

BIODIVERSITY

- ✦ The occurrence of different types of genes, gene pools, species, habitats and ecosystems in a particular place and various parts of earth is called biodiversity.
- ✦ The common man would find it hard to believe that there are more than 20,000 species of ants, 3,00,000 species of beetles, 28,000 species of fishes and nearly 20,000 species of orchids.
- ✦ The term biodiversity was given by Edward Wilson.

13. BIODIVERSITY AND CONSERVATION

Three levels of Biodiversity

Genetic Diversity

- ✦ Diversity shown by a single species at genetic level.
- ✦ India has 50,000 strains of rice and 1,000 varieties of mango.

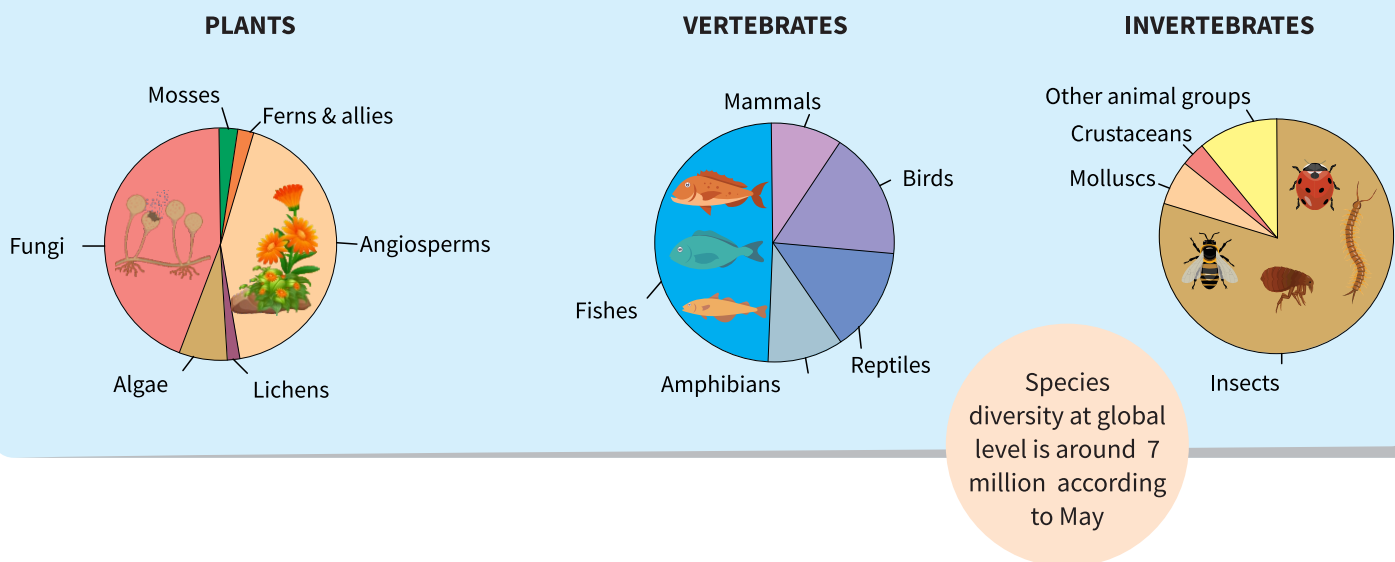
Species Diversity

- ✦ Diversity At Species Level
- ✦ Western Ghats Are Rich In Amphibian Diversity Compared To Eastern Ghats

Ecological Diversity

- ✦ Diversity at ecosystem level
- ✦ In comparison to polar regions tropical is rich in diversity

Representing Global Diversity



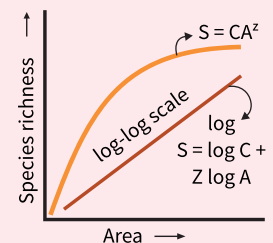
Patterns of Biodiversity

LONGITUDINAