**Ecosystem**

- Eco- ecological

- System approach

System: a set of interconnected parts which function together as a complex whole.

✔ Holistic approach not reductionist:
✔ Function:
✔ Structure of and relationship between different parts of the environment
✔ Focuses on different parts of the system work as one unit.
✔ So allows scientists to understand where adjustment occur

- Environment: as a single system in its entirety, consisting of interconnected sub systems

**Ecosystem**

- The living organisms of a habitat and their non living environment function together as one unit called the ecosystem
- Any recognisable unit of nature contains four components
- Components :

✔ Abiotic: climatic, inorganic substances and organic substances

Biotic:

✔ Producers: autotrophic (auto =self, troph= nourishing) energy transducers (chiefly plants)

✔ Consumers: heterotrophic, (hetero=other) herbivores, carnivores (mainly animals)

✔ Decomposers: heterotrophic, Depend on dead organic matter( mainly microorganisms)

- Manmade ecosystem: agriculture
- Ecosystem degradation: Keystone species

**Food chains ( Charles Elton, 1927 in Animal Ecology)**

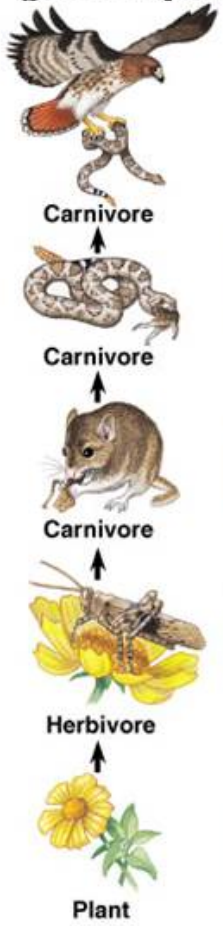
- The transfer of energy from plant sources through a series of organisms.
- Plant → Herbivore→Carnivore1→Carnivore2

(simple food chain), links mainly 3 to 5

- Food chain relationship are very complex: complex or web like structure called food web
- Base is always producers or autotrophs.
- Food chain help understand feeding relationships and interaction between different organisms
- Biological accumulation and biological magnification

## Food Chain

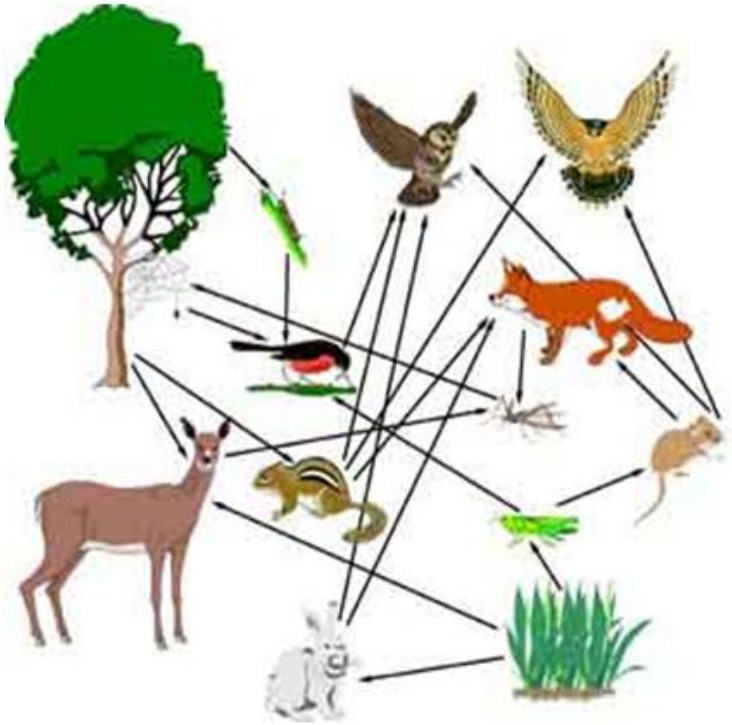
**(just 1 path of energy)**




| | |
|---|---|
| Quaternary consumers | 5th trophic level |
| Tertiary consumers | 4th trophic level |
| Secondary consumers | 3rd trophic level |
| Primary consumers | 2nd trophic level |
| Primary producers | 1st trophic level |

## Food Web

**(all possible energy paths)**



**The *arrow* points to the eater and shows the transfer of energy.**

# Ecological Pyramids

- Charles Elton in 1927
- Classification based on feeding level on the basis of energy source, trophic relationships
- Show relationship between producers, herbivores and carnivores. (different trophic level)
- Animals at the base of food chain are abundant while at end are few (e.g. Grassland) in pyramid of number and biomass
- But pyramids may be inverted also (e.g. Parasites)
- Pyramid of number, pyramid biomass, pyramid of energy (always upright)