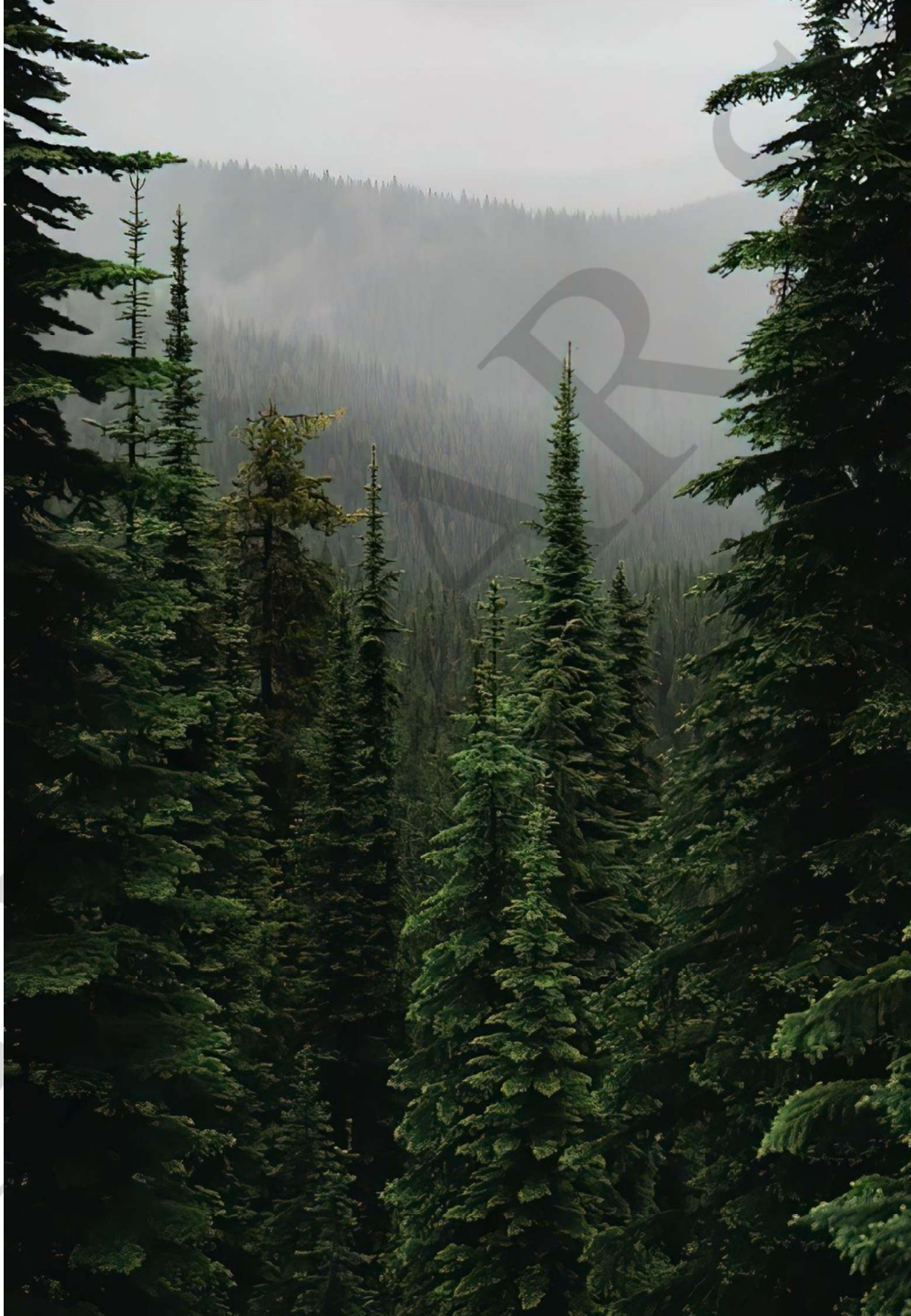


# FORESTS AND GRASSLANDS



## Forest

### Evergreen Forests

- They are layered forests (due to different stratas present in the forest)
- Stratas in Evergreen forest
  - Top vertical: Trees
  - Middle vertical: Shrubs
  - Bottom: Herbs and Bushes
- They appear green all year because the trees in these forest don't shed their leaves at the same time
- They are seen in places of high-temperature → (above 22°C) and high rainfall (200 cm)
- In India, seen in western side of Western Ghats, Andaman and Nicobar Islands, North-East, Tamil Nadu coast (heavy rainfall in these areas)
- Highest biodiversity is seen here
- Vegetation seen: Ebony (epiphytes), mahogany, rosewood, rubber, and cinchona

### Deciduous Forests

- They are spread over a region, receiving rainfall between 200 cm and 70 cm
- These are most widespread forest of India (called Monsoon forest)
- Divided into
  - Moist deciduous
  - Dry deciduous

→ Foothills of Himalayas

} On basis of availability of water

\* Tendu leaves are used to make Bidi

\* Guttation: Hydathodes

#### MOIST DECIDUOUS

Found in: Areas receiving rainfall 200–100 cm

Mostly in eastern part: Northeastern states, foothills of Himalayas, Jharkhand, West, Odisha, and Chhattisgarh and on eastern slopes of Western Ghats

Example: Teak (most dominant), bamboos, sal, shisham, sandalwood, khair, kusum, arjun, and mulberry

#### DRY DECIDUOUS

Found in: Areas receiving rainfall 100–70 cm

Mostly in: rainier part of Peninsular Plateau and plains of Bihar and Uttar Pradesh

Example: Teak, sal, peepal, neem, tendu, palas, amaltas, bel, khair, axlewood

On the wetter margins, it has a transition to the moist deciduous, while on the drier margins to thorn forests



### Thorn Forests

- **Found in:** Regions with <70cm of rainfall
- Thorns are modified form of leaves (to avoid water loss)
- **Vegetation seen in:** Northwestern part of country (semi-arid areas) of Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Uttar Pradesh, and Haryana
- **Main plant species:** Acacias, palms, euphorbias, cacti
- Special type of grass seen here: Tussocky grass (height upto: 2m)
- Trees are scattered with long roots penetrating deep inside soil

### Coniferous Forests

- Shape: Cone
- Seen in areas of high snowfall
- **In India:** Seen in upper Himalayas
- **Trees:** Softwood trees → such as Chir, pine, cedar, deodar, spruce ↗ Gymnosperms

