

Natural Vegetation and Wildlife

India has varied types of flora and fauna. India is one of the twelve mega biodiversity countries of the world.

Natural Vegetation

It is the plant community which has grown naturally without human help. The natural vegetation, which is left undisturbed over a long period of time is called **virgin vegetation**. Thus, cultivated crops, fruits, orchards form part of vegetation but **not** natural vegetation. *Virgin vegetation are of two types*

- (i) **Endemic or Indigenous Species** These plant species are originated in India.
- (ii) **Exotic species** These plant species are originated outside India.

India has around 47,000 plant species. Due to this varied plant diversity, India occupies tenth place in the world and fourth in Asia continent.

India has around 15,000 flowering plants which account for 6% of the world's total number of the flowering plants. India also has many non-flowering plants. For eg. ferns, algae and fungi.

Importance of Forests

- Forests play a major role in enhancing the quality of environment.
- Forests modify local climate, reduce soil erosion, regulate stream flow, provide raw material for industries and livelihood for many communities.
- Forests also offer panoramic or scenic view for recreation.
- Forests control wind force, temperature and cause rainfall.
- Forests also provide humus to soils and shelter to the wildlife.

Chapter Syllabus

- Types of Vegetation
- Wildlife

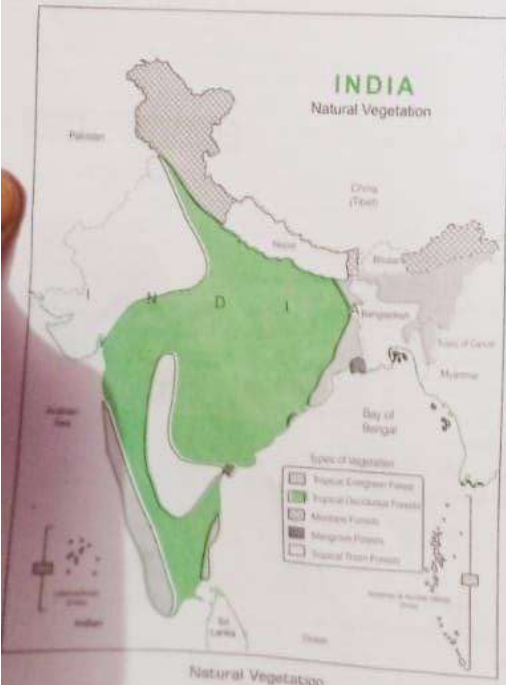
Change in Nature of Vegetation in India

- Factors like growing demand for cultivated land, development of industries and mining, urbanisation and over-grazing of pastures have changed natural vegetation of India.
- The vegetation cover of India in large parts is no more natural in the real sense, except in some inaccessible regions like the Himalayas, the hilly region of Central India and the Marusthali¹ where vegetation is still natural.

Types of Vegetation

India has the following major types of vegetation

1. Tropical Evergreen Forests
2. Tropical Deciduous Forests
3. Tropical Thorn Forests and Scrubs
4. Montane Forests
5. Mangrove Forests



¹ Marusthali: It is the desert, arid region.

1. Tropical Evergreen Forests

These forests are found in heavy rainfall areas where the annual rainfall is over 200 cm with a short dry season. These are also called **tropical rainforests**.

Regions of these forests are the Western slopes of the Western Ghats, both groups of islands (Lakshadweep and Andaman and Nicobar Islands), upper parts of Assam and coasts of Tamil Nadu.

Characteristics of Tropical Evergreen Forests

- These forests have abundant vegetation with tall trees (up to 60 m), creepers and bushes.
- These forests are found remain warm and wet throughout the year.
- The vegetation occurred in these forests is multilayered in structure.
- These forests appear green throughout the year.
- These forests shed their leaves at different times and have short dry season.
- Ebony, mahogany, cinchona, rubber and rosewood trees are useful commercial trees found here.
- Animals found in these forests include, elephants, monkey, lemur, deer, birds, bats, sloth, scorpions and snails. One horned rhinoceroses are found in the jungles of Assam and West Bengal.

2. Tropical Deciduous Forests

These forests are found where the annual rainfall is between 200 to 70 cm. These forests are the most abundant variety of forests in India. These forests are also called **monsoon forests**.

Trees of these forests shed their leaves for about 6 to 8 weeks in dry summer.

Lions, tigers, elephants, pigs and deer are common animals in these forests.

Besides these, many varieties of birds, lizards, snakes and tortoises are found here.

Types of Tropical Deciduous Forests

On the basis of the availability of water, these forests are further divided into moist and dry deciduous.

Natural Vegetation and Wildlife

Moist Deciduous

- Forests growing in annual rainfall areas between 100 and 200 cm are classified as **moist deciduous forests**.
- These forests are found mostly in the Eastern part of the country such as North-Eastern states, West Odisha, Jharkhand, Chhattisgarh, along the foothills of Himalayas and the Eastern slopes (leeward side) of the Western Ghats.
- Teak (most dominant species), bamboo, sal, shisham, sandalwood, khair, kusum, arjun and mulberry trees are found in these forests. These are commercially very important.

Dry Deciduous

- Forests growing in annual rainfall areas between 70 and 100 cm are classified as **dry deciduous forests**.
- These forests are found in rainier parts of the Peninsular plateau and the plains of Uttar Pradesh and Bihar.
- There are open stretches in these forests in which Teak, sal, peepal and neem trees grow.
- Many parts of these forests have been cleared for agricultural activities and for grazing.

3. Tropical Thorn Forests and Scrubs

These forests are found in areas where the annual rainfall is less than 70 cm. These forests are found in North-Western part of the country including semi-arid areas of Gujarat, Rajasthan, Uttar Pradesh, Chhattisgarh, Haryana and Madhya Pradesh.

Characteristics of Tropical Thorn Forests and Scrubs

- Trees in these forests are scattered and have long roots penetrating deep into the soil. It is helpful to get moisture from underground water.
- The stems of the trees in these forests are succulent to conserve water which help the trees to survive in arid climate.
- Leaves of the trees in these forests are mostly thick and small to minimise **evaporation**².
- These forests have scrubs and thorn forests in arid areas.
- Trees like acacia palms euphorbia and cactus are the main plant species of these forests.

- Fox, wolf, rats and mice, wild ass, horses, tiger, lion, camels and similar animals are found in these areas.

4. Montane Forests

In mountainous areas, the decrease in temperature with increasing altitude leads to the corresponding change in natural vegetation. These forests are found in mountainous areas of Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh.

The common animal like Kashmir stag, spotted deer, wild sheep, jack rabbit, Tibetan antelope, yak, snow leopard, squirrels, shaggy horn wild ibex, bear and rare red panda, sheep and goats with thick hair are found in these forests.

Altitudinal Distribution of Montane Forests

- **Wet Temperate Forests** These forests are found at lower altitude between 1,000-2,000 m. Evergreen broad leaf trees such as oaks and chestnuts are prominent here.
- **Temperate Forests** These forests are found at the altitude between 1,500-3,000 m. Here coniferous trees like pine, deodar, silver fir, spruce and cedar are found. These forests cover mostly the Southern slopes of the Himalayas, places having high altitude in Southern and North-East India.
- **Temperate Grasslands** These grasslands are found at higher elevations.
- **Alpine Vegetation** These vegetation are found above 3,600 metres height in these forests. The common trees of these forests are silver fir, junipers, pines and birches. On the snow-line these forests are not found. Through shrubs and scrubs these forests merge into the Alpine grasslands.
- **Alpine Grasslands** These grasslands are used extensively for grazing by Nomadic tribes like the Gujjars and the Bakarwals.
- **Tundra Vegetation** Mosses and lichens are part of Tundra vegetation which are found at higher altitudes.

5. Mangrove Forests

These forests are found in coastal areas influenced by tides. Due to this fact, they are also called **tidal forests**. Dense mangroves are the common varieties in these forests and the roots of the mangroves are submerged under water.

These forests are found in the delta areas of the Ganga, Mahanadi, the Godavari, the Krishna and the Kaveri.

² Evaporation It is the process by which water changes from liquid to a gas or vapour.

In the Ganga-Brahmaputra delta, Sundari trees are found. These provide durable hard timber. Other trees are palm, coconut, keora, agar, etc.

Royal Bengal Tiger is the famous animal found in these forests. Other animals found here include the snakes, turtles, gharials and crocodiles.

Medicinal Plants

India is known for its herbs and spices from ancient times. Some 2,000 plants have been described in Ayurveda and at least 500 are in regular use. The World Conservation Union's Red List has named 352 medicinal plants of which 52 are critically threatened and 49 endangered.

The commonly used plants in India are given in the table

Medicinal Plants	Features
Sarpagandha	It is used to treat blood pressure. It is found only in India.
Jamun	The juice from this ripe fruit is used to prepare vinegar, which is carminative and diuretic and has digestive properties. The powder of the seed is used for controlling diabetes.
Arjun	The fresh juice of its leaves is a cure for earache. It is also used to regulate blood pressure.
Babool	Its leaves are used as a cure for eye vision. Its gum is used as a tonic.
Neem	It has high antibiotic and antibacterial properties.
Tulsi	It is used to cure cough and cold.
Kachnar	It is used to cure asthma and ulcers. Its buds and roots are good for digestive problems.

Check Point 01

1. An example of non-flowering plants is
2. Multilayered vegetation is occurred in
3. What is the dominant species of moist deciduous forest?
4. Where do temperate forests found in India?
5. Red Panda is found in which type of forest?
6. The fresh juice of plant is a cure for earache.

Wildlife

India is rich in its fauna (animal life). India has approximately 90,000 animal species. The country has about 2,000 species of birds. They constitute 13% of the total world's stock.

There are 2,546 species of fish, which account for nearly 12% of the world's stock. It also shares between 5% and 8% of the world's amphibians, reptiles and mammals.

Distribution of Wildlife in India

The existence of animals in our country varies from place to place.

The following points show distribution of wildlife in India

- The elephants are found in the hot wet forests of Assam, Karnataka and Kerala.
- One-horned rhinoceroses are found in swampy and marshy lands of Assam and West Bengal.
- Wild ass and camels are found in arid areas of the Rann of Kachchh and the Thar desert, respectively.
- India is the only country in the world that has both tigers and lions. Indian lion is found in the Gir Forest in Gujarat. The Gir Forest is the last remaining habitat of the Asiatic lion.
- Tigers and leopards are found in the forests of Madhya Pradesh, the Sundarbans of West Bengal and the Himalayan region.
- The Himalayas have a range of animals, which can survive in extreme cold.
- Yak, the shaggy horned wild ox (weighing around 1 tonne) the Tibetan antelope, the bharal (blue sheep), wild sheep and the kiang (Tibetan wild ass) are found in high altitudes in Ladakh.
- The ibex, bear, snow-leopard and rare red panda are found in certain areas.
- Turtles, crocodiles and gharials are found in the rivers, lakes and coastal areas. Gharial is the only representative of a variety of crocodile, found in the world today.
- Peacocks, pheasants, ducks, parakeets, cranes and pigeons are some of the birds found in the forests and wetlands of the country.
- Indian bison, nilgai (blue bull), chousingha (four horned antelope), gazel and different species of deer are some other animals found in different places of India. It also has several species of monkeys.
- The wetlands of India are home to many migratory birds such as siberian crane, flamingo, etc. These places are Rann of Kachch and places where desert merges with the Sea.

Loss of Ecosystem

Every species has a role to play in the ecosystem, thus, its conservation is essential for environment.

Due to excessive exploitation of the plants and animal resources by human beings, the ecosystem has been disturbed. About 1,300 plant species are endangered and 20 species are extinct.

The main causes of threat to ecosystem are

- Hunting by greedy hunters for commercial purposes.
- Pollution due to chemical and industrial waste, acid deposits.
- Introduction of alien species.
- Reckless cutting of the forests to bring land under cultivation and habitation.

Governmental Steps for Protection of Flora and Fauna

To protect animals and plants life, the government has taken many steps.

Some of these are as follows

- (i) Eighteen biosphere reserves³ have been set-up in the country to protect flora and fauna. Ten out of these, the Sundarbans, Nanda Devi, the Gulf of Mannar, the Nilgiris (Kerala, Karnataka and Tamil Nadu), Nokrek, Great Nicobar, Manas, Simlipal, Pachmarhi and Achanakmar Amarkantak have been included in the world network of biosphere reserves.

Eighteen Bio-reserves

1. Sundarbans	10. Simlipal
2. Gulf of Mannar	11. Dihang-Dibang
3. Nilgiri	12. Dibru Saikhowa
4. Nanda Devi	13. Agasthyamalai
5. Nokrek	14. Kangchendzonga
6. Great Nicobar	15. Pachmarhi
7. Manas	16. Achanakmar-Amarkantak
8. Rann of Kachchm	17. Cold Desert
9. Seshachalam	18. Panna

- (ii) Financial and technical assistance is provided to many botanical gardens by the government since 1992.
- (iii) Many other eco-developmental projects have been introduced such as Project Tiger, Project Rhino, Project Great Indian Bustard, etc.

³ Biosphere Reserves These are the areas where plant and animal species are protected. They are created so that this natural heritage can be transmitted to future generations.

⁴ National Park It is an area of country-side, or occasionally sea or fresh water, protected by the state for the protection of wildlife.

- (iv) Wildlife Protection Act was implemented in 1972 in India.
- (v) 101 national parks⁴, 535 wildlife sanctuaries and zoological gardens are set-up to take care of natural heritage.

In spite of all these steps, it is must to realise the importance of the natural ecosystem for our own survival. Then only indiscriminate destruction of natural environment will be put to an immediate end.



Wildlife Reserves

Check Point 02

1. Around species of fishes are found in India.
2. What is the habitat for one-horned rhinoceros?
3. What is the name of the only representative of a variety of crocodile, that is found in India?
4. When did Wildlife Protection Act implemented in India?
5. There are national parks and wildlife sanctuaries in India.

SUMMARY

- India is one of the 12 mega biodiversity countries of the world.
- Natural vegetation is the plant community which has grown naturally without human help.
- Natural vegetation which is left undisturbed over a long period of time is called **virgin vegetation**.
- The type of virgin vegetation which are purely Indian origin are called **Endemic or Indigenous species**.
- The virgin vegetation which are originated outside India is called **exotic species**.
- Forests play a major role in enhancing quality of environment.
- India has major types of vegetation such as tropical evergreen forests, tropical deciduous forests, tropical thorn forest and scrubs, montane forests and mangrove forests.
- Tropical Evergreen forests** are found in heavy rainfall areas where the annual rainfall is over 200 cm with a short dry-season.
- Tropical deciduous forests** are found where the annual rainfall is between 200 to 70 cm. These forests are the most abundant variety of forests in India.
- The thorn forest and scrubs** are found in areas where the annual rainfall is less than 70 cm.
- In mountainous areas, the decrease in temperature with increasing altitude leads to the corresponding change in natural vegetation.
- Montane forests have different types of vegetation such as wet temperate forests, temperate grasslands, alpine grasslands, alpine vegetation and tundra vegetation.

- Mangrove forests are found in coastal areas influenced by tides. Due to this fact, they are also called tidal forests. Sundari is an important mangrove tree.
- India is rich in its fauna (animal life). India has approximately 90,000 animal species. The country has about 2000 species of birds. They constitute 13% of the total world's stock.
- The **Wildlife Protection Act** in India was implemented in 1972.
- Every species has a role to play in the ecosystem, thus, its conservation is essential for environment.
- To protect animals and plants life, the government has taken many steps. Such as setting up of eighteen biosphere reserves, 503 national parks, 535 wildlife sanctuaries and zoological gardens in India.
- Wildlife Protection Act was implemented in 1972 in India.
- Financial and technical assistance is provided to many botanical gardens by the government since 1992.
- Many other eco-developmental projects have been introduced such as Project Tiger, Project Rhino, Project Great Indian Bustard, etc.
- Government of India has taken many steps to protect plants and animals such as – setting up of national parks, biosphere reserve etc. introduction of different projects to conserve critically endangered species e.g. Project tiger, Project rhino etc. We all should be aware of the fact that natural ecosystem is very important for our survival.

NCERT FOLDER

Intext Questions

On Page 43

- 1 Why are the Southern slopes in the Himalayan region covered with thick vegetation cover as compared to the Northern slopes of the same hills?

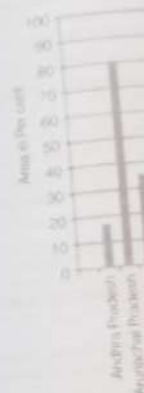
Ans. The Southern slopes are covered with thick vegetation as compared to the Northern slopes because the Southern slopes of the Himalayas receive more rain due to the South-West monsoon winds and also receive adequate amount of sunlight. Whereas the Northern slopes do not receive such rainfall.

- 2 Why have the Western slopes of the Himalayas covered with thick vegetation cover as compared to the Eastern slopes?

Ans. Western slopes of the Himalayas are covered with thick forests and receive more rainfall than the Eastern slopes. Moisture laden winds from the Arabian Sea hit the Western slopes of the Himalayas during the monsoon season and release rain there.

Natural Vegetation and Wildlife

3 Study the following bar graph.



- (a) Name the state where the area under tropical evergreen forests is the highest.
- (b) Name the union territory where the area under tropical deciduous forests is the highest.

Ans. (a) Mizoram (more than 90%)

- (b) Daman and Diu (more than 90%)
- (c) spread over 5% of the total area of the country.

Let's Discuss On

- 4 (a) What will happen if the area under tropical evergreen forests is reduced?
- (b) Can human activities be controlled to protect the area under tropical evergreen forests?
- (c) Why is biodiversity important for the environment?

- (a) If the plants and animals are reduced, the ecosystem will be disturbed.

- (b) No, human activities cannot be controlled to protect the area under tropical evergreen forests.

- (c) Necessity is the mother of invention. It is a system. It is a many basic crops, clean water, etc.

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- (o) Necessity is the mother of invention. It is a system. It is a many basic crops, clean water, etc.

- (p) Necessity is the mother of invention. It is a system. It is a many basic crops, clean water, etc.

- (q) Necessity is the mother of invention. It is a system. It is a many basic crops, clean water, etc.