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Topic :

Forest & Grasslands



Vegetation / Forests

India's vegetation is broadly divided into 5 groups.

1. Evergreen Forest / Tropical Green Forest



2. Deciduous Forest



3. Thorn Forest



4. Montane Forest



5. Mangrove Forest



Evergreen Forests Or Tropical Rainforest

They are layered forests (due to different stratas present in the forest).

Different Stratas in Evergreen Forest

1. **Top vertical: Trees.**
2. **Middle vertical: Shrubs.**
3. **Bottom: Herbs and Bushes.**







- They appear green all year because the trees in these forest don't shed their leaves at the same time.
- Evergreen forests are also known as Deserts covered by trees because soil of these forest is low in humus due to high rate of decomposition of organic material.
- They are seen in places of high-temperature (above 22°C) and high rainfall (200 cm).
- In India, they are seen in western side of Western Ghats, Andaman and Nicobar Islands, North-East, Tamil Nadu coast (Dry Evergreen in Tamil Nadu & Coromandal Coast)
- Tropical evergreen forests have the highest biodiversity on Earth.
- Dry part of Evergreen Forest has Semi-Evergreen vegetation like Cedar, Hallock and Kail.

Cinchona bark is primarily known for its use in treating and preventing malaria due to the quinine and other alkaloids it contains.

Vegetation seen in Evergreen Forest



Ebony



Mahogany



Rosewood



Rubber



Epiphytes



Cinchona

Deciduous Forest

- These are the most widespread forest of India and are also called Monsoon forests.
- They are spread over a region, receiving rainfall between 70 cm and 200 cm. They shed their leaves for 6-8 weeks during summer.
- Hardwood Tress are prominent here.

Deciduous Forests are of two types:

1 Moist Deciduous

- Found in: Areas receiving rainfall 150-200 cm

Mostly in eastern part like:

- Northeastern states,
- Foothills of Himalayas,
- Jharkhand,
- West Bengal,
- Odisha,
- Chhattisgarh and
- On eastern slopes of Western Ghats

Examples are :


Teak


Bamboos


Sal


Shisham


Sandalwood


Khair


Kusum


Arjun


Mulberry

2 Dry Deciduous

- Also Known as Parkland Landscape
- Found in: Areas receiving rainfall 70-150 cm
- Mostly in: Rainier part of Peninsular Plateau and plains of Bihar and Uttar Pradesh

Examples are :


Axlewood


Teak


Pipal


Amaltas


Neem


Tendu


Sal


Palas


Bel





Tendu leaves are used to make Bidi.



Thorn Forest





- Found in: Regions with less than 50 cm of rainfall.
- Thorns are modified form of leaves (to avoid water loss).
- These forests are seen in Northwestern part of the country (semi-arid areas) of Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Uttar Pradesh, and Haryana.
- Main plant species: Acacias, palms, euphorbias, cacti, etc.
- Special type of grass is seen here: Tussocky grass (height upto: 2m).
- Trees are scattered with long roots penetrating deep inside soil.



Coniferous Forest

- They are seen in areas of high snowfall : Upper Himalayas in India.
- The trees in coniferous forest are cone-shaped which help them to shed snow in cold climates.
- Wood of Deodar is used in construction activities.

Examples are softwood trees like :


Chir


Pine


Cedar


Deodar


Spruce

Taiga Forest

- Also Known as Boreal Forest.
- It is a cold, Subarctic coniferous forest.
- Flora includes Spruce, Pine, Fir, Moss, Lichens, and Mushrooms
- Fauna includes animals like Bear, Lynx, Moose, Salmon, Owl and Mosquito

