

## The Ecosystem of the Forest



Even if it doesn't look like it, all living things constantly interact with their environment. For instance, every time you take a breath, you get oxygen from the air, and every time you breathe back out, you release carbon dioxide into the world around you. Both oxygen and carbon dioxide are vital gases that different organisms can use. You, a human, need the oxygen for energy and need to get rid of the carbon dioxide, because it's a waste matter.

Just like us, all other organisms take something from their environment while putting waste back into it. When several kinds of organisms interact with each other in one particular area, it's called an ecosystem. In the forest, living beings (plants, animals, insects, fungi and bacteria) all interact with each other and with the soil and water to form the forest's specific kind of ecosystem.

So, how does it work? Every organism in the forest can be put in one of three categories. Depending on which category they're in, they'll interact with each other and the forest's resources in a different way. The categories are producer, decomposer and consumer. Let's look at each one.

Producers are living things that can make their own energy out of non-living resources all around them like, oxygen and water. They're also known as autotrophs. Autotrophs do not need to kill anything in order to eat. Plants and algae, for example, are producers. In the forest's ecosystem, the trees, shrubs and moss are all producers. They turn water and sunlight into the energy they need to live and grow, through a process called photosynthesis. And remember that carbon dioxide you expelled as waste matter? Well, for plants, carbon dioxide is a vital gas. It is used to help aid with the process of photosynthesis.

Like producers, decomposers don't need to kill another living being to obtain food. However, they differ from producers because they still need to get their nutrients from other organisms or from waste matter expelled by other organisms. Usually they eat dead animals and plants. Bacteria and certain kinds of fungi are examples of decomposers. They're very important because by helping break down dead organisms, they actually provide energy to living ones.

Consumers are the living beings that need to eat other organisms to survive. You may have heard about this group as being "at the top of the food chain." They're also known as heterotrophs. Humans are heterotrophs who eat both plants and animals to live. In the forest, a deer eating plants, a wolf hunting deer, a hawk eating rodents, and rodents eating both bugs and plants, are all examples of the ecosystem's consumers. As you can see, carnivores, omnivores and herbivores are all different kinds of heterotrophs. It doesn't matter which kind of organism they eat; as long as they eat other organisms to survive, they're consumers/heterotrophs.

So, now that you know each type of player, how does the ecosystem's cycle work? Well, when an organism dies and its body decomposes, bacteria go to work. Let's imagine the dead organism is a deer. Bacteria obtain energy from the deer's body, while helping it decompose efficiently. When the deer's body breaks down, because of the work done by the bacteria, it returns to the soil. This is important for the earth, because the carcass actually gives vital energy back to the environment. It makes the soil rich in nutrients for plants to grow there. Grasses, flowers and trees then grow in that soil and get the energy they need, along with energy from the sun and water. The water also filters through the soil, which is necessary for the forest's flowers and trees to be able to take it up through their roots. Heterotrophs, like deer, eat those plants to get their energy, and other heterotrophs, like wolves, eat the deer for their energy.

As you can see, in a forest ecosystem or any kind of ecosystem, every being interacts with other beings. What's important to remember is that each part of the ecosystem is as important as another. Without soil, there'd be no plants. With no plants, there'd be no deer, rodents or certain kinds of insects. And without tiny microbes (remember, the decomposers), animals and plants would die without their bodies being returned to the earth. Because forests cover about a quarter of the total land surface of the world, keeping their ecology balanced is important for the entire earth.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What is an ecosystem?

- A a living being, such as a human, that eats other living beings in order to survive
- B the process by which the body of a living thing is broken down by decomposers
- C one particular area where several kinds of organisms interact with each other
- D an organism that breathes in oxygen and then breathes out carbon dioxide

2. What does this passage explain?

- A This passage explains what the difference between plants and fungi is.
- B This passage explains what an ecosystem is and how it works.
- C This passage explains how oxygen is used by the human body after it is breathed in.
- D This passage explains what happens when a decomposer dies in the forest.

3. In an ecosystem, different organisms interact with each other.

What evidence from the passage supports this statement?

- A Plants use sunlight, water, and carbon dioxide in a process called photosynthesis.
- B Forest ecosystems cover about a quarter, or one-fourth, of the total land surface in the world.
- C Producers are living things that can make their own energy out of non-living resources.
- D A deer decomposing in the soil provides food for bacteria and nutrients for plants to grow.

4. Based on the information in the passage, what do all ecosystems have in common?

- A All ecosystems are home to living beings that interact with each other.
- B All ecosystems are home to trees, deer, humans, rodents, wolves, hawks, and bacteria.
- C All ecosystems have an equal number of consumers, decomposers, and producers.
- D All ecosystems have a few consumers that do not interact with decomposers and producers.

5. What is this passage mainly about?

- A the differences between oxygen and carbon dioxide
- B different kinds of consumers and the reasons they are "at the top of the food chain"
- C different organisms in a forest ecosystem and how they interact
- D what happens when the ecology of a forest is thrown off-balance

6. Read the following sentence: "Consumers are the living beings who need to eat other **organisms** to survive."

What does the word "**organisms**" mean?

- A environments
- B waste matter
- C categories
- D living things

7. Choose the answer that best completes the sentence below.

Every organism in the forest can be put in one of three categories, \_\_\_\_\_ producer, decomposer, or consumer.

- A namely
- B although
- C as a result
- D earlier

8. What is a decomposer?

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9. How do decomposers interact with their ecosystem? Be sure to name one example of them taking from the ecosystem and one example of them giving to the ecosystem.

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10. The author writes that each part of the ecosystem is as important as another. Based on the information in the passage, do you agree or disagree? Explain your reasons for agreeing or disagreeing using evidence from the passage.

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## Teacher Guide &amp; Answers

Passage Reading Level: Lexile 1000

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8. What is a decomposer?

**Suggested answer:** A decomposer is a living thing that gets its nutrients from other organisms or the waste matter of other organisms.

9. How do decomposers interact with their ecosystem? Be sure to name one example of them taking from the ecosystem and one example of them giving to the ecosystem.

**Suggested answer:** Decomposers eat dead animals, like bacteria feeding on a deer. They also support plant life by breaking down animals, which makes the soil rich in nutrients.

10. The author writes that each part of the ecosystem is as important as another. Based on the information in the passage, do you agree or disagree? Explain your reasons for agreeing or disagreeing using evidence from the passage.

**Suggested answer:** Students may agree or disagree, provided that they support their answers with evidence from the passage. Those agreeing may point out that organisms in an ecosystem are dependent on one another. Plants need bacteria to enrich the soil by breaking down dead animals. Animals need plants to eat. Bacteria, in turn, need organisms like plants and animals to feed on. Students may also disagree, pointing out that an ecosystem could survive without certain organisms but not without others. For example, an ecosystem might be able to survive the loss of one type of consumer (such as humans) as long as there are other consumers to keep the cycle of life going.