

CBSE Class 9 Geography

Chapter 5: Natural Vegetation and Wildlife

PREMIUM STUDY NOTES — EXAM REVISION EDITION

SECTION 1: CHAPTER INTRODUCTION

India is one of the 12 mega bio-diversity countries of the world. With about 47,000 plant species, India occupies tenth place in the world and fourth in Asia in plant diversity. This chapter explores the rich heritage of flora and fauna in India and the factors that govern their distribution.

- **What is Natural Vegetation?** Natural vegetation refers to a plant community that has grown naturally without human aid and has been left undisturbed by humans for a long time.
- **What is Wildlife?** Wildlife refers to the un-domesticated animal species living in their natural habitats, ranging from birds, insects, and reptiles to large mammals.
- **Importance of Natural Vegetation and Wildlife:**
 - Vegetation modifies local climate, controls soil erosion, regulates stream flow, and supports various industries.
 - Wildlife maintains ecological balance, provides pollination for crops, and serves as a vital biological resource.
- **Relationship Between Climate, Relief, Soil, and Vegetation:** The type of vegetation found in an area depends directly on geographical factors. Variation in relief (land and soil) and climate (temperature, photoperiod, and precipitation) creates distinct ecological zones, giving rise to diverse forest types and animal habitats.

SECTION 2: DETAILED EXPLANATION OF CONCEPTS

Natural Vegetation

A plant community growing naturally without human assistance, adapting to the local climate and soil conditions. *Example: The dense woods of the Western Ghats.*

Virgin Vegetation

The part of natural vegetation that has remained completely undisturbed by humans for a long period. Cultivated crops, orchards, and plantations form part of vegetation but **not** natural or virgin vegetation.

Endemic Species

Purely indigenous plants or animals that are completely native to a specific country or region and are not found anywhere else naturally. *Example: The Asiatic Lion in Gir Forest.*

Exotic Species

Plants or animals that have been introduced to a region from outside or from another country. *Example: Water Hyacinth, Eucalyptus.*

Ecosystem

A self-sustaining structural and functional unit of the biosphere where all living organisms (plants, animals, microorganisms) interact with each other and with their physical environment (soil, air, water).

Biodiversity

The degree of variation of life forms within a given ecosystem, biome, or an entire planet. It includes diversity among species and ecosystems.

Flora

The entire plant life occurring in a particular region or time period. India possesses around 47,000 plant species, including 15,000 flowering plants (6% of the world's total).

Fauna

The entire animal life occurring in a particular region or time period. India has approximately 90,000 species of animals, along with a rich variety of fish, birds, and insects.

SECTION 3: FACTORS AFFECTING NATURAL VEGETATION

The distribution of flora and fauna is primarily determined by two major factors: **Relief** and **Climate**.

1. Relief

- **Land:** The nature of land directly and indirectly affects the type of vegetation.
Impact: Fertile, undulating, and flat terrains are generally cleared and used for agriculture. Rough, rugged, and mountainous terrains develop into grasslands and woodlands, providing shelter to diverse wildlife.
- **Soil:** Different types of soils provide a basis for different types of vegetation.
Impact: Sandy soils of the desert support cactus and thorny bushes. Wet, marshy, deltaic soils support mangroves. Hill soils with deep depth support conical or montane trees.

2. Climate

- **Temperature:** The character and extent of vegetation are highly dependent on temperature along with humidity in the air, precipitation, and soil quality.
Impact: As temperature falls from tropical to subtropical, temperate, and alpine zones on mountain slopes, the vegetation changes accordingly. Below a certain temperature, plant growth is severely restricted.

- **Photoperiod (Sunlight):** The duration of sunlight received by a place depends on its latitude, altitude, and season.

Impact: Due to longer duration of sunlight, trees grow faster in summer.

- **Precipitation:** In India, almost the entire rainfall is brought in by the advancing Southwest Monsoon (June to September) and retreating monsoons.

Impact: Areas of heavy rainfall (more than 200 cm) possess dense vegetation compared to areas of low rainfall. Hence, the windward slopes of the Western Ghats are covered with thick forests, unlike the leeward side.