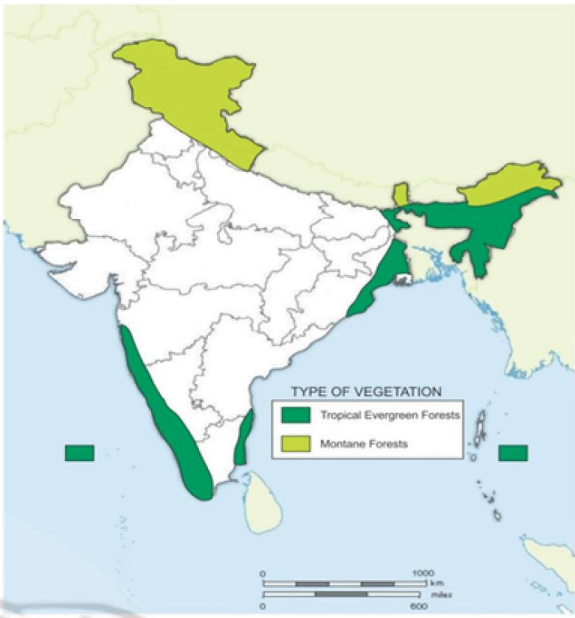
Tundra Biome

- The Tundra is a cold, Treeless biome in the Arctic, Antarctic, and high mountain tops.
- Flora : Moss, Lichens, Grass, Low shrubs.
- Fauna : Polar Bear, Arctic fox, Caribou, arctic hare, snowy owl, Ptarmigan



Montane Forests

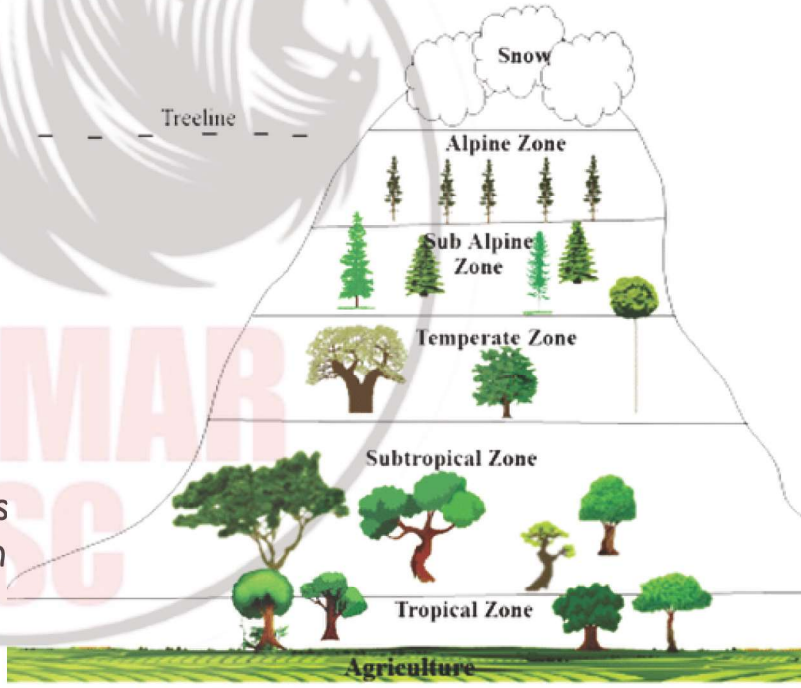
- Montane forests are found in mountainous areas.
- In mountainous areas, the decrease in temperature with increasing altitude leads to the corresponding change in natural vegetation.
- These forests cover mostly the southern slopes of the Himalayas, places having high altitudes in southern and north-east India.
- There is succession of natural vegetation belts in same order as we see from Tropical to Tundra region.
- Montane forests are extensively used for grazing by nomadic tribes (Gujjars and Bakarwals).



Note : Snowline Decreases from Western to Eastern Himalayas

Succession with Changing Altitude

- Foothills of Himalayas: Deciduous forests.
- 1000-2000 m: Wet Temperate Forests; Evergreen Broad Leaf Trees (Oaks, Chestnuts, etc.).
- 1500-3000 m: Temperate Forests are characterised by Coniferous trees (pine, deodar, silver fir, spruce, and cedar, etc.).
- Above 3600 m: Temperate Forests and grasslands : Alpine vegetation (silver fir, junipers, pines, rhododendrons, and birches, etc.).







What is Temperate Deciduous ?

A biome characterized by four distinct seasons, where the dominant trees are broad-leaved and shed their leaves in the autumn to conserve energy during winter.
Birds like Pheasant and Monal are seen here.



