

Biosphere = the living part of the earth.

### Ecosystems

- An ecosystems is made up of many parts.
  - ♦ biotic factors include: trees, plants, animals, bacteria
  - ♦ abiotic factors include: non living things
    - Ecosystems can take up whole continents of land, or can be the size of a puddle.

ecosystem - a "machine" where ecology happens or things interact.

Within ecosystems are habitats. A habitat is where an organism lives, and finds food.

### Abiotic Interactions in Ecosystems

Although we think about ecosystems as places where living things (biotic factors) live, there are many abiotic (non-living) factors that are very important

- Abiotic components allow the biotic components to survive.
- oxygen: produced by green plants and certain micro-organisms, used by animals and most other micro-organisms.
- water: necessary for all life.
- nutrients enter the food chain with plants, are very important for growth.
- light: is required for photosynthesis, (process in plants that converts and stores the Sun's energy into starches and carbohydrates.)
- dirt: contains water and nutrients, home to many plants and animals.

### Biotic Interactions in Ecosystems

Organisms in an ecosystem do not live in isolation. They are constantly interacting with their own and other species.

- a community = all the organisms that interact within an ecosystem.
- a population = all the members of a certain species within an ecosystem.
- species = all of the organisms that have the same structure, and can reproduce with each other.

## Symbiotic Relationships

- when things live really closely together.

There are several ways that different species can interact with each other

- commensalism - one species benefits, one is not affected  
trees + spanish moss
- mutualism - both species benefit  
eg fungus farming ants.
- parasitism - one species benefits, the other is harmed  
eg ticks suck blood.

## Niches, Competition and Predation

- A niche refers to the role an organism has within an ecosystem. It is how an organism fits into its environment physically, chemically and biologically
- competition occurs when a resource is desired by two or more individuals.
  - ♦ competition usually means resources are limited
  - ♦ This limits the size and health of that individual, and perhaps that population.
- predation is the relationship between the predators and their prey.
  - ♦ predators have adaptations to help them catch their prey.  
- forward facing eyes
  - ♦ prey have adaptations to help avoid predators.  
- wide eyes for better peripheral vision
  - ♦ The number of predators and prey influence each other.

birds

- some might eat seeds
- some might eat insects
- some eat nectar
- some eat dead/carrion

competition and predation are not really a symbiosis because these organisms are not living close together all the time

## Biodiversity in Ecosystems

- biodiversity refers to the variety and number of different individuals and species in an ecosystem.
  - ♦ Healthy ecosystems generally are very diverse.
  - ♦ Most biodiversity losses occur from the loss of habitat.
- Humans often have a negative impact on biodiversity.
  - ♦ Ecological management programs try to balance human progress with maintaining biodiversity.

diverse ecosystems recover quickly from disasters.