Name	Date	Class

Chapter 10 Ecosystems • Section 1 Summary

Living Things and the Environment

Key Concepts

- What needs are met by an organism's environment?
- What are the two parts of an organism's habitat with which it interacts?
- What are the levels of organization within an ecosystem?

A prairie dog is one type of **organism**, or living thing. Different types of organisms live in different types of environments. **An organism obtains food, water, shelter, and other things it needs to live, grow, and reproduce from its environment.** Other living things depend on plants and algae for food. An environment that provides the things the organism needs to live, grow, and reproduce is called its **habitat**.

An organism interacts with both living and nonliving parts of its habitat. The living parts of a habitat are called biotic factors. The nonliving parts of a habitat are called abiotic factors. Abiotic factors include water, sunlight, oxygen, temperature, and soil. Some organisms make their own food in a process called photosynthesis.

A species is a group of organisms that are physically similar and can mate with each other and produce offspring that can also mate and reproduce. All the members of one species in a particular area are referred to as a population. All the different populations that live together in an area make up a community. The community of organisms that live in a particular area, along with their nonliving surroundings, make up an ecosystem. The smallest level of organization is a single organism, which belongs to a population that includes other members of its species. The population belongs to a community of different species. The community and abiotic factors together form an ecosystem.

The study of how living things interact with each other and with their environment is called **ecology**. Ecologists are scientists who study ecology. They study how organisms react to changes in their environment.

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s section describes what organisms r needs. The section also describes communities.	need and horn their and	nimonana 1 C
e Target Reading Skills		
you read the "Habitats" section, w ortant idea—in the graphic organiz give examples of the main idea.	rite the main idea—the zer below. Then write th	biggest or most tree supporting details
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Ecosystems • Reading/Notetaking Guide

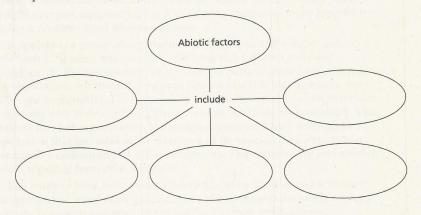
Living Things and the Environment (continued)

Biotic Factors (p. 393)

- 5. The living parts of a habitat are called _____
- **6.** Circle the letter of each choice that is a biotic factor in a prairie dog ecosystem.
 - a. Grass and other plants that the prairie dog eats
 - b. Hawks, ferrets, and other animals that hunt the prairie dog
 - c. The soil that provides the prairie dog with a home
 - d. Worms, fungi, and bacteria that also live in the soil

Abiotic Factors (p. 394)

- 7. The nonliving parts of a habitat are called ______
- 8. Complete the concept map.



- 9. Circle the letter of each sentence that is true about water.
 - a. It is needed by all living things.
 - **b.** It makes up 95 percent of the human body.
 - c. It is needed by algae and plants to make food.
 - d. It is an abiotic factor only for organisms that actually live in the water.
- 10. The process in which plants and algae make food using water, sunlight, and carbon dioxide is called _______.

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Ec	osystems Reading/Not	etaking Guide	
11.	a. Humans can live only a b. Organisms that live on l c. It makes up about 40 pe d. Fish get it from the water	few hours without it. and get it from the air. rcent of air.	oxygen.
Le	vels of Organization (p	p. 395–397)	
12.	What is a species?		
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13.	Circle the letter of each choica. all the prairie dogs in a pb. all the bees in a hive	orairie dog town	a population.
	c. all the pigeons in New Yd. all the trees in a forest	ork City	
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15.	All the different population	s that live together in an	area make up a(n)
16.	Circle the letter of the choice ecosystem from the smalles	e that lists the levels of o t unit of organization to	rganization in an the largest.
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Chapter 10 Ecosystems • Section 2 Summary

Populations

Key Concepts

- What causes populations to change in size?
- What factors limit population growth?

Ecologists study populations to determine how a population may be changing. This is done by observing population changes over several years.

Populations can change in size when new members join the population or when members leave the population. The main way in which new individuals are added to a population is being born in it. The birth rate of a population is the number of births in a population over a certain amount of time. The major way that individuals leave a population is by dying. The death rate is the number of deaths in a population over a certain amount of time. If the birth rate is greater than the death rate, the population will generally increase in size. If the death rate is greater than the birth rate, the population size will generally decrease. The size of a population can also change when individuals move into or out of the population. Immigration means moving into a population. Emigration means leaving a population. Graphs are useful to show changes in the size of a population over time.

A limiting factor is an environmental factor that causes a population to stop growing. Some limiting factors for populations are food and water, space, light, soil composition, and weather conditions. The largest population that an environment can support is called the carrying capacity. A population usually stays near its carrying capacity because of the limiting factors in its habitat.

Pulations (pp. 399–403) section describes how scientists study population density, size, and growth. The on also explains how factors such as food, space, and weather limit how large dations can become. Target Reading Skills plete the first column in the chart by filling in the red headings. Then in the new column, ask a what, how, or where question for each heading. As you read election, complete the third column with the answers. Section 2: Populations Heading Question Answer	me	Date	Class
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osystems • Reading/Note	etaking Guide
anges in Population Siz	ze (pp. 400–401)
How can populations change	ge in size?
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Eco	systems • Reading/Notetaking Guide
Po	oulations (continued)
Lin	iting Factors (pp. 402–403)
12.	An environmental factor that causes a population to decrease is called a(n)
13.	What are some limiting factors for populations?
	Topicalistica is mice enaptication. Which with Ability and year has in adding tad VI. 2
14.	The largest population that an area can support is called its
15.	Is the following sentence true or false? Space is often a limiting factor for plants.
16.	Which of the following is NOT a limiting factor in soil composition? a. mineral content
	b. acidity c. humus d. litter
17.	What are some ways weather conditions can limit population growth?
	of the evaluation of dealths from properties or the contract of the contract o
	spin and regions at the pirit of the best and are three some and welfor that

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Chapter 10 Ecosystems Section 3 Summary

Energy Flow in Ecosystems

Key Concepts

- What energy roles do organisms play in an ecosystem?
- How does energy move through an ecosystem?
- How much energy is available at each level of an energy pyramid?

