

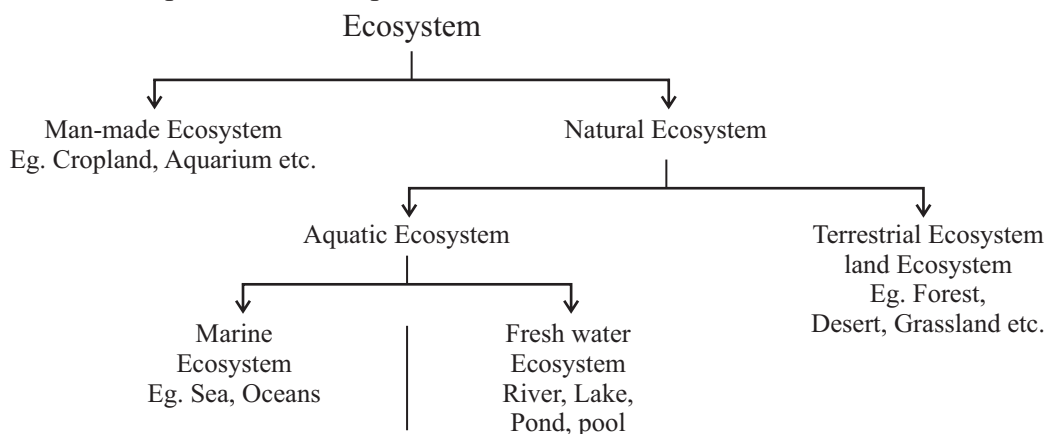
## CHAPTER – 15

# OUR ENVIRONMENT

- Environment means everything which surrounds us. It may include living (biotic) and non-living (abiotic) components. So, it may include besides all creatures, water & air also.
- Environment affects the life and development of an organism in its natural habitat & vice versa.
- Substances that are decomposed are called bio-degradable. Eg. organic wastes while some substances like plastics, some chemicals (DDTs & fertilizers) are inert and can't be decomposed, are called Non-biodegradable
- Actually non-biodegradable persist in the environment for a long time or may harm the various members of the ecosystem.

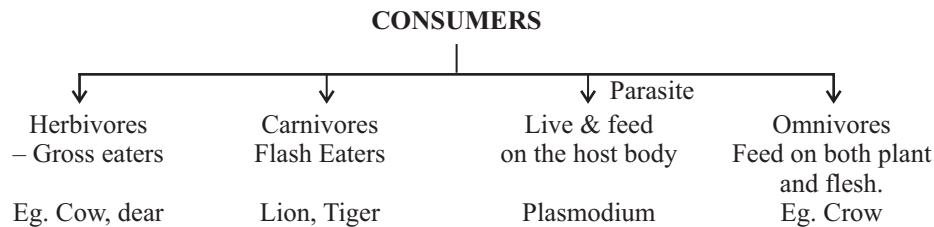
### ECO SYSTEM & ITS COMPONENT

All the interacting organisms in an area together with non living components form an ecosystem. So an ecosystem consists of both biotic (living creatures) and abiotic components like temperature, rainfall, wind, soil etc.



- All living organisms are classified on the basis of the manner in which they survive in the Ecosystem. These groups include
- I **Producers**– All green plants, blue green algae can produce their food (Sugar & starch) from inorganic substance using light energy (Photosynthesis)

II **Consumers**– Include organisms which depend on the producers either directly or indirectly for their sustenance. In other word consumers consume the food produced by producers.



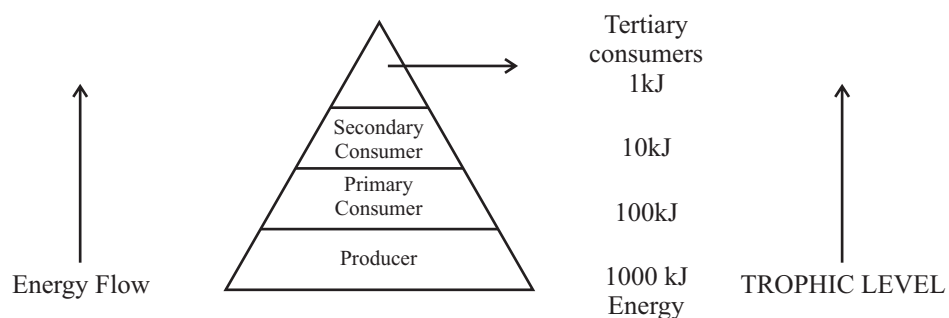
III **DECOMPOSERS**– Fungi & Bacterias which break down (decompose) the dead plant, animals complex compounds into the simpler one. Thus decomposers help in the replenishment of the natural resources.

Food chain refers to an arrangement of different biotic groups in a sequence of energy transfer. These biotic groups are producer herbivores, carnivores.

