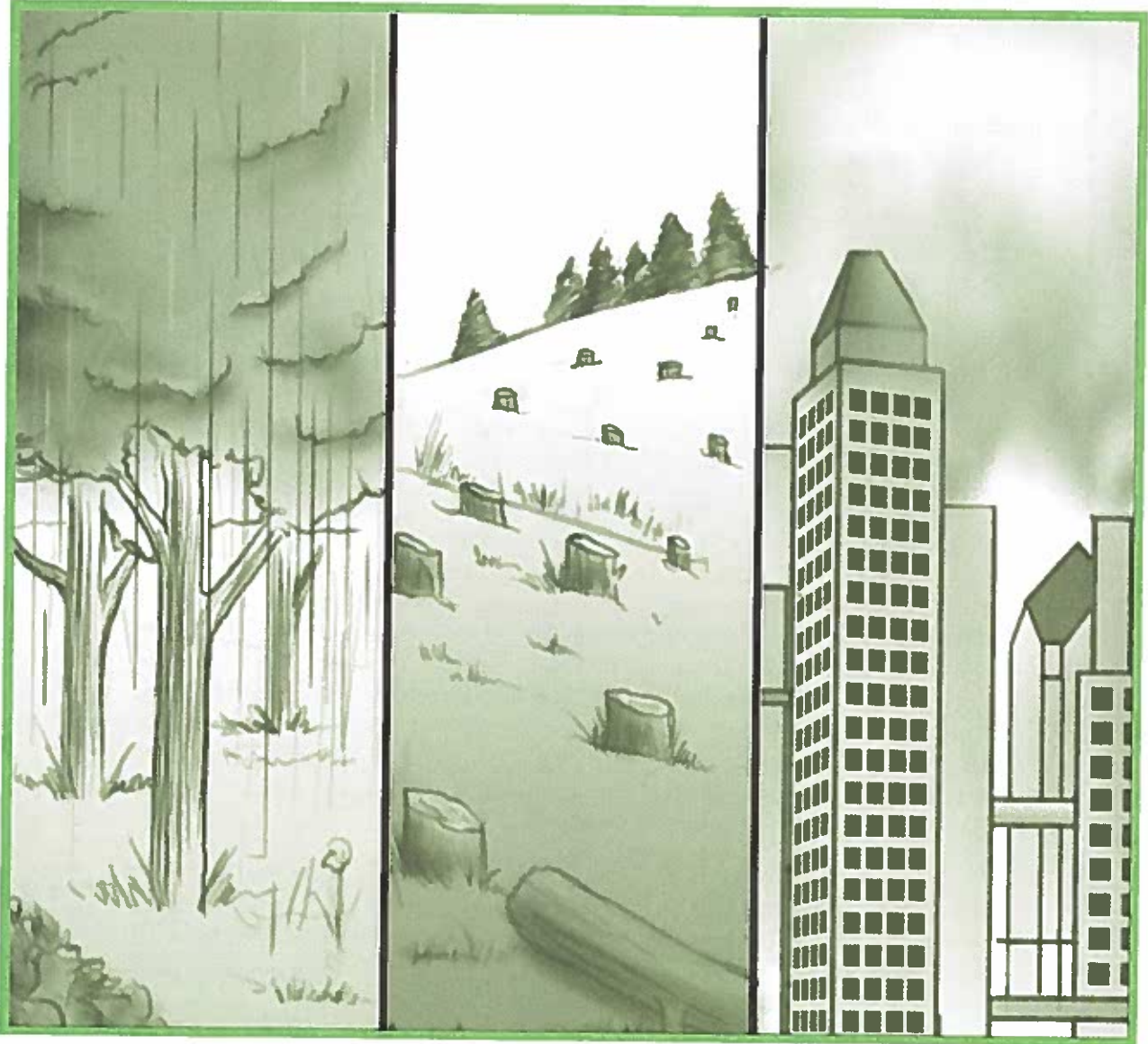


# How do people upset the balance of nature?



## **KEY TERMS**

**pollution:** anything that harms the environment

**pollutants:** harmful substances

# LESSON

# 24

## How do people upset the balance of nature?

An environment is constantly changing. Sometimes, the changes work together to keep the environment in balance. In a balanced environment, the size of the population remains about the same over time.

