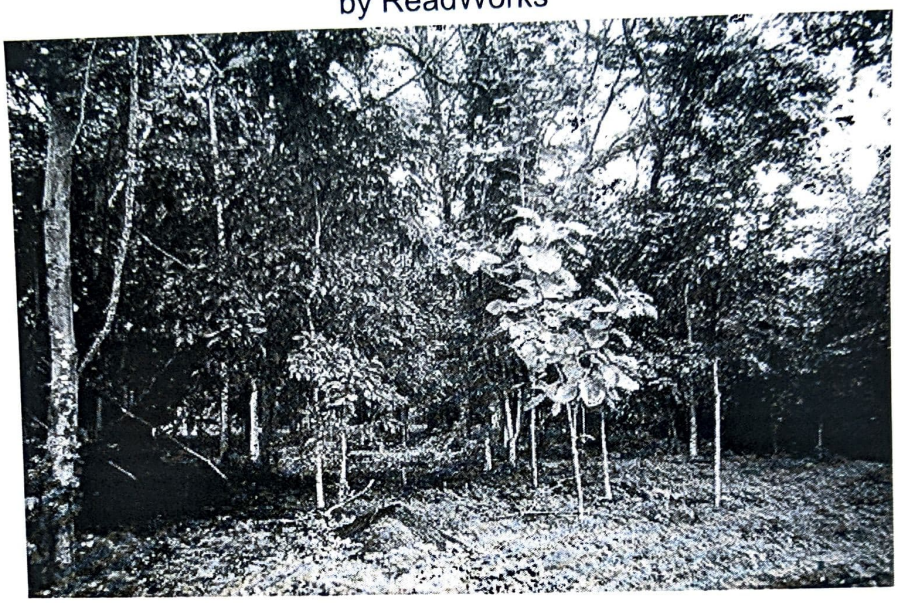
The Ecosystem of the Forest

by ReadWorks



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.

interact

in · ter · act

Advanced Definition

intransitive verb

1. to react to one another in a social situation.

   We were pleased to see that the students from the two schools were interacting well.

   He's always nervous about interacting with people at parties.

2. to have an effect on or modify one another.

   It is important to know how the drugs interact.

Spanish cognate

interactuar: The Spanish word *interactuar* means interact.

These are some examples of how the word or forms of the word are used:

1. The ability to **interact** is crucial, or necessary, for robots that will one day work closely with humans, says Chris Atkeson, a professor at the Robotics Institute at Carnegie Mellon University in Pennsylvania. "It is important for robots and all machines that interact with people to understand what you say and how you are feeling and respond with appropriate emotions," he told WR News.

2. One of them beckoned to her with his hand. "Bring it up!" he called out. The thought of **interacting** with them set her nerves on edge. She was only 10. They were older-high schoolers.

3. The International Astronomical Union is a group of astronomers that acts as the authority on celestial bodies. The main objective of this group is to regulate **interactions** and research between various countries, keeping international relations friendly and universal. It is in this way that astronomers in Italy have the same names for stars as those in America.

4. An ecosystem is a community of plants and animals that **interacts** with the environment. If cave creatures decline, it could signal problems or changes in the environment.

5. He is, by the way, a friend of Hunter "Patch" Adams's. If that name sounds familiar, it's because Adams is a funny doctor who became so famous that a movie was made about him. His **interactions** with his patients were like comedy routines.

6. "[Separate classes don't] prepare boys and girls for the real world, where they will have to **interact** with and work alongside each other," says Kim Gandy, NOW president. NOW and other groups want to improve coed schools rather than separate boys and girls.

organism

or · gan · ism

Advanced Definition

noun

1. any single living being, such as an animal, plant, fungus, or bacterium.

   The water sample contains numerous kinds of tiny organisms.

2. any structure or system that is analogous to a living thing.

   We're discussing the social organism that is our city.

Spanish cognate

organismo: The Spanish word *organismo* means organism.

These are some examples of how the word or forms of the word are used:

1. Robert Hazen's pressure-bomb experiments created a number of organic molecules, including simple sugars, amino acids, and lipids-the main building blocks of life. All three are found in every living **organism** on Earth.
2. An ecosystem is a community of **organisms** functioning as a unit with its environment.
3. It's a complex lottery in which offspring of the first two **organisms** inherits a combination of their genetic material.
4. "If we're right, we think we're looking at [an] environment in the solar system [besides Earth] where we have liquid water and the potential for living **organisms**," Porco told reporters.
5. Lysenkoism is hard to describe, but it centered on the idea that new traits in both plants and animals were not found at birth, but rather developed over an **organism**'s lifetime and then were passed on to its offspring.

vital

vi · tal

Advanced Definition

adjective

1. pertaining to or characteristic of life.

   The nurse checked the patient's heartbeat and other vital signs.

2. necessary to maintain life.

   The heart and lungs are vital organs.

   These foods contain vital nutrients.

3. full of life, vigor, or energy.

   My grandmother is still vital at ninety years of age.

4. of critical importance; essential.

   It is vital that you get her to the emergency room immediately.

   This is a vital step in the process and must not be overlooked.

5. fatal; deadly.

   The soldier dealt his enemy a vital blow.

Spanish cognate

vital: The Spanish word *vital* means vital.

These are some examples of how the word or forms of the word are used:

1. "Coltan is **vital** to the function of modern society," says Andrew Campbell, a professor of mineralogy at the New Mexico Institute of Mining and Technology. "It is an incredibly precious mineral."

2. As they scrambled up the hill face, Kurt sweated and Roscoe panted. Halfway up, they paused for a juice break. "On an adventure," Kurt reminded Roscoe, "it's **vital** to stay hydrated." The dog panted in agreement as he sipped his juice.

3. Printing quickly replaced hand copying and became a **vital** new way to communicate. ... The middle classes began to demand books written in their own languages. They wanted books about everything-not just religion. As people read about politics and social issues, they formed opinions and exchanged ideas. These ideas fueled the Renaissance of Europe.

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?

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.

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.