SECTION 4: TYPES OF NATURAL VEGETATION IN INDIA

India's natural vegetation can be classified into five major types:

1. Tropical Evergreen Forests

- **Climatic Conditions:** Heavy rainfall of more than 200 cm with a short dry season. Warm and wet climate throughout the year.
- **Characteristics:** Multilayered structure (strata) from ground shrubs up to trees reaching heights of 60 meters or above. No definite time for trees to shed their leaves, making the forest look green all year round. Dense and luxurious growth.
- **Important Trees:** Ebony, Mahogany, Rosewood, Rubber, and Cinchona.
- **Important Regions:** Western slopes of the Western Ghats, island groups of Lakshadweep and Andaman & Nicobar, upper parts of Assam, and the Tamil Nadu coast.

2. Tropical Deciduous Forests

These are the most widespread forests of India, also known as **Monsoon Forests**. They spread over regions receiving rainfall between 70 cm and 200 cm. They are subdivided based on water availability:

- **A. Moist Deciduous Forests:**
 - *Rainfall:* 100 to 200 cm.
 - *Regions:* Foothills of the Himalayas, eastern slopes of the Western Ghats, Odisha, Jharkhand, Chhattisgarh, and West Bengal.
 - *Important Trees:* Teak (dominant species), Bamboo, Sal, Shisham, Sandalwood, Khair, Kusum, Arjun, and Mulberry.
- **B. Dry Deciduous Forests:**
 - *Rainfall:* 70 to 100 cm.
 - *Regions:* Rainier parts of the Peninsular plateau and the plains of Bihar and Uttar Pradesh.
 - *Characteristics:* Large tracts are cleared for cultivation and grazing. Trees shed their leaves for about 6 to 8 weeks in the dry summer.
 - *Important Trees:* Teak, Sal, Peepal, and Neem.

3. Thorn Forests and Scrubs

- **Climatic Conditions:** Rainfall less than 70 cm.
- **Characteristics:** Trees are scattered with long, deep roots penetrating deep into the soil to get moisture. Stems are succulent to conserve water. Leaves are mostly thick and small to minimize evaporation.
- **Important Trees/Plants:** Acacias, Palms, Euphorbias, and Cacti.
- **Important Regions:** Semi-arid areas of northwest India, including Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Uttar Pradesh, and Haryana.

4. Montane Forests

Found in mountainous areas where a decrease in temperature with increasing altitude leads to a corresponding change in natural vegetation.

- **Zonation Structure:**
 - *1000 to 2000 meters:* Wet temperate forests. Broad-leafed evergreen trees like Oaks and Chestnuts dominate.
 - *1500 to 3000 meters:* Temperate forests containing coniferous trees like Pine, Deodar, Silver Fir, Spruce, and Cedar. These cover the southern slopes of the Himalayas.
 - *Above 3600 meters:* Alpine vegetation. Coniferous forests give way to Silver Fir, Junipers, Pines, and Birches. They get progressively stunted near the snowline, turning into alpine grasslands used by nomadic tribes like Gujjars and Bakarwals for grazing.
 - *Highest Altitudes:* Mosses and lichens form part of tundra vegetation.

5. Mangrove Forests

- **Climatic Conditions & Habitat:** Found in coastal areas influenced by tides, where mud and silt accumulate.
- **Characteristics:** Roots of the plants are submerged underwater. They can survive in highly saline conditions.
- **Important Trees:** Sundari trees (provide durable hard timber). Palm, Coconut, Keora, and Agar also grow here.
- **Important Regions:** Deltas of the Ganga, Mahanadi, Krishna, Godavari, and Kaveri. The Ganga-Brahmaputra Delta features the famous Sundarbans.

SECTION 5: WILDLIFE IN INDIA

India has a rich fauna consisting of about 90,000 animal species, 2,000+ species of birds (13% of the world's total), and 2,546 species of fish (nearly 12% of the world's stock). It also accounts for 5% to 8% of the world's amphibians, reptiles, and mammals.

