Land

READING WARM-UP

Before you read this chapter, take a few minutes to answer the following questions in your *EcoLog.*

1. Name and describe three ways that humans use land.

2. Define the term *urban sprawl*, and list two of its effects on the environment?

On the edge of Palm Springs, California, suburban housing has been built on what was once a desert ecosystem.

How We Use Land

Some years ago, officials in California decided to find out how land was being used in the state. Measurements were made using maps, aerial photographs, field surveys, and a computerized mapping system. The results were startling—in just eight years (between 1984 and 1992) nearly 84,000 hectares (about 210,000 acres) of farmland, rangeland, and woodland had been converted into suburbs and cities. This change is happening in many communities all over the world.

Land Use and Land Cover

We use land for many purposes, including farming, mining, building cities and highways, and recreation. Land cover is what you find on a patch of land, and it often depends on how the land is used. For example, land cover might be a forest, a field of grain, or a parking lot. There are different types of land cover and different human uses for each cover type, as shown in **Table 1.**

Land that is covered mainly with buildings and roads is called urban land. For the purposes of determining land use and residence trends, the U.S. Census Bureau defines an urban area as an area that contains 2,500 or more people and usually has a governing body, such as a city council. Any population not classified as urban is considered rural. Land that contains relatively few people and large areas of open space are rural areas. **Figure 1** shows the relative proportion of each of the types of land cover defined in **Table 1.** As the table shows, most land provides one or more resources that humans consume. These resources include wood in forests, crops in farmland, and mineral resources.

Objectives

▶ Distinguish between urban and rural land.

▶ Describe three major ways in which humans use land.

▶ Explain the concept of ecosystem services.

Key Terms

urban
rural
ecosystem services

Land Use in the United States

Source: Natural Resources Conservation Service.

Figure 1 ▶ The graph above shows the percentage of each land cover type in the United States.

Table 1 ▼

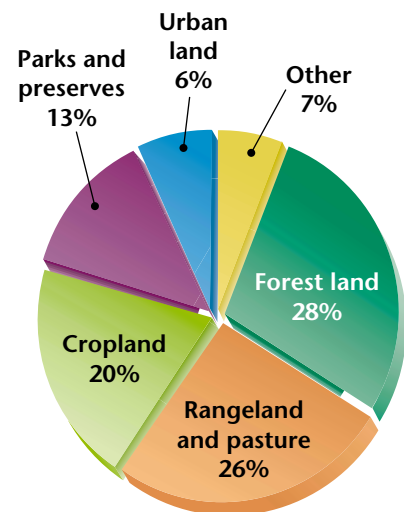| Primary Land-Use Categories	
Land cover type	**Human use of land**
Rangeland	land used to graze livestock and wildlife
Forest land	land used for harvesting wood, wildlife, fish, nuts, and other resources
Cropland	land used to grow plants for food and fiber
Parks and preserves	land used for recreation and scenic enjoyment and for preserving native animal and plant communities and ecosystems
Wetlands, mountains, deserts, and other	land that is difficult to use for human purposes
Urban land	land used for houses, businesses, industry, and roads

Figure 2 ▶ The photo on the left, of New York City, shows a typical urban scene, whereas the photo on the right, of the Connecticut River Valley, shows a typical rural scene.

Where We Live

Until about 1850, most people lived in rural areas. Many of them were farmers, who grew crops and raised livestock for food, clothing, and manufacturing. Other people managed the forests, worked in local mines or mills, or manufactured the necessities of life for a town.

The Industrial Revolution changed this pattern. Machinery was built that made it possible for fewer people to operate a farm or a grain mill. In addition, better transportation allowed manufacturers to be located far from their customers. So thousands of jobs in rural areas were eliminated. Many people had to move to cities to find jobs. As a result, urban areas grew rapidly during the 20th century and spread over more land. **Figure 3** shows that today, most people throughout the world live in urban areas. The movement of people from rural areas to urban areas happened rapidly in developed countries between about 1880 and 1950. Now, this movement is occurring rapidly in developing countries.

Figure 3 ▶ This graph shows the proportion of people living in urban areas and rural areas in different parts of the world.
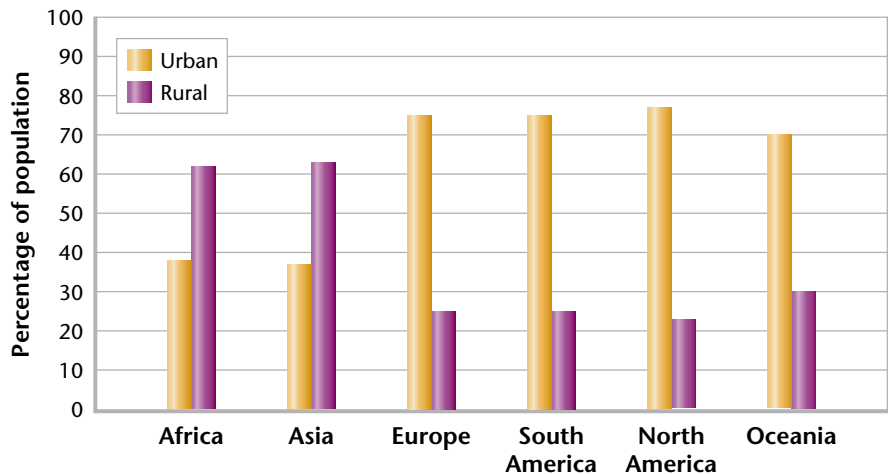
Source: Population Reference Bureau.

The Urban-Rural Connection

Whether people live in cities or in the countryside, people are dependent on resources produced in rural areas. These resources include clean drinking water, fertile soil and land for crops, trees for wood and paper, and much of the oxygen we breathe, which is produced by plants. The resources that are produced by natural and artificial ecosystems are called ==ecosystem services.== Some examples of ecosystem services are shown in **Table 2.**

Supporting Urban Areas The area of rural land needed to support one person depends on many factors, such as the climate, the standard of living, and how efficiently resources are used. In a wet climate, for example, most agriculture depends on rain and does not depend on areas of lakes and rivers for irrigation. Each person in a developed country uses the ecosystem services provided by about 8 hectares of land and water. In the United States each person uses the ecosystem services from more than 12 hectares, whereas each person in Germany uses about 6 hectares' worth. Many people in developing nations do not have access to all the resources for a healthy life. They may use ecosystem services from less than a hectare of land per person.

MATHPRACTICE

Ecosystem Services
Earth contains about 12.4 billion hectares of productive land—cropland, grazing land, forest, fresh water, and fisheries. In 1996, the world population was about 5.7 billion people, for a mean of 2.18 hectares of productive land per person. The world population in 2010 is projected to be 6.8 billion. On average, how much productive land per person will there be in 2010?

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Topic: Ecosystem Services
SciLinks code: HE4026

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Table 2 ▼

Examples of Ecosystem Services
purification of air and water
preservation of soil and renewal of soil fertility
prevention of flood and drought
regulation of climate
maintenance of biodiversity
movement and cycling of nutrients
detoxification and decomposition of wastes
aesthetic beauty

SECTION 1 Review

1. **Explain** how ecosystem services link rural lands with urban lands.

2. **Describe** three main ways in which humans use land. Write a paragraph to explain your answer.
   WRITING SKILLS

3. **Distinguish** between rural lands and urban lands, and provide an example of each.

CRITICAL THINKING

4. **Making Decisions** What could individuals do to reduce the loss of ecosystem services per person as the human population grows?

5. **Making Inferences** How does the movement of people from rural lands to urban lands affect people's relationship with natural resources?