An organism's energy role is determined by how it obtains energy and how it interacts with the other living things in its ecosystem. Each of the organisms in an ecosystem fills the energy role of producer, consumer, or decomposer.

Plants, algae, and some bacteria can carry out photosynthesis. In this process, the organism uses the sun's energy to turn water and carbon dioxide into sugar molecules. An organism that can make its own food is a **producer**. Producers are the source of all the food in an ecosystem.

Other organisms cannot make their own food. They depend on producers for food and energy. An organism that obtains energy by feeding on other organisms is a **consumer**. Consumers are classified by what they eat. Consumers that eat only plants are called **herbivores**. Consumers that eat only animals are called **carnivores**. A consumer that eats both plants and animals is called an **omnivore**. A **scavenger** is a carnivore that feeds on the bodies of dead organisms. An organism may play more than one role in an ecosystem.

Organisms that break down wastes and dead organisms and return the raw materials to the environment are called **decomposers**. As decomposers obtain energy for their own needs, they return simple molecules to the environment to be used again by other organisms.

The transfer of energy from organism to organism in an ecosystem can be shown in diagrams called food chains and food webs. A food chain is a series of events in which one organism eats another and obtains energy. The first organism in a food chain is always a producer. The second organism, called a first-level consumer, eats the producer. The next consumer, called a second-level consumer, eats the first-level consumer. A food chain shows just one possible path of energy through an ecosystem.

Most producers and consumers are part of many food chains. A more realistic way to show the flow of energy through an ecosystem is a food web. A **food web** consists of the many overlapping food chains in an ecosystem.

When an organism makes its own food or eats other organisms, it obtains energy. The organism uses some of this energy to move, feed, grow, and reproduce. Only some of the energy will be available to the next organism in the food web. A diagram called an energy pyramid shows the amount of energy that moves from one feeding level to another in a food web. The most energy is available at the producer level of the pyramid. As you move up the pyramid, each level has less energy available than the level below. In general, only about 10 percent of the chemical energy at one level of a food web is transferred to the next higher level. As a result, there are usually few organisms at the highest level in a food web.

Energy Flow in Ecosy	stems (pp. 404–409)
	that organisms play in the movement of one of the organisms in the
Jse Target Reading Skills	
raphic organizer below, ask three questi	Jeb on page 407 of your textbook. In the ions that you have about the illustration. As os, write the answers to your questions.
A Foo	od Web
Q. How is a food chain related to a	a food web?
A.	condition and constitutes are called a constitute of the constitut
Q. What do the levels of a food we	eb represent?
A.	varieties for their own needs they returns in warmen to be used again by other organisms.
Q. What is the role of decomposer	rs in a food web?
A. aworth much book A. a.	iled a first cond-love cond-love cone pas libe path of covery through an erosys
Energy Roles (pp. 404–405)	Most pro- stant way to slow the flow of energy through an look web copsists of the many overlapping root
Match the energy role with its definition	n. Hong best two alterdam memacan character
Energy Role	Definition
1. producer	a. Organism that breaks down wastes an
2. consumer	dead organisms b. Organism that obtains energy by
3. decomposer	feeding on other organisms

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Ecosystems • Readin	g/Notetaking Guide	
4. What types of organ	isms are producers?	
Key conclusions	ED LYSE DUOYS UNS 19 VIII- HALVE	o tero tradherd our intrat all out hopersy the missa book.
sunlight.		
6. Is the following sente food in an ecosysten	ne source of all the	
7. List two major group		
a	b	
8. Complete the compa		
7	Types of Consumers	construction of the constr
Type of Consumer	Type of Food	76 A. C. Sand
a.	Only plants	AND MESSAGE
Carnivore	b.	
c.	Both plants and anima	als
d.	Dead organisms	13. Circle the legis of earth 28

9. Is the following sentence true or false? Decomposers return raw materials to the environment.

Food Chains and Food Webs (pp. 406–407)

10. A series of events in which one organism eats another and obtains energy is called a(n) _______.

Na	me Date Class
Eco	osystems • Reading/Notetaking Guide
En	ergy Flow Ecosystems (continued)
11.	Label the producer and the first-level and second-level consumers in the food chain illustrated below.
	Kestrel MAN AND MAN AND MENTAL MAN AND MAN AN
	Grass Mouse Mouse
12.	The many overlapping food chains in an ecosystem make up a(n)
13.	Circle the letter of each sentence that is true about a food web.
	 a. Producers are at the top of the food web. b. All first-level consumers are carnivores. c. Second-level consumers may be carnivores or omnivores. d. An organism may play more than one role in a food web.
Ene	ergy Pyramids (pp. 408–409)
14.	What does an energy pyramid show?
	Lois Deutsch Wante
15.	Circle the letter of each sentence that is true about an energy pyramid. a. The greatest amount of energy is available at the producer level. b. At each higher level of the pyramid, there is more energy available. c. About half the energy at one level is transferred to the next. d. Scavengers and decomposers are part of the energy pyramid.

16. Why are there usually few organisms at the top of a food web?