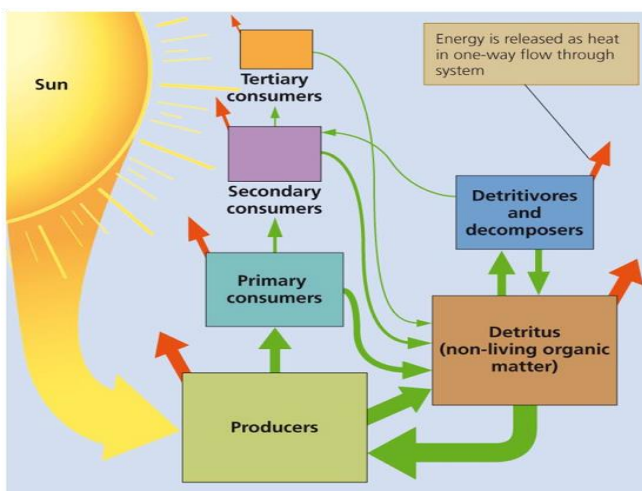
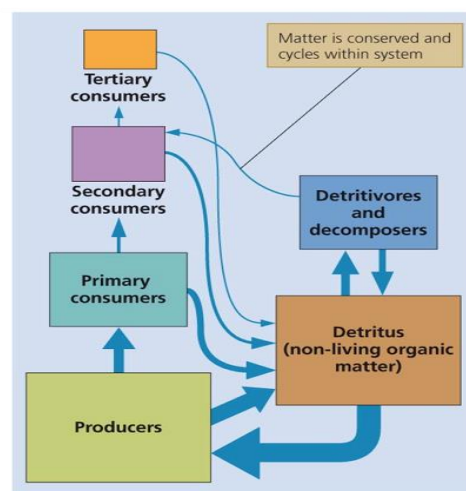


Ecology | Topic Notes

- **Ecology** is a branch of biology concerned with the study of the interactions of living organisms with each other and with their environment.
- An **ecosystem** is a community of organisms that interact with their environment.
- **Biosphere** is a region of the earth where life can exist.(atmosphere, hydrosphere, lithosphere)
- A **habitat** is a place where an organism lives.
- An **abiotic factor** is anything that is non-living and has an effect on living organisms in an ecosystem. The two main types are:
 1. **Climatic factors** are weather conditions that have an effect on living organisms in an ecosystem.
 2. **Edaphic factors** are anything relating to the soil or geology of land that have an effect on living organisms in an ecosystem.
- A **biotic factor** is anything that is living and has an effect on living organisms in an ecosystem. (e.g presence of predator, presence of pathogenic organisms)
- **Pathogenic**: capable of producing disease.



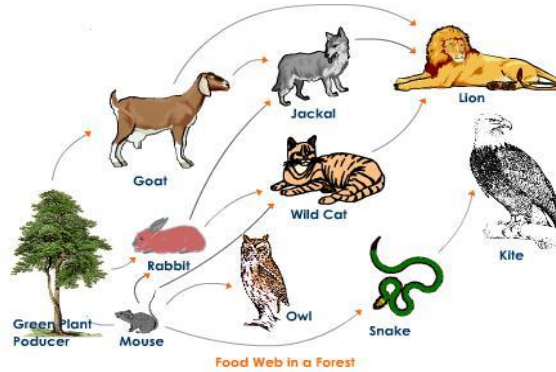
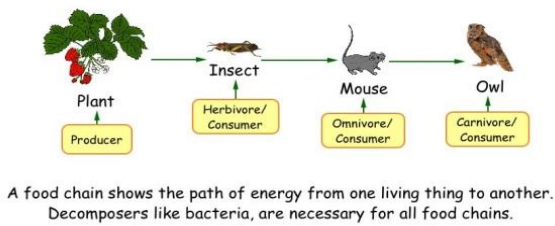
(a) Energy flowing through an ecosystem
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(b) Matter cycling within an ecosystem

- A **grazing food chain** is a relationship of the sequence of predator-prey relationships in an ecosystem.

The Food Chain Of An Owl



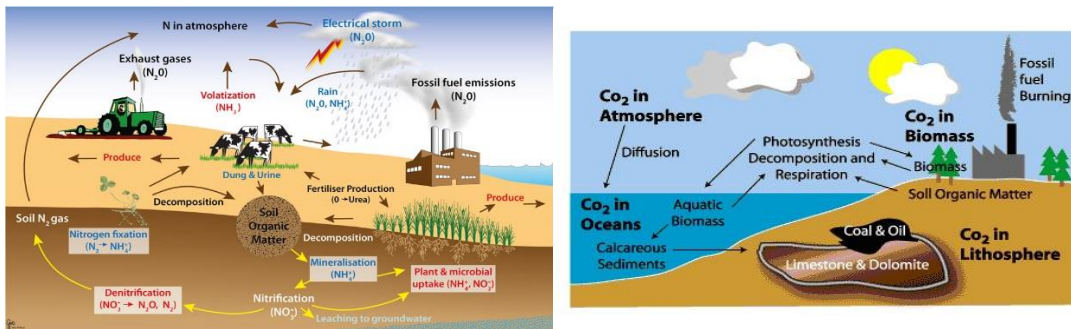
- A **food web** consists of two or more interconnected food chains.
- An **ecological pyramid of numbers** shows the numbers of organisms at each trophic level in a food chain. (May be *upright*, *partially upright* or *inverted* in shape.
- **Niche** refers to the functional role an organism plays in its habitat.
- A **population** is a group of organisms living in a habitat that belong to the same species.
- A **community** is a group of organisms living in a habitat that belong to many different species.
- **Competition** is the struggle between organisms for a resource that is in limited supply.
 1. **Contest competition** is the direct fight between two organisms for a resource that is in short supply. (e.g. two stags fighting for a mate)
 2. **Scramble competition** is the struggle amongst a number of organisms for a resource that is in short supply. Each organism gets a small share of the resource. (e.g. a pack of vultures competing for a portion of the kill made by a large predator)
- A **resource** is a stock or supply (such as food) that can be drawn on.
- **Predation** is the catching, killing and eating of another organism.



- **Symbiosis** is the biological relationship in which two species live in close proximity to each other and interact regularly in such a way as to benefit one or both of the organisms.

(**Mutualism** is when both of the organisms benefit from the presence of each other, e.g. N_2 -fixing bacteria that live in root nodules of legume plants (such as peas) assimilate NO_3^- from N_2 .)
- **Parasitism** is where one organism, called the **parasite**, lives in or on another organism, called the **host**, and the host is harmed. (e.g. aphids are parasites of plants, athlete's foot and mosquitos)

- **Factors affecting human population:** War, Contraception, Famine & Disease.
- **Nutrient recycling** is the process of exchanging important elements between living organisms and the environment.
- **Carbon cycle** is the process through which elemental C (in the form of biomolecules) is exchanged between living things and the environment.
- **Nitrogen cycle** is the process through which elemental N_2 (in the form of biomolecules) is exchanged between living organisms and their environment.



- **Pollution** is any undesirable change to a habitat.
- **Eutrophication** is a process where water receives too many nutrients that stimulate excessive algal growth.
- **Conservation** is the wise management of our existing natural resources.
- **3 processes of sewage treatment**: **primary**=physical screening, **secondary**=microorganisms, **tertiary**=addition of microorganisms if PO & NO levels too high, or chlorine (kill pathogens).