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CHAPTER NOTES

Biodiversity and Conservation Class 12 Notes — CBSE Biology Chapter 15

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Biodiversity and Conservation Class 12 Notes — CBSE Biology Chapter 15

Chapter 15 — **Biodiversity and Conservation** — covers types of biodiversity, patterns, threats (HIPPO), conservation strategies, and biodiversity hotspots. Carries **4-6 marks**.

Key Concepts

Levels of Biodiversity

- **Genetic diversity:** Variation in genes within a species (e.g., different rice varieties)
- **Species diversity:** Variety of species in an area
- **Ecological diversity:** Variety of ecosystems (forests, wetlands, deserts, etc.)

Patterns of Biodiversity

Latitudinal gradient: Biodiversity increases from poles to tropics

Tropics have highest biodiversity because: (1) More solar energy (2) More stable climate (3) More time for evolution (no glaciation) (4) More area

Species-Area relationship (Alexander von Humboldt):

$$\log S = \log C + Z \log A$$

S = species richness, A = area, Z = slope (0.1-0.2 for small areas, 0.6-1.2 for islands), C = Y-intercept

Importance of Biodiversity

- **Narrowly utilitarian:** Food, medicines, fibres, industrial products (25% drugs from plants)
- **Broadly utilitarian:** Ecosystem services — O₂, pollination, nutrient cycling, flood control
- **Ethical:** Every species has intrinsic right to exist; stewardship responsibility

Threats to Biodiversity — HIPPO

Threat	Details
Habitat loss & fragmentation	Deforestation, urbanisation — #1 cause of extinction. Amazon rainforest losing huge area.
Invasive species	Alien species outcompete natives. E.g., Nile perch in Lake Victoria, water hyacinth
Pollution	Chemical contamination of air, water, soil
Population growth	More resources needed → more pressure on ecosystems
Over-exploitation	Overhunting, overfishing. E.g., Steller's sea cow, dodo, passenger pigeon — all extinct

Conservation Strategies

Type	Description	Examples
In-situ (on-site)	Protect in natural habitat	National parks, wildlife sanctuaries, biosphere reserves, sacred groves
Ex-situ (off-site)	Protect outside natural habitat	Zoos, botanical gardens, seed banks, cryopreservation

India's Biodiversity

- India has 4 biodiversity hotspots: Western Ghats, Himalayas, Indo-Burma, Sundaland
- ~45,000 plant species, ~91,000 animal species
- 14 Biosphere Reserves, 106 National Parks, 550+ Wildlife Sanctuaries
- Mega-diversity country (one of 17 in the world)

Biodiversity Hotspots (Norman Myers): Regions with high endemism (≥ 1500 endemic plant species) + high threat ($\geq 70\%$ habitat loss). 36 hotspots globally.

Quick Revision Points

- 3 levels: genetic, species, ecological diversity

- Tropics = most biodiverse; latitudinal gradient
- Species-Area: $\log S = \log C + Z \log A$
- Threats: HIPPO (Habitat loss #1); Steller's sea cow, dodo = extinct from over-exploitation
- Conservation: in-situ (national parks, biosphere reserves) + ex-situ (zoos, seed banks)
- India: 4 hotspots, mega-diversity country, 14 biosphere reserves
- Sacred groves: traditional in-situ conservation (Khasi-Jaintia hills, Western Ghats)

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