Sometimes the balance in an environment is upset. Many times people upset the balance of nature. People upset the balance of nature by destroying the habitats of other living things. For example, people cut down forests for farms and towns. They build dams and dig mines. All of these human activities can be harmful to other organisms in the environment. Many species of animals are finding it hard to survive because of the ways people have upset the balance of nature.

People also upset the balance of nature by causing **pollution** [puh-LOO-shun]. You probably know that pollution is a major problem. Pollution is anything that harms the environment. It occurs when harmful substances, or **pollutants** [puh-LOOT-ents] are released into the environment. Pollution of the air, land, and water are all major problems. Today many different substances are poisoning the environment and upsetting nature's balance. And we cannot think of just air pollution, or just water pollution, or just land pollution. Pollution may start out in one part of our environment. But it does not remain there. It S-P-R-E-A-D-S to all parts.

Pollution is increasing daily. Like other organisms, people also suffer from the effects of pollution—in the form of illness, birth defects, respiratory diseases, and many other problems. Therefore, we must all work together to help reduce pollution.

## AIR POLLUTION

Study the pictures below and read the text describing each picture. Then answer the questions.



Figure A

The burning of fossil fuels is the major cause of air pollution. Oil, coal, and natural gas are fossil fuels. When these fuels are burned, many harmful substances are released into the air.

1. How do you think car-pooling helps reduce air pollution? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

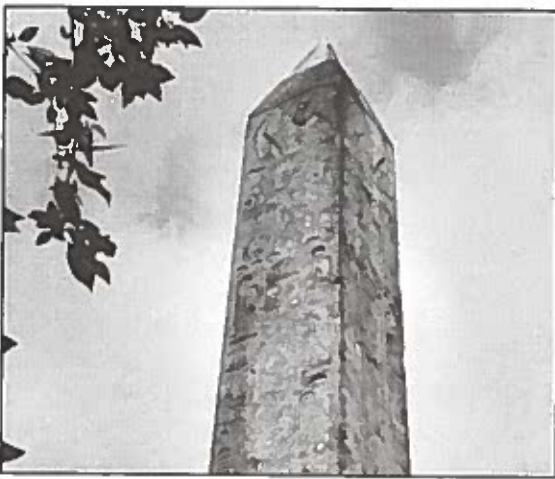


Figure B

When some harmful gases are released into the air, they combine with water to form acids. The acids fall to the earth as acid rain. Acid rain kills living things. It also damages buildings and statues.

2. What is acid rain? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

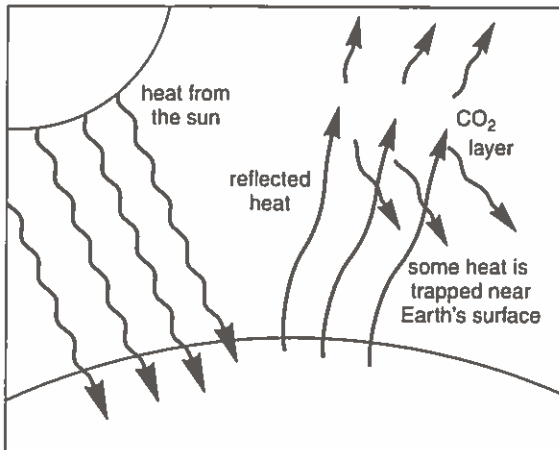


Figure C

Fuels need oxygen when they burn. They give off carbon dioxide. Carbon dioxide traps heat energy from the sun.

3. Scientists think that the increase of carbon dioxide in the air is causing the temperature of the earth to \_\_\_\_\_

rise, fall

## WATER AND LAND POLLUTION

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Water pollution occurs when harmful substances enter the water. Major sources of water pollution include sewage, chemical wastes from factories, and fertilizers [FUR-tul-y-zuhrs], and pesticides [PES-tuh-sides] washed off farm fields.

