

SECTION

1

Everything Is Connected**BEFORE YOU READ**

After you read this section, you should be able to answer these questions:

- What do organisms in an ecosystem depend on for survival?
- What are biotic and abiotic factors?
- What are the levels of organization in the environment?

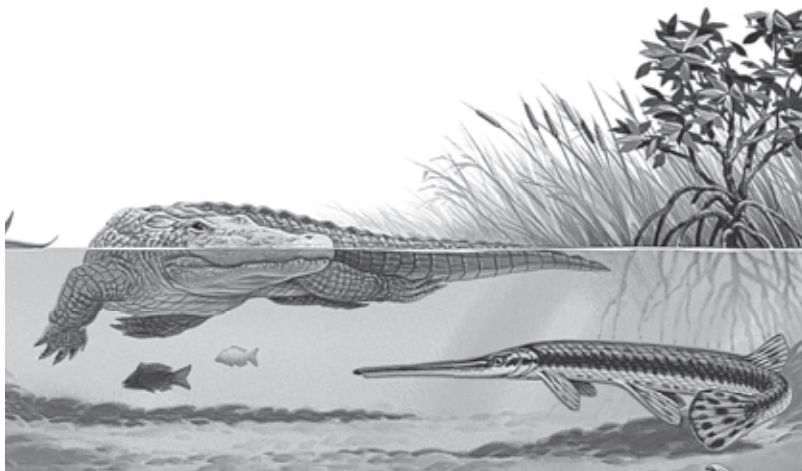
**National Science
Education Standards**
LS 4a, 4b, 4c, 4d

What Is the Web of Life?

All organisms, or living things, are linked together in the web of life. In this web, energy and resources pass between organisms and their surroundings. The study of how different organisms interact with one another and their environment is **ecology**.

An alligator may hunt along the edge of a river. It may catch a fish, such as a gar, that swims by too closely. As it hunts, the alligator is interacting with its environment. Its environment includes other organisms living in the area. The alligator depends on other organisms to survive, and other organisms depend on the alligator.

However, one organism eating another is not the only way living things interact. For example, when it gets too hot, the alligator may dig a hole in the mud under water. When the alligator no longer uses the hole, fish and other organisms can use it. They may live in the hole when the water level in the rest of the river is low.



Living things in an environment interact.



Underline As you read, underline any new science terms. Find their definitions in the section review or a dictionary. Make sure you learn what each term means before you move to the next section.



Discuss With a partner, talk about the organisms in this picture. How do you think each type of organism interacts with the others? What kind of things do you think each of these organisms needs to survive?

SECTION 1 Everything Is Connected *continued*

What Are the Two Parts of an Environment?

An organism's environment is made up of biotic and abiotic parts. **Biotic** describes the living parts of the environment, such as fish. **Abiotic** describes the nonliving parts of the environment, such as rivers. Organisms need both biotic and abiotic parts of the environment to live. ✓

READING CHECK

1. Compare What is the difference between biotic and abiotic factors?

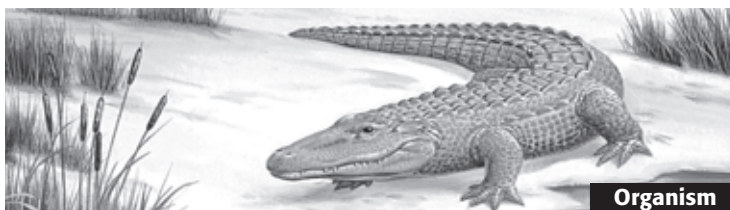
Critical Thinking

2. Identify Relationships How are the first two levels of organization related?

How Is the Environment Organized?

The environment can be organized into five levels. Individual organisms are at the first level. The higher levels include more and more parts of the environment. The highest level is called the biosphere. It is the largest level, and includes all the other levels.

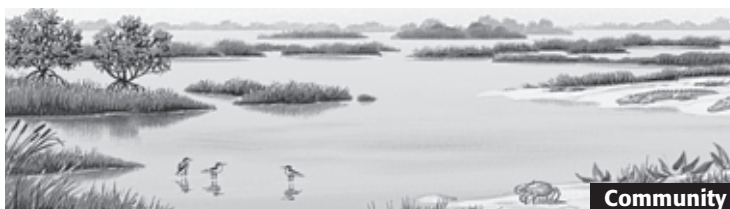
1. An *individual* is a single organism.



