



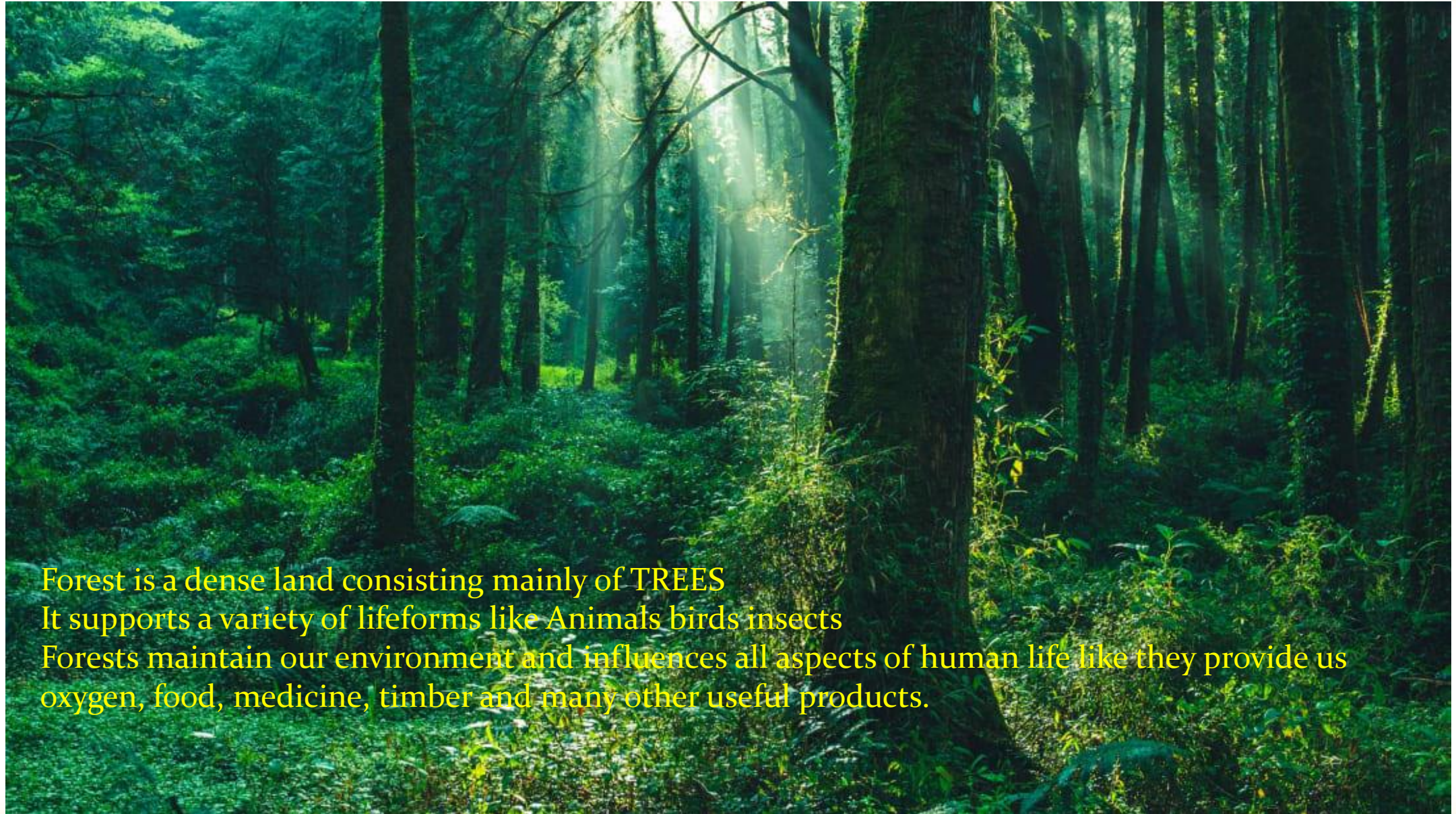
THE **HDFC** SCHOOL

PUNE



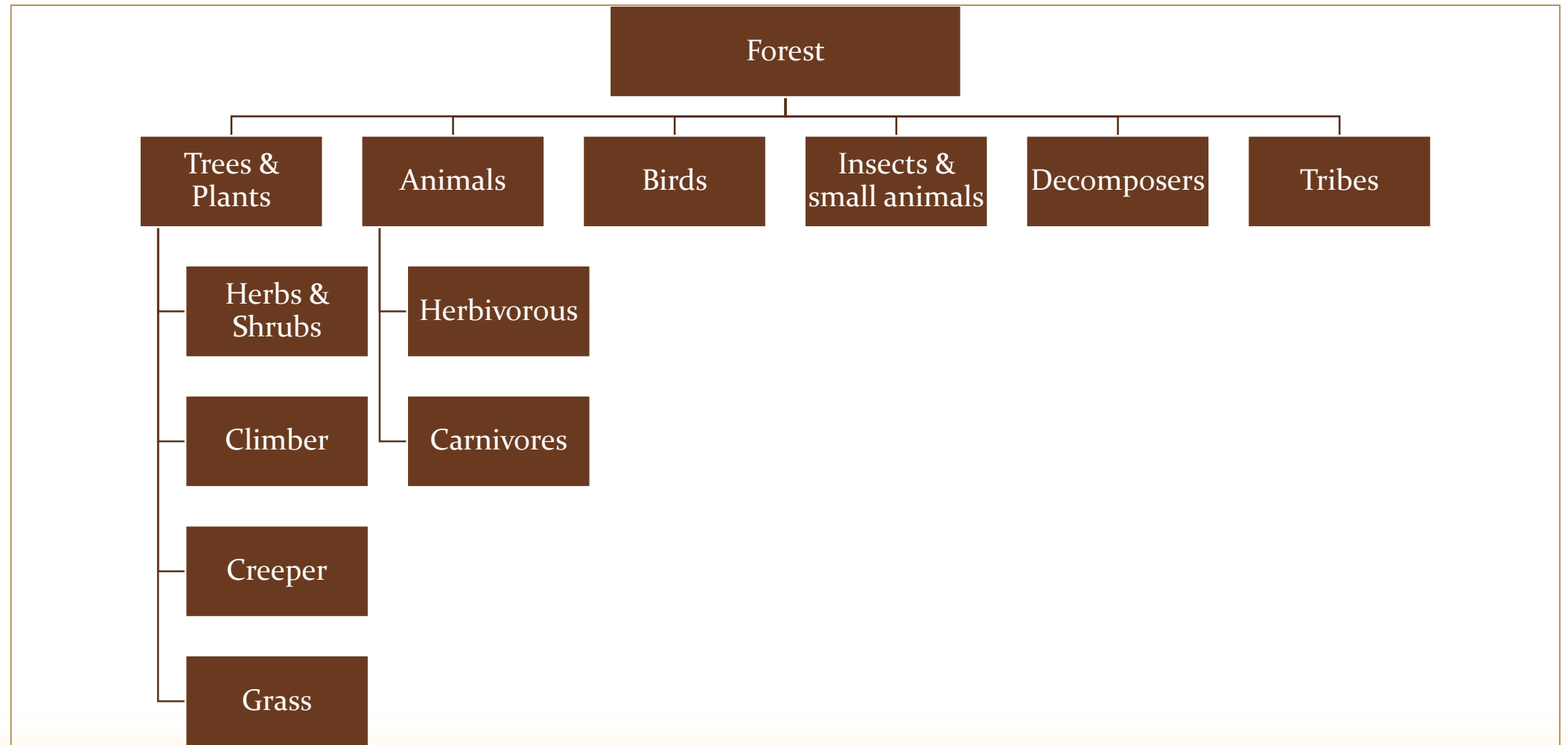
Forests – Our lifelines





Forest is a dense land consisting mainly of TREES
It supports a variety of lifeforms like Animals birds insects
Forests maintain our environment and influences all aspects of human life like they provide us
oxygen, food, medicine, timber and many other useful products.

Forest as a habitat



Structure of Forest

Emergent Layer

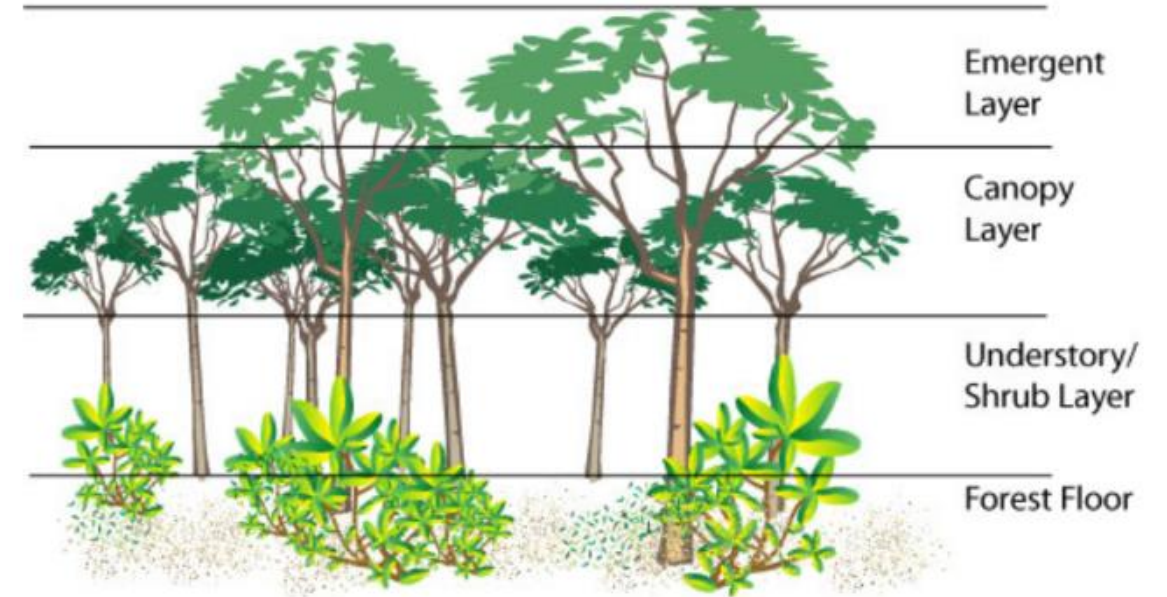