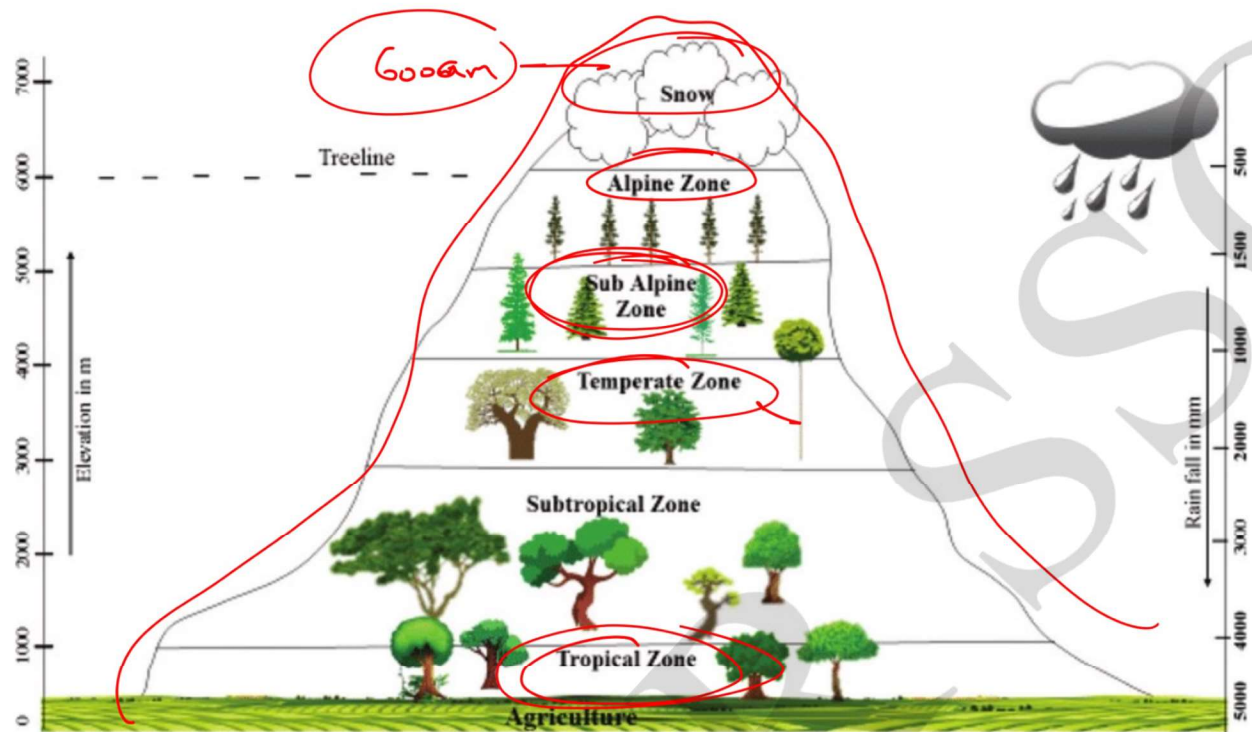
### Montane Forests

#### In mountainous areas

- Decrease in temperature with increase in altitude → Corresponding change in natural vegetation
- There is succession of natural vegetation belts in same order as we see from Tropical to Tundra region

### Succession with Changing Altitude

- **Foothills of Himalayas:** Deciduous forests
  - **1000–2000 m:** Wet Temperate Forests; Evergreen Broad Leaf Trees (Oaks, Chestnuts)
  - **1500–3000 m:** Temperate Forests containing Coniferous trees (pine, deodar, silver fir, spruce, and cedar)
  - **Above 3600 m:** Temperate Forests and grasslands → Alpine vegetation (silver fir, junipers, pines, rhododendrons, and birches)
  - **Shrubs + Scrubs:** Alpine grasslands (Bughyal)
  - **At higher altitudes:** Mosses + Lichens (Tundra vegetation)
- \* Montane Forests are extensively used for grazing by **nomadic tribes** (Gujjars and Bakarwals)



### Southern Montane Forests

- Found in three distinct areas of Peninsular India: Western Ghats, Vindhyas, Nilgiris
- Closer to tropics → Only 1500 m above the sea level

### Vegetation

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

### Mangrove Forests

- They are known as **Littoral/Swamp forests**
- Seen in coastal areas that are highly influenced by tides
- The deltas of Ganga, the Mahanadi, the Krishna, the Godavari and the Kavari are covered by such vegetations
- More in Sundarban deltas → **Sundari trees** are found here (region: West Bengal)
- The trees are viviparous
- They are also called **Pneumatophores (living roots)**

## Biomes/Forests across the World

- **Temperate Evergreen Forests:** Found in mid-latitudinal coastal areas (US, Canada, Europe, Asia)
- **Temperate Deciduous Forests:** Eastern margins of mid-latitudinal areas; Pheasants and Monals are found here (35°-50°)
- **Tiaga/Boreal Biome (untouched):** 50°-70° N/S
- **Tundra:** Beyond 70° N/S

## Indian State of Forest Reports

- 1st published in: 1987
  - 17th: 2021
  - It is a Binneal report
  - **Forest cover:** 21.7%
  - **Tree cover:** 2.9%
  - **Forest + Trees:** 24.6%
- } 2021 Report
- **Forest cover (area-wise):** Madhya Pradesh > Arunachal Pradesh > Chhattisgarh
  - **Forest cover (% wise):** Mizoram > Arunachal Pradesh > Meghalaya
  - **Highest increase:** Andhra > Telangana
  - **Highest decrease:** Arunachal > Manipur
  - Haryana: Least forest cover
  - **Indian Forest Policy (NFP) 1952:** States that 33% geographical area should be under forest or tree cover
- ↓
- Later revised in the year 1988** → It aimed at maintenance of environmental stability through preservation and restoration of ecological balance

## 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

## Chipko Movement

- 1973: Led by Sundarlal Bahugna
- **Forest Day:** 21st March
- Indian Forest Research Institute in Dehradun, Uttarakhand



### Types of Grasslands

#### Tropical Grasslands

- Tall, non-nutritious, elephant grass

#### Temperate Grasslands

- Shorts and nutritious

#### Different Names

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

#### Different Names

- **Prairies**: North America (Known as **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)

### Shifting Cultivation

- It is known as Slash and Burn agriculture
- Not good for environment → causes deforestation and soil loses its productivity

### Difference Names across the World

- **Indonesia**: Ladang
- **Mexico**: Milpa
- **Sri Lanka**: Chena
- **Vietnam**: Ray
- **Brazil**: Roca
- **Venezuela**: Konuko

### Names across India

- **Jhum**: North-East
- **Kumari**: Western Ghats
- **Pama Dabi/Bringa**: Odisha
- **Penda/Podu**: Andhra Pradesh
- **Dipa**: Chattisgarh (Bastar district) and Andaman and Nicobar Islands
- **Waltre**: Rajasthan
- **Kuruwa**: Jharkhand
- **Bewar/Dahiya**: Madhya Pradesh