Major Wildlife Species & Their Habitats

- **Elephants:** The most majestic mammals. Found in the hot wet forests of Assam, Karnataka, and Kerala.
- **One-horned Rhinoceroses:** Live in swampy and marshy lands of Assam and West Bengal (Kaziranga and Jaldapara).
- **Wild Ass and Camels:** Inhabit arid areas. Wild Ass in the Rann of Kachchh and Camels in the Thar Desert.
- **The Big Cats:** India is the only country in the world that has both tigers and lions.
Asiatic Lion: Natural habitat is the Gir Forest in Gujarat.
Tigers: Found in the forests of Madhya Pradesh, the Sundarbans of West Bengal, and the Himalayan region.
- **Himalayan Animals:** Adapted to survive severe cold temperatures.
Yak: Shaggy horned wild ox weighing around one ton.
Other Species: Tibetan antelope, Bharal (blue sheep), Wild sheep, and the Kiang (Tibetan wild ass). The rare Snow Leopard is found in upper reaches.

Threats to Wildlife

- Hunting by commercial poachers for skins, bones, and horns.
- Pollution due to chemical and industrial waste and acid deposits.
- Clearing of forests for agriculture, urbanization, and industrial expansion.
- Introduction of alien/exotic species disrupting native food webs.

SECTION 6: CONSERVATION OF NATURAL VEGETATION AND WILDLIFE

To protect the biodiversity of the country, the government has taken several major steps and implemented institutional frameworks.

Key Terms in Conservation

- **National Park:** A protected area reserved exclusively for the preservation of wildlife and biodiversity, where human activities like forestry, grazing, or cultivation are strictly prohibited.
- **Wildlife Sanctuary:** A protected area intended to preserve specific animal species, where limited human activities (like harvesting timber or collection of minor forest produce) are permitted as long as they do not interfere with animal safety.
- **Biosphere Reserve:** A large, protected multi-purpose coastal or terrestrial ecosystem where wildlife, traditional tribal lifestyles, and domesticated plants/animals are protected holistically.

Government Conservation Initiatives

1. **Biosphere Reserves:** 18 biosphere reserves have been set up in the country. Out of these, 12 have been included in the world network of biosphere reserves (e.g., Sundarbans, Nanda Devi, Gulf of Mannar, Nilgiri).
2. **Financial & Technical Assistance:** Provided to many botanical gardens by the government since 1992.
3. **Eco-Development Projects:** Launch of specialized targeted wildlife conservation initiatives like Project Tiger, Project Elephant, Project Rhino, and the Great Indian Bustard project.
4. **Protected Networks:** Establishment of 103 National Parks, 535 Wildlife Sanctuaries, and zoological gardens to take care of the natural heritage.
5. **Legislative Measures:** The Wildlife Protection Act was implemented in 1972 to provide a legal framework for protecting wildlife habitats and banning hunting.

SECTION 7: IMPORTANT TERMS & DEFINITIONS

- **Flora:** The plant life of a particular region or geological era.
- **Fauna:** The animal life of a particular region or geological era.
- **Endemic Species:** Species of plants/animals native to a specific zone and not naturally found anywhere else.
- **Exotic Species:** Species introduced to a region from an external geographic origin.
- **Ecosystem:** An interconnected system formed by the interaction of living organisms with their physical surroundings.
- **Biome:** A large community of plants and animals that occupies a distinct region defined by its climate (e.g., Rainforest biome, Desert biome).
- **Afforestation:** The process of planting trees on land that has not recently been covered by forest.
- **Deforestation:** The large-scale clearance or cutting down of forest lands for non-forest purposes.

SECTION 8: NCERT KEY POINTS

CRITICAL EXAM FACTS TO REMEMBER

- **India's Standing:** 10th in the world and 4th in Asia for plant diversity.
- **The Lion & Tiger Rule:** India is uniquely the only country on earth containing native populations of both lions and tigers.
- **The Gir Forest:** This is the last remaining habitat of the wild Asiatic Lion.
- **Sundari Trees:** Found in Mangrove forests, named so because they provide tough, durable timber ideal for boat building.
- **Shedding Season:** Dry deciduous trees shed their leaves for exactly 6 to 8 weeks during dry summer.
- **Wildlife Protection Act:** Passed and executed in 1972.

