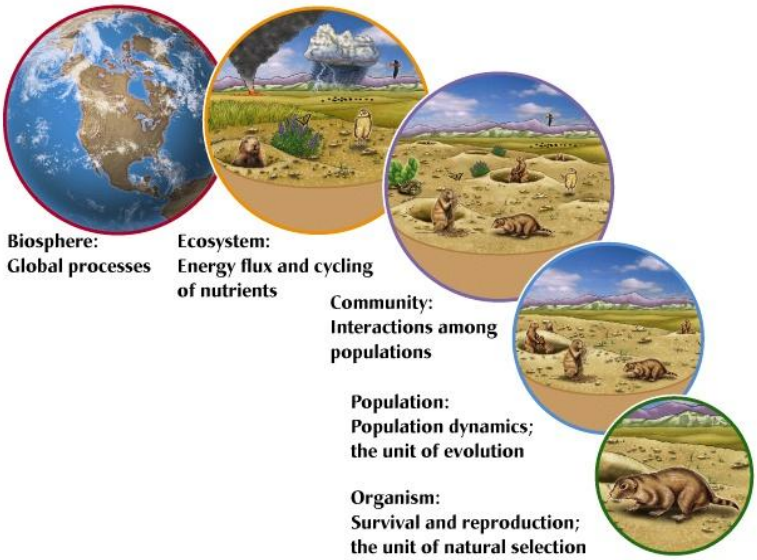
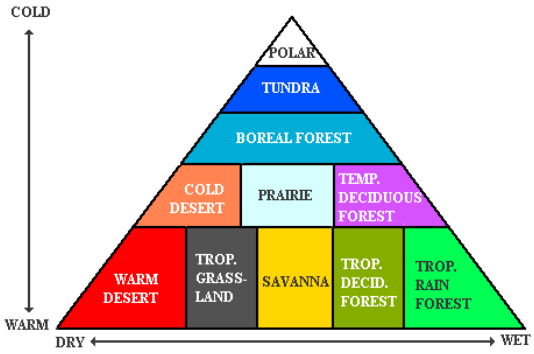
Ecology

Ecology The study of the relationships between organisms and their interactions with the environment. There are many different levels of ecology.
Environment - total surroundings of an organism or a group of organisms.

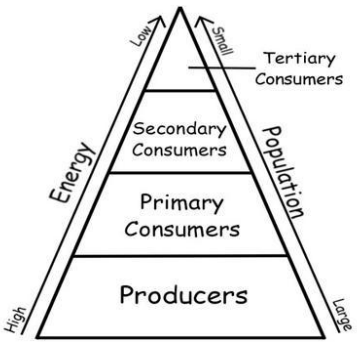


The **Biosphere** is zone of life on Earth or the sum total of all ecosystems on Earth. It is a closed system and largely self-regulating.
If a change is made in the system a corresponding change will occur in reaction.

A **Biome** is a large area or geographical region with distinct plant and animal groups adapted to that environment. Temperature and Precipitation within the biosphere determine the biome of a given area.



An **Ecosystem** is a system composed of living organisms (**biotic factors**) and nonliving components of an environment **(abiotic factors**).



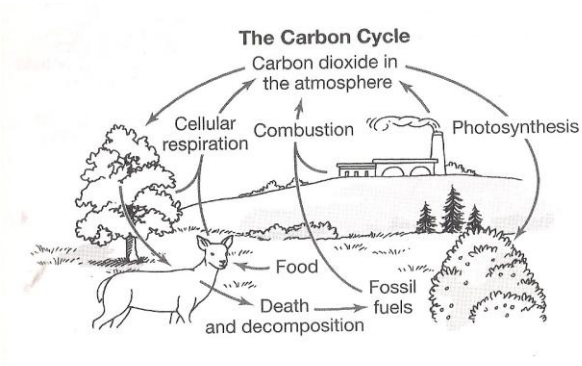
Energy Flow

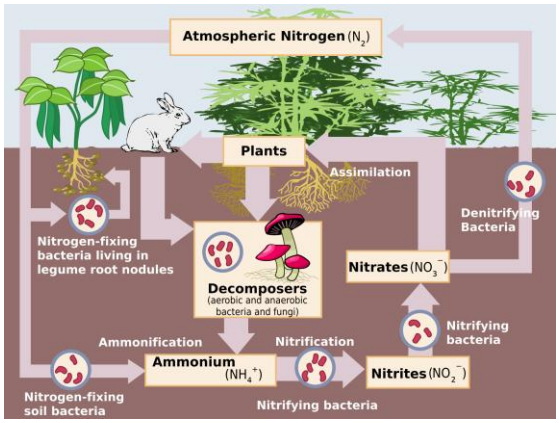
All ecosystems need energy, and the most basic form of energy comes from the sun. **Producers** (**autotrophs**) are able to make their own food. These are eaten by **consumers** (**heterotrophs**).
We can track the flow of energy linearly using a **food chain** or look at a more detailed flow of energy using a **food web**.

