

Close, continued

Alternative Assessment

ADVANCED

Modeling Ecosystems Have students create a poster, diorama, or computer model showing the relationships between organisms in a small ecosystem they are familiar with, such as a pond or dead log near their home. The model should include producers, consumers, and decomposers.

KS Kinesthetic/Logical

Answers to Section Review

1. An ecosystem is a community of organisms and the environment that they inhabit.
2. The biosphere sustains organisms that interact and affect each other, providing an environment for all of them.
3. how matter and energy cycle through the ecosystem, how ecosystems respond to change, and how organisms in the ecosystem interact
4. The sun's energy is stored in carbohydrates that are produced by plants by photosynthesis. This energy is absorbed by consumers that eat the plants, and is in turn absorbed by higher-level consumers. Energy from animal remains is transferred to decomposers.
5. Ecosystems will generally respond to change in a way that restores balance within the ecosystem.
6. A food chain is a sequence in which an organism is consumed by another organism. In a food web, several organisms feed upon one type of organism, which are consumed by still other organisms that compete with each other, producing a more complex pattern of consumption.
7. Good stewardship helps maintain balance within and between ecosystems, which helps to ensure their health and productivity.
8. removes vegetation that helps hold topsoil in place, otherwise leading to soil erosion; water pollution from street runoff affects the water supplies; animals may flee, disturbing neighboring ecosystems
9. Ecosystems can react to gradual changes by making small adjustments to maintain the overall balance of the



Figure 4 ▶ These hikers are acting responsibly by choosing to remain on marked trails in the rain forest. In this way, they are helping prevent ecological damage to the area.

Human Stewardship of the Environment

All of Earth's systems are interconnected, and changes in one system may affect the operation of other systems. Earth's ecosystems provide a wide variety of resources on which people depend. People need water and air to survive. Changes in ecosystems can affect the ability of an area to sustain a human population. For example, the quality of the atmosphere, the productivity of soils, and the availability of natural resources can affect the availability of food.

Ecological balances can be disrupted by human activity. Populations of plants and animals can be destroyed through overconsumption of resources. When humans convert large natural areas to agricultural or urban areas, natural ecosystems are often destroyed. Another serious threat to ecosystems is pollution. *Pollution* is the contamination of the environment with harmful waste products or impurities.

When people, such as those in **Figure 4**, strive to prevent ecological damage to an area, they are trying to be responsible stewards of Earth. To help ensure the ongoing health and productivity of the Earth system, many people work to use Earth's resources wisely. By using fossil fuels, land and water resources, and other natural resources wisely, many people are helping keep Earth's ecosystems in balance.

Section 3 Review

1. **Define** *ecosystem*.
2. **Explain** why the entire biosphere is an ecosystem.
3. **Identify** three factors that control the balance of an ecosystem.
4. **Summarize** how energy is transferred between the sun and consumers in an ecosystem.
5. **Describe** one way that ecosystems respond to environmental change.
6. **Compare** a food chain with a food web.
7. **Summarize** the importance of good stewardship of Earth's resources.

CRITICAL THINKING

8. **Making Inferences** Discuss two ways that the expansion of urban areas might be harmful to nearby ecosystems.
9. **Analyzing Ideas** Why would adapting to a gradual change in environment be easier for an ecosystem than adapting to a sudden disturbance would be?
10. **Making Inferences** Why does energy flow in only one direction in a given food chain of an ecosystem?

CONCEPT MAPPING

11. Use the following terms to create a concept map: *ecology, ecosystem, producer, decomposer, carrying capacity, consumer, and food web*.

system. Extreme environmental changes require dramatic adjustments by organisms and may result in permanent changes to some components of the ecosystem.

10. Energy flows from producers toward consumers that use more energy. Lower-level consumers rarely consume higher-level consumers. Producers do not consume at all.
11. *Ecology* is the study of *ecosystems*, which have a *carrying capacity* and contain a *food web* that has *producers, consumers, and decomposers*.

CHAPTER RESOURCES

Chapter Resource File

- Section Quiz **GENERAL**

Workbooks

- Study Guide (also in Spanish)