




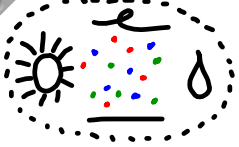
Grade 7 Science

Unit 2: Ecosystems

Review of Definitions

Biotic?

Abiotic?

Individual	A single living thing.	
Population	A group of organisms of the same species in an ecosystem.	
Community	A group of different populations interacting in an ecosystem.	
Ecosystem	All the organisms living in a particular area, as well as all the nonliving, physical components of the environment with which they interact.	

Revised Ecosystem Definition:

Interactions amongst biotic communities and the abiotic factors of their environment.

Ecosystems



A community is filled with groups of organisms that interact with each other, but it does not exist on its own. It has boundaries, and it is affected by external conditions, such as the average amount of sun and rain, and the average temperature. Look at the photograph of the beaver dam in Figure 1.4. Imagine the community that lives there. What non-living, or abiotic, features can you think of that interact with the organisms in the community? Your list may include air, sunlight, rocks, rain, and soil. An **ecosystem** is the interactions between abiotic features of an area and the biotic community that lives in the area. An ecosystem includes individuals, populations, and communities (see Figure 1.5). and in this case, the ecosystem is the beaver dam.

An ecosystem can be large or small, but it must contain all the abiotic and biotic features of the area. For example, a rotting log is an ecosystem, as long as all the organisms living in or on the log and all the abiotic factors affecting the log are included. In the same way, a forest is an ecosystem, as long as it includes all the biotic organisms living in it, as well as the abiotic features affecting it. Usually the environment is the same across an ecosystem, so that it gets the same amount of rain or sunshine. An ecosystem also has fairly clear physical or environmental boundaries. For example, the edge of a ploughed field would physically mark the edge of a field ecosystem. The edge of a pond would physically mark the edge of a pond ecosystem. An environmental boundary could be the edge of an area that gets more sunshine or rain, or a change in altitude along the side of a mountain.



Level 1: individual



Level 2: population

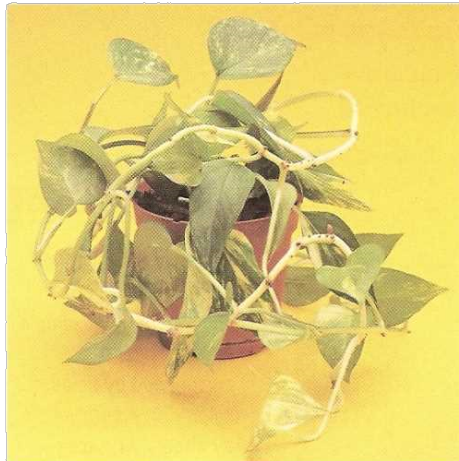


Level 3: community



Level 4: ecosystem

Let's play devil's advocate to the validity of these pictures. Why are they not as labelled?



Abiotic-Biotic Interactions in an Ecosystem

In an ecosystem, the non-living and living parts interact and affect each other. Think about the following four abiotic factors as you consider an ecosystem.

- *Sun* The Sun provides energy that gives warmth to spiders, and other organisms, enabling them to survive. It provides light, which green plants like the one in Figure 1.6 use to make their own food. (You will learn more about this process in Chapter 3.) The number of hours of daylight triggers seasonal events, such as plants flowering and the migration of birds.
- *Air* The air contains oxygen, which animals breathe. It provides carbon dioxide, which plants use to make their own food.
- *Water* Plants need water to grow. Water is important to all organisms for life processes. These include distributing food particles through their bodies, breathing, and digesting food. The bodies of most organisms are 50 to 95 percent water. Some organisms, such as trout, whales, and algae, live in water not air. (Can you think how they obtain their oxygen?)

- *Soil* Soil contains both abiotic parts, such as minerals, and biotic parts, such as decaying bodies of dead organisms. Soil provides a home for many animals that live underground. For example, earthworms burrow in and overturn soil, allowing air and water to go down into the soil. They also eat organic material in the soil and pass the remains out behind them, often on the surface. In this way, they bring valuable nutrients to the topsoil (see Figure 1.7). Soil also provides minerals and other nutrients for plants. Plants, in turn, hold soil in place, helping to keep it from being blown or washed away. (In Chapter 10, you will learn more about soil.)



Can you find the mistake in this paragraph?

"dead organisms" = dead living things... Walking Dead?



Features of an Ecosystem

- Constant environment
- Same general level of rain/sunlight throughout
- Clear physical or environmental boundary (i.e., the edge of a pond is the edge of the pond ecosystem)

Four Main Abiotic Factors

- Air
- Sun
- Water
- Soil

Interactions Between Biotic and Abiotic

Abiotic Factor	What does it provide?
Air	O ₂ (oxygen), CO ₂ (carbon dioxide)
Sun	Energy, Light, Warmth
Water	Growth, Transportation of Food
Soil	Nutrients

This information, as well as my amazing drawings from the first slide, are posted online as "Features of an Ecosystem Note." Please print it and put it in your binder.