Canopy

Understorey

Shrub Layer

Herb Layer

Forest Floor



Emergent Layer, Canopy & Understorey

- Emergent layer
 - Very large and tall trees forms the emergent layer
- Canopy
 - Crown – the branches of grownup trees above the stem is called crown
 - Branches of tall trees(i.e. the crowns of tall trees) act like roof over the small plants and forms the canopy
- Understorey
 - Immature and young trees

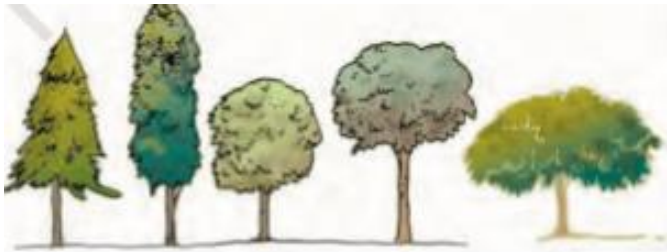
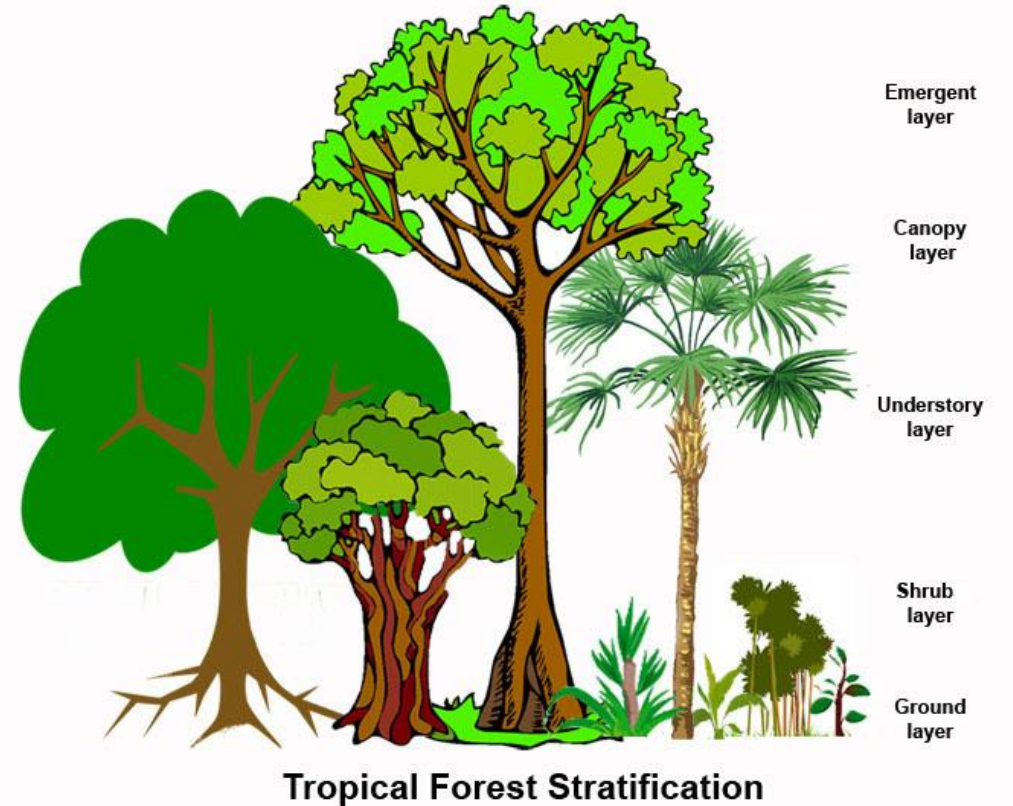


