

⇒ Introduction :-

- India is one of the twelve mega bio-diversity countries of the world. India occupies 10th place in the world with about 47,000 plant species and 4th in Asia in plant diversity.
- 15000 flowering plants in India constitute 6% in the world's total number of flowering plants. India also has approximately 90000 species of animals as well as a rich variety of fish in its fresh and marine waters.
- A plant community which has grown naturally without human aid is called Natural vegetation.
- Natural vegetation that has been left undisturbed by humans for a long time is called virgin vegetation.
- Flora is used to denote plants for a particular region or period and Fauna is species of animals of a particular region or period. Flora and Fauna Kingdom constitute biodiversity of a particular region or period.
- Relief, climate and Ecosystem are three factors for biodiversity.

• Relief

- Land: The nature of Land influences the type of vegetation. Fertile lands supports agriculture while undulating and rough terrains have grassland and woodlands which give shelter to a variety of wildlife.
- Soil: Different type of soil provides basis for different type of vegetations. The sandy soil of desert support cactus and thorny bushes while wet, marshy, deltaic soil support mangroves and deltaic vegetation. The hill slopes with some depth of soil have colonial trees.

• climate:

- Temperature: The character and extent of vegetation are mainly determined by temperature along with humidity in the air, ~~temp~~ precipitation and soil.
- Sunlight Due to differences in latitude, altitude, season and duration of the day there is variation in duration of sunlight.
- Precipitation (Rain): Areas of heavy rainfall have more dense vegetation.



compared to other areas of less rainfall. In India almost the entire rainfall is brought in by the advancing southwest monsoon (June to September) and retreating northeast monsoons.

⇒ Ecosystem :

- All the plants and animals in an area are interdependent and interrelated to each other in their physical environment, thus forming an ecosystem.
- A very large ecosystem on land having distinct types of vegetation and animal life is called a biome.

• Importance of forests :

- These are renewable resources and play a major role in enhancing quality of environment.
- They modify local climate, control soil erosion, regulates stream flow, support a variety of industries, provide livelihood for variety of species, many communities and offer panoramic and scenic view of recreation.
- It controls wind force and temperature and causes rainfall. It provides humus to the



soil and shelter to the wildlife.

- Natural vegetation in India has undergone many changes due to several factors such as the growing demand for cultivated land, development of Industries and mining, urbanisation and over-grazing of pastures.

⇒ Types of vegetation may be identified in our country are:

- (i) Tropical Evergreen Forest.
- (ii) Tropical Deciduous Forest.
- (iii) Tropical Thorn Forest and Scrubs.
- (iv) Montane Forests.
- (v) Mangrove Forests.

(a) Tropical Evergreen Forests :-

These forests are present in the Western Ghats and the Island groups of Lakshadweep, Andaman and Nicobar, upper part of Assam and Tamil Nadu Coast.

- (1) These forests grow best in areas having rainfall more than 200 cm with a short dry season.
- (2) The trees go to great height up to 60 meters or even above.
- (3) It has the vegetation of all kinds i.e. trees, shrubs and creepers giving it a multilayered structure.

(4) These Forests appear green all the year round.

(5) Important Trees of this forest are ebony, mahogany, rosewood, rubber, Cinchona.

(6) common animals Found in these forest are elephant, monkey, Lemur and deer:

⇒ Tropical Deciduous Forests.

These Forests are also called the monsoon Forests.

(1) They are spread over the region having rainfall between 200 cm and 70 cm.

(2) They shed their leaves about 6 to 8 weeks in the dry summer.

(3) In these Forests, the common animals Found are Lion, Tiger, Pig, deer and elephant.

⇒ These Forests are further divided into:

Moist deciduous: These are Found in areas having rainfall between 200 cm and 100 cm.

Teak is the most dominant species of this forest. Bamboos, Sal, Shisham, Sandalwood, Khair, arjun and mulberry are other commercially important species.

- Dry deciduous These are found in areas having rainfall between 100cm to 70cm. These are open stretches, in which teak, sal, peepal and neem grow.

⇒ The Thorny Forests and Scrubs:

The natural vegetation consists of thorny trees and bushes. This type of vegetation is found in the north-western part of the country, including semi-arid areas of Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Uttar Pradesh and Haryana.

- (1) Trees are scattered and have long roots penetrating deep into the soil to get moisture.
- (2) The stems are moist to conserve water.
- (3) Leaves are mostly thick and small to minimise evaporation.
- (4) Acacias, palms, euphorbias and cacti are the main plant species.
- (5) Common animals are rats, mice, rabbits, fox, wolf, tiger, lion, wild ass, horses and camels.

Montane Forests:

Montane Forests are the Forests which are Found in the mountains.

- (1) The Wet temperate type of forests are Found between a height of 1000 and 2000 m.
- (2) At high altitudes, generally more than 3600 metres above the Sea Level, temperate Forests and grasslands give way to the Alpine vegetation.
- (3) Alpine grasslands are used for grazing ⁽¹⁵⁰⁾ ^{Uttarakhand} ^(UK)
- (4) At higher altitudes, mosses and Lichens form parts of tundra vegetation.
- (5) The common animals are Found 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.