Southern Montane Forest

- These forests are found in three distinct areas of Peninsular India: Western Ghats, Vindhyas, Nilgiris.
- They are closer to tropics : Only 1500 m above the sea level.



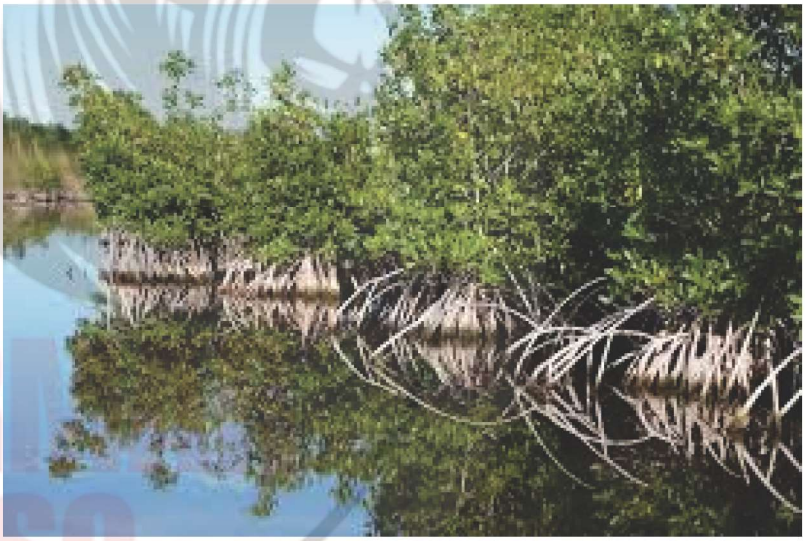
Vegetation Includes:

- Temperate: In higher regions.
- Subtropical: On lower regions of Western Ghats (Kerala, Tamil Nadu, Karnataka).
- Temperate grasslands/forests: They are called Sholas in Nilgiris (Western Ghats), Anaimalai and Palani hills.



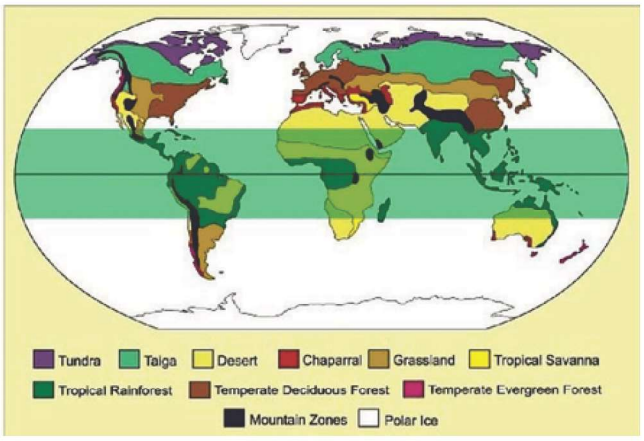
Mangrove Forests

- They are known as Littoral/Swamp forests.
- They are mostly seen in the coastal areas that are highly influenced by tides → the deltas of Ganga, the Mahanadi, the Krishna, the Godavari and the Kaveri are covered by such vegetations.
- They are found more in Sundarban delta→ Sundari trees are found here (region: West Bengal). Palm, coconut, keora, agar trees are also found.
- The trees are viviparous (produce embryos that develop before detaching from the parent plant) and are also called Pneumatophores (living roots).



