

Functions of An Ecosystem

- Energy always flow in unidirection from producer to top consumers.
- Level of energy decreases from first trophic level upwards.

→ Food chain: Sequence of organisms that feed on one another form a food chain.

Types of food chain:-

- (i) Grazing food chain: Plant → Herbivores → Carnivores.
- (ii) Detritus food chain: starts from dead organic matter
Litter → Earthworms → chicken → Hawks.

Food-web: A food web illustrates all possible transfers of energy and nutrients among the organisms in an Ecosystem, whereas a food chain traces only one pathway of food.

Ecological Pyramids:

Steps of trophic level expressed in a diagrammatic way are Eco.Pys.

Ecological Pyramids are of three categories

- (i) Pyramids of Numbers.
- (ii) Pyramids of Biomass.
- (iii) Pyramids of Energy or productivity.

(A) Pyramids of Numbers.

(i) This deals with the relationships between the numbers of primary producers and consumers at different levels.

Pyramid of numbers can be upright like Grassland Ecosystem or Pyramid of Numbers can be inverted like tree or forest system - Pyramid of nos. does not completely define the trophic structure of an Ecosystem - also it does not take into account the fact that the size of organisms can vary.

Pyramid of Biomass

→ Individual in each trophic level are weighed instead of being counted. i.e. total dry weight of all organisms at each trophic level at a particular time, g/m^2 .

It can be upward-like Grassland.

It can be inverted:- an Aquatic Ecosystem.

Pyramid of Energy

→ It is always upward.

→ To compare the functional roles of the trophic levels in an Ecosystem an energy pyramid is most suitable.

→ Loss of Energy being depicted at each trophic level - hence the pyramid is always upward.

Bioaccumulation

Refers how pollutants enter a food chain. In bioaccumulation there is an increase in concentration of a pollutant from the environment to the first organisms in a food chain.

Biomagnification

- Tendency of pollutants to concentrate as they move from one trophic level to the next.

- Thus in biomagnification there is an increase in concentration of a pollutant from one link in a food chain to another.

→ It is traditional to measure the amount of pollutants in fatty tissues of organisms.

- | | Species I | - | Species II | |
|-------------------|-----------|---|------------|---------------------------------|
| (i) Mutualism | (+) | | (+) | → Both species benefit |
| (ii) Commensalism | (+) | | (0) | → One benefits other unaffected |
| (iii) Predation | (+) | | (-) | One benefits other harmed |
| (iv) Competition | (-) | | (-) | Both species are harmed |
| (v) Amensalism | (-) | | (0) | One harmed other unaffected |