SECTION 9: TABLES & FLOWCHARTS

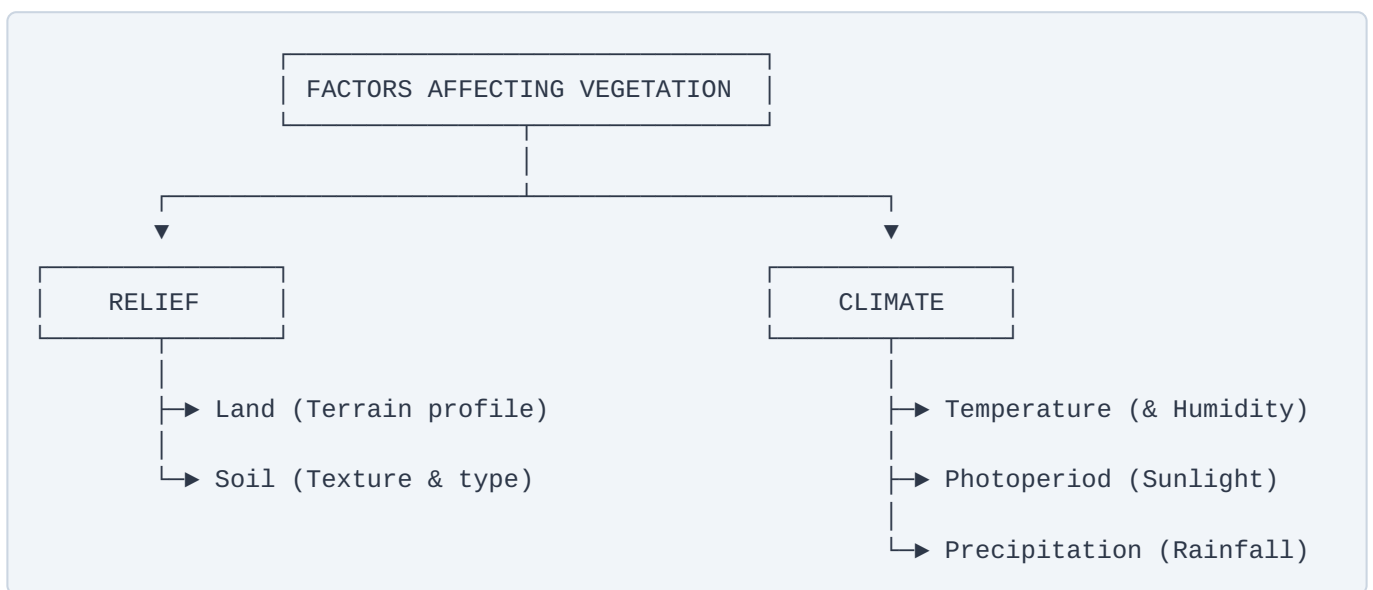
1. Types of Forests Summary

Forest Type	Rainfall	Key Plant Species	Core Geographic Locations
Tropical Evergreen	> 200 cm	Ebony, Mahogany, Rosewood, Rubber	Western Ghats, Assam, Andaman & Nicobar
Moist Deciduous	100 cm - 200 cm	Teak, Sal, Shisham, Sandalwood	Foothills of Himalayas, Odisha, Jharkhand
Dry Deciduous	70 cm - 100 cm	Teak, Sal, Peepal, Neem	Plains of Bihar, Uttar Pradesh
Thorn & Scrub	< 70 cm	Acacias, Palms, Cacti, Euphorbias	Gujarat, Rajasthan, Semi-arid Haryana
Montane	Varies by Altitude	Oak, Chestnut, Deodar, Silver Fir	Slopes of Himalayas
Mangrove	Tidal Coastal Zones	Sundari, Palm, Coconut, Keora	Ganga-Brahmaputra Delta, Mahanadi Delta

