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Chapter 6

Humans in the Biosphere

Section 6–1 A Changing Landscape (pages 139–143)

This section describes types of human activities that can affect the biosphere.

Earth as an Island (page 139)

1. Increasing demands on what resources come with a growing human population? _____

_____

Human Activities (page 140)

2. Is the following sentence true or false? Human activity uses as much energy as all of Earth's other multicellular species combined.

_____

3. What four human activities have transformed the biosphere?

   a. _____ c. _____

   b. _____ d. _____

Hunting and Gathering (page 140)

4. How did prehistoric hunters and gatherers change the environment? _____

_____

_____

5. Hunting that makes relatively few demands on the environment is called _____.

Agriculture (pages 141–142)

6. What is agriculture? _____

7. Why was the spread of agriculture an important event in human history? _____

_____

8. What ecological changes came with the cultivation of both plants and animals? _____

_____

_____

9. What changes in agriculture occurred in the 1800s as a result of advancements in science and technology? _____

_____

_____

10. What was the green revolution? _____

_____

_____

11. What is the farming method called monoculture? _____

_____

_____

12. Circle the letter of each benefit of the green revolution to human society.

a. It helped prevent food shortages.

b. China and India depleted water supplies.

c. It increased food production.

d. Global food production was cut in half.

Industrial Growth and Urban Development (page 143)

13. What occurred during the Industrial Revolution of the 1800s? _____

_____

14. From what resources do we obtain most of the energy to produce and power the machines we use? _____

_____

15. The continued spread of suburban communities across the American landscape is referred to as _____.

16. How does suburban sprawl place stress on plant and animal populations? _____

Section 6–2 Renewable and Nonrenewable Resources (pages 144–149)

This section explains how environmental resources are classified. It also describes what effect human activities have on natural resources.

Introduction (page 144)

1. How was the commons in an old English village destroyed? _____

_____

_____

_____

The Tragedy of the Commons (page 144)

2. What is meant by the phrase the "tragedy of the commons"? _____

_____

_____

_____

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3. Complete the table about types of environmental resources.

TYPES OF ENVIRONMENTAL RESOURCES

Type of Resource	Definition	Examples
Renewable resources		
Nonrenewable resources		

Sustainable Use (page 145)

4. What is sustainable use? _____

5. How do human activities affect renewable resources? _____

6. Upon which principles are sustainable practices based? _____

Land Resources (page 145)

7. What is fertile soil? _____

8. The uppermost layer of soil is called _____.

9. What is soil erosion? _____

10. How does plowing the land increase the rate of soil erosion? _____

11. The conversion of a previously soil-rich, productive area into a desert is called _____.

12. What can cause desertification? _____

Forest Resources (page 146)

13. Why have forests been called the "lungs of the Earth"? _____

14. Why are forests in Alaska and the Pacific Northwest called old-growth forests? _____

15. What is deforestation, and how does it affect soil? _____

Ocean Resources (page 147)

16. For what resources are the Earth's oceans particularly valuable? _____

_____

_____

17. The practice of harvesting fish faster than they can reproduce is called _____.

18. What are some important species that have been overfished? _____

_____

_____

19. What is one approach to sustainable use of fisheries? _____

_____

_____

20. What is aquaculture? _____

Air Resources (page 148)