Fig. 17.6 Some crown shapes



Shrub and Herb Layer

- Shrub Layer
 - Bushes and medium size plants
- Herb Layer
 - Lowest vegetative layer
 - Consists of Small plants, grass and wild flowers



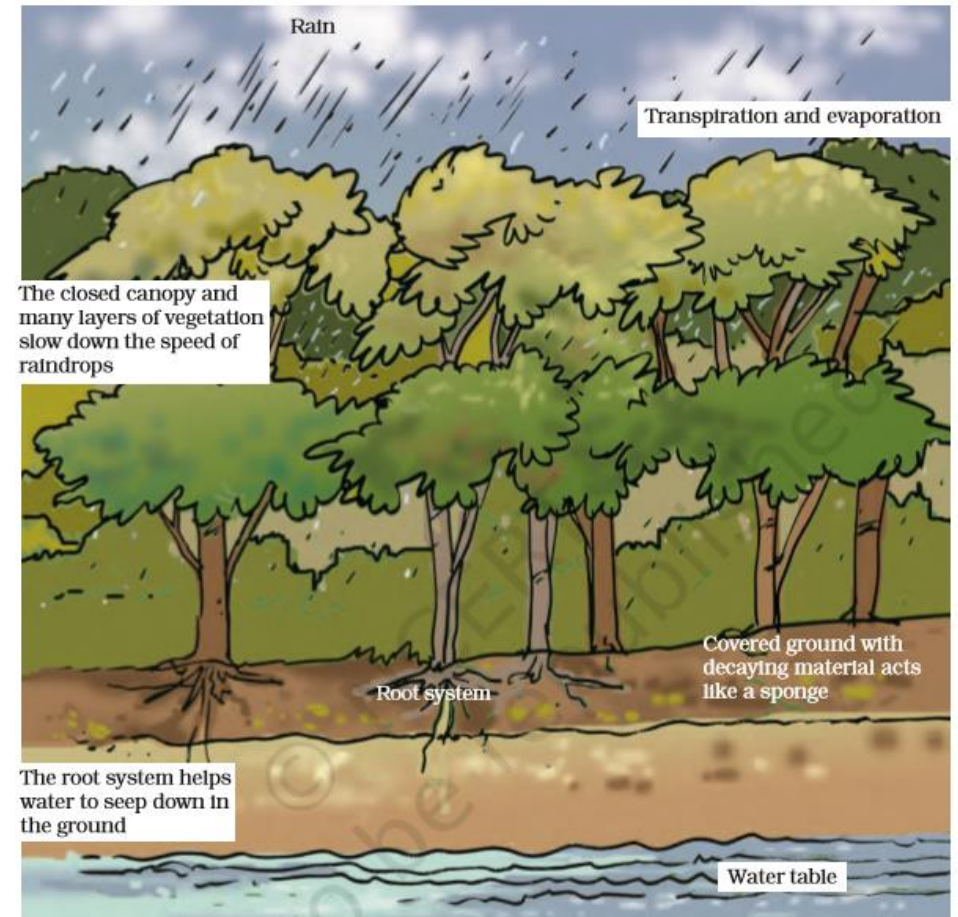
Forest Floor

- Dark in colour
- Consists of dead decaying leaves, fruits, twigs, small plant and animal remains
- Germination of seeds occurs on forest floor
- Decomposers dwell on it.
- Small animals rodents and insects ants spiders are found here.



Role of Trees

- Forest are called Green Lungs, because they release Oxygen in the atmosphere and maintain the ratio of oxygen to carbon dioxide.
- They help in maintaining temperature of the Earth by absorbing Carbon Dioxide.
- Forest helps in controlling the floods. The thick canopy layer slows down the speed of rain water .So the water drips down slowly on shrubs, herbs and then on the forest floor.
- The roots of the trees pass on excess rain water into the soil, increasing the ground water level.
- Forest also helps in bringing rainfall by adding moisture in air by the process of transpiration(evaporation of water from plants is called transpiration).This cools the air. It also helps in cloud formation and ensures good rainfall



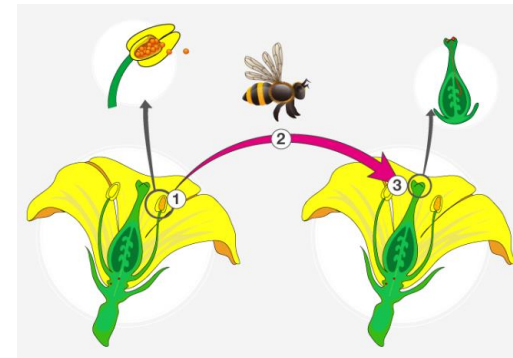
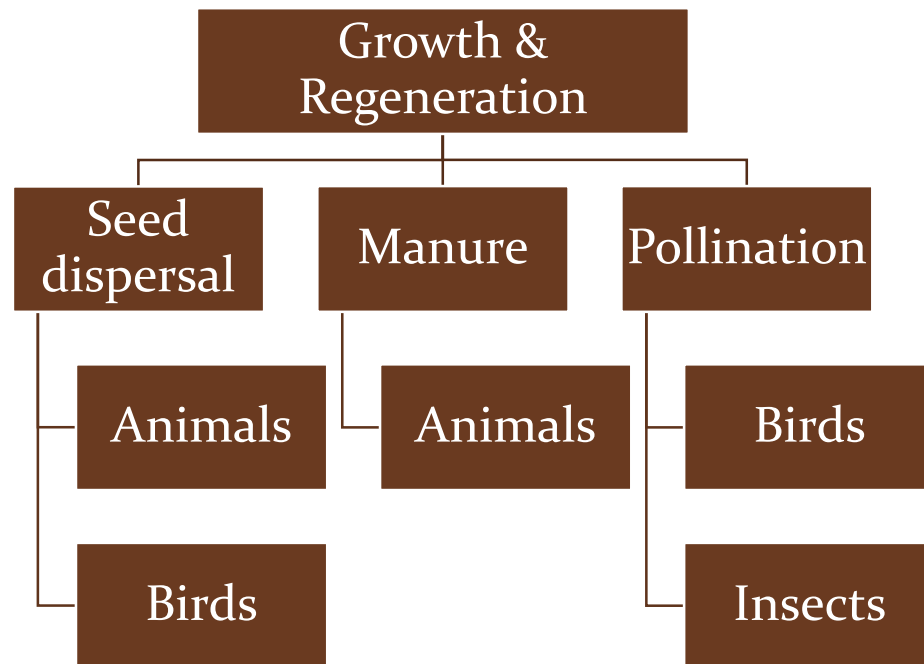
Role of Trees