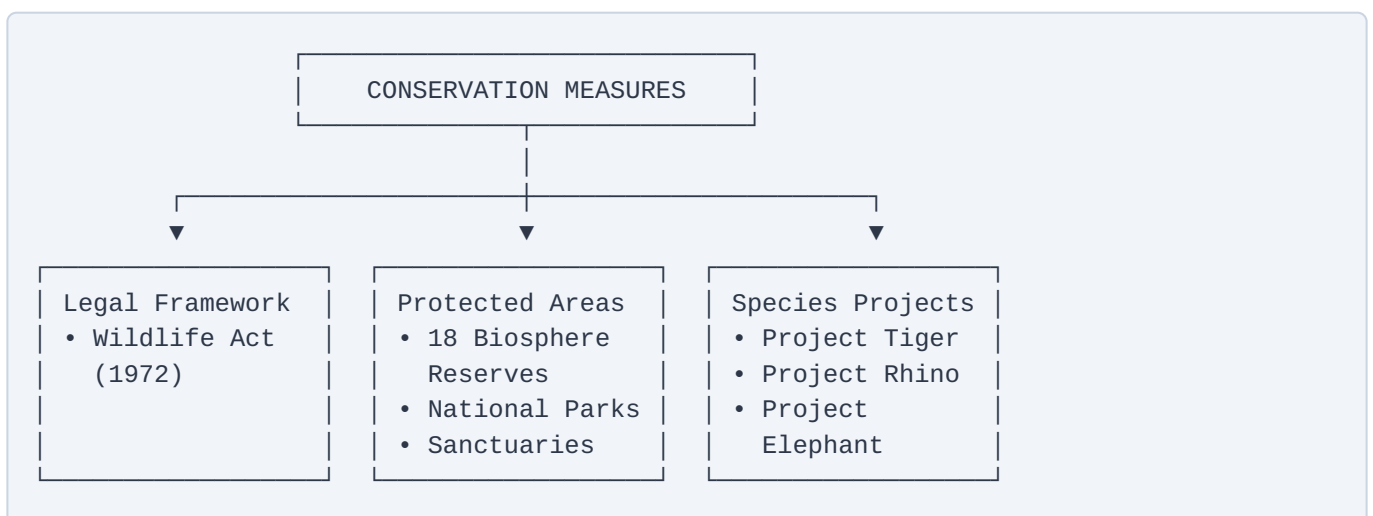
2. Difference Between Endemic and Exotic Species

Feature	Endemic Species	Exotic Species
Origin	Indigenous / Native to the local area.	Introduced from outside the country/region.
Natural Presence	Found only in specific localized boundaries.	Spread globally across suitable environments.
Example	Asiatic Lion (Gir Forest).	Eucalyptus, Water Hyacinth.

3. Factors Affecting Vegetation Flowchart



4. Conservation Measures Flowchart



SECTION 10: MAPS & DIAGRAM NOTES

Essential Map Identification List (As per CBSE Syllabus)

Major Forest Types: Identify shaded patches of Evergreen, Deciduous, and Thorn forests on the map of India.

National Parks to Locate: Corbett (Uttarakhand), Kaziranga (Assam), Ranthambore (Rajasthan), Shivpuri (Madhya Pradesh), Kanha (Madhya Pradesh), Simlipal (Odisha), Manas (Assam).

Wildlife Sanctuaries: Sariska (Rajasthan), Mudumalai (Tamil Nadu), Dachigam (Jammu & Kashmir).

Map-Learning Tips:

- **The North-East Corridor:** Mark Kaziranga and Manas right next to each other along the Brahmaputra river channel in Assam.
- **The Central Focus:** Kanha and Shivpuri sit right in the heart of Madhya Pradesh. Shivpuri is further north, while Kanha is down towards the south-east of the state.
- **Deciduous Strip:** Remember that the largest portion of India's map is colored as Tropical Deciduous. Only the thin western coastal strip and the north-east are deeply colored for Evergreen.