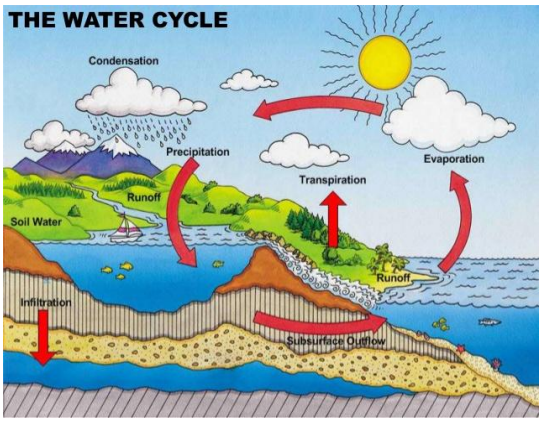
Food Chain A simplified path illustrating the passing of potential chemical energy (food) from one organism to another organism.
Food Web A complex arrangement of interrelated food chains illustrating the flow of energy between interdependent organisms
Energy Pyramid A model that illustrates the biomass productivity at multiple trophic levels in a given ecosystem.
Trophic Level The position of an organism in relation to the flow of energy and inorganic nutrients through an ecosystem (e.g., producer, consumer, and decomposer).

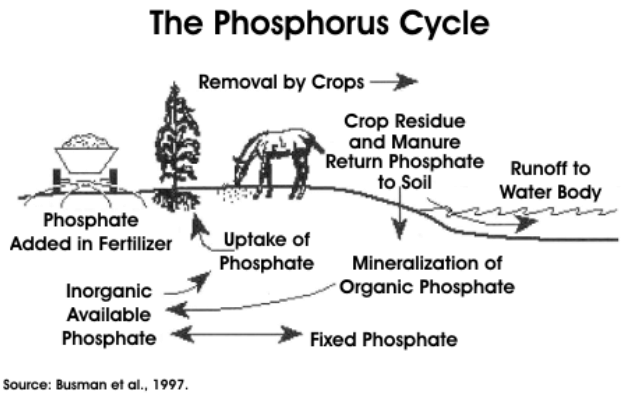
Nutrient Cycles

Important nutrients such as carbon, nitrogen, phosphorus, and water are cycled through biotic (living things) and (abiotic) the environment through **biogeochemical cycles**.





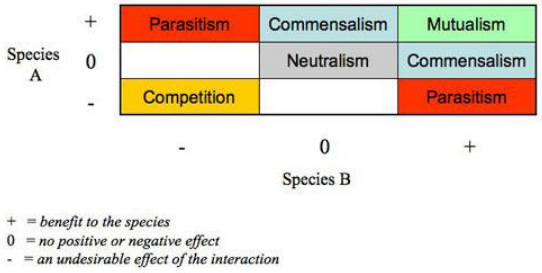




A **Community** is different populations of organisms interacting in a shared environment.

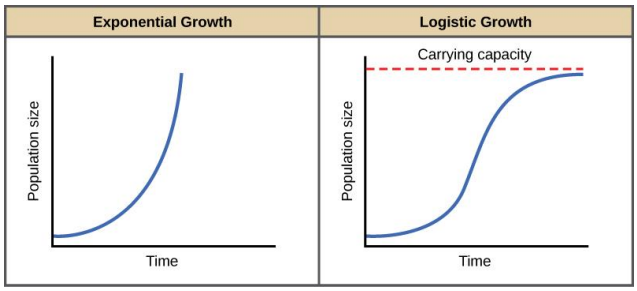
Community interactions

Symbiosis is the term for organisms of different species that closely interact with each other.

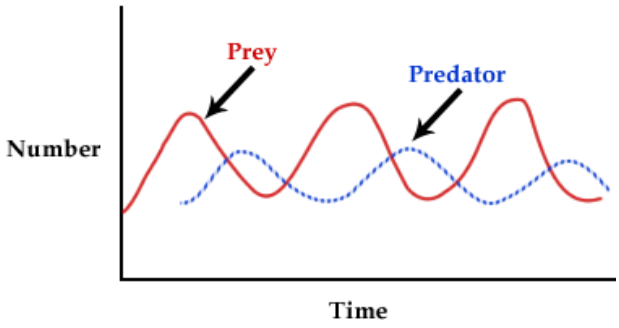


Primary Succession	Secondary Succession
Begins with no life	Follows removal of existing biota
No soil present	Soil already present
New area (e.g. volcanic island)	Old area (e.g. following a bush fire)
Lichen and moss come first	Seeds and roots already present
Biomass is low	Biomass is higher

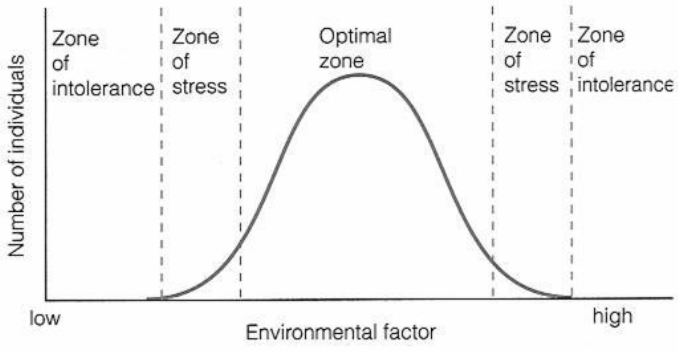
Succession A series of predictable and orderly changes of communities within an ecosystem over time.



A Population is a group of individuals of the same species living in a specific geographical area and reproducing.



Population Dynamics -study of short and long-term changes in the number of individuals for a given population, as affected by birth, death, immigration, and emigration.



Organisms are life forms consists of one (unicellular) or more (multicellular) cells.

A **limiting factor** is a chemical or physical factor that limits the existence, growth, abundance, or distribution of an individual organism

Habitat- area that provides an organism with its basic needs for survival.

Niche- the role or function of an organism or species in an ecosystem.