Forests: Our Lifeline

Components of Forests

Forests are home to a large number of plants and animals. **What kind of plants and animals are seen in these forests?** Let us explore the various components of forests.

Forests have several types of trees, shrubs, herbs, and grasses. Climbers and creepers are also found on the trees of these forests. Small animals such as spiders, squirrels, and ants can be seen on the branches of the trees. **Can you think of more plants and animals that inhabit these forests?**

The floor of a forest is dark in colour and is covered with dead and decaying matter. **What forms the dead matter on the floor of the forest?** This dead and decaying matter on the floor of the forest consists of dead and decaying leaves, fruits, seeds, twigs, small herbs, and animals.

Mushrooms and microorganisms are also found in the forests. They act as decomposers, which decompose organic matter and convert it to **humus**.

Humus is the top layer of soil that is rich in nutrients. It is dark in colour. The decomposers convert the dead plants and animals into humus that is utilized by the plants.

Layers of a Forest
The different layers of the forest include

The Emergent Layer:
This layer is very sunny because it is the very top and only the tallest trees reach this level. It is also known as the overstory. In the emergent layer, the top of the tree is called crown. Crown is defined as the branchy part of a tree above the stem. These crowns can be of different types - pyramidal crowned, vase crowned etc.
Animals found in this layer include birds, butterflies, small monkeys, bats, snakes and bugs.

The Canopy Layer:
This is the thickest layer and much of the rain is stopped by the thick foliage. Most trees in the forest grow to this height. There are plants that grow in the canopy layer whose roots don't reach the ground. These are called air plants.
Animals found in this layer include birds, monkeys, frogs, and sloths, lizards, snakes and many insects.

The Understory:
This layer has many vines, dense vegetation but not much sunlight as it is all blocked by the canopy.

Animals found in this layer include birds, butterflies, frogs and snakes.

The Forest Floor:
This layer is dark, damp, full of many dead leaves, twigs and dead plants. It is usually clear of vegetation, with little or no winds and rains reaching there. The forest floor is dark due to the trees above stopping the sunlight from entering the forest. It is estimated that only 2% of the sunlight actually reaches the floor.
Animals found in this layer include jaguars in South America, gorillas, leopards in Africa, tapirs, tigers and elephants in Asia.

A trip to a forest

Visit a forest with your parents. Observe the trees and the animals living in the forest. Make a list of the plants and animals that you see. **Do you see any useful plants in the forest?**

How do these various components of a forest interact with each other?

Types of interactions in a forest

In a forest, there are various types of interactions that occur between the living and the non-living components.

The plants and animals living in a forest interact with each other. All the animals, whether they are herbivores or carnivores, are directly or indirectly dependent on the plants for food. The organisms that feed on the plants are eaten by other animals. For example, insects feed on grass and frogs feed on insects. Frogs in turn are eaten by snakes, and snakes form the prey for eagles. This is known as a **food chain**.

$$\text{Grass} \rightarrow \text{Insects} \rightarrow \text{Frog} \rightarrow \text{Snake} \rightarrow \text{Eagle}$$

All food chains in the forests are linked. What happens if one food chain is disturbed? If a single food chain is disturbed, then it affects all the other food chains. Therefore, if we remove one component from the forest, then all the other components will also be affected.

Plants and animals are also dependent on each other. Plants utilize the carbon dioxide that is released by the animals during the process of respiration. This carbon dioxide is used by the plants to prepare food by the process of photosynthesis. The oxygen released during photosynthesis is used by the animals for **respiration**. In this way, plants and animals help in maintaining **the balance of oxygen and carbon dioxide in the atmosphere.**

Plants also provide animals with shelter. They protect the animals from their predators that live in the forests. In return, animals help the plants by dispersing their seeds to other parts of the forests, thereby helping the forest to grow and regenerate.

Animal droppings are also important for plants. They are a rich source of nutrients that enable the plants to grow and flourish.

Decomposers are yet another important component of the forests**. What is the role of decomposers in the forests?** Decomposers are the organisms that convert the dead plants and animals into humus. We know that humus is the nutrient-rich, top most layer of the soil. The nutrients released by the decomposers are taken up by the roots of the plants. In this way, the decomposers help in recycling the nutrients.

Can you now explain why decomposers are a very important component of the forests?

They are important because they recycle the organic matter and return the nutrients from the dead plants and animals to the soil. This is then utilized by the plants.

Uses Of Forests

You may have heard people talking about the need to protect our forests. **Why are forests important? Why should we protect them?**

Forests are important to us as they are the source of a large number of products.

1. **Plywood, fuel wood, boxes, paper, matchsticks, and furniture,** are some of the wood-based products that are obtained from forests.

2. Forests also provide us with food products, such as **oils, spices, etc.**

3. They are a source of **rubber, gum, and various medicinal products**.

Forests are the **"lungs" and serve as water purifying systems** of nature. They are also **home to a large number of animals and plants**.

You may have come across pictures of a forest where the branches of the tall trees spread out like roof over the other plants. **What is this called?**

The part of the tree with branches is known as the **crown**. When the crown of tall trees in the forests forms a roof-like covering over the other plants, it is known as a **canopy**.

Usefulness of trees

Observe the things present around you. Make a list of the products in your house that are obtained from forests. Also, visit a market and observe all the items that are obtained from forests. **Do you think that the cutting of forests will affect the availability of these things?**

We need to protect our forests as they are an important source of several things used by us. In addition, forests are necessary for life as they provide a clean environment for both humans and animals.

Do you know that in rainforests, it can take up to 10 minutes for the rain water to hit the ground because of the presence of canopy?

What role do forests play in nature?

Forests are very important for our environment. Some of their functions are discussed below:

(i) Forests help prevent floods

An area that has a large number of trees or a dense forest cover nearby is protected from floods. **Why is it so?**

Forests act as a natural absorber of rain water. The roots of the trees absorb the water and allow it to seep into the soil. This way forests help in maintaining the water table. They also maintain the flow of water in the streams.

What will happen if the forests die?

In the absence of trees, the rain water will hit the ground directly and this may cause floods in the surrounding areas. The roots of the trees also help to bind the soil together. Therefore, the absence of trees may also lead to erosion of the loose soil.

1. **Forests influence the environment, climate, and the water cycle**

Forests keep the climate of an area cool. An area with a forest cover is most likely to receive rainfall. Forests also provide us with oxygen and food.

2. **Other functions of forests**

Forests constitute the natural habitat for a large number of animals. They help to protect the soil. They are a source of timber and medicinal plants. It is therefore important to preserve our forests.

Now, can you prepare a list of activities that need to be avoided in order to prevent a destruction of valuable forests?

- Cutting of trees for obtaining timber or other products
- Construction of roads through forest regions

- Construction of buildings near or inside forest regions
- Overgrazing by animals, etc.

Although these activities are important for the development of human society, they need to be controlled, so that we do not lose these valuable forests forever.

Do you know that every second in rainforests an area which is equivalent to the size of a football field, is being destroyed as a result of deforestation?