SECTION 11: MEMORY TRICKS

1. Forest Types Rainfall Ladder (Highest to Lowest)

"Every Monsoon Drops Thorny Vegetation"

- **E**—— Evergreen (> 200 cm)
- **M**—— Moist Deciduous (100 - 200 cm)
- **D**—— Dry Deciduous (70 - 100 cm)
- **T**—— Thorn forest (< 70 cm)
- **M**—— Mangrove (Tidal/Deltaic)

2. Evergreen Forest Trees Combo

"My Ebony Rose Runs Crazy"

Mahogany, **E**bonny, **R**osewood, **R**ubber, **C**inchona.

3. Key Biosphere Reserves

"Sundar Neela Manna"

Sundarbans, **N**ilgiri, Gulf of **M**annar.

SECTION 12: COMMON MISTAKES STUDENTS MAKE

✗ **Mistake:** Classifying agricultural crops and orchards as natural vegetation.

✓ **Correction:** Crop fields are human-made. Natural vegetation must grow without human intervention.

✗ **Mistake:** Confusing the rainfall values of Moist vs. Dry Deciduous forests.

✓ **Correction:** Moist Deciduous is **100 - 200 cm**, while Dry Deciduous is **70 - 100 cm**. They both form part of Tropical Deciduous forests.

✗ **Mistake:** Mixing up National Parks and Wildlife Sanctuaries.

✓ **Correction:** National parks protect the entire ecosystem and strictly forbid human layout or activity. Sanctuaries offer targeted protection to certain animal species and might allow minor traditional harvesting.

SECTION 13: QUICK REVISION NOTES

- **Flora count:** 47,000 species. **Fauna count:** 90,000 species.
- **Dominant Forest Type:** Tropical Deciduous Forests cover the maximum area of India.
- **Teak** is the most commercially valuable timber species of the Moist Deciduous forest ecosystem.
- **Gir National Park** in Gujarat is the exclusive home of the remaining world population of Asiatic Lions.
- **Alpine Grasslands** are utilized heavily by migratory nomadic groups like the Gujjars and Bakarwals.
- **Sundarbans Delta** gets its name from the Sundari trees that flourish in its swampy mangrove waters.