⇒ Mangrove Forests:

Mangrove are trees that live along tropical coastlines, rooted in salty sediments, often underwater.

↓ The mangrove tidal Forests are Found in



The areas of coasts influenced by Tides. Mud and Silt get accumulated on such coasts.

(2) Dense mangroves:- are the common varieties with roots of the plant submerged underwater.

(3) Sundari trees are found in Ganga-Brahmaputra delta and provide hard timber.

(4) Royal Bengal Tiger is a famous animal in these forests.

⇒ Wildlife:

- India has about 2000 species of birds which constitute 13% of the world's total. There are 2546 species of fish, which account for nearly 12% of the world stock. It also shares between 5 and 8 percents of the world's amphibians, reptiles and mammals.
- Elephants are found in the hot wet forests of Assam, Karnataka and Kerala.
- One-horned Rhinoceroses lived in swampy and marshy lands of Assam and West Bengal.

- Ran of Kachchh is habitat of wild ass and camels are found in Thar Desert.
- Indian bison, Nilgai (blue bull), chousingha (Four horned antelope), gazel and different species of deer are some other animals found in India.
- India is the only country, in the world that has both Tigers and Lions. Gir Forests in Gujarat is the natural habitat of Lion whereas Tigers are found in the forest of Madhya Pradesh, The Sundarbans of West Bengal and the Himalayan region.
- The Himalayan harbour a hardy range of animals, which survive in extreme cold.
- Ladakh's Freezing high altitudes are home to yak, the shaggy horned wild ox weighing around one tonne, the Tibetan antelope, the bharal (blue sheep), wild sheep and the Kiang (Tibetan wild ass). The ibex bear, snow-leopard and very rare red panda are found in certain parts.
- In the rivers, lakes and coastal areas, turtles, crocodile and gharials are found.
- Birds like peacock, pheasants, ducks, parakeets cranes and pigeons are some of the birds inhabiting the forests and wetlands of the



country.

⇒ conservation of Flora and Fauna:

- The excessive exploitation of the plants and animal resources by human beings, disturbed the ecosystem. About 1300 plant species are endangered and 20 species are extinct also few animals are endangered and some have become extinct.

- Cause of this threats are:

→ Hunting by greedy hunters for commercial purpose.

→ pollution Due to chemical and Industrial waste and acid deposits.

→ Introduction of alien species.

→ Reckless cutting of the forests to bring land under cultivation and inhabitation.

⇒ Governmental steps to protect Flora and Fauna of country are:

→ ~~Fl~~ Fourteen biosphere reserves have been set up in the country to protect Flora and Fauna.

→ Financial and technical assistance is provided to many Botanical Gardens by the government since 1992.

→ Project Tiger, project Rhino, project Great Indian Bustard and many other eco-development project have been introduced.



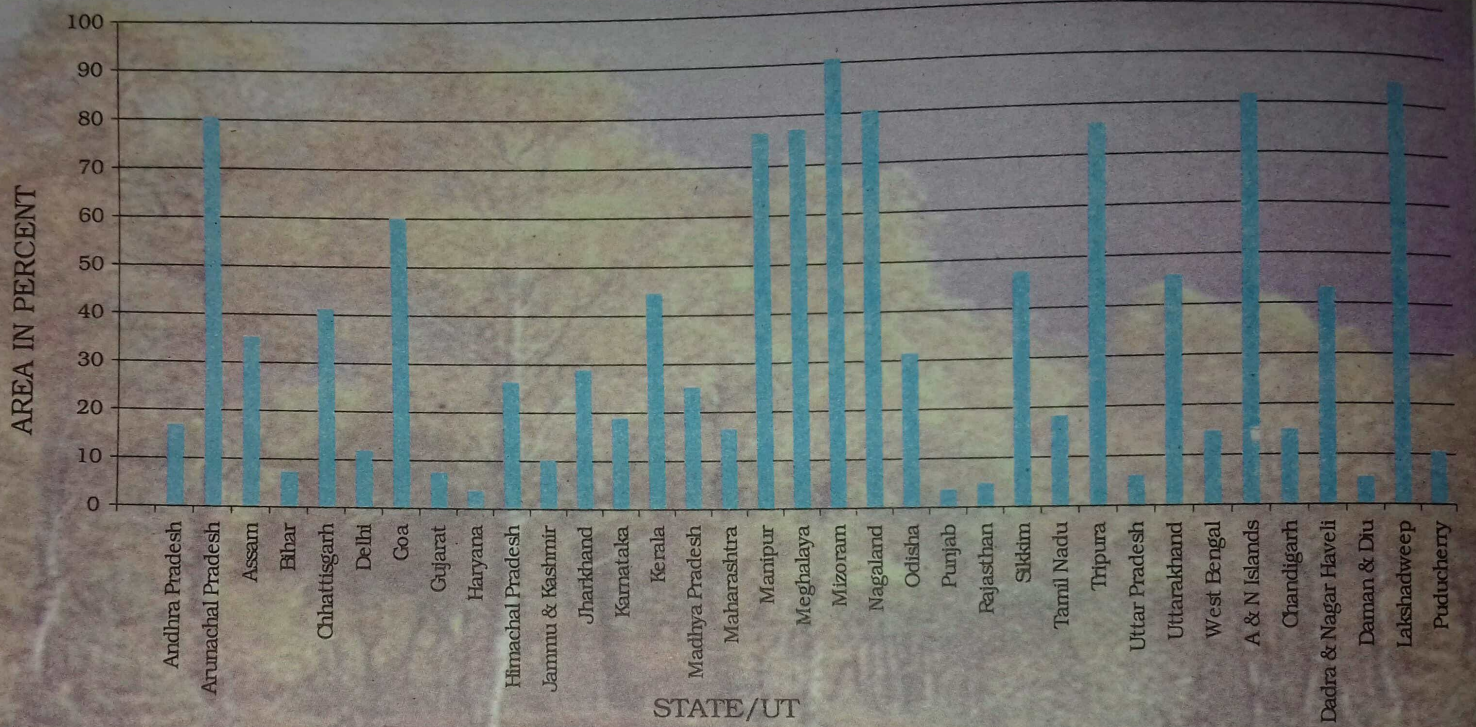
→ 89 National parks, 490 Wildlife Sanctuaries and zoological gardens are set up to take care of Natural heritage.

