Western Ghats

Introduction

- The **Western Ghats**, also known as the **Sahyadri Hills**, are well known for their rich and unique assemblage of flora and fauna.
  - The range is called **Sahyadri in northern Maharashtra** and **Sahya Parvatham in Kerala**.
- The northern portion of the narrow coastal plain between the Western Ghats and the Arabian Sea is known as the **Konkan Coast**.
  - The central portion is called **Kanara** and the southern portion is called **Malabar region or the Malabar Coast**.
  - The foothill region east of the Ghats in Maharashtra is known as **Desh**, while the eastern foothills of central Karnataka state is known as **Malanadu**.
  - In the south the range is known as the Nilgiri malai in Tamil Nadu.
- It is recognized as a **UNESCO World Heritage Site**.
- It is **one of the eight hotspots** of biological diversity in the world due to its high level of biological diversity and endemism.

Geology of Western Ghats

- There are two views regarding the Geology of the Western Ghats.
  - The mountains of the Western Ghats are **Block Mountains** formed due to the down warping of a part of land into the Arabian Sea.
  - The mountains of the Western Ghats are not true mountains, but are the faulted edge of the Deccan Plateau.
- Major rocks found in the region include Basalt, charnockites, granite gneiss, khondalites, leptynite, metamorphic gneisses with detached occurrences of crystalline limestone, iron ore, dolerites and anorthosites.

Basic Topography

- Geographical Extent:
  - The Western Ghats extend from the **Satpura Range in the north**, go south past **Goa**, through **Karnataka** and into **Kerala** and **Tamil Nadu** end at Kanyakumari embracing Indian ocean.
  - A chain of mountains runs parallel to India’s western coast, approximately 30-50 km inland.
  - These mountains cover an area of around 140,000 km² in a 1,600 km long stretch.

- Mountain Ranges:
  - The **Nilgiri ranges** southeast of Mysore in Karnataka, meet the **Shevaroys (Servarayan range)** and **Tirumala range** farther east, linking the Western Ghats to the Eastern Ghats.
  - The peak of **Anamudi in Kerala** is the highest peak in the Western Ghats, as well as the highest peak in India outside the Himalayas.
Famous hill station: This range is home to many hill stations like Matheran, Lonavala-Khandala, Mahabaleshwar, Panchgani, Amboli Ghat, Kudremukh and Kodagu.

Rivers:

West flowing: The rivers that originate in Western Ghats and flow towards west are Periyar, Bharathappuzha, Nethravati, Sharavathi, Mandovi etc.

- The west flowing rivers of Western Ghats are fast-moving, owing to the short distance travelled and steeper gradient.
- This makes Western Ghats more useful in terms of production of hydroelectricity. The steep gradient also makes Western Ghats more useful in terms of production of hydroelectricity.

East flowing: The rivers that originate in Western Ghats and flow towards east include three major rivers viz. Godavari, Krishna and Kaveri, and many smaller/tributary rivers such as Tunga, Bhadra, Bhima, Malaprabha, Ghataprabha, Hemavathi, Kabini.

- These east flowing rivers are comparatively slower moving and eventually merge into larger rivers such as the Kaveri and Krishna.

Climate and Vegetation:

- The forests of the site include some of the best representatives of non-equatorial tropical evergreen forests anywhere and are home to at least 325 globally threatened flora, fauna, bird, amphibian, reptile and fish species.
- The high montane forest ecosystems influence the Indian monsoon weather pattern.
  - The Ghats act as a key barrier, intercepting the rain-laden monsoon winds that sweep in from the south-west during late summer.
  - The western slopes have tropical and subtropical moist broadleaf forests marked predominantly by Rosewood, Mahogany, Cedar etc.
    - These slopes appear green in almost all parts of the year.
    - No time is fixed when these trees would shade their leaves.
- The eastern slopes of the Western Ghats have dry as well as moist deciduous forests marked predominantly by Teak, Sal, Shisham, Sandalwood trees.

Wildlife:

- The Nilgiri marten, brown palm civet, stripe-necked mongoose, Indian brown mongoose, small Indian civet and leopard cat are the small carnivores living in the forests of the Western Ghats.
- Many species are endemic, such as the Nilgiri tahr (Hemitragus hylocrius) and the lion-tailed macaque (Macaca silenus).
- At least 325 globally threatened (IUCN Red Data List) species occur in the Western Ghats.
  - The globally threatened flora and fauna in the Western Ghats are represented by 229 plant species, 31 mammal species, 15 bird species, 43 amphibian species, 5 reptile species and 1 fish species.

Protected Areas:

- Western Ghats is home to India’s two biosphere reserves, 13 National parks, several wildlife sanctuaries and many Reserve Forests.
- The Nilgiri Biosphere Reserve forms the largest contiguous protected area in the Western Ghats.
  - It comprised the evergreen forests of Nagarhole, deciduous forests of Bandipur National Park and Nugu in Karnataka and adjoining regions of Wayanad and Mudumalai National Park in the states of Kerala and Tamil Nadu.
- The Silent Valley National Park in Kerala is among the last tracts of virgin tropical evergreen forest in India.
Significance of Western Ghats

- **Hydrological:**
  - The Western Ghats feeds a large number of perennial rivers of peninsular India including the three major eastward-flowing rivers Godavari, Krishna, and Kaveri.
  - The peninsular Indian states that receive most of their water supply from rivers originating in the Western Ghats.

