Our Environment

- All biological (plants, animals, micro-organisms etc.) and physical (Soil, Water, air, sunlight etc.) Surroundings around us create our environment.

Ecosystem

- All interacting organisms in an area together with non- living constituents of the environment form an ecosystem.

Types of Ecosystem

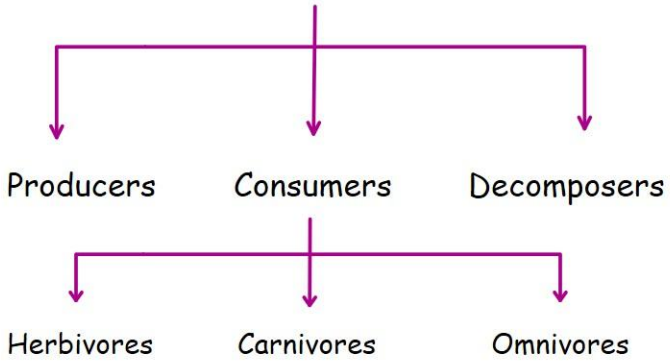
Natural Ecosystem

- It exists in nature without any human interference.
- Example - Pond, River, Forest

Artificial Ecosystem

- Made by humans for their own interest
- Example - Aquarium, Garden

Components of Ecosystem

Biotic Components [living components]	Abiotic components [Non-living components]
- All the living organism of a certain area like plants, animals, humans, microbes etc.  	- All climatic factors like rain, humidity, temperature inorganic substances like oxygen, nitrogen etc.

Producers

- Organism which can prepare their own food from simple inorganic substances like carbon dioxide and water by using sunlight energy in the presence of chlorophyll.

- Ex. Green plants and certain blue-green algae

Consumers

- Those organism which consume food prepared by producers are called Consumers.

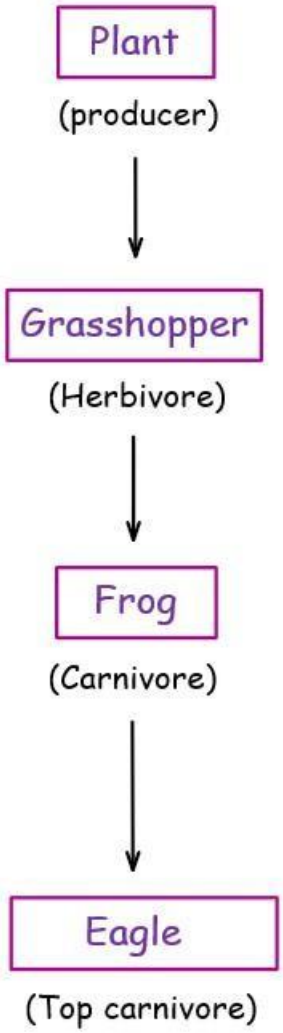
Herbivores	Carnivores	Omnivores
- Those animals which eats only plants. - Ex. Goat, Sheep etc.	- Those animals which eats only other animals as food. - Ex. Lion, Tiger etc.	- Those animals which eats both plants and animals. - Ex. Man, Dog