For Eg.            T<sub>1</sub>            T<sub>2</sub>            T<sub>3</sub>  
                     Grass ← DearA ← Lion

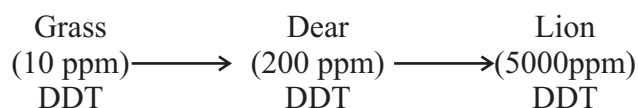
A 3-setp Food chain

- In a food chain, these biotic components where transfer of energy takes place is called a trophic level.
- The green plants capture 1% of sunlight falls on their leaves.
- The flow of energy is unidirectional in a food chain
- There is gradual decrease in the amount of energy transfer from one trophic level to next trophic level in a food chain



So only 10% of Energy is transferred to next trophic level while 90% of energy is used by present trophic level in its life processes.

- While the conc. of harmful chemical increases with every next trophic level in a food chain. It is called Bio-magnification For Eg.



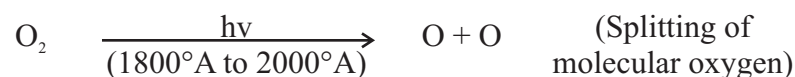
- Maximum concentration of such chemicals accumulated in human bodies.
- Naturally the food chains are inter-connected with each other forming a web like pattern, which is known as FOOD WEB.
- The loss of energy at each step (trophic level) is very high, so very little amount of energy remains after four trophic levels.
- There are generally a big population at lower trophic levels of an ecosystem. For Eg. the population of the producer is higher than the consumer carnivore (lion) population.

### ENVIRONMENTAL PROBLEMS

- Changes in environment affect us and our activities change the environment around us. This led to the slow degradation of environment that arose many environmental problems. Eg. depletion of the Ozone Layer and waste disposal.

#### I Depletion of Ozone Layer

- Ozone (O<sub>3</sub>) layer is largely found in the stratosphere which is a part of our atmosphere from 12 km – 50km above sea level.
- Ozone is a deadly poison at the ground level.
- Ozone is formed as a result of a following photochemical reaction.



- Ozone layer is a protective blanket around earth which absorbs most of the harmful U.V. (Ultraviolet) radiation of the Sun, thus protecting the living beings of the earth from health hazards like skin cancer, cataract in eyes, weaken immune system, destruction of plants etc.
- The decline of Ozone layer thickness in Antarctica was first discovered in 1985 and was termed as OZONE HOLE.

### **Reason of Ozone Depletion :**

Excessive use of CFCs (Chloro Fluoro Carbon) a synthetic, inert chemical Eg. Freon which are used as refrigerants and in fire extinguishers, caused Ozone depletion in the upper atmosphere. A single chlorine atom can destroys 1,00,000 Ozone molecules. U.N.E.P. (United Nation Environment Programme) did an excellent job in forging an agreement to freeze CFC production at 1986 levels (KYOTO Protocol) by all countries.

### **Garbage Disposal**

Industrialization and rise in demand of consumer goods have created a major problem in the form of wastes/garbage accumulation and its disposal especially in urban area.

The different methods of solid wastes disposal commonly used around the world are.

1. **Open dumping :** A conventional method in which solid wastes dumped in selected areas of a town. It actually cause pollution
2. **Land fillings :** Wastes are dumped in low living area and are compacted by rolling with bulldozers
3. **Composting :** Organic wastes are filled into a compost pit (2m x 1m x 1m). It is then covered with a thin layer of soil. After about three months the same garbage filled inside the pit changes into organic manure.
4. **Recycling :** The solid wastes is broken down into its constituent simpler materials. These materials are then used to make new items. Even non-bio degradable solid wastes like plastic, metal can be recycled.
5. **Reuse :** A very simple conventional technique of using an item again & again. For Eg. paper can be reused for making envelopes etc.

## **EXERCISE**

### **(Question Bank)**

#### **Very Short Answers (1 Mark)**

1. Define Biomagnification
  2. Expand the term CFC & U.N.E.P.
  3. Define Ozone hole
  4. Which of the following is/are Biodegradable plastic cups, cowdung, Aluminium foil, cotton.
  5. Define food web
  6. Define Ecosystem
  7. Differentiate between Biodegradable and non biodegradable wastes.
  8. Use of Kulhads was not environment friendly idea. Why?
  9. Draw an Energy Pyramid showing different trophic level.
  10. What is the advantage of disposable paper cup use over plastic cups?
  11. How can we help in reducing the the problem of waste disposal? Give any two methods.
  12. What is role of decomposer in Ecosystem.
  13. Give any two ways in which non biodegradable substance would affect the environment.
  14. What are trophic levels? Give an example of a food chain and state the different trophic levels in it.
  15. What will happen if we kill all the organisms in one trophic level?
  16. Study the food chain given below.  
I Grass Grasshopper Frog  
II Wheat Rat Snake Hawk
- Which of the two consumers frog/hawk will get more available energy and why?