- The Sunderbans in West Bengal, Nanda Devi in Uttarakhand, the Gulf of Mannar in Tamil Nadu and the Nilgiris (Kerala, Karnataka and Tamil Nadu) have been included in the World Network of Biosphere Reserve.

⇒ List of Fourteen bio-reserves in India are:

- a. Sunderbans (West-Bengal)
- b. Simlipal (Odisha)
- c. Gulf of Mannar (Tamil Nadu)
- d. Dihang - Dibang (Arunachal Pradesh)
- e. The Nilgiris in South India (Tamil Nadu, Kerala, Karnataka)
- f. Dibru Saikhowa (Arunachal Pradesh)
- g. Nanda Devi (Uttarakhand)
- h. Agasthyamalai (Kerala and Tamil Nadu)
- i. Nokrek (Meghalaya)
- j. Kanchenjunga (Sikkim)
- k. Great Nicobar (Bay of Bengal)
- l. Pachmarhi (Madhya Pradesh)
- m. Manas (Assam)
- n. Achanakmar - Amarkantak (Chhattisgarh)

- Wildlife Protection Act 1972
- According to India State of Forest Report 2011 The forest cover 21.05%.



Source : India State of Forest Report 2011

Figure 5.1 Area under Forest Cover

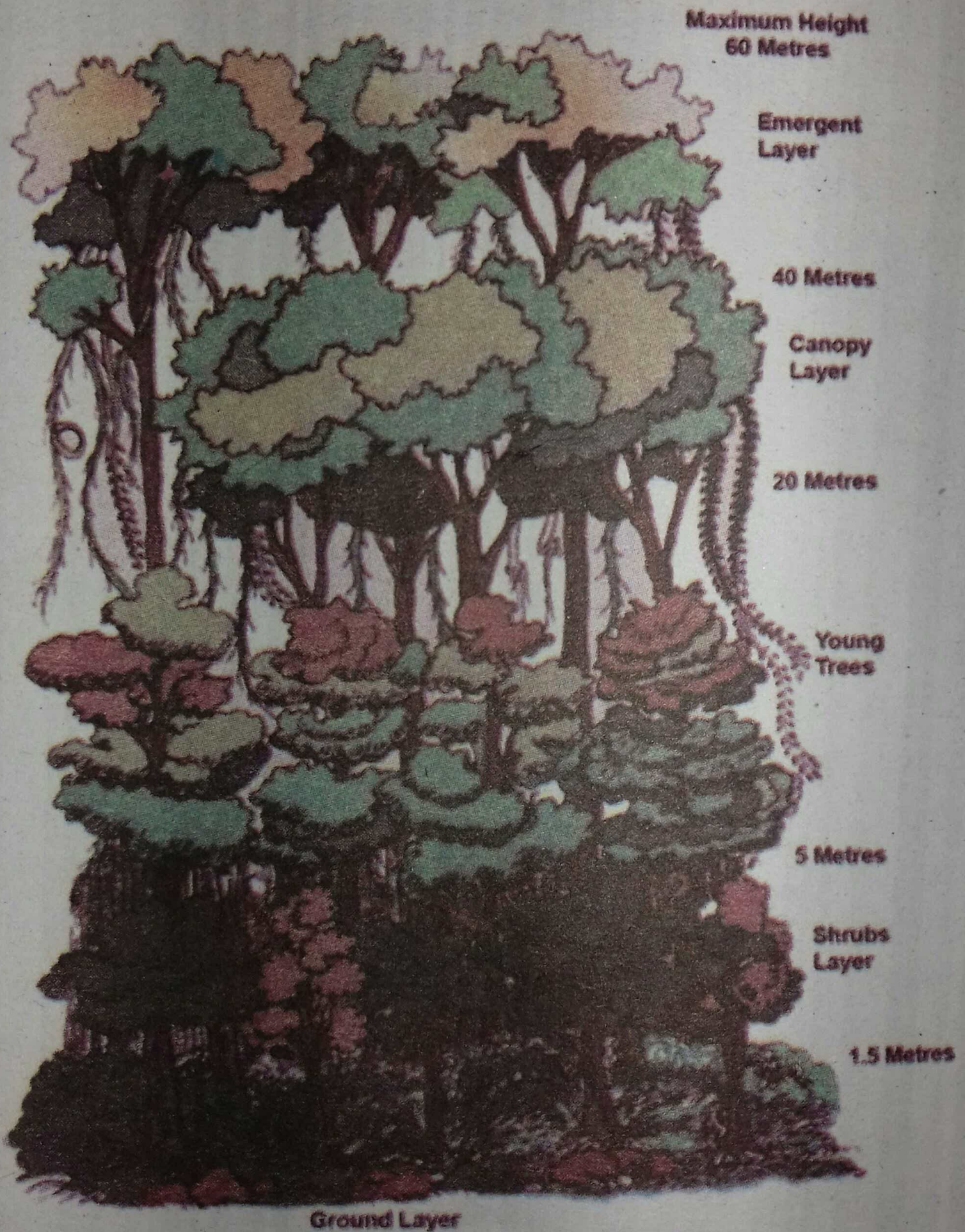


Figure 5.2 : Tropical Evergreen Forest

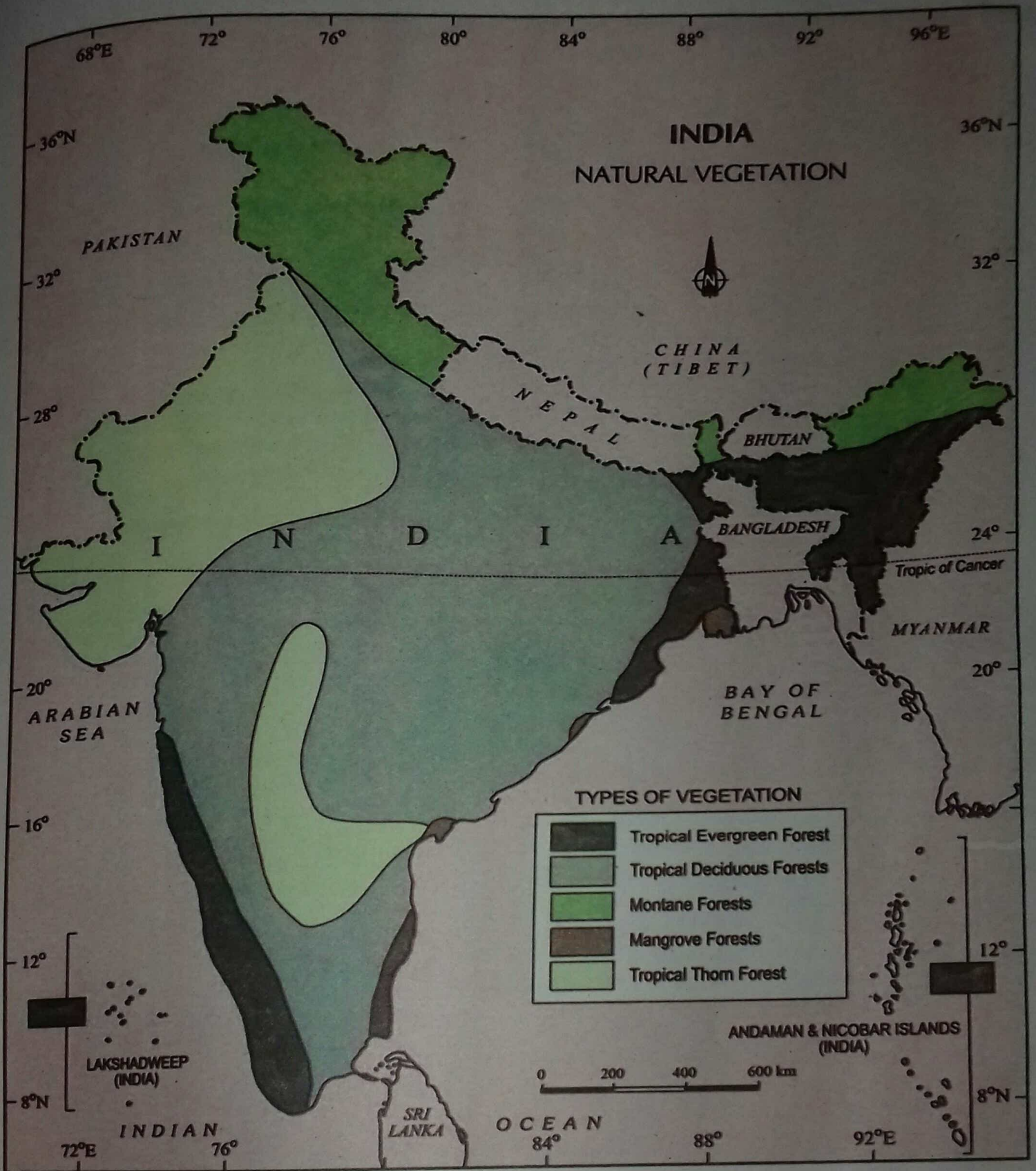


Figure 5.3 : Natural Vegetation

Study the given map for the forest cover and try to find the reasons as to why certain states have more area under forest as compared to others?