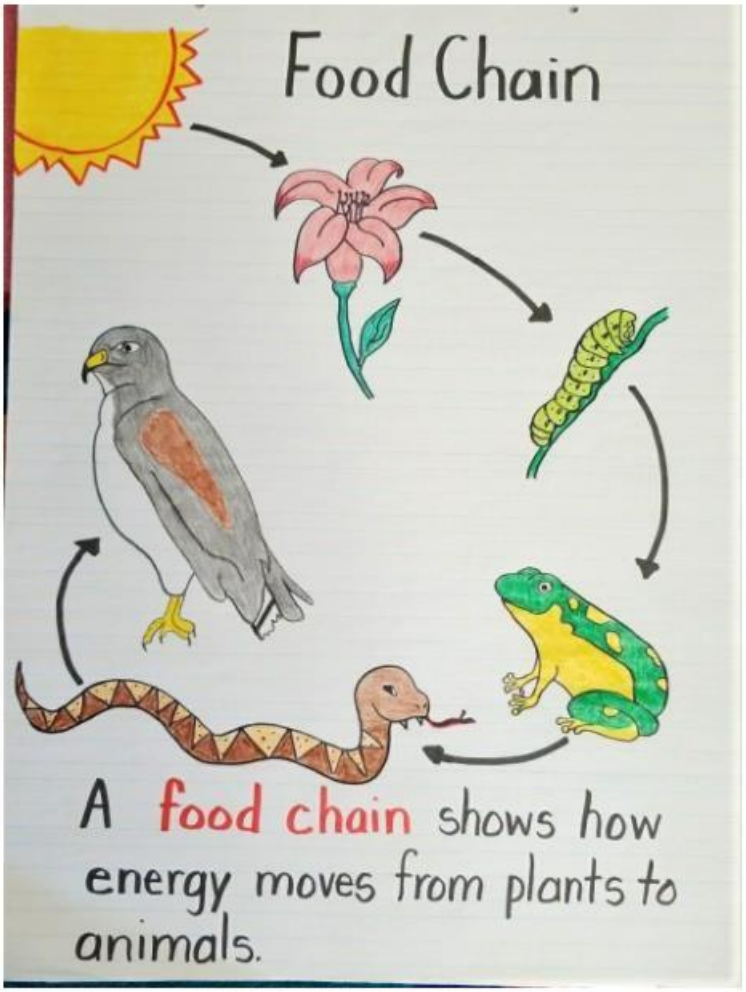
Decomposers

- Micro-organism that break down the complex organic compounds present in dead organism into simpler substances.
- Ex. Certain bacteria and Fungi

Food Chain

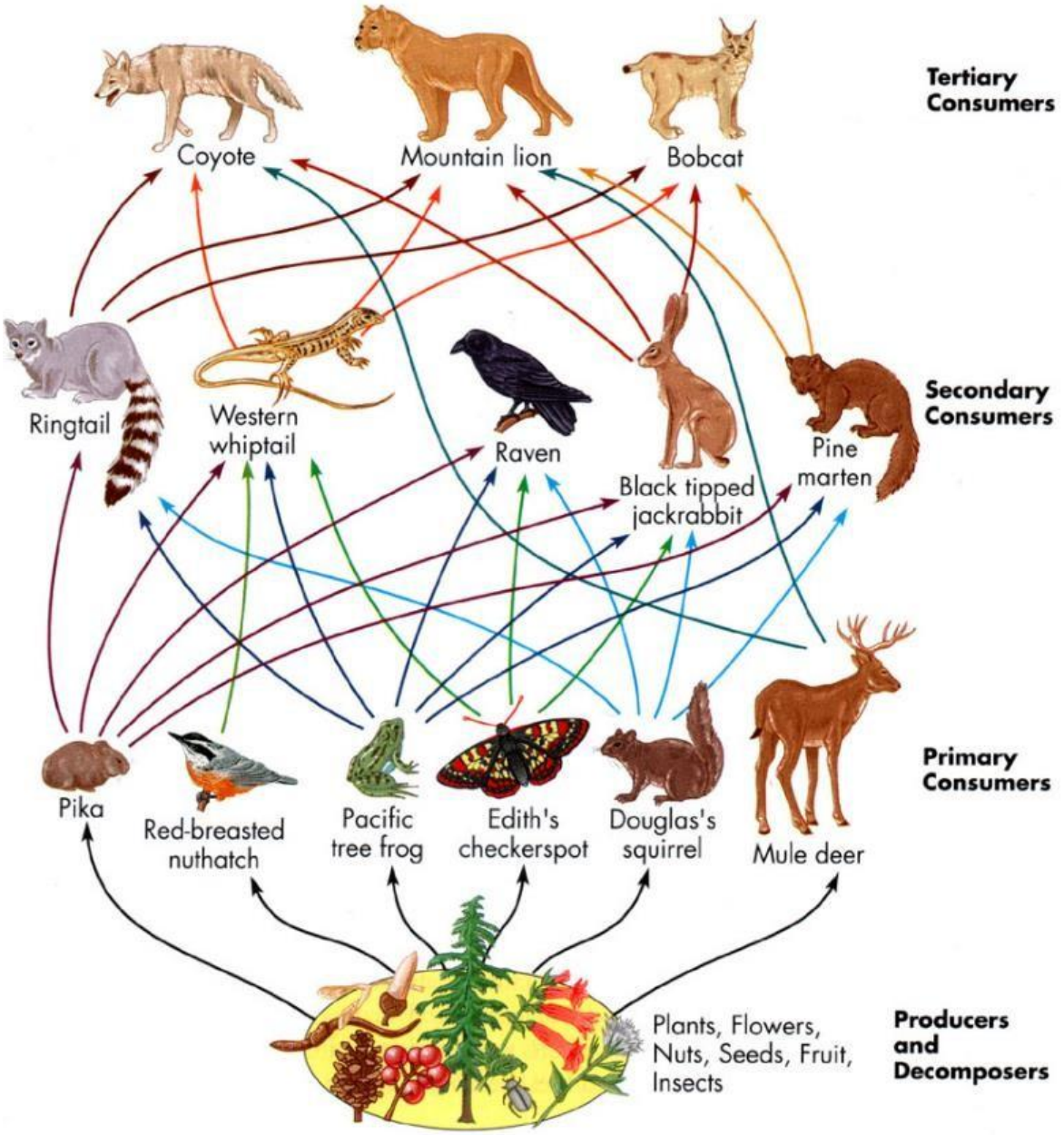
- The flow of nutrients and energy from one organism to another at different trophic levels forms a food chain.
- Food chain represents a single unidirectional transfer of energy.
- Food chain starts with producer.





