

# Read About Ecosystems

## DEFINITION OF ECOSYSTEMS

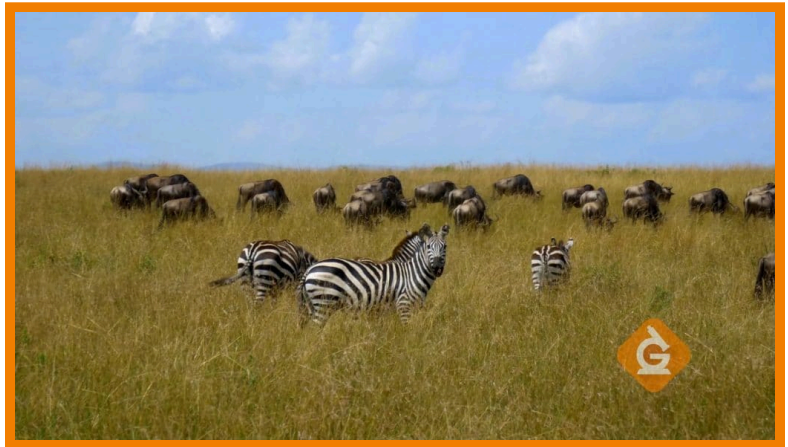
An *ecosystem* is a community of interacting organisms and their environment. Living things interact with each other and also with non-living things like soil, water and air. Ecosystems often contain many living things and can be as small as your backyard or as large as the ocean.

*To learn how the different types of ecosystems work...*

## LET'S BREAK IT DOWN!

### **An ecosystem is a community of interacting organisms and their environment.**

Many people only think of animals when they learn of ecosystems, but in reality, an ecosystem has animals, plants, and NON-living things too. Animals need to hide inside rocks and dead trees. Water is needed to drink and some animals live in the water. Air is a non-living part of an ecosystem as well -- all animals need air.



Some ecosystems provide special services for the entire world. For example, even though rainforests only cover 6% of Earth, they produce about 40% of the oxygen in the atmosphere through photosynthesis. Other ecosystems produce food, medicine, and helpful materials like rubber and lumber.

## Organisms only survive in an ecosystem when their specific needs are met.

All organisms have needs, such as food, water, and air. If the needs of the organisms in the ecosystem are not met, they cannot survive.

Animals usually need food, water, and shelter. For example: if deer need to eat grass and the place they live in (their ecosystem) no longer has grass, they have to move somewhere else or risk not surviving.



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## A healthy ecosystem has many different kinds of organisms.

When you think of an ecosystem, such as a forest, there are many organisms that are important. Trees, deer, plants, birds, squirrels, and insects are prominent members of the ecosystem. There are many more organisms that live in an ecosystem that are not as noticeable.



We often forget about all the bacteria, fungus, and tiny insects that are equally important. Ecosystems depend on many organisms to keep them in balance.

When that balance is disrupted organisms cannot thrive, and some may even die. Possible disruptions caused by humans include pollution, deforestation, land development, or removing too many resources like water. Making wise choices to protect ecosystems will help all the living things continue to live and thrive. It's important to remember that not all disruptions are caused by humans, some happen naturally.

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## Newly introduced organisms can throw off the balance of an ecosystem.

Another way humans impact ecosystems is by introducing invasive species. *Invasive species* are living things not naturally found in that ecosystem.

They upset the natural balance. Wild pigs were introduced to the United States centuries ago. Each year they



cause billions of dollars of damage to crops. Wild pigs eat turkey eggs and other animals. Since they are no longer in their native environment, wild pigs do not have any natural predators, so their population is difficult to control.

In nature, an ecosystem is balanced with predator-prey relationships that keep populations from getting too high.

When invasive species are introduced three possible things can happen to existing animals. (1) The animals can adapt and stay in that ecosystem. (2) The existing animals die or (3) the animals can move somewhere else to find a new home.

## EXAMPLES OF DIFFERENT TYPES OF ECOSYSTEMS



**A small puddle can be its own ecosystem.** All the organisms needed to have a well-balanced ecosystem can exist on a small scale.



**Using too much fertilizer can damage ecosystems.** In some cases, pesticides kill a lot more bugs than they are intended to. This means less bugs to eat for some animals. It causes a disruption in the balance of the whole ecosystem.



**Ecospheres are ecosystems you can have on your desk.** These mini ecosystems are completely balanced and only require a source of sunlight. They contain algae and shrimp which make food for each other.

## ECOSYSTEMS VOCABULARY

### Ecosystem

A community of interacting organisms and their environment. Living things interact with each other, and also with non-living things like soil, water and air.

### Botanist

A scientist that studies plants.

### Nectar

A sweet, sugary liquid made inside flowers. Insects and hummingbirds feed on.

### Rainforest

An area densely packed with lots of different kinds of plants, tall trees and animals. Rainforests get a lot of rain (about 100 inches of rain per year). All that rain allows lots of different plants to grow and lots of animals live near those plants. Rainforests also produce a lot of oxygen that humans breathe and scientists estimate that there are millions of different kinds of living things still undiscovered in rainforests.

### Invasive species

Living things not naturally found in that ecosystem. They usually cause damage or throw off the balance of the natural ecosystem.

## **ECOSYSTEMS DISCUSSION QUESTIONS**

### **How big is an ecosystem?**

Ecosystems range from the size of your backyard to an entire ocean.

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### **How do the components of Dr. Jeff's ecosphere interact to help each other survive?**

In the enclosed ecosphere, the algae uses sunlight to grow. The algae is then eaten by the shrimp. The shrimp's poop provides food for bacteria which convert the poop to nutrients that help the algae to grow. It's a cycle!

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### **Why would the shrimp in the ecosphere die if there was no sunlight?**

The shrimp in the ecosphere depend on the algae for food. If there was no sunlight, the algae would die, which leaves no food for the shrimp.

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### **What are some of the components of a rainforest ecosystem and how do they interact?**

Rainforest ecosystems contain lots of plants. Plants provide food and homes for animals like birds and butterflies. Birds build nests in plants. Bugs eat leaves of plants and birds drink nectar from flowers. Some plants also make fruit which animals eat.

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### **Why are rainforest ecosystems important?**

Rainforests cover only about 6 percent of the planet but are responsible for producing about 40% of the oxygen we breathe!

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### **What are some parts of a freshwater ecosystem?**

There are many examples. Some of the examples in the video include fish, crabs, shrimp, turtles, algae, plants, dead wood and rocks. All these are part of a freshwater ecosystem.

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