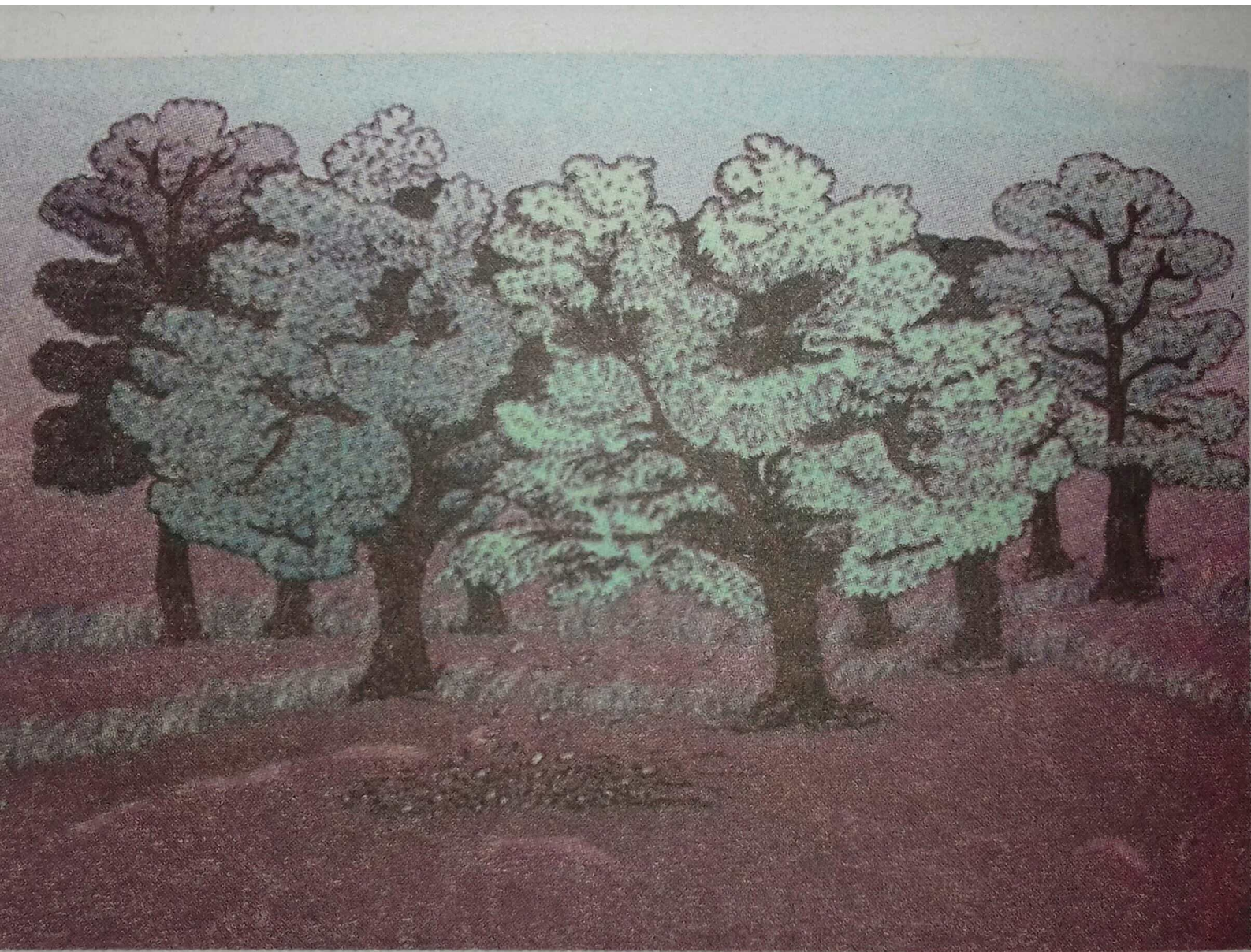


Figure 5.4 : Tropical Deciduous Forest