- They act as wind barrier from heavy winds.
- They prevent soil erosion by binding the soil within the roots.
- They reduce noise pollution by absorbing sound.
- They are a source of medicinal plants and many other useful products.
- They provide food and shelter to animals.



Role of animals, birds and insects

- They help in growth and regeneration of forest



Role of Decomposers



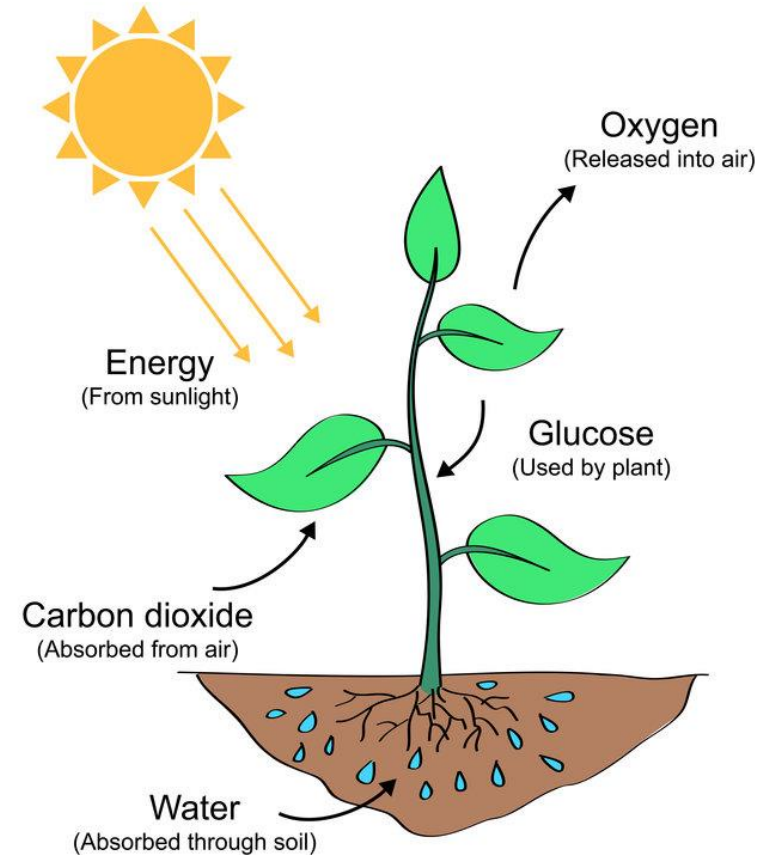
- Organisms that feed upon dead plants and animals and convert them into a dark coloured substance called humus.
- Decomposers feed upon dead plants and animal remains and break it down into simpler nutrients
- Decomposers do not allow anything to go waste in forest. They ensures that nutrients from dead plants and animals are released in the soil.
- They **recycle** the nutrients



Producers, Consumers and Decomposers....

- Producers or Autotrophs

Plants are called producers because they can prepare their own food by utilizing the energy of Sun (Photosynthesis)



Producers, Consumers and Decomposers...

- Consumers or Heterotrophs

Organisms that depend on plants for their food directly or indirectly are called heterotrophs.

- Herbivores or primary consumers(plant eating animals like deer, nilgai, bison)
- Carnivores or secondary consumers (meat eating animals like lion, wolf)
- Omnivorous (both plant and meat eating animals like crow, bear)
- Scavengers (animals that eat dead animals like vultures, crow jackals hyena)



Producers, Consumers and Decomposers

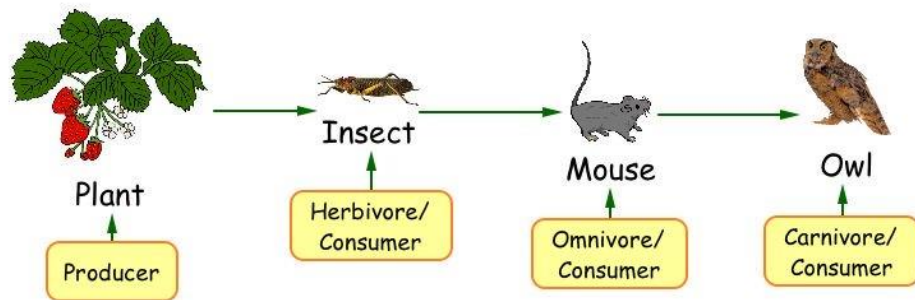
Decomposers or Saprotrophs

- Organisms that feed upon dead remains of plants and animals and break down the dead remains into simpler nutrients are called decomposers.
- Decomposers do not allow anything to go waste in forest. They ensure that nutrients from dead plants and animals are released in the soil.
- They **recycle** the nutrients



Food Chain

The Food Chain Of An Owl



A food chain shows the path of energy from one living thing to another.
Decomposers like bacteria, are necessary for all food chains.

In the forest one organism is eaten by another organism and transfer of energy occurs in the form of food.

Food chain is a sequence/order in which transfer of energy take place from one organism to next organism.