Food Web

- Several Interconnected food chains forms a food web.
- Single food chain doesn't naturally occur in an ecosystem.



Trophic Levels

- The various steps in a food chain at which the transfer of food (or energy) takes place are called trophic levels.

Plant (Producer) → Insect (Producer consumer) → Frog (Secondary consumer) → Eagle (Tertiary consumer)

1st Trophic Level | 2nd Trophic Level | 3rd Trophic Level | 4th Trophic Level

- There are generally a greater number of individuals at the lower trophic levels of ecosystem, the greatest number is of producers.

- The energy transfer is never 100% Thus, each successive trophic level receives lesser energy than previous resulting in a pyramid shape.

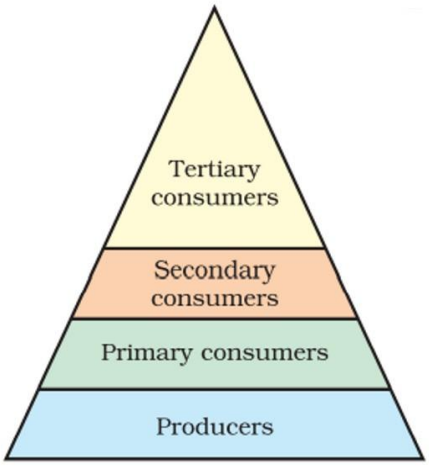
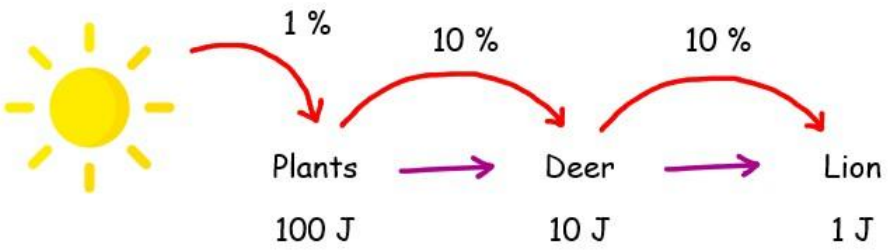
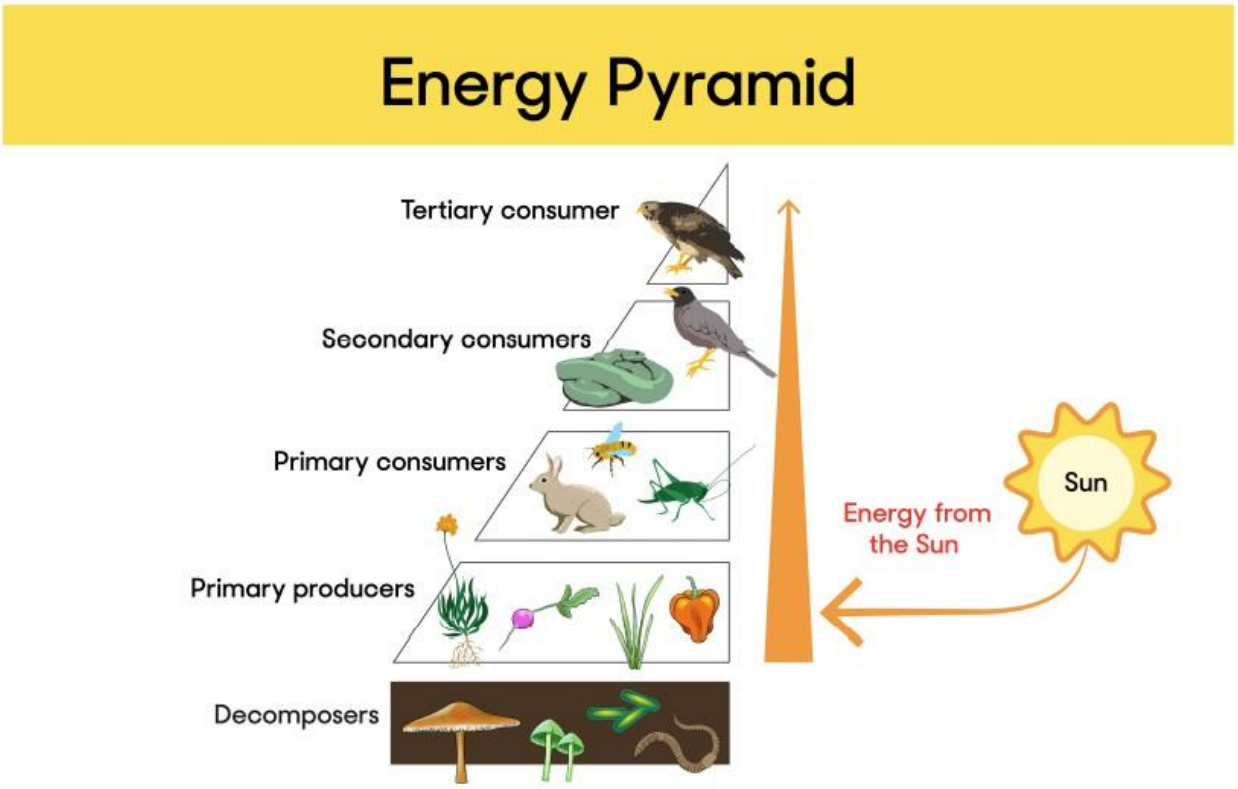


Figure 15.2
Trophic levels

Ten Percent Law

- Only 10 percent of the energy entering a particular trophic level of organisms is available for transfer to the next higher trophic level.





- Bioaccumulation refers to the accumulation of a toxic chemical in the tissue of a particular organism.

- It occurs in a single organism over lifetime.