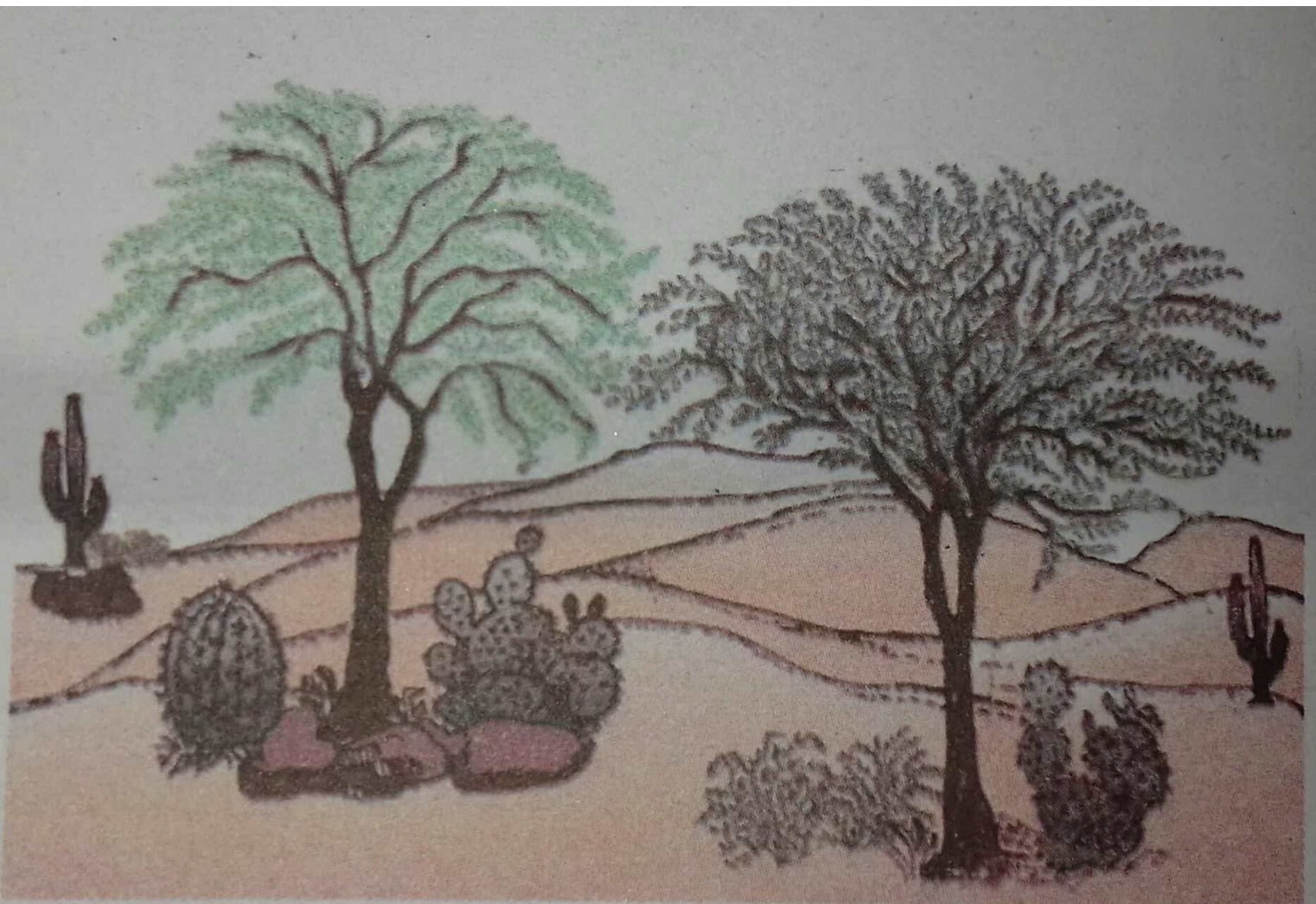


Figure 5.5 : Thorn Forests and Scrubs



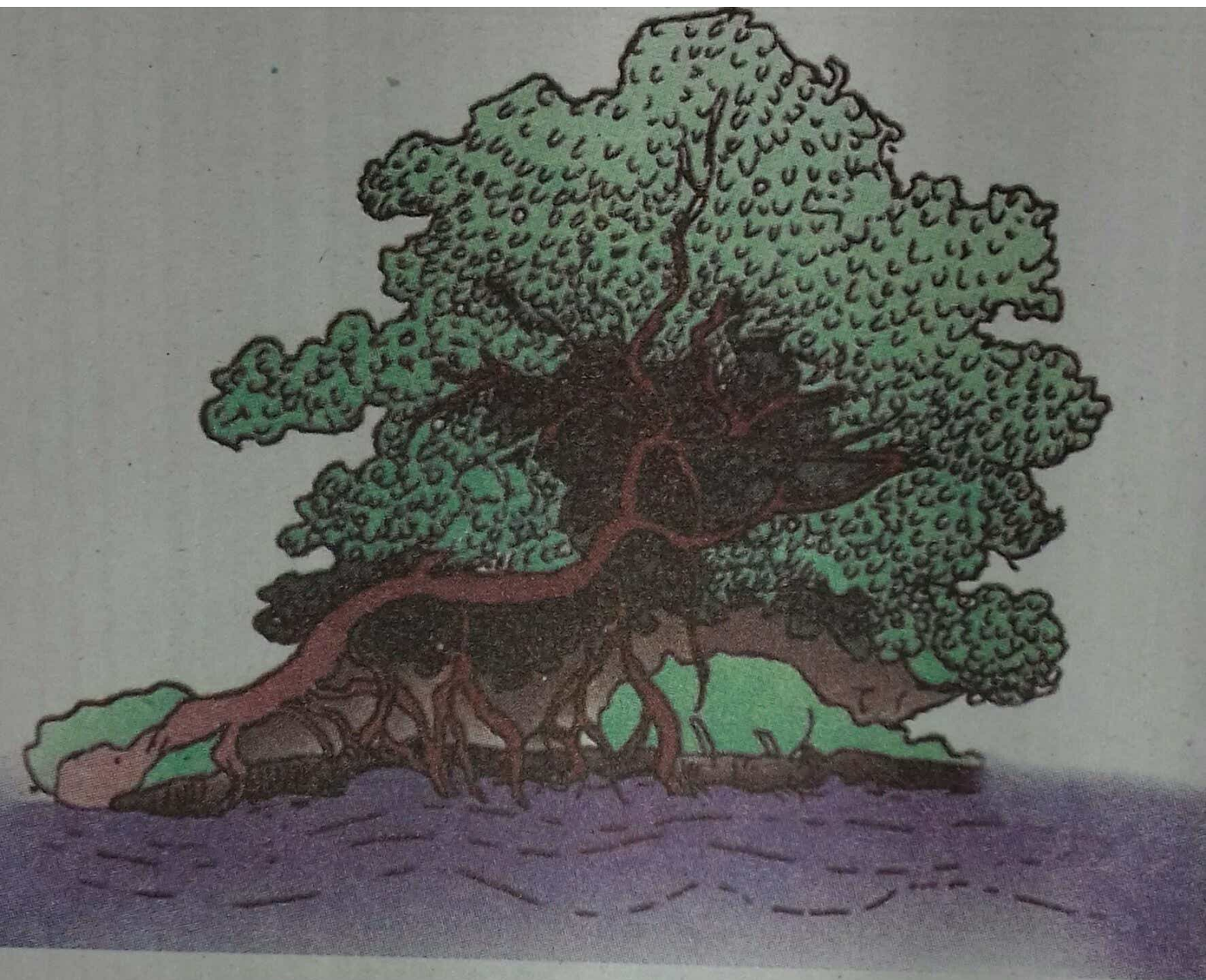