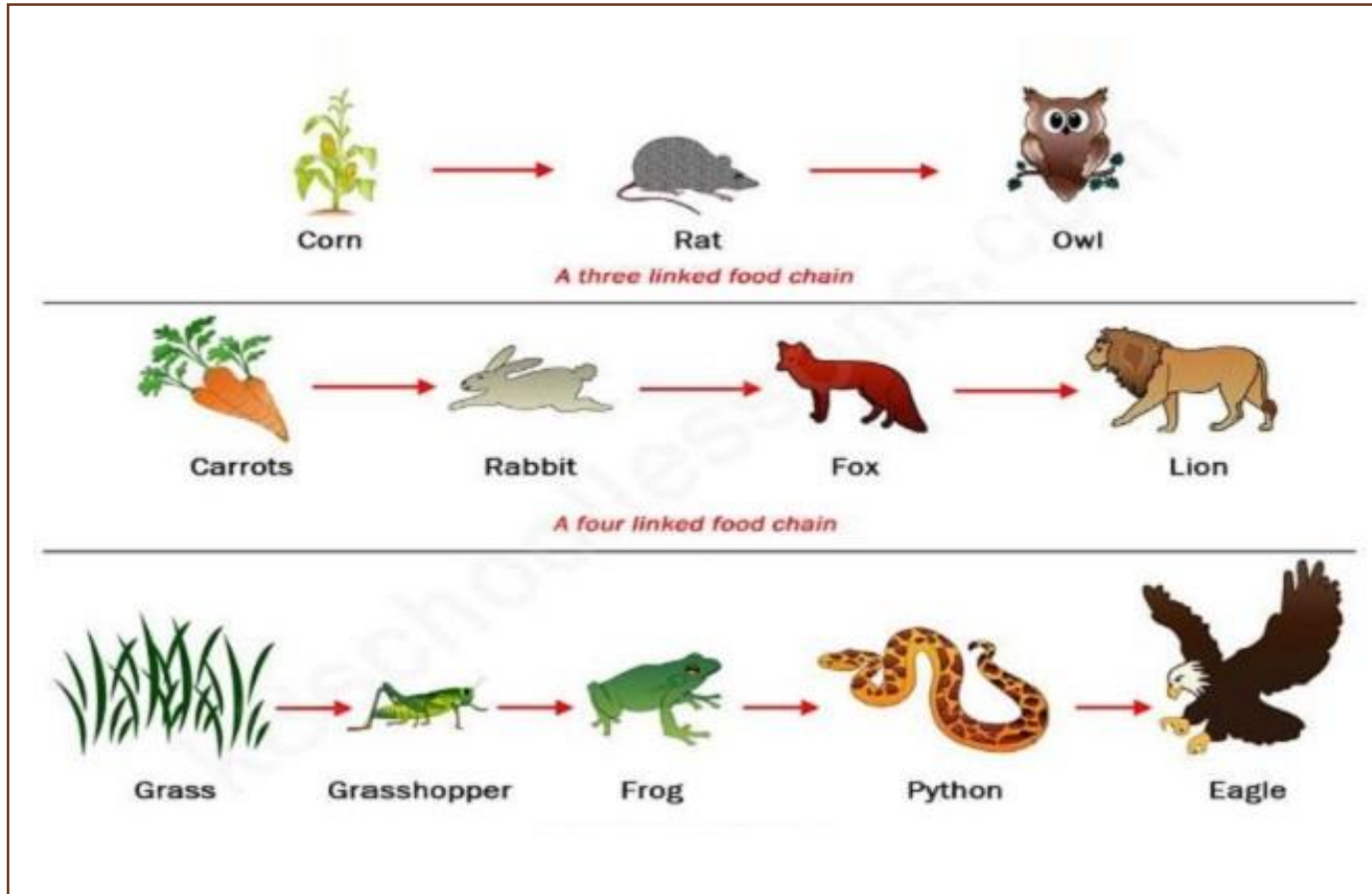
Plant → producer

Insect → primary consumer(herbivore)

Mouse → secondary consumer(omnivore)

Owl → tertiary consumer(carnivore)