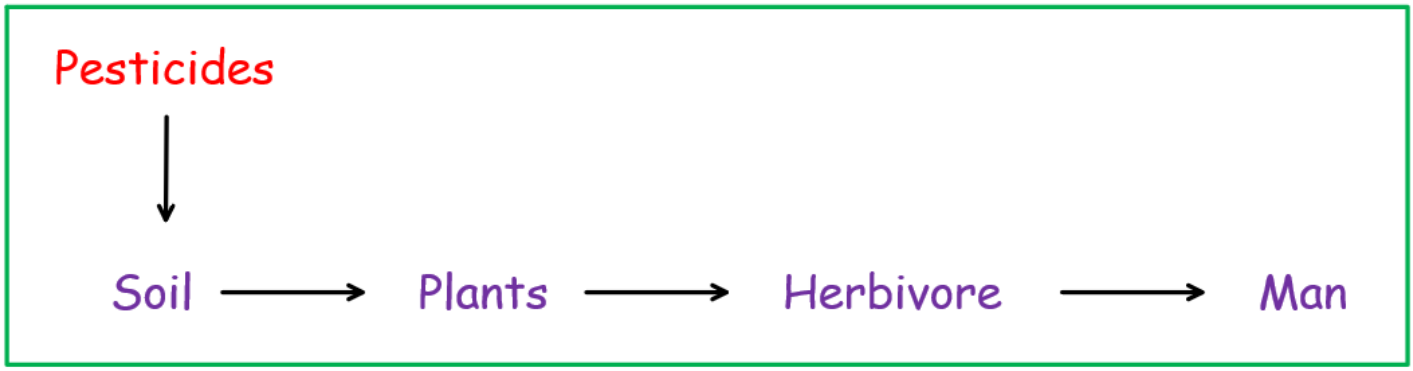
Biomagnification

- Biomagnification refers to the increase in concentration of harmful chemical substances in the body of living organism at each trophic levels of a food chain.

- It expands over different trophic levels.

- Organisms at the higher trophic levels have higher concentration of such chemicals.

- Eg. In the below case, man will have the highest amount of pesticides



How Do our Activities Affect the Environment

Ozone Layer Depletion

- Ozone molecule is made up of 3 atoms of oxygen combined together (O_3)

- Ozone layer protects the life on earth from harmful ultraviolet radiations coming from sun.

- Ultraviolet rays can cause skin cancer.

How Ozone is formed:

- Ozone is formed high up in the atmosphere by the action of ultraviolet radiation on oxygen gas.

$$O_2 \xrightarrow{UV} O + O$$

$$O + O_2 \longrightarrow O_3$$

(Ozone)

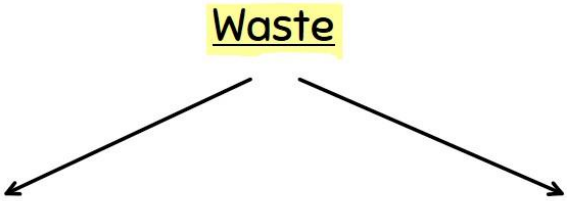
Reason of Ozone Depletion

- Chlorofluorocarbon (CFC) is one of the major chemicals that deplete the ozone layer. CFC is found in coolant, fire extinguisher etc.

Effort to protect

- In 1987, United Nations Environment Programme (UNEP) forged an agreement among its member countries to freeze CFC production.

Managing the Garbage we produce



Biodegradable

- Wastes that can be broken down by biological processes.
- Ex. Vegetable waste, paper cups, Kulhad etc.

Non-Biodegradable

- Wastes that can't broken down by biological processes.
- Ex. Polythene bags, Glass etc.

Management

Disposal Methods

- These are Landfills, Incineration, Composting, Sewage treatment, Recycling etc.

Efforts on Individual Level

- Reduce, Reuse and Recycle.
- Proper waste disposal methods should be followed.
- Use of clay made cups or paper cups over plastic cups.
- Cloth, Jute or paper cups should be used.