Figure 5.7 : Mangrove Forests

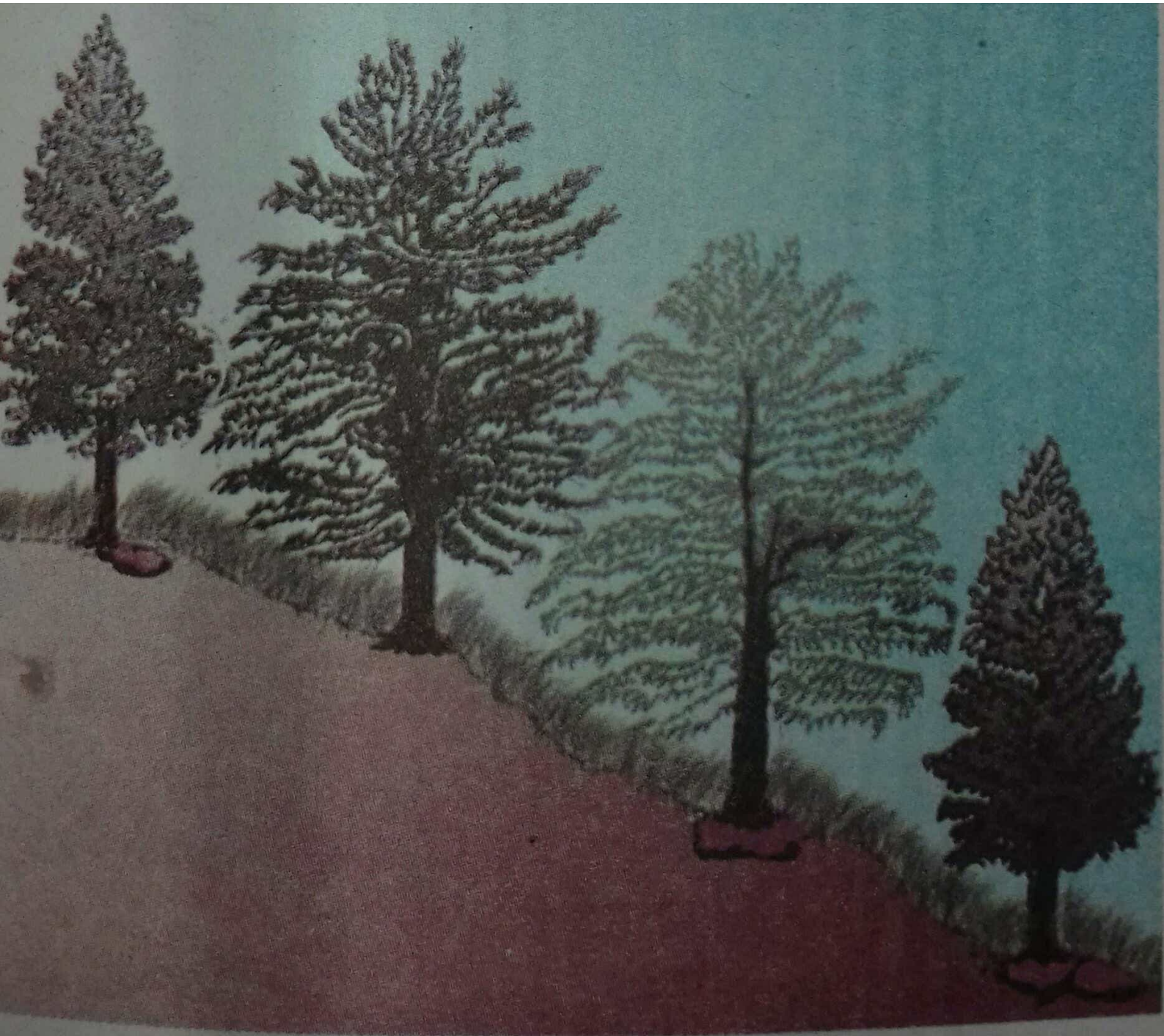


