

FORESTS: OUR LIFELINE

Learning Objectives

1. Introduction
2. Uses of forests
3. Interdependence of plants and animals
4. Forests help in purifying air
5. Conservations of forests



A forest

INTRODUCTION

The forest is a complex ecosystem consisting mainly of trees that have formed a buffer for the earth to protect life forms. The trees which make up the main area of the forest create a special environment which, in turn, affects the kinds of animals and plants that can exist in the forest. Forests can be broadly classified into many types, some of which are the Taiga type (consisting of pines, spruce, etc.) the mixed temperate forests with both coniferous and deciduous trees, the temperate forests, the subtropical forests, the tropical forests, and the equatorial rainforests.

In India it is believed that organized exploitation of forest wealth began with an increase in hunting. Ashoka the Great is said to have set up the first sanctuary to protect the forests and all life in it. The Mughal rulers were avid hunters and spent a great deal of time in the forests.

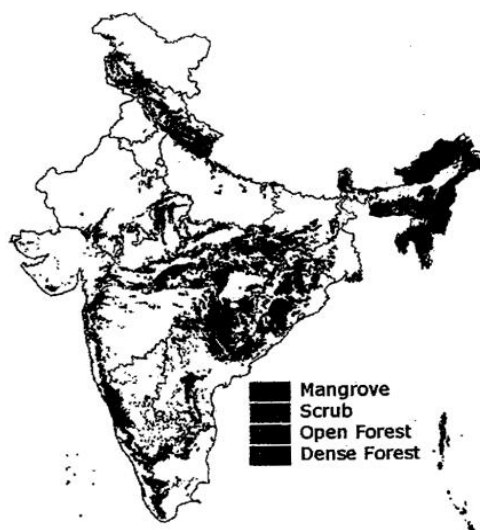
Do you know?

- The oldest living tree has an age of 4700 years and it is in US.
- In less than 100 years half of the entire forest range of the world has been cut. Hence the whole area is now bereave and unprotected.

It was during the British rule that the first practical move towards conservation in modern times took place. They established 'reserved forest' blocks with hunting by permit only.

Though there were other motives behind their move, it at least served the purpose of classification of and control over the forests. Soon after independence, rapid development and progress saw large forest tracts fragmented by roads, canals, and townships. There was an increase in the exploitation of forest wealth. It was only in the 1970s that the importance of conservation of forests was realized and the preservation of India's remaining forests and wildlife was given a front seat.

National forest vegetation map



DIFFERENT TYPES OF FORESTS IN INDIA

1. Mangrove are short dense trees that tolerate and adapt themselves well to both saline and fresh water and grow in coastal areas. The Gangetic Sunderbans is the largest mangrove area in India.
2. Scrubs are the areas which are covered mainly by grass or scrubs, these lie mainly in the Deccan Plateau and on the outskirts of the forests.
3. Open Forest is where the forest cover is not very dense and the area is more open. Mainly found in the Himalayan region and the North-Eastern part of India.
4. Dense Forest is an area of forest where the vegetation is very thick and the canopy cover is dense (when the forest is very dense and the trees literally cover the vegetation under it). The two main areas are the Western Ghats and the Eastern Himalayas which are tropical forests.

Kerala, which is one of the India's southern states, is also known as "God's own country". It is rich in natural vegetation. The forests are spread over a large area, and consist of tropical wet evergreen, partly evergreen, deciduous and dry forests.

Some plants found in these forests are known for their medicinal value. These forests have given Kerala its healing touch in the form of Ayurvedic medicines for the treatment of various ailments.

Do you know?

Over 25% of natural medicines have been discovered in rainforests.

The Indonesian rainforest alone is home to one fifth of all land animal life yet it is disappearing at a faster rate than at any other time.

Endemic species

When an animal or a plant is found in a specific area, it is known as an endemic species.

Wayanad Wildlife Forest

It's a large collection of flora and fauna. Many endemic species of animals, such as pale-faced monkeys called bonnet macaques, striped-neck mongoose, small Indian civet, striped hyena, jackal, Indian fox, wild bear, giant squirrel, bison, chital and others, are found here. Kerala's forests have huge Neem trees that can grow up to a height of 50 to 65 feet. The Neem tree has high medicinal value and is said to treat around 40 diseases. The wood of the Neem tree is used to make a musical instrument, called the dhol.

Trees such as the bamboo, which can grow at the rate of 45 inches in a day, the fig tree, the amia tree or the Indian gooseberry, the Sal tree or the sandal wood tree, the teak tree and many more are all found in these forests. The crown, i.e. the branchy part of a tree above the stem, is not of the same type and size for all the trees. So they appear like different layers in the forest and are known as under storey.

Apart from all these trees, the forest is covered with shrubs, herbs, tall grasses, creepers and climbers. The branches of the tall trees are just like a roof over the other plants, and are called the canopy. The soil of the forest is moist and warm because it is covered with leaves and fruits. The floor of the forest is a soft spongy carpet laid with dry leaves. Dead and decaying leaves, fruits and herbs produce a black substance called humus, which is good for the growth of the plants. Saprophytic organisms and

micro-organisms convert the dead waste into humus.

Advantages of Forests

Plants are called producers because they prepare their own food. These producers are eaten by animals that are the primary consumers, which are, in turn, eaten by other animals that are the secondary consumers. Finally, the secondary consumers are eaten by the tertiary consumers. Thus, forests play a very important role in the food chain. When forests are affected, they affect living beings such as animals and plants.

- Forests play a vital role in the preservation of the water cycle. Plants absorb water from the ground through their roots. Excess water from the plants is released into the atmosphere in the form of water vapour. This process is termed as transpiration. Plants release a huge amount of water into the atmosphere through transpiration.
- A single apple tree loses as much as 30 litres of water in a day.

