Chapter 2

Principles of Ecology

Reinforcement and Study Guide

Section 2.1 Organisms and Their Environment

In your textbook, read about what ecology is and about aspects of ecological study.

Use each of the terms below just once to complete the passage.

ecology	**biotic factors**	**nonliving**	**environments**	**atmosphere**
humans	**organisms**	**soil**	**biosphere**	**abiotic factors**

Living organisms in our world are connected to other **(1)** _____ in a variety of ways. The branch of biology called **(2)** _____ is the scientific study of interactions between organisms and their **(3)** _____ , including relationships between living and **(4)** _____ things.

All living things on Earth can be found in the **(5)** _____ , the portion of Earth that supports life. It extends from high in the **(6)** _____ to the bottom of the oceans. Many different environments can be found in the biosphere. All living organisms found in an environment are called **(7)** _____ . Nonliving parts of an environment are called **(8)** _____ . For example, whales, trees, and **(9)** _____ are biotic factors. Ocean currents, temperature, and **(10)** _____ are abiotic factors.

In your textbook, read about levels of organization in ecology.

For each item in Column A, write the letter of the matching item in Column B.

Column A	Column B
_____ **11.** A group of organisms of one species that interbreed and live in the same place at the same time	**a.** community
_____ **12.** A collection of interacting populations	**b.** competition
_____ **13.** Interacting populations and abiotic factors in a community	**c.** forest
_____ **14.** Increases when resources are scarce	**d.** population
_____ **15.** A terrestrial ecosystem	**e.** ecosystem

In your textbook, read about organisms in ecosystems.

For each statement below, write true or false.

_____ **16.** A habitat is the role a species plays in a community.

_____ **17.** Habitats may change.

_____ **18.** A niche is the place where an organism lives its life.

_____ **19.** A habitat can include only one niche.

_____ **20.** A species' niche includes how the species meets its needs for food and shelter.

_____ **21.** The centipedes and worms that live under a certain log occupy the same habitat but have different niches.

_____ **22.** It is an advantage for two species to share the same niche.

_____ **23.** Competition between two species is reduced when the species have different niches.

Complete the table below by writing the kind of relationship described on the left.

Relationships Among Organisms	
Description of Relationship	**Kind of Relationship**
24. Organisms of different species live together in a close, permanent relationship.	
25. One species benefits and the other species is neither benefited nor harmed by the relationship.	
26. One species benefits from the relationship at the expense of the other species.	
27. Both species benefit from the relationship.	

Chapter 2

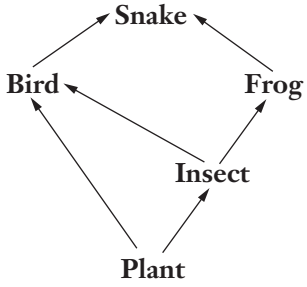
Principles of Ecology, *continued*

Reinforcement and Study Guide

Section 2.2 Nutrition and Energy Flow

In your textbook, read about how organisms obtain energy and about matter and energy flow in ecosystems.

Answer the questions below. Use the diagram of a food web to answer questions 1–7.



1. How many food chains make up the food web?

2. Which organism is an herbivore?

3. Which organism is an autotroph?

4. Which organism is a third-order heterotroph? To what trophic level does that organism belong?

5. Which organism is an omnivore?

6. Which organisms belong to more than one food chain?

7. Which organism belongs to more than one trophic level?

8. What are decomposers? Where would decomposers appear in this food web?

9. What does a pyramid of energy show about the amount of energy available at different trophic levels of a food chain?

10. Why do different trophic levels have different amounts of energy?

In your textbook, read about cycles in nature.

Circle the letter of the choice that best completes the statement or answers the question.

11. Energy that is lost at each trophic level of an ecosystem is replenished by
a. heat. **b.** nutrients. **c.** sunlight. **d.** organisms.

12. Besides energy, what moves through the organisms at each trophic level of an ecosystem?
a. organisms **b.** nutrients **c.** sunlight **d.** cycles

13. Evaporation and condensation a part of the
a. carbon cycle. **b.** nitrogen cycle. **c.** phosphorus cycle. **d.** water cycle.

14. Plants lose water to the air through
a. condensation. **b.** photosynthesis. **c.** their roots. **d.** evaporation.

15. Animals lose water when they
a. breathe in. **b.** urinate. **c.** breathe out. **d.** both b and c.

16. The major process by which water in the atmosphere is returned to the earth is
a. precipitation. **b.** evaporation. **c.** photosynthesis. **d.** decomposition.

17. Autotrophs and heterotrophs use carbon-containing molecules for energy and for
a. photosynthesis. **b.** growth. **c.** decomposition. **d.** both a and b.

18. What do plants use in photosynthesis to make carbon-containing molecules?
a. carbon dioxide **b.** carbohydrates **c.** fertilizer **d.** oxygen

19. Heterotrophs get carbon-containing molecules by
a. making the molecules themselves. **b.** feeding on other organisms.
c. decaying. **d.** growing.

20. When decomposers break down the carbon-containing molecules in dead organisms,
a. the dead organisms are converted to coal. **b.** oxygen is released.
c. carbon dioxide is released. **d.** carbon dioxide is converted to energy-rich carbon-containing molecules.

21. Fertilizers provide plants with
a. nitrogen. **b.** carbon. **c.** water. **d.** oxygen.

22. Which of the following convert(s) nitrogen from air into a form plants can use?
a. bacteria **b.** lightning **c.** sunlight **d.** both a and b

23. Plants use nitrogen to make
a. carbohydrates. **b.** nitrogen gas. **c.** amino acids **d.** both b and c.

24. An animal returns nitrogen to the environment when it
a. breathes. **b.** decomposes. **c.** urinates. **d.** both b and c.

25. Animals get phosphorus from
a. the air. **b.** eating plants. **c.** water. **d.** the soil.

26. Phosphorus in the soil comes from
a. rocks. **b.** decaying organisms. **c.** the air. **d.** both a and b.