Other Food Chains



Plants → producer

Rat

Rabbit

Grasshopper

Owl

Fox

Frog

Lion

Snake

Eagle

Primary
Consumers

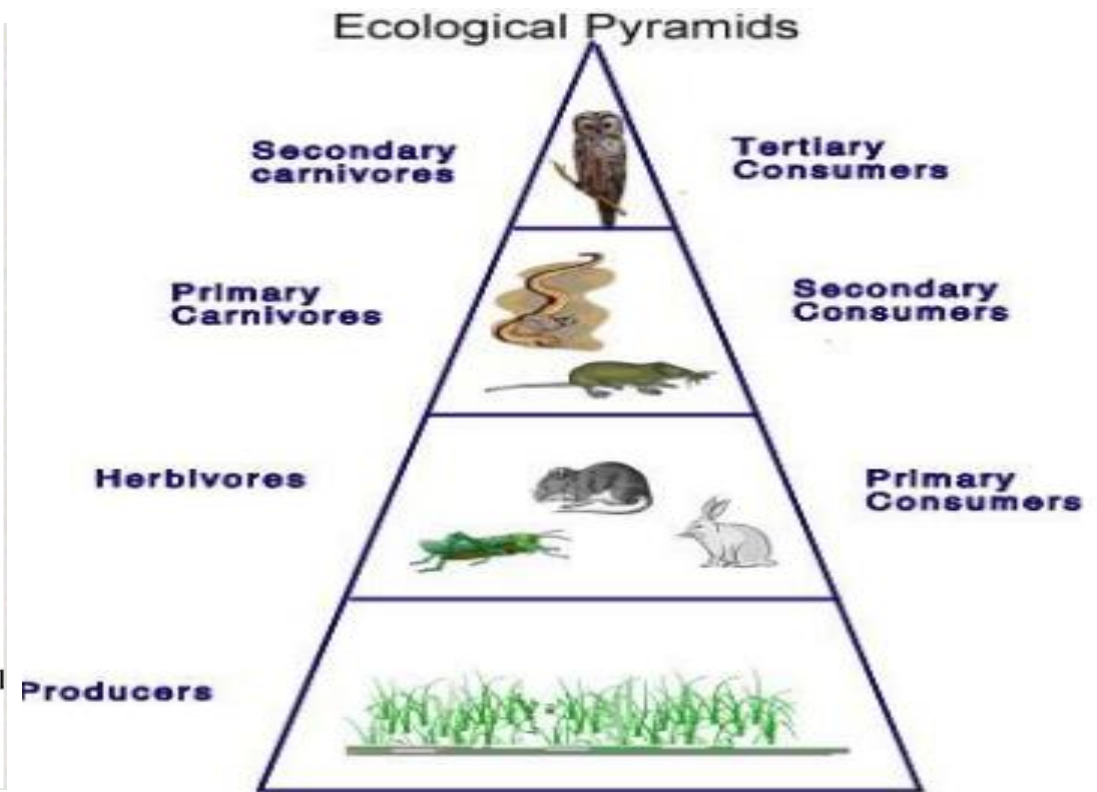
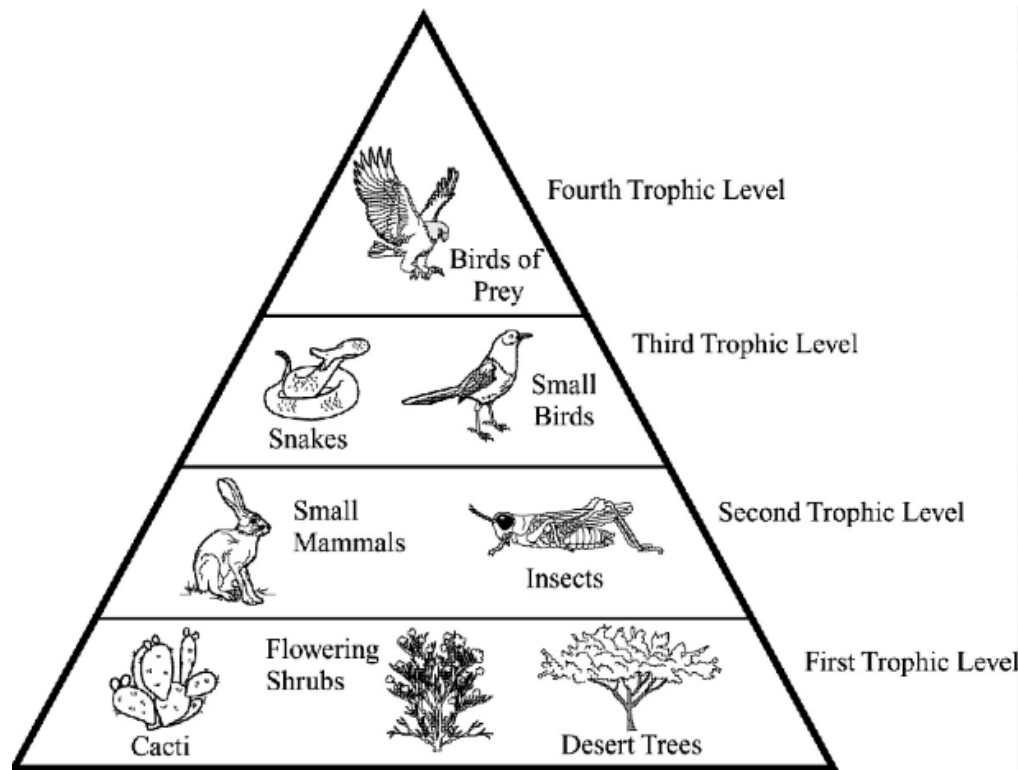
Secondary
Consumers

Tertiary
Consumers

Quaternary
Consumers

Trophic Levels in Food Chain

- Different levels in food chain are called Trophic Levels

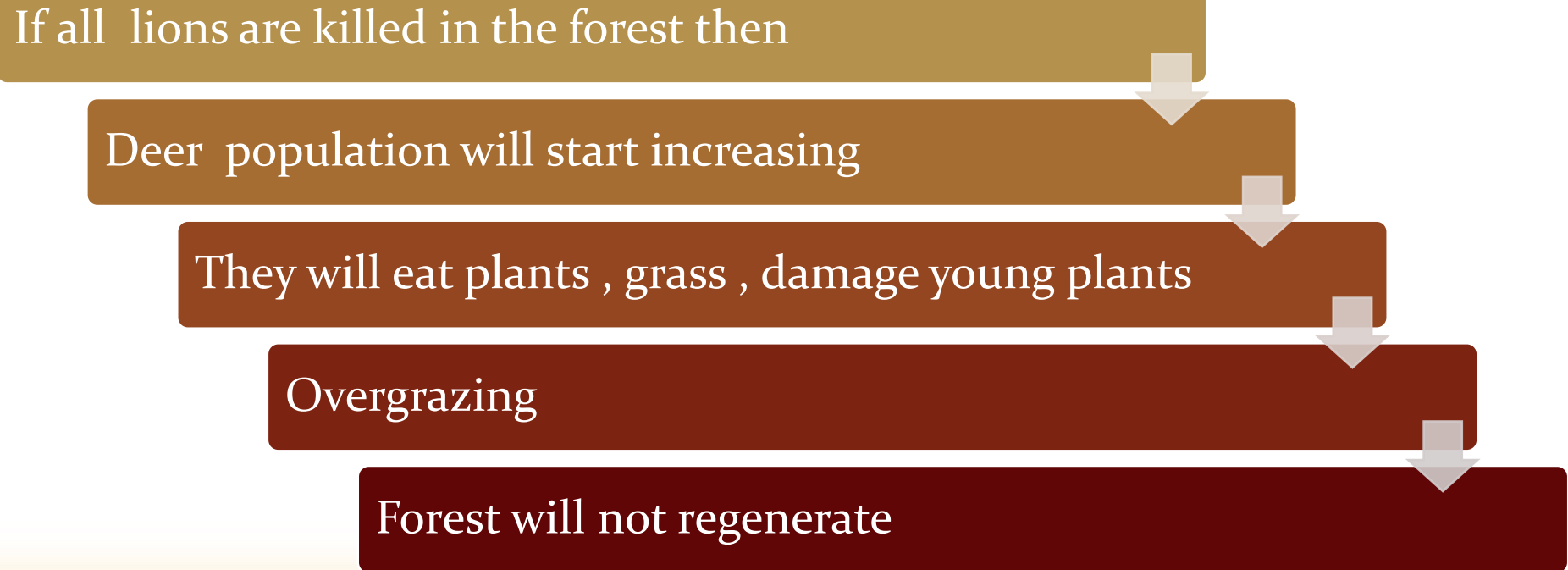


Balance in Nature

If any one component is removed from the food chain an imbalance will be created in the forest habitat.