You have probably seen cans, bottles, and papers thrown on the ground. These throw-away materials are called litter. Litter is one cause of land pollution. Garbage and chemical wastes are other sources of land pollution. We produce billions of tons of garbage each year. Chemical wastes are often buried in the ground.

### NOW TRY THIS!

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Ten pollutants and pollutant sources are listed below.

Write **water** next to those that start out as water pollution. Write **land** next to those that start out as land pollution.

- \_\_\_\_\_ 1. raw sewage discharge
- \_\_\_\_\_ 2. dumping of chemicals into rivers
- \_\_\_\_\_ 3. pesticides
- \_\_\_\_\_ 4. detergents
- \_\_\_\_\_ 5. garbage
- \_\_\_\_\_ 6. burial of drums of toxic wastes
- \_\_\_\_\_ 7. fertilizers
- \_\_\_\_\_ 8. use of DDT to control mosquitos
- \_\_\_\_\_ 9. litter
- \_\_\_\_\_ 10. abandoning junk cars

Explain how a pollutant gas in the atmosphere can become

- a) water pollution \_\_\_\_\_  
\_\_\_\_\_
- b) land pollution \_\_\_\_\_  
\_\_\_\_\_

## FILL IN THE BLANK

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Complete each statement using a term or terms from the list below. Write your answers in the spaces provided.

spreads  
pollution  
sun  
sewage  
pollutants

illness  
balanced  
does not  
survive

air  
reduce  
defects  
wastes

1. Anything that harms the environment is \_\_\_\_\_.
2. Pollution occurs when \_\_\_\_\_ enter the environment.
3. The size of a population remains about the same in a \_\_\_\_\_ environment.
4. Many species are finding it hard to \_\_\_\_\_ because of human activity.
5. Major sources of water pollution include \_\_\_\_\_ and chemical \_\_\_\_\_.
6. Pollution can cause \_\_\_\_\_ and birth \_\_\_\_\_ in people.
7. Pollution \_\_\_\_\_ stay in one place. It \_\_\_\_\_ to all parts of the environment.
8. To help nature maintain a proper balance, we must \_\_\_\_\_ pollution.
9. The burning of fossil fuels is the major cause of \_\_\_\_\_ pollution.
10. Carbon dioxide traps energy from the \_\_\_\_\_.

## REACHING OUT

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About 66,000 square miles of the world's tropical rain forests are being destroyed each year. How does this upset the balance of nature? \_\_\_\_\_

\_\_\_\_\_

## SCIENCE **EXTRA**

### Wildlife Refuge Manager



How would you go about saving animals and plants? You could become a wildlife refuge manager. A wildlife refuge manager supervises a protected area for wild plants and animals. Refuges may be in forests, deserts, wetlands, or other habitats.

In order to properly protect plants and animals, refuge managers need to understand how the weather and soil affect living things. So they often measure temperature, rainfall, and soil chemistry. Refuge managers also work with the plants and animals directly. They count the numbers of different species living in the refuge. This is called taking a census. It is important for managers to know the population sizes of wildlife species they are trying to protect. Sometimes, however, there are so many plants or animals of one kind that it is impossible to count them all. In this case, managers estimate population size from a sample. This means that they count individual plants or

animals in a small area, then compare the sample area to the size of the refuge.

Sometimes, refuge managers take active steps to protect a rare plant or animal. If a refuge contains a rare species of a bird, for example, the manager might keep visitors away from all nesting places, or close the refuge during the nesting season.

You need a bachelor's degree in biology, botany, or zoology to become a wildlife refuge manager. Preparing reports and analyzing data from the field also are part of the manager's job. So it is helpful to study mathematics, statistics, and technical writing as preparation for this career. You should also enjoy outdoor work, including working in the rain, snow, heat, or cold. Refuge managers sometimes must be out in bad weather, because protecting wildlife cannot always wait for a warm sunny day.