21. What is smog? _____

_____

22. What is a pollutant? _____

_____

23. How does the burning of fossil fuels affect air quality? _____

_____

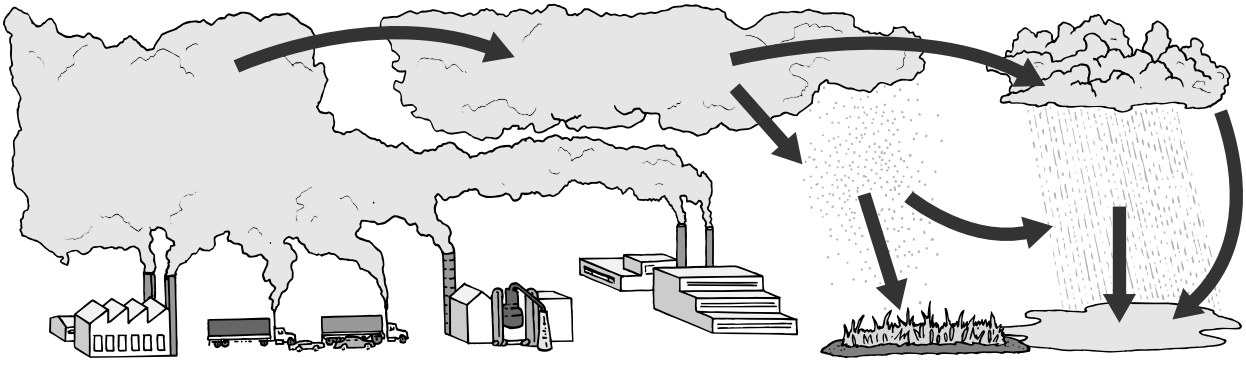
_____

24. Microscopic particles of ash and dust in the air that can cause health problems are called _____.

25. What does acid rain contain that kills plants and harms soil? _____

_____

26. Complete the illustration by writing the names of the processes that lead to the formation of acid rain.



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Water Resources (page 149)

27. Why are protecting water supplies from pollution and managing demand for water major priorities? _____

28. What is domestic sewage, and how does it threaten water supplies? _____

29. How can protecting forests ensure sustainable use of water resources? _____

30. Why can conservation in agriculture save large amounts of water? _____

Section 6–3 Biodiversity (pages 150–156)

This section describes what the current threats to biodiversity are. It also explains the goal of conservation biology.

The Value of Biodiversity (page 150)

1. What is biodiversity? _____

2. Complete the table about diversity.

DIVERSITY IN THE BIOSPHERE

Type of Diversity	Definition
Ecosystem diversity	
Species diversity	
Genetic diversity	

3. Why is biodiversity one of Earth's greatest natural resources? _____

Threats to Biodiversity (page 151)

4. What are four ways that human activity can reduce biodiversity?

a. _____

b. _____

c. _____

d. _____

5. When does extinction occur? _____

_____

6. A species whose population size is declining in a way that places it in danger of extinction is called a(an) _____.

7. Why does a declining population make a species more vulnerable to extinction? _____

_____

Habitat Alteration and Fragmentation (page 151)

8. The process of splitting a habitat into small pieces is called _____.

Demand for Wildlife Products (page 151)

9. Why are species hunted? _____

_____

_____

Pollution (page 152)

10. What is DDT? _____

11. What two properties of DDT make it hazardous over the long term? _____

_____

_____

12. What is biological magnification? _____

_____

_____

Introduced Species (page 153)

13. Plants and animals that have migrated to places where they are not native are called _____.

14. Why do invasive species reproduce rapidly and increase their populations? _____

_____

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Conserving Biodiversity (pages 154–156)

15. What is conservation? _____

_____

16. What is the purpose of conservation biology? _____

_____

17. What does protecting an ecosystem ensure? _____

_____

_____

Reading Skill Practice

Writing a summary can help you remember the information you have read. When you write a summary, write only the important points. Write a summary of the information in Section 6–3. Your summary should be shorter than the text on which it is based. Do your work on a separate sheet of paper.

Section 6–4 Charting a Course for the Future (pages 157–160)

This section describes two types of global change that is of concern to biologists.

Ozone Depletion (pages 157–158)

1. What is ozone? _____

_____

2. Where is ozone concentrated in the atmosphere? _____

_____

3. Over what continent has a "hole" in the ozone layer been growing larger and lasting longer over the last 20 years?

_____

4. What is causing the problem of ozone depletion? _____

_____

_____

_____

Global Warming (page 159)

5. What is global warming? _____

_____

6. What is the most widely accepted hypothesis about the cause of global warming? _____

_____

_____

7. Circle the letter of each sentence that is true about the problem of global warming.

a. The burning of fossil fuels pulls carbon dioxide from the atmosphere.

b. Some scientists think it is part of natural variations in climate.

c. The 1990s were the hottest decade ever recorded.

d. Cutting down and burning forests adds carbon dioxide to the atmosphere.

8. If global warming continues at the current rate, how might sea level be affected? _____

_____

_____

The Value of a Healthy Biosphere (page 160)

9. What goods and services does a healthy biosphere provide to us? _____

_____

_____

_____

10. What is the most important shift that a society can make to solve today's ecological problems? _____

_____

11. What is the first step in charting a course that will improve living conditions without harming the environment? _____

_____

WordWise

Complete the sentences using one of the scrambled terms below.

oouuertlcnm diiioeytsrvb lblgao mwgnira fortaestnoide eeernwbla eecruosr

1. The loss of forests is _____.

2. The increase in the average temperature of the biosphere is _____.

3. A resource that can regenerate and therefore is replaceable is a(an) _____.

4. The agricultural method in which large fields are planted with a single crop year after year is _____.

5. The sum total of the genetically based variety of all organisms of the biosphere is _____.