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Natural Vegetation in India

Natural vegetation refers to plant communities that have grown naturally without human intervention and have remained undisturbed for a long time. This is also called virgin vegetation. Cultivated crops, fruits, and orchards are part of vegetation but not natural vegetation.

India is one of the 12 mega biodiversity countries of the world. It has about 47,000 plant species, ranking tenth globally and fourth in Asia. Approximately 15,000 flowering plants are found in India, accounting for 6% of the world's total flowering plants. India also has many non-flowering plants such as ferns, algae, and fungi. The country is home to about 90,000 animal species and a rich variety of fish in fresh and marine waters.

The term **flora** denotes plants of a particular region or period, while **fauna** refers to animal species.

What is Natural Vegetation?

Natural vegetation grows without human aid and remains undisturbed. Virgin vegetation that is purely Indian is called endemic or indigenous species, while those introduced from outside India are termed exotic plants.

Exam Question

Q: What is natural vegetation? How are endemic and exotic plants different?

A: Natural vegetation is plant growth that occurs naturally without human interference. Endemic plants are native to India, while exotic plants have been introduced from other countries.

Types of Vegetation in India

India has five major types of natural vegetation:

- Tropical Evergreen Forests
- Tropical Deciduous Forests
- Tropical Thorn Forests and Scrubs
- Montane Forests
- Mangrove Forests

Tropical Evergreen Forests

These forests are found in areas with heavy rainfall exceeding 200 cm, such as the Western Ghats, Andaman and Nicobar Islands, parts of Assam, and the Tamil Nadu coast. Trees grow very tall, up to 60 meters or more, and the forest remains green throughout the year as trees do not shed leaves simultaneously.

Important commercial trees include ebony, mahogany, rosewood, rubber, and cinchona. Common animals are elephants, monkeys, lemurs, deer, and one-horned rhinoceroses.

Exam Question

Q: Where are tropical evergreen forests found and what are their characteristics?

A: Tropical evergreen forests are found in regions with rainfall over 200 cm, such as the Western Ghats and Andaman Islands. They have tall trees, remain green all year, and have diverse flora and fauna.

Tropical Deciduous Forests

Also called monsoon forests, these are the most widespread forests in India, found in areas receiving 70 to 200 cm of rainfall. Trees shed their leaves for six to eight weeks during the dry summer.

They are divided into moist deciduous (rainfall 100–200 cm) found in northeastern states and dry deciduous (rainfall 70–100 cm) found in the peninsular plateau and northern plains. Teak is the dominant species. Animals include lions, tigers, pigs, deer, and elephants.

Exam Question

Q: What are tropical deciduous forests and how are they classified?

A: Tropical deciduous forests shed leaves seasonally and are found in areas with 70–200 cm rainfall. They are classified into moist deciduous (100–200 cm rainfall) and dry deciduous (70–100 cm rainfall) forests.

Tropical Thorn Forests and Scrubs

These forests occur in regions with less than 70 cm of rainfall, such as northwestern India including Rajasthan and parts of Gujarat and Madhya Pradesh. Vegetation consists of thorny trees and bushes like acacias, palms, euphorbias, and cacti. Plants have adaptations like thick leaves and long roots to conserve water.

Exam Question

Q: Describe the characteristics and location of tropical thorn forests.

A: Tropical thorn forests are found in dry areas with less than 70 cm rainfall. They have thorny plants with small or thick leaves and deep roots to conserve water, mainly in northwestern India.

Montane Forests

Found in mountainous regions, these forests show vertical zonation with altitude. Between 1000 and 2000 meters, wet temperate forests with broad-leaf trees like oaks and chestnuts grow. Between 1500 and 3000 meters, coniferous forests with pine, deodar, and cedar are found. Above 3600 meters, alpine vegetation with shrubs and grasslands appears. These forests are home to animals like Kashmir stag, snow leopard, and red panda.

Exam Question

Q: What are montane forests and how do they change with altitude?

A: Montane forests grow on mountains and change with altitude. Lower altitudes have broad-leaf trees, mid-altitudes have coniferous trees, and higher altitudes have alpine vegetation and grasslands.

Mangrove Forests

Mangrove forests grow in tidal coastal areas where mud and silt accumulate, such as the deltas of the Ganga, Mahanadi, Krishna, Godavari, and Kaveri rivers. They have dense vegetation with roots submerged in water. Sundari trees provide hard timber. Animals include the Royal Bengal Tiger, turtles, crocodiles, and gharials.

Exam Question

Q: Where are mangrove forests found and what are their features?

A: Mangrove forests are found in tidal coastal areas and river deltas. They have dense trees with submerged roots that help in breathing and stability. They protect coasts and support diverse wildlife.

Wildlife in India

India is rich in fauna with approximately 90,000 animal species, including about 2,000 bird species, 2,546 fish species, and a significant share of amphibians, reptiles, and mammals globally.

Elephants are found in wet forests of Assam, Karnataka, and Kerala. One-horned rhinoceroses live in Assam and West Bengal. Arid regions like the Rann of Kachchh and Thar Desert are habitats for wild ass and camels. Other animals include Indian bison, nilgai, chousingha, gazelle, deer, and various monkeys.

India is unique in having both tigers and lions. The Asiatic lion is found in the Gir forest of Gujarat, while tigers inhabit Madhya Pradesh, Sundarbans, and the Himalayas. Leopards are also common predators.

The Himalayas host animals adapted to cold, such as yak, Tibetan antelope, bharal, snow leopard, and red panda. Rivers and coastal areas have turtles, crocodiles, and gharials.

Birdlife is diverse with peacocks, pheasants, ducks, parakeets, cranes, and pigeons.

Exam Question

Q: Name some important animals found in India and their habitats.

A: Elephants live in wet forests; one-horned rhinoceroses in Assam and West Bengal; Asiatic lions in Gir forest; tigers in Madhya Pradesh and Sundarbans; Himalayan animals include snow leopards and red pandas.

Conservation of Flora and Fauna

Due to excessive exploitation, about 1,300 plant species are endangered and 20 species extinct. Many animal species are also endangered or extinct. Major threats include hunting, pollution, introduction of alien species, and deforestation.

The Indian government has taken several steps to protect natural heritage:

- Establishment of 18 biosphere reserves, including Sundarbans, Nilgiri, Nanda Devi, and Great Nicobar, many of which are part of the world network.
- Financial and technical support to botanical gardens since 1992.
- Introduction of projects like Project Tiger, Project Rhino, and Project Great Indian Bustard.
- Setting up 103 National Parks, 563 Wildlife Sanctuaries, and Zoological Gardens.

Wildlife Protection Act was implemented in 1972 to safeguard animals and plants.

Exam Question

Q: What are the major steps taken by the Indian government for conservation?

A: The government has created biosphere reserves, supported botanical gardens, launched wildlife projects, established national parks and sanctuaries, and enacted the Wildlife Protection Act.

Medicinal Plants of India

India has a rich tradition of using medicinal plants, with around 2,000 plants described in Ayurveda and 500 regularly used in remedies. The World Conservation Union's Red List identifies 352 medicinal plants as threatened.

Common medicinal plants include:

- **Sarpagandha:** Used to treat blood pressure, found only in India.
- **Jamun:** Fruit juice used as carminative and diuretic; seed powder controls diabetes.
- **Arjun:** Leaf juice cures earaches and regulates blood pressure.
- **Babool:** Leaves cure eye sores; gum used as tonic.
- **Neem:** Has antibiotic and antibacterial properties.
- **Tulsi (Holy Basil):** Used to cure cough and cold.
- **Kachnar:** Used for asthma, ulcers, and digestive problems.

Exam Question

Q: Name some medicinal plants of India and their uses.

A: Sarpagandha treats blood pressure; Jamun helps digestion and diabetes; Arjun cures earaches; Babool treats eye sores; Neem has antibacterial properties; Tulsi cures cough; Kachnar helps asthma.

Wildlife Sanctuaries and National Parks in India

India has numerous protected areas to conserve wildlife:

- **Wildlife Sanctuaries:** Areas protecting wildlife and habitats (e.g., Sariska, Dudhwa).
- **Bird Sanctuaries:** Areas protecting bird species (e.g., Keoladeo Ghana, Ranganathittu).
- **National Parks:** Large protected areas for biodiversity (e.g., Corbett, Gir, Kaziranga).

These areas help protect endangered species, maintain biodiversity, support research, and promote eco-tourism.

Exam Question

Q: What is the difference between wildlife sanctuaries, bird sanctuaries, and national parks?

A: Wildlife sanctuaries protect animals and their habitats; bird sanctuaries focus on protecting birds; national parks are large protected areas conserving overall biodiversity.

Quick Reference

- **Natural Vegetation:** Plant communities growing naturally without human interference.
- **Flora:** Plants of a region.
- **Fauna:** Animals of a region.
- **Tropical Evergreen Forests:** Dense, tall forests in high rainfall areas.
- **Tropical Deciduous Forests:** Forests shedding leaves seasonally.
- **Thorn Forests:** Dry area forests with thorny plants.
- **Montane Forests:** Mountain forests with altitude-based vegetation zones.
- **Mangrove Forests:** Coastal tidal forests with specialized roots.
- **Wildlife Protection Act:** Law enacted in 1972 to protect wildlife.
- **Biosphere Reserves:** Protected areas conserving biodiversity.

Glossary

- **Endemic Species:** Species native to a particular region.
- **Exotic Species:** Species introduced from other regions.
- **Deciduous:** Trees that shed leaves seasonally.
- **Evergreen:** Trees that retain leaves throughout the year.
- **Biosphere Reserve:** Protected area for conserving ecosystems.
- **Poaching:** Illegal hunting of wildlife.
- **Carminative:** Substance that relieves gas.
- **Diuretic:** Substance that increases urine production.

Solved Examples

Example 1

Q: Why do tropical evergreen forests remain green throughout the year?

A: Because the trees do not shed their leaves at the same time and the region receives heavy rainfall throughout the year, supporting continuous growth.

Example 2

Q: What adaptations do plants in thorn forests have?

A: They have thick, small leaves or spines to reduce evaporation and long roots to access deep moisture.

Practice Set

Easy

- Define natural vegetation.
- Name two animals found in tropical evergreen forests.
- What is flora?

Moderate

- Explain the difference between moist and dry deciduous forests.
- List three medicinal plants and their uses.
- What is the significance of mangrove forests?

Challenging

- Describe the vertical zonation in montane forests.
- Discuss the major threats to wildlife in India and government measures to protect them.
- Explain the ecological importance of biodiversity conservation.

Answer Key

Easy

- Natural vegetation is plant growth that occurs naturally without human interference.
- Elephant and one-horned rhinoceros.
- Flora refers to the plants of a particular region or period.

Moderate

- Moist deciduous forests receive 100–200 cm rainfall and are dense; dry deciduous forests receive 70–100 cm rainfall and are more open.
- Sarpagandha (blood pressure), Neem (antibacterial), Tulsi (cough and cold).
- Mangrove forests protect coastlines from erosion and provide habitat for marine life.

Challenging

- Montane forests change with altitude: broad-leaf trees at lower levels, conifers at mid-levels, alpine vegetation at higher altitudes.
- Threats include poaching, habitat loss, pollution; measures include biosphere reserves, wildlife projects, and legal protection.
- Biodiversity maintains ecosystem balance, supports food chains, and provides resources for humans.

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