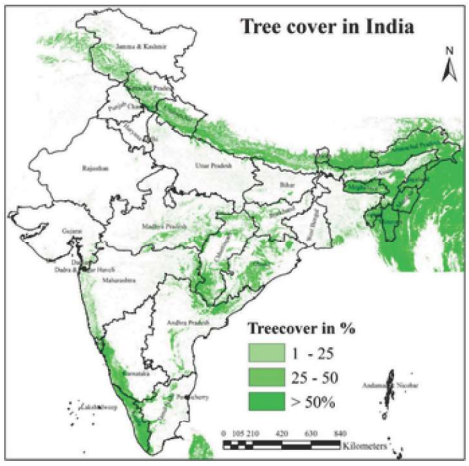
Biomes/Forests across the World

- Temperate Evergreen Forests: Found in mid-latitudinal coastal areas (US, Canada, Europe, Asia). They lie on the eastern coastal margins.
- Temperate Deciduous Forests: They are found between 40°-60° North and South of equator where rainfall is high (between: 500-1500 mm a year) → Birds like Pheasant and Monal are found here (35°-50°N/S).
- **Taiga/Boreal Biome** (untouched): 50°-70°N/S.
- **Tundra**: Beyond 70°N/S (in Arctics).



Indian State of Forest Report

- It is released by Forest Survey of India (FSI).
- It was first published in: 1987 (It is a Biennial report).
- 18th Indian State of Forest Reports was published in: 2023.



According to 2023 Report:

- **Forest cover**: 21.7%.
- **Tree cover:** 3.41%.
- **Forest + Trees cover:** 25.17%.
- **Forest cover (area-wise)**: Madhya Pradesh > Arunachal Pradesh > Chhattisgarh.
- **Forest cover (% wise):** Lakshadweep > Mizoram > Andaman and Nicobar Islands.
- **Maximum increase (Forest + Tree cover)** : Chhattisgarh > Uttar Pradesh
- **Maximum increase (Forest cover)** : Mizoram > Gujarat.
- **Largest decrease**: Madhya Pradesh > Karnataka.
- **Indian Forest Policy (NFP) 1952** (last revised in 1988) states that: 33% geographical area should be under forest or tree cover.

Social Forestry

Social forestry means the management and protection of forest and afforestation on barren lands with the purpose of helping in the environmental, social, and rural development.





Miyawaki Forest



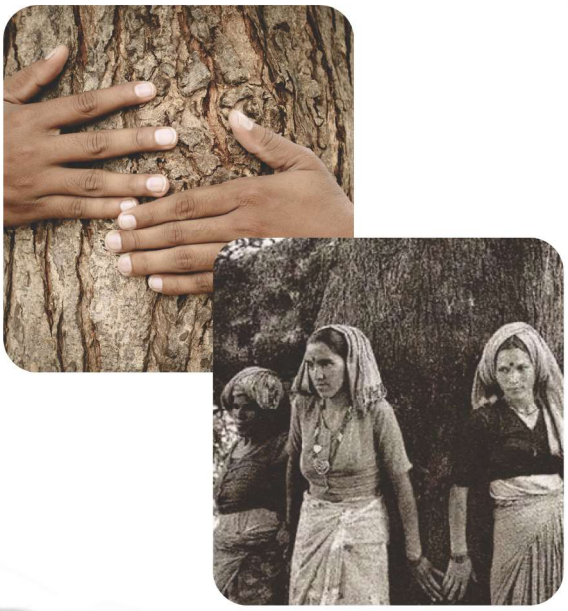
A dense, multi-layered forest created using a method developed by Japanese botanist Akira Miyawaki.

Benefits of Miyawaki Technique:

- Rapid growth
- High biodiversity
- Environmental restoration
- Self-sustaining



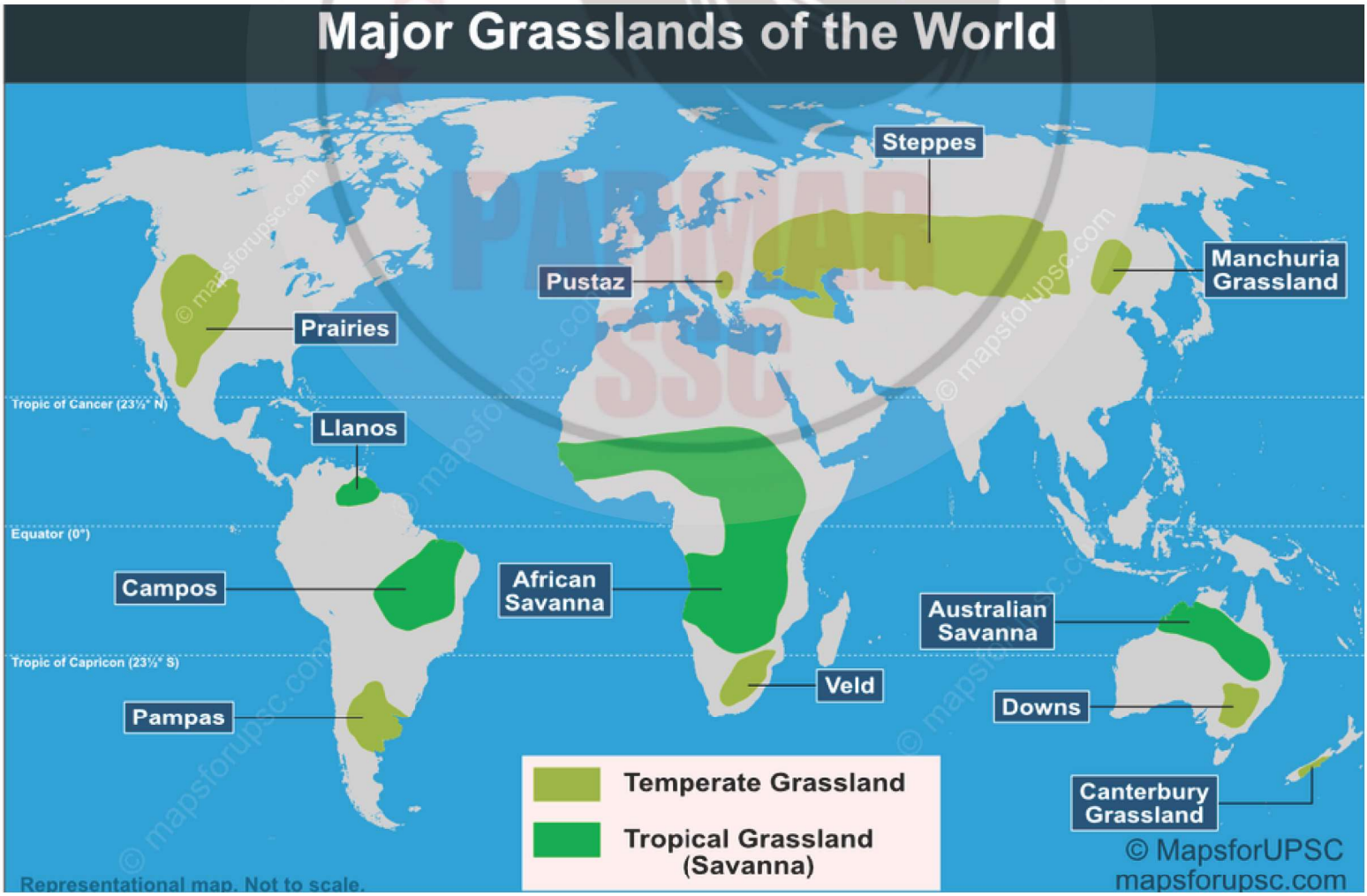
Chipko Movement



- The Chipko Movement was a forest conservation movement in India.
- It began in 1973 in the Chamoli district of Uttarakhand (then Uttar Pradesh) → Led by Sundarlal Bahuguna along with local villagers to protect trees from being cut down by government-backed commercial loggers.

- Forest Day is celebrated on 21st March.
- Indian Forest Research Institute located in Dehradun, Uttrakhand.

Grasslands



Tropical Grasslands

- They have tall, non-nutritious, elephant grass

Different names around the world:

- Savannah: Africa (known as Big Game country due to extreme poaching of animals)
- Campos grasslands: Brazil
- Llanos grasslands: Venezuela

Temperate Grasslands

- They have short and nutritious grass.

Different names around the world:

- Prairies : North America (Wheat Granaries of the World)
- Steppes : Asia / Europe
- Velds: South Africa
- Downs: Australia
- Pustaz: Hungary
- Canterbury : New Zealand
- Pampas : Argentina (Alpha Alpha grass, A nutrient rich grass is seen here)

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