



What Is an Ecosystem?



An **ecosystem** consists of a given habitat and its community. A community is all the populations living in a certain place. A population is all of the same kind of organisms living in that certain place. The living (biotic) and nonliving (abiotic) things in an environment together with their interactions make up the ecosystem. The habitat and all the interactions going on inside form a self-contained ecological unit.

Populations

A **population** is all of the same kind of organism living in a certain place. Different populations may live in the same environment. Study or visualize a pond near your home. Are there different organisms that live in the pond? Do you see frogs and toads? Maybe you see a few cattails, some fish, and overhead you hear ducks as they come in for a fantastic landing. There are 5 toads, 10 frogs, 20 minnows, 15 catfish, 10 blue gill, 6 ducks, and a lot of cattails. The five toads make up one population within the community. The 15 catfish make up another population in the community. What is the duck population of the pond community? If you could get a microscope and a drop of the pond water, you would see many other **microorganisms** (tiny living things) living in the pond community.



Communities

All the different populations living together and reacting in the habitat make up a unique community. Organisms interact with each other and the other things in the environment. There are many kinds and sizes of ecosystems. A rotting log, puddle of water, or even something as big as a desert can be an ecosystem. All ecosystems must be able to support all the organisms that live in or on that habitat. To support organisms, these four processes must occur:

1. The production of energy is one process that must occur inside the community. The sun is a source of energy in most ecosystems.
2. Energy must be transferred to plants that make their own food. The stored energy then is passed on to animals when they eat the plants.
3. When organisms die, they must decay, or break down, so that other living things can reuse these nutrients (raw materials).
4. This decomposition of dead materials is then recycled. As the materials break down, they return to the soil and are reused over and over.



What Is an Ecosystem? (cont.)



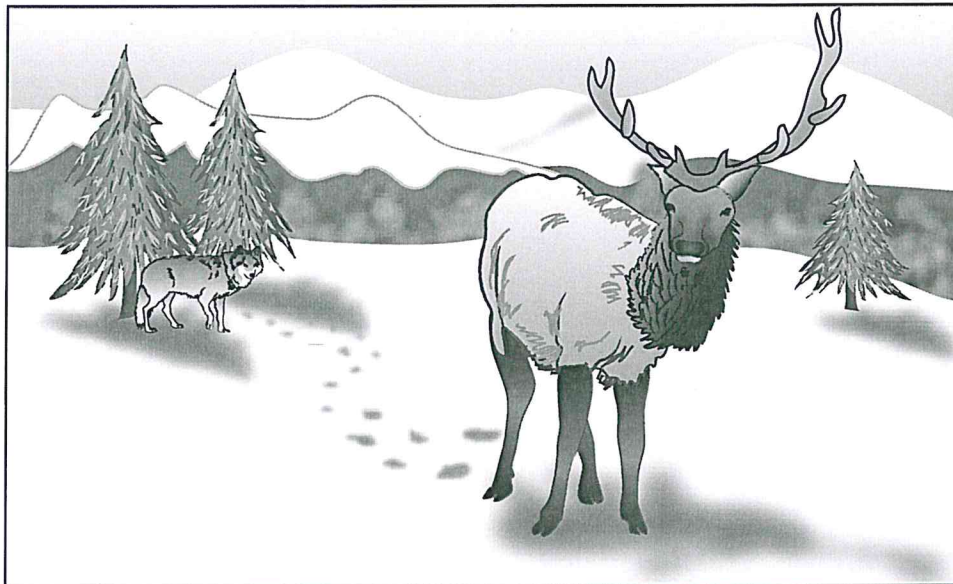
Habitats

A **habitat** is where an organism lives. The habitat provides everything an organism needs in order to survive. It has the food and water supply necessary to live. It also provides suitable shelter and a place to reproduce. As we said earlier, it may be very large or very small. There are water habitats and land habitats. The entire ocean is the habitat for whales. A habitat for a woodpecker may be as small as one tree in the forest. Even an anthill is a habitat.

Niches

Every organism has a certain role or job they perform within the community. What is your role or job right now? Did you answer “a student”? That is the job you have right now where you live. The job each organism fills within the community is its **niche** (NITCH or NEESH). This includes everything the organism does or needs.

Since many kinds of organisms share the same habitat, they must have certain roles within the community so that everything stays balanced. Each performs a different role and has different needs so the habitat can support everything living there. Wolves and elk share the same habitat, but they do not have the same niche. They do not eat the same thing or require the same shelter. If they did, they would not be able to live together for very long. One would be able to do the job better and end up crowding out the other one. What would happen if the elk and the wolves ate the same food? There might not be enough for both, and one would eventually perform the job better and take over the food supply. The other population would need to leave and find a new habitat or end up starving. If two populations shared the same niche, the one best suited to the role would survive and reproduce. Two populations may share the same habitat, but they cannot share the same niche.



Name: _____ Date: _____

What Is An Ecosystem?: Reinforcement Activity

To the student observer: Study the image on page 5, and see if you can identify the community.

The image represents a _____ community.

Analyze: Observe the image again and see if you can identify the largest population and the smallest population. What other populations might exist there?

Largest: _____ Smallest: _____

Other: _____

Completion:

1. A _____ is all the different kinds of organisms that live in a certain place.
2. All the biotic and abiotic things in an environment and their interactions make up an _____.
3. The _____ is the main source of energy in most ecosystems.
4. When an organism dies, its body _____, or breaks down.
5. The anthill is the _____ for the ants in your backyard.
6. The role of an organism in the habitat is its _____.
7. Two populations may share the same _____ but not the same _____.
8. All ecosystems must be self-supporting. Can you identify the four processes that occur in an ecosystem?
 - a. _____
 - b. _____
 - c. _____
 - d. _____

Making an Inference: Polar bears live in a cold, arctic habitat. Could this animal live in a hot, dry desert? Why or why not?
