

Principles of Ecology



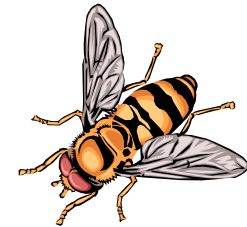


Ecology: Study of the interactions between organisms and their environment.

Two types of things to look at:

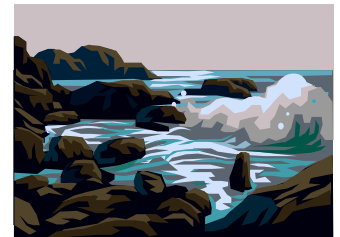
Biotic: Living organisms

-Plants, Animals, Bacteria



Abiotic: Non-Living things

-Rocks, Sun, Water, Wind



Ecologists must choose what to study

- Organism**: Study of an individual
- Population**: Group of organisms of one species in the same area.
- Community**: Group of populations in a given area.
- Ecosystem**: A community and all of the abiotic factors around it.
- Biosphere**: The portion of the earth that supports life, including both biotic and abiotic factors

Interactions between living and non-living things

Habitat: The place where an organism lives.

-**Niche:** The role or position that an organism has in its environment.

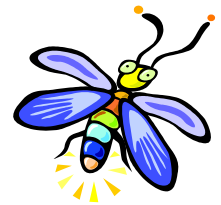
Symbiosis: Means living together

3 types of Symbiosis:

-**Mutualism:** Both benefit

-**Commensalism:** One benefits and other is neither helped nor harmed.

-**Parasitism:** One benefits, other is harmed.



Nutrition and Energy Flow

The ultimate source of energy is the sun.

Organisms called **AUTOTROPHS** capture energy from the sun and convert it into usable energy. (Plants, some bacteria)

That useable energy is stored as different types of sugars.

HETEROTROPHS (animals) cannot capture energy from the sun and must therefore eat autotrophs to get energy.

Different types of heterotrophs:

- Herbivores**: Plant eaters
- Carnivores**: Eat animals
- Omnivores**: Eat plants and animals.
- Scavengers & decomposers**: Eat dead organisms

Energy flow



- A food chain is a simple model to show how energy moves through an ecosystem.
- A food web shows all the possible eating relationships in a community.
- Each organism in a food web or chain represents a feeding step, or a “trophic level”.
- Ecological Pyramids show the relative amount of energy at each trophic level in an ecosystem.
- The base of the pyramid represents the autotrophs (1st trophic level).
- Higher trophic levels are layered on top of one another.
- Most but not all ecological pyramids are large at the base and narrow at the top.
- This is because every time that an organism is eaten by the next trophic level, some of the energy is lost as heat.