- **Climate:**
  - The mountains of the Western Ghats influence the Indian monsoon weather patterns that mediate the warm tropical climate of the region
    - The Ghats act as a key barrier, intercepting the rain-laden monsoon winds that blow from the south-west during late summer.
    - The Western Ghats play a significant and important ecological function in sequestration of atmospheric CO2 and hence have an important role in climate change.
      - It is estimated that they neutralize around 4 million tonnes of carbon every year-around 10% of emissions neutralised by all Indian forests.

- **Biodiversity:**
  - Western Ghats along with its geographical extension in the wet zone of Sri Lanka are now also considered one of the eight, hottest hotspots of biodiversity
  - The Western Ghats contain exceptional levels of plant and animal diversity and endemcity.

- **Economic:**
  - The Western Ghats are rich in iron, manganese and bauxite ores.
  - The forests of Western Ghats are an important source of timber and support a large number of forest-based industries such as paper, plywood, poly-fibres and matchwood.
  - In parts of their ranges Pepper and cardamom, which are native to the evergreen forests of the Western Ghats have been taken up as plantation crops on a large scale.
  - Other large scale plantations include tea, coffee, oil palm and rubber.

- **Home to Indigenous Tribes:**
  - The indigenous people of the Western Ghats, including the Particularly Vulnerable Tribal Groups, constitute 44.2% of the tribal population of 6.95% of Karnataka.
  - The Western Ghats are also home to a sizable population of communities like Gowlis, Kunbis, Halakki Vakkala, Kare Vakkala, Kunbi, and Kulvadi Marathi.
  - The communities have been deriving sustenance from the forest by collecting non-timber forest produce (NTFP).

- **Tourism and Pilgrimage Centre:**
  - There are a number of tourist centres that have sprung up in the Western Ghats; example: Ooty, Thekkady WS etc.
  - There have been important pilgrimage centres in the region- prominent amongst these being Sabarimalai in Kerala, Madevewharamalai in Karnataka and Mahabaleshwar in Maharashtra.

Threats to Western Ghats

- **Mining:** The mining activities have grown rapidly especially in Goa and often in violation of all laws, resulting in serious environmental damage and social disruption.
  - Sand mining has emerged as a major threat in Kerala.
  - Unsustainable mining has increased vulnerability to landslides, damaged water sources and agriculture, thus negatively affected the livelihoods of the people living in those areas

- **Extraction of Forest Produce:** Human communities living within and adjacent to protected
areas in the Western Ghats are often dependent on extraction of NTFPs to meet a diversity of subsistence and commercial needs.

- With rising population and changing consumption patterns, sustainability of NTFP is a critical issue.

- **Livestock Grazing:** Livestock grazing within and bordering protected areas by high densities of livestock (cattle and goats) is a serious problem causing habitat degradation across the Western Ghats.

- **Human-wildlife Conflict:** Given that the Western Ghats exists within an intensely human-dominated landscape, human-wildlife conflicts are a common phenomenon.

- **Hunting:** Illegal local hunting driven by tradition or demand for wild meat is pervasive across the Western Ghats.
  - Hunters employ guns as well as a wide array of traditional methods such as poisoning, snaring and trapping.
  - Wild meat is a nonessential part of the diet of hunters who frequently have access to alternative sources of animal protein.

- **Plantations:** Agroforestry systems in the Western Ghats are today dominated by tea, coffee, rubber and monocultures of various species, including the recently introduced oil palm.
  - Large-scale planting of coffee in the Western Ghats began in 1854 when the British established themselves in Kodagu.
  - Over the years, plantations of cash crops have displaced extensive patches of natural forests throughout the Western Ghats and are frequently associated with encroachment of surrounding forest areas.

- **Encroachment by Human Settlements:** Human settlements where legal and/or traditional rights of land ownership occur both within and outside protected areas all across the Western Ghats and represent a significant landscape level threat.

- **Hydropower Projects:** Large dam projects in Western Ghats have resulted in environmental and social disruption despite cost benefit analyses and environmental impact assessments being done by the government and companies.

- **Deforestation:** Conversion of forest land into agricultural land or for commercial purposes like tourism, illegal logging for timber have had significant negative effects on biodiversity.

- **Climate Change:** The changes in land use and deforestation have led to big variations in the duration and intensity of rainfalls.
  - Climate change has been considered as a cause of floods in many regions in the recent past.

**Conservation Efforts for Western Ghats**

- **Committees for Western Ghats:**
  - **Gadgil Committee (2011):** Also known as the Western Ghats Ecology Expert Panel (WGEEP), it recommended that all of the Western Ghats be declared as the Ecological Sensitive Areas (ESA) with only limited development allowed in graded zones.
  - **Kasturirangan Committee (2013):** It sought to balance the development and environment protection in contrast to the system proposed by the Gadgil report.

  - The Kasturirangan committee recommended that instead of the total area of Western Ghats, **only 37% of the total area should be brought under ESA** and a complete ban on mining, quarrying and sand mining be imposed in ESA.

**Passes in Western Ghats**

- **Thal Ghat Pass** (Kasara Ghat): connects Mumbai to Nashik
- **Bhor Ghat Pass:** connects Mumbai to Pune via Khopoli
- **Palakkad Gap (Pal Ghat):** connects: Coimbatore, Tamil Nadu to Palakkad, Kerala
- **Amba Ghat Pass**: connects Ratnagiri district to Kolhapur.
- **Naneghat Pass**: connects Pune district with Junnar city.
- **Amboli Ghat Pass**: connects Sawantwadi of Maharashtra to Belgaum of Karnataka.