Plants -----> Deer -----> Lion

If all lions are killed in the forest then



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graph TD; A[If all lions are killed in the forest then] --> B[Deer population will start increasing]; B --> C[They will eat plants, grass, damage young plants]; C --> D[Overgrazing]; D --> E[Forest will not regenerate];
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Deer population will start increasing

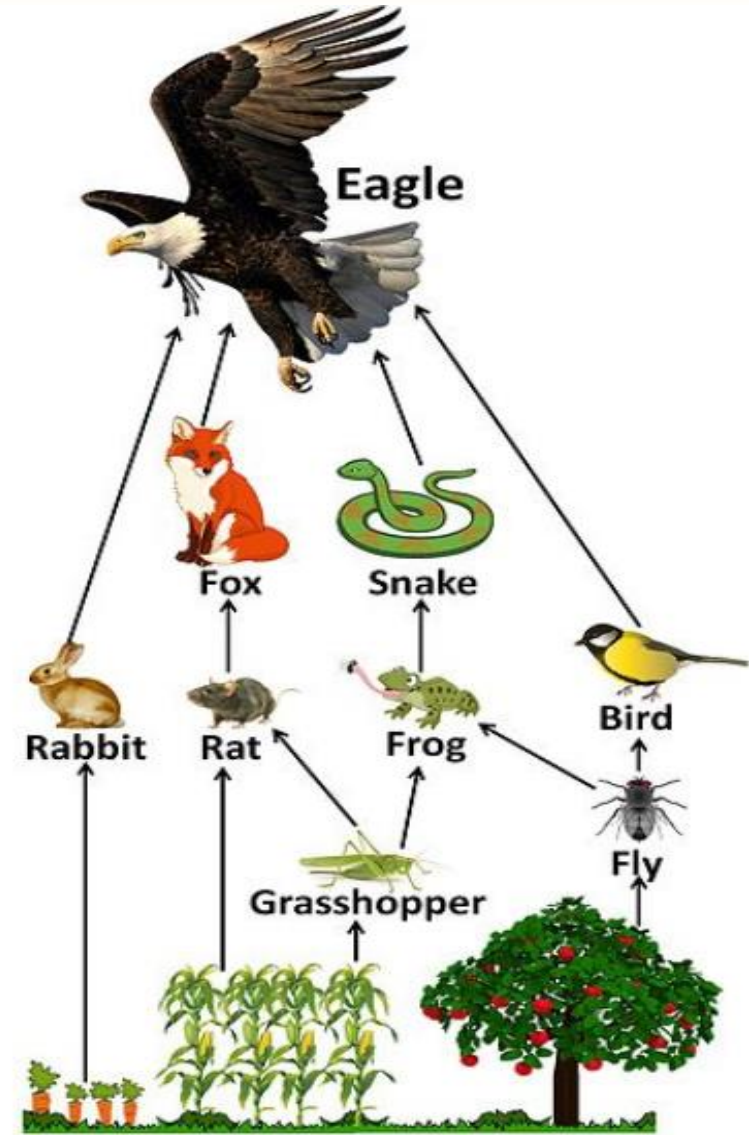
They will eat plants, grass, damage young plants

Overgrazing

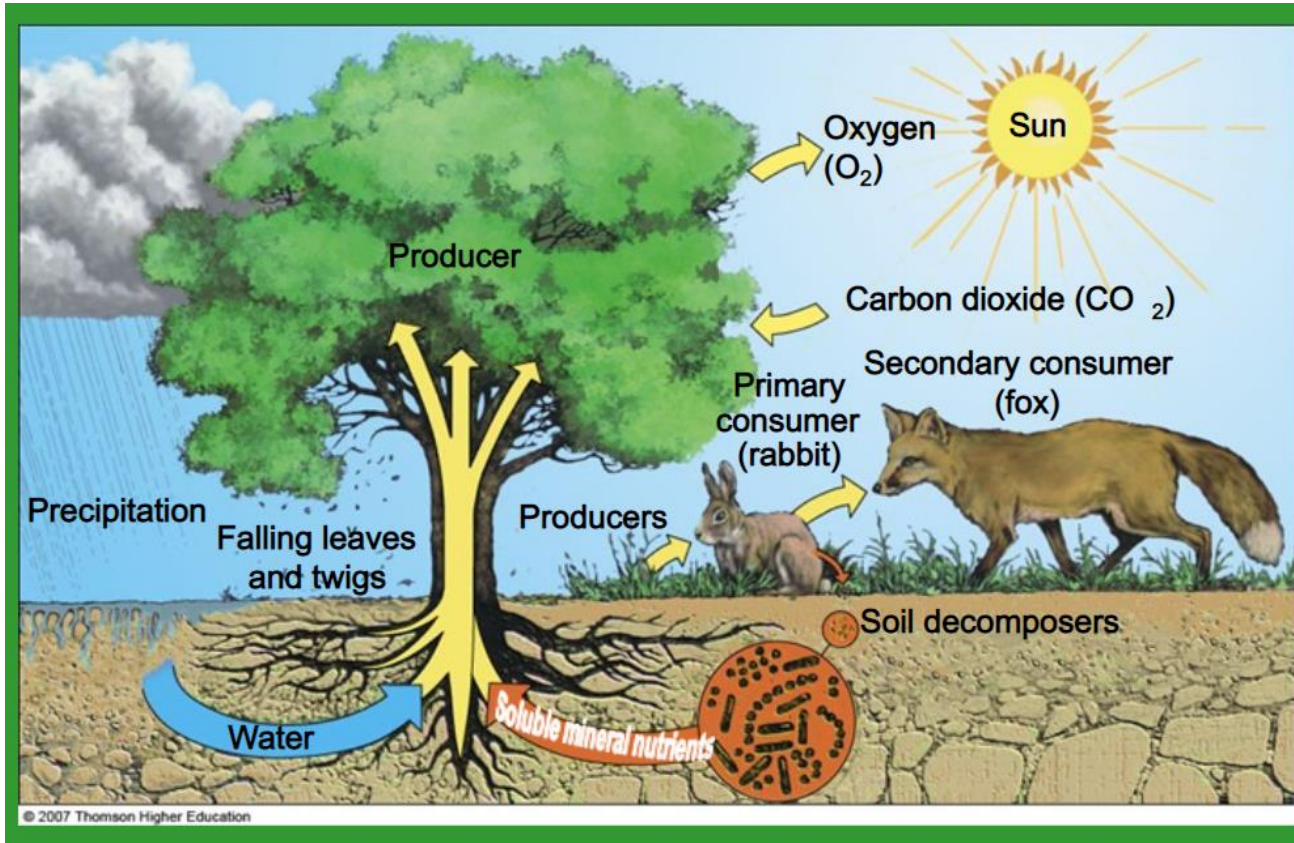
Forest will not regenerate

Food Web

- There are many food chains in a Forest interconnected to each other forming a Web

