

Principle of Ecology

The Ecosystem:

Why it's important:

Everything on earth Air, land, water, plants, and animalsis connected. Understanding these connections helps us keep our environment clean, healthy and safe.

What is Ecology?

The branch of biology that developed from natural history is called ecology. Ecology is the study of interactions and their environment Ecologists may ask what a coyote eats, how day length influences plants or migrating birds.

The Biosphere:

On Earth. Living things are found in the air, on land, and in both fresh – and salt water.

The biosphere is the portion of Earth that supports living things. It extends from high in the bottom of the oceans. Although it is thin, the biosphere supports a diverse group of organisms in a wide range of climates. The climate, soils, plants and animals in one part of the world. Living things are affected by both the physical or nonliving environment and by other living things.

A biotic Factors:

Are non living things. ((Non living parts)) of on organisms environment are the a biotic factors. Example of a biotic factors in clued air currents, temperature, moisture, light and soil.

Biotic Factors

Are all living things (organisms). All the living organisms that inhabit an environment are called biotic factors. Example goldfish in a bowl. Now consider its relationships with other fishes? Does the fish live alone or with other fishes? Are there live plants in the bowl? The fish may be depend on other living things for food, or it may be food for other life. The gold fish needs members of the same species to reproduce.

Levels of Organization:

Ecologists study individual organisms, interactions among organisms of the same species, and interactions among organisms of different factors on interacting species.

Why you are studying the levels of organization?

Why Ecologists studying the levels of organization?

To help them understand the interactions of the biotic and a biotic (factors) parts of the world, ecologists have organized the living world into levels – the organism by itself, populations, communities, and Ecosystems.

Summary:

Levels of organization Ecology is the study of relationships on several levels of biological organization, including individual organisms, population, communities, ecosystems, biomes, and the biosphere.

1- Organism:

An individual living thing that is made of cells, uses energy, reproduces, responds grows, and develops.

2- Population:

A group of organisms, all of one species, which interbreed and live in the same place at the same time.

3- Biological Community:

All the population of different species that live in the same place at the same time.

4- Ecosystem :

Populations of plants and animals that interact with each other in a given area and with the a biotic components of that area.

5- Biosphere:

The portion of earth that supports life.

The are two kinds (major) of ecosystems.

1- Terrestrial ecosystems 2- Aquatic ecosystems.

Terrestrial ecosystems are those located on land. Examples include forests, meadows, and rotting.

Aquatic ecosystems occur in both fresh – and salt water.

Example: pond, sea, lakes and ocean.

6- Biome:

Is a large group of ecosystem that share the same climate and have similar types of communities. Marine biome and all of the biomes on earth combine to form the highest level of organization – the biosphere.

Biome: biome is formed by a group of ecosystem. Such as

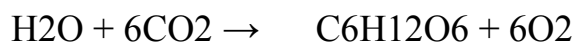
The coral reef of the coast of the Florida keys that share the same climate and have similar types of communities.

Energy in an Ecosystem:

How organisms make their nutrients? Or how organism take food, their food, or how Organisms Obtain their.

Organism obtain their food by two modes (kinds):

1- Autotrophs: All organisms of green plants and other organisms that produce their own food in an ecosystem are primary producers called autotrophs. An autotroph is an organism that collects energy from sun light or in organic substance to produce food.



2- Heterotrophs: A heterotroph is an organism that gets its energy requirements by consuming other organism.

In addition to herbivores and carnivores.

There are organisms that eat both plants and animals, called omnivores, Ex: Humans, and Bears.

The detritivores. Which eat fragments of dead matter in an ecosystem, return nutrient to the soil, air, and water where the nutrients can be reused by

organisms. Detritivores include worms and many aquatic insects that live on stream bottoms. They feed on small pieces of dead plants and animals, such as those Fungi and bacteria are decomposers.

Therefore, heterotrophs also are called consumers. A heterotroph that eats only plants is an

Herbivore such as a cow, Rabbit, or grasshoppers. Heterotrophs that prey on other heterotrophs, such as wolves, lions and lynxes are called.

Carnivores (Heterotroph eats other heterotroph).

The relationships between the Organisms

And how the Energy in their Ecosystem:

How organisms take their food, they obtain their food as the following:

Predation: refers to a +/- interaction between species in which one species, the predator kills and eat the other. Ex: a lion attacking and eat an antelope and an animal that kills a plant by eating the plants tissues can also be considered a predator.

Herbivory: Ecologists use the term herbivory to a +/- interaction in which an organism eats part of a plant or alga. Ex: large mammalian herbivores such as cattle, sheep, and water buffalo may be most familiar, most herbivores are actually invertebrates, such as grasshoppers and beetles.

Symbiosis: when individuals of two or more species live in direct and intimate contact with one another, their relationship is called symbiosis. This kind nutrient includes all such interactions, whether harmful, helpful, or neutral some biologists define symbiosis more narrowly as a synonym for mutualism, in which both species benefit.

1- Mutualism:

Mutualistic symbiosis, or mutualism $+/+$ is an interspecific interaction that benefits both species ($+/+$) Ex: nitrogen fixation by bacteria in the root nodules of legumes. The digestion of cellulose by microorganiss in the digestive systems of termites and ruminant mammals the exchange of nutrients in mycorrhizae, association of fungi and the roots of plants mutulism between acacia trees and ants

2- Commensalis:

An interaction between species that benefits one of the species but neither harms nor helps the other ($+/0$) is called commensalism. Ex: A possible example of commensalism between cattle egrets and water buffalo.

Suppose you live (of community) in an agriculture area. What examples of the four types of community interactions (competition, predation, herb ivory and symbiosis).