2. A **population** is a group of individuals of the same species in the same area. For example, all the alligators in the same river make a population. The whole population uses the same area for food and shelter.



3. A **community** is made up of all the different populations that live and interact in the same area. The different populations in a community depend on each other. For example, alligators eat other animals, including fish. Alligators create water-filled holes where fish and other organisms in the river can live during dry seasons.



Critical Thinking

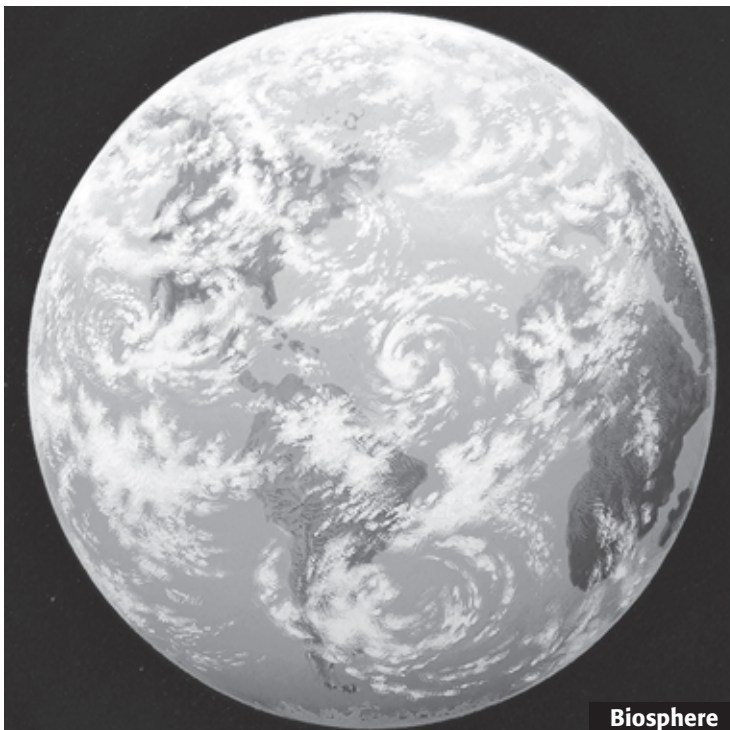
3. Infer Could a community be made up of only one population of organisms? Explain.

SECTION 1 Everything Is Connected *continued*

4. An **ecosystem** is made up of a community and its abiotic environment. The abiotic factors provide resources for all the organisms and energy for some. A river, for example, can provide water for river plants and many animals, and shelter for water insects. It can provide nutrients for plants, as well as food for fish and alligators.



5. The **biosphere** is the part of Earth where life exists. The biosphere is the largest environmental level. It reaches from the bottom of the ocean and the Earth's crust to high in the sky. Scientists study the biosphere to learn how organisms interact with abiotic parts of the environment. These abiotic parts include Earth's atmosphere, water, soil, and rock.

**TAKE A LOOK**

4. **Identify** Use colored pencils to make circles on the picture.
Circle an individual in red.
Circle a population in blue.
Circle a community in brown.
Circle an ecosystem in green.

Math Focus

5. **Calculate** From sea level, the biosphere goes up about 9 km and down about 19 km. What is the thickness of the biosphere in meters?
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Section 1 Review

NSES LS 4a, 4b, 4c, 4d

SECTION VOCABULARY

<p>abiotic describes the nonliving part of the environment, including water, rocks, light, and temperature</p> <p>biosphere the part of Earth where life exists</p> <p>biotic describes living factors in the environment</p> <p>community all of the populations of species that live in the same habitat and interact with each other</p>	<p>ecology the study of the interactions of living organisms with one another and with their environment</p> <p>ecosystem a community of organisms and their abiotic, or nonliving, environment</p> <p>population a group of organisms of the same species that live in a specific geographical area</p>
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1. Compare What is the difference between a community and an ecosystem?

2. Organize Complete the chart below to describe the five levels of the environment, from smallest to largest.

Level	Description
	a single organism
Population	
	all of the populations of species that live in the same habitat and interact with one another
Ecosystem	
Biosphere	

3. Identify What two kinds of factors does an organism depend on for survival?

4. Infer Would all the birds in an area make up a population? Explain your answer.