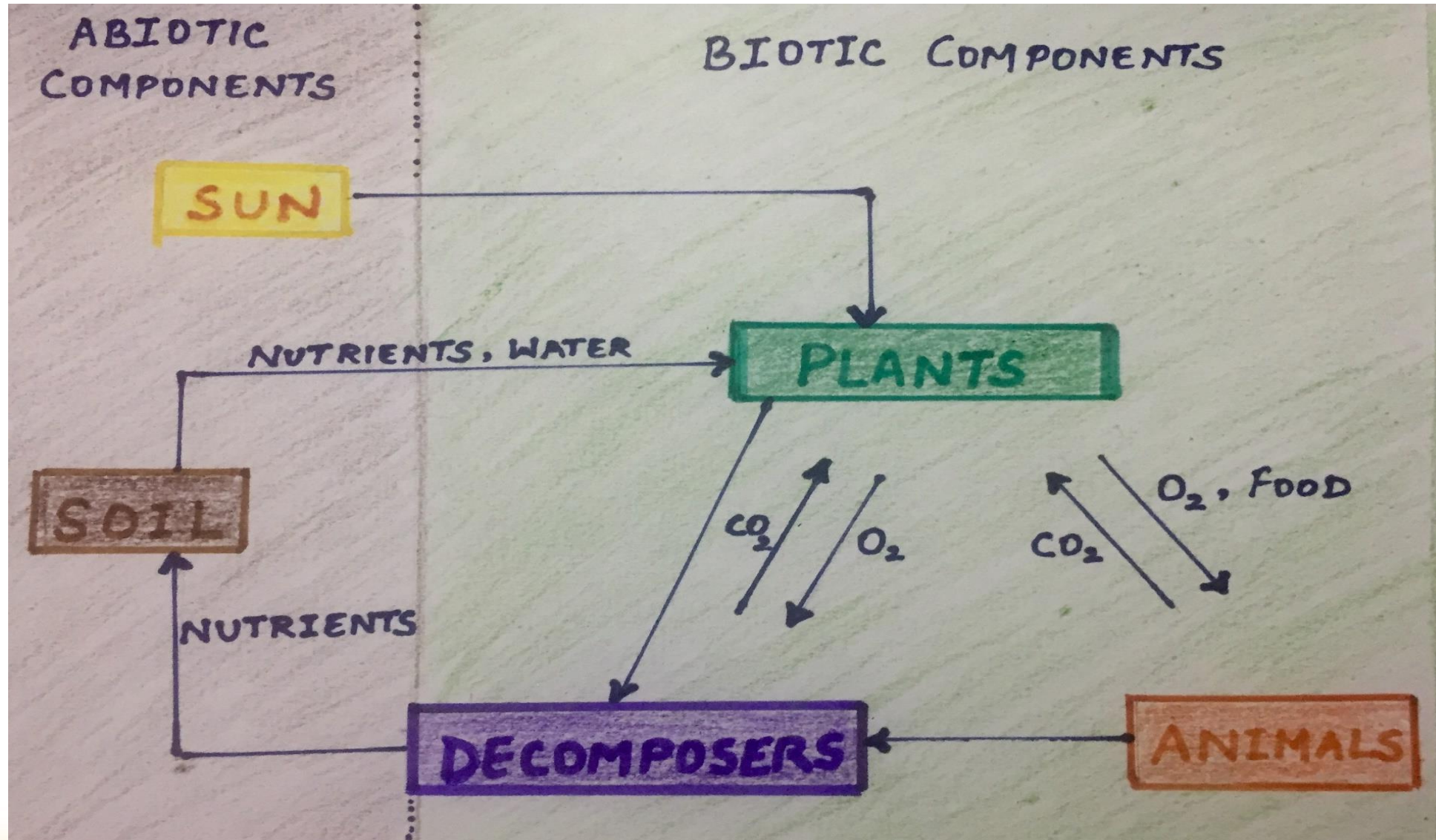


Interrelationships in Forest



- Every part of the forest is dependent on other parts
- Living organisms
 - Plants
 - Animals
 - Decomposers
- Are dependent on Non-Living components,
 - Soil
 - Water
 - Sunlight
- Non Living components are also dependent on Plants and animals for their replenishment

Interrelationships : Biotic & Abiotic components



Deforestation...

Cutting down of forests is called deforestation.

Reasons for Deforestation

- Rise in population, urbanization
- Industrial development
- Increase demand for Space, Housing and agricultural land
- Demand for Timber, Paper and other forest products
- Mining(digging up forest land) for mineral and ores
- Forest Fire



Consequences of Deforestation.....

In the absence of Forest,

- Carbon dioxide in air will increase, resulting in the increase of Earth temperature. Glaciers will melt leading to shortage of drinking water and flooding of low lying areas
- Floods and soil erosion will become common
- Animals will not get Food and Shelter and may die
- Pollution
- Desertification
- Shortage of Food
- Human survival will become difficult.



Global Warming



Pollution



Drought



Desertification



Animal & Plant Life Affected



Shortage of food



Flooding of Rivers

Forest Conservation

- Planned harvesting - only selective cutting of trees should be done from the forests. The seeds from uncut trees can regenerate the forests.
- Afforestation - renewing the forest by planting seedlings or small trees.
- Protection from bush fire – bush fires can be controlled by spraying fire extinguishing solution or changing the direction of winds using strong blowers .
- Protection from insects and pests – by using insecticides and fungicides or by using natural insect predators. Infected trees should also be removed from the forest
- Protection from overgrazing – the young trees are either damaged or eaten by cattle sheep , horses. This leaves very little scope for regeneration of forest.



Forests are valuable natural resource we must aim to preserve them !!



Summary

- Forest is a habitat comprising various plants, animals and micro-organisms.
- In a forest, trees form layered pattern, the uppermost layer(Canopy), followed by shrubs. The herbs form the lowest layer of vegetation.
- Different layers of vegetation provide food and shelter for animals, birds and insects.
- Role of Trees, Animals, Birds and insects in a Forest
- Importance of decomposers in recycling the nutrients.
- Living component of Forest are interdependent on one another
- Interrelationships between living and non living components
- Consequences of Deforestation
- Conservation of forest