3- Parasitis:

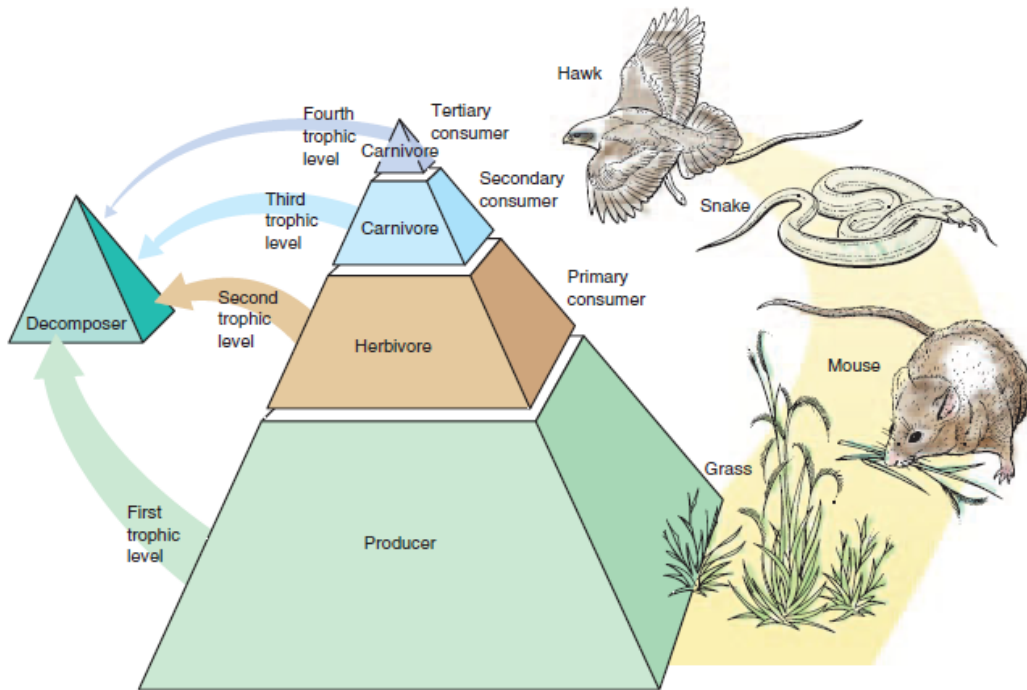
Parasitism is a $+/-$ symbiotic interaction in which one organism, the parasite derives its nourishment from another organism, its host.

Which is harmed in the process. Parasites that live within the body of their host, such as tapeworm, are called end parasites, parasites that feed on the external surface of a host, such as ticks and lice are called ectoparasites.

Inter specific

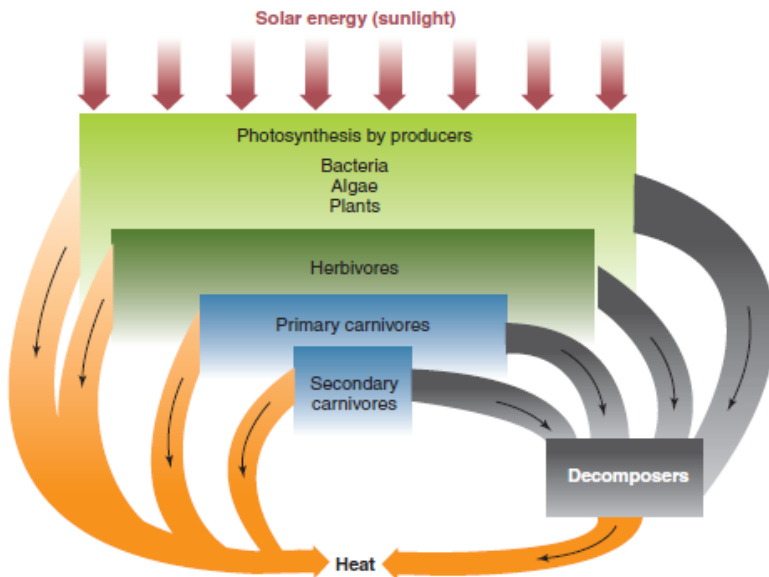
Table community interaction by whether they help, harm, or no effect (unaffected) on the species involved.

Interaction	Description
Mutualism (+/+)	Both species benefit from the interaction.
Commensalism (+/0)	one species benefits from the interaction, while the other is unaffected by it.
Carnivore (+/-)	one species benefits by eating animals while the others are harmed Ex: lions
Omnivore (+/-)	organism eats plant and animal Ex: human.
Competition (-/-)	Two or more species compete for a resource. that is in short supply the two species cannot coexist in the same community if their niches are identical.
Predation (+/-)	One species, the predator, kills and eats the prey, predation has led to diverse adaptations, including mimicry.
Herbivory (+/-)	An herbivore eats part of a plant or alga. Plants have various chemical and mechanical defenses against herbivory, and herbivores have specialized adaptations for feeding.
Symbiosis	Individuals of two or more species live in close contact with one another, symbiosis includes. Parasitism, mutualism, and commensalism.
Parasitism (+/-)	The parasite derives its nourishment from a second organism, its host, which is harmed.



The Organization of an Ecosystem

Organisms within ecosystems can be divided into several different trophic levels on the basis of how they obtain energy. Several different sets of terminology are used to identify these different roles. This illustration shows how the different sets of terminology are related to one



Energy Flow Through an Ecosystem

As energy flows from one trophic level to the next, approximately 90% of it is lost. This means that the amount of energy at the producer level must be ten times larger than the amount of energy at the herbivore level.

The End