SECTION 14: ONE-PAGE SUMMARY

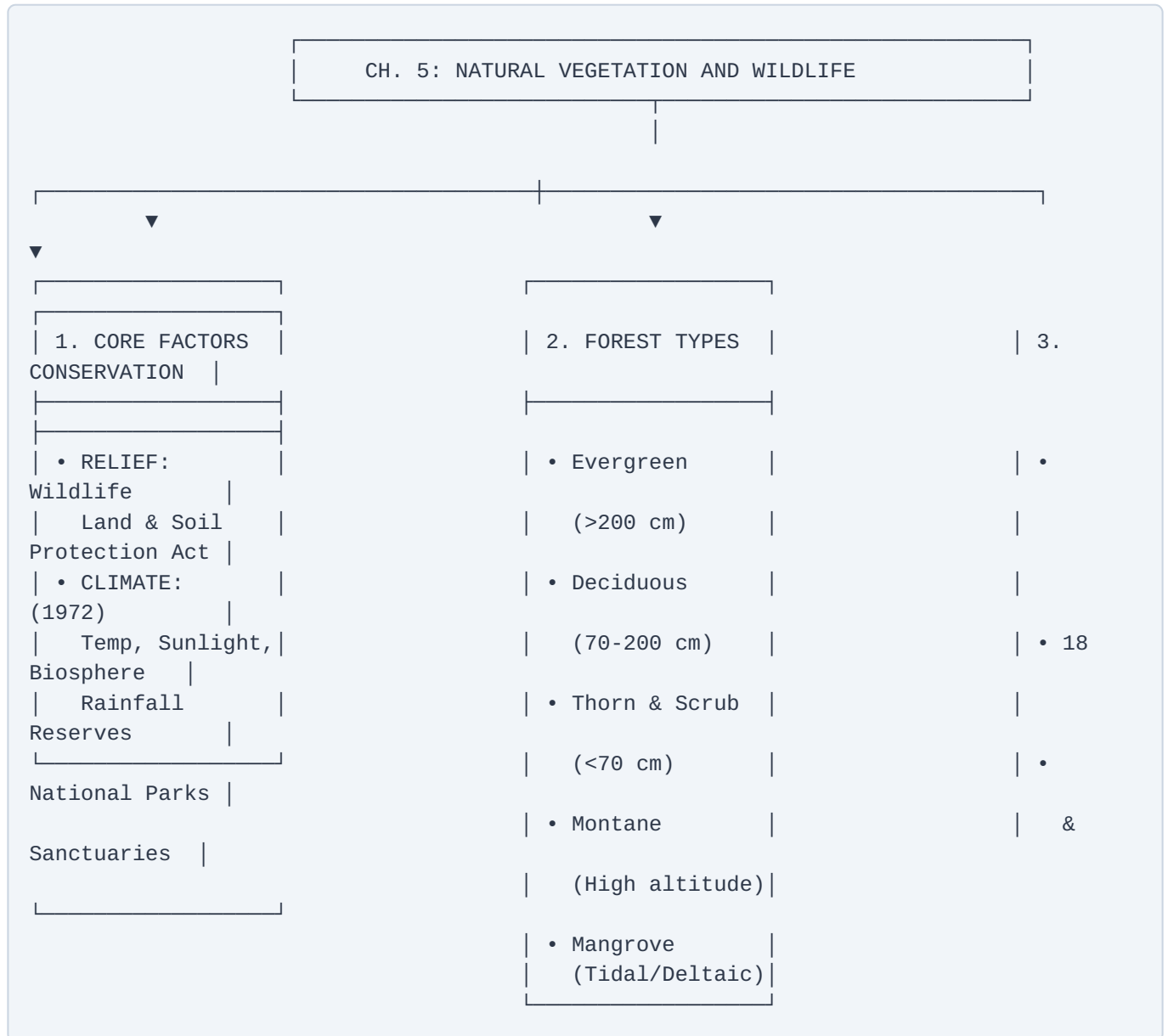
India's vast geographical size allows for an incredible range of biodiversity, placing it among the top 12 mega-biodiversity nations worldwide. Natural vegetation grows entirely without human touch and is shaped heavily by land variations, soil conditions, temperature, sunlight hours, and rainfall profiles.

India's forests are divided into five distinct classes: Tropical Evergreen (dense, wet, multi-layered), Tropical Deciduous (widespread, monsoonal, splits into moist and dry variants), Thorn and Scrubs (arid zones, deep-rooted, succulent stems), Montane (altitude-dependent belts ranging from broadleaf to conifers and alpine zones), and Mangrove (silt-loving, salt-tolerant tidal vegetation).

Parallel to this plant diversity is India's varied wildlife, which includes elephants in wet southern forests, rhinos in eastern swamps, tigers in central plains and Sundarbans, and lions in the dry Gir woodland. Due to over-exploitation, poaching, and deforestation, these species face significant survival risks. In response, the Indian government has institutionalized protection via the Wildlife Protection Act of 1972,

creating an expansive network of 18 Biosphere Reserves, over a hundred National Parks, and hundreds of Wildlife Sanctuaries to safeguard its ecological balance.

SECTION 15: MIND MAP



SECTION 16: EXAM TIPS

- **Focus on Teak and Sal:** Questions often ask which forest type these trees belong to. Remember they belong to the Tropical Deciduous Forests.
- **Identify Adaptations:** Be ready to explain why thorn forest trees have deep roots and small, thick leaves (to find moisture and prevent water loss through transpiration).

- **Watch the Boundary Lines on Maps:** When marking Kaziranga, make sure your point sits on the upper side of the Assam valley hook, not inside Meghalaya or Bangladesh.
- **Learn the Core Year:** Do not forget **1972**—the year the Wildlife Protection Act was passed. It is a highly tested multiple-choice question.