- The water vapour rises in the atmosphere and condenses to form clouds. The clouds move to the land due to sea breeze and bring rain. This is called precipitation. Excess water seeps into the ground and reaches the ground water table.

- By the process of transpiration and photosynthesis, forests maintain the temperature. During photosynthesis, plants take in CO_2 to prepare food, and release O_2 and water vapour into the atmosphere.

- The more the number of trees, the more the oxygen; and the less the number of trees, the more the carbon dioxide in the atmosphere. A decrease in the number of trees results in global warming. Trees are the main source of oxygen.

- Forests provide shelter for the animals and act as a protective camouflage. Forests provide shelter and food to the tribes living in the jungle.

- Forest trees such as the bamboo are used in making furniture, baskets, ladders, etc. The teak tree is used to make furniture. The Neem tree is used for medicinal purposes. Forests also provide wood to make paper and other products such as gum, wax, rubber, and honey. There are major benefits from forests and so they should be protected.

- Many important forest products are useful for us. Some examples are given below: Firewood and dry leaves are used as kitchen fuel in villages which are close to a forest.

- Timber is an important raw material; for construction activities and for making furniture and artifacts.
- Wood pulp is used in manufacturing paper.
- Honey, kendo leaves, catechu, lac, raisin, etc. are important forest produce.
- Many medicinal plants and herbs are found in forests.

Do you know?

The tallest tree in the world is called Hyperion. It is a redwood tree that measures 116.66 metres tall. Orangutans are the largest tree dwelling animals.

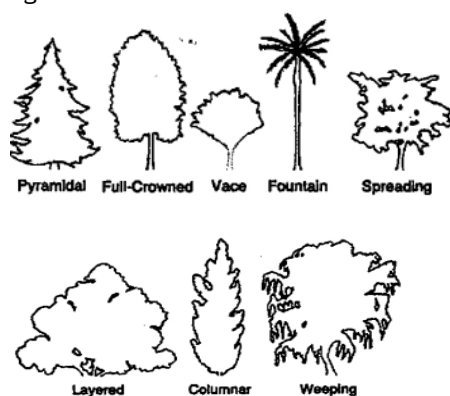
Types of Plants in a Forest

A forest consists of all kinds of plants; herbs, shrubs, trees, creepers, climbers and microorganisms like bacteria and fungi. There are moss and lichens as well.

Regions in a Forest

A typical tree forest is composed of two distinct layers, viz. over story (or canopy) and understory. A tree can be divided into two parts: trunk and branches. The branches of a tree make its crown. Crowns of several trees; in the forest; make the canopy. In dense forests, the canopy looks like the roof of the forest. There are many animals and creatures which live only on the canopy, e.g. monkeys.

Crowns of trees come in various shapes. Some common examples are shown in the given figure.



The lower layer of the forest is called understory. It is composed of herbs and shrubs. The understory is a different world in itself. The understory may not get proper sunlight in dense forests.

There are many animals and creatures which live only in the understory of a forest.

Do you know?

Assuming it lives at least 100 years, a tree exhales around 100 times as much oxygen in its life as it takes in around 1 year.

Interdependence of Living Organisms

Every part of the forest contributes in making a self-sustaining system. The green plants prepare food through photosynthesis. The herbivores directly take food from the green plants. The carnivores take food from the herbivores. This makes a food chain, which can be shown by following example:

Grass → Deer → Lion

When an animal or a plant dies, its dead remains rot in due course of time and turn into soil-like thing. The process is called decomposition and microorganisms carry out this process. Decomposition is the process by which all the raw materials are returned to the nature. The soil-like thing made after decomposition is called humus. It makes the soil highly fertile. The topsoil of forest is fertile because of presence of humus.

DEFORESTATION

Due to the rise in the population, trees are being cut down to obtain land for agriculture, industry and housing. This is known as deforestation. Due to this, many species become homeless. Forests are also lost due to forest fires and floods. If trees are cut down, then the carbon dioxide level increases. This leads to an increase in the temperature of the earth's surface, resulting in global warming. If forests disappear, then the soil becomes very loose, resulting in soil erosion. The fertility of the soil is maintained when the roots hold the trees and prevent soil erosion by wind and water. Due to growing human population, vast tracts of forest have been removed. This has created many problems.

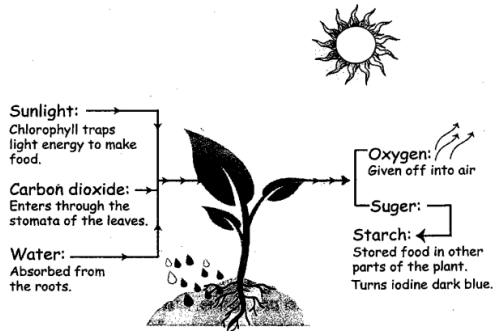
Some of them are given below:

- Reduced forest cover has led to soil erosion and loss of soil fertility at many places.
- Reduced forest cover has disturbed the natural process of recharging of groundwater. This has resulted in shortage of drinking water at many places.
- Reduced forest cover means there is loss of habitat for many animals. Existence of most of the animals is in danger because of this.
- Reduced forest cover means there is higher percentage of carbon dioxide in the atmosphere.

This is leading to global warming. The average temperature of the earth is on the rise.

Do you know?

The dryings of birds in tropical rainforests grow into new lands.



KEYWORDS

- Topography: Physical features of a place.
- Biodiversity: Short for 'biological diversity', it refers to the diverse life forms of the earth.
- Global warming: Increase in gases such as carbon dioxide released as a result of burning of fossil fuels.
- Deforestation: Cutting of forests.
- Afforestation: Replanting trees to raise forests.

CONCEPT MAP