Figure 5.6 : Montane Forests

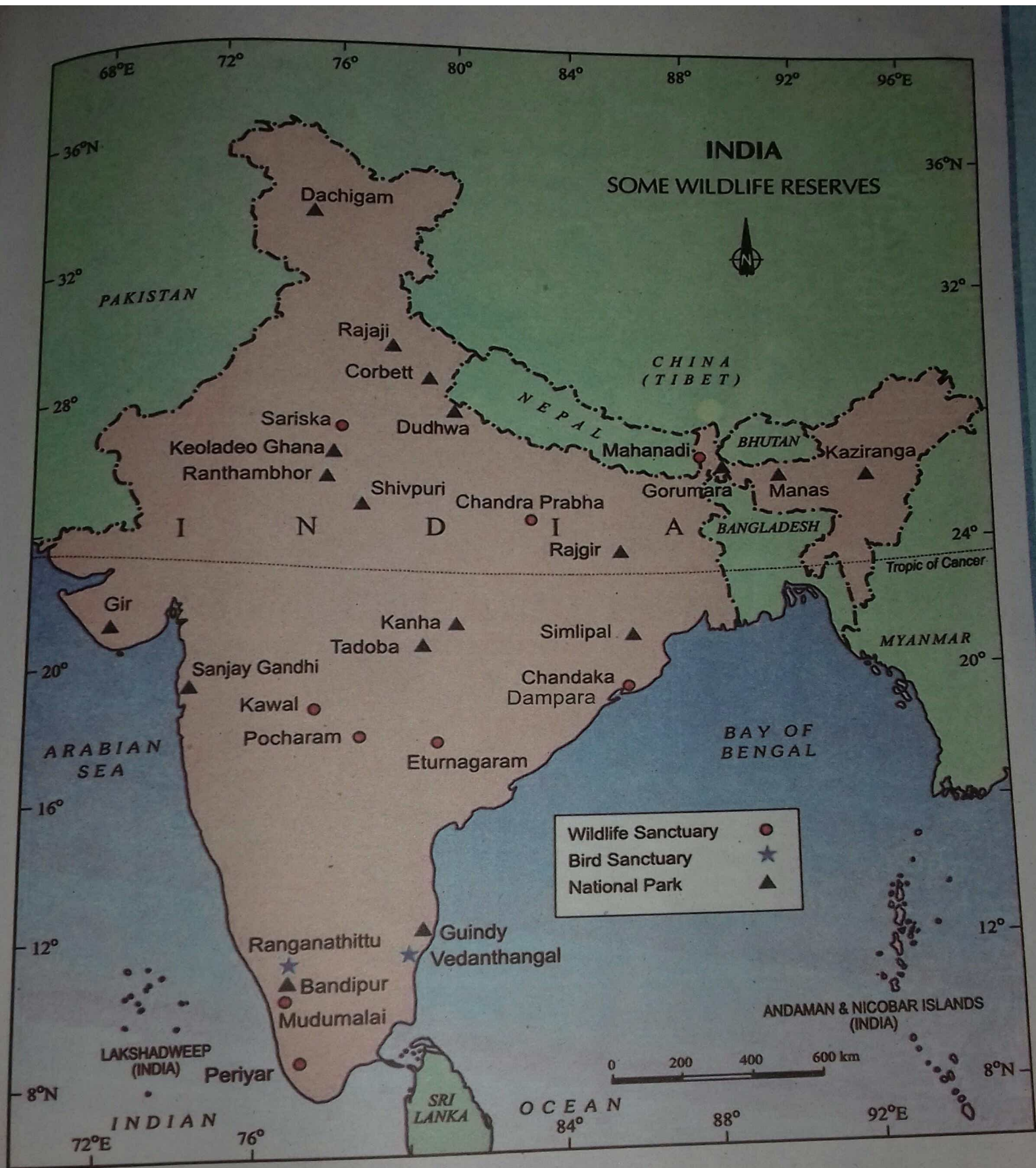


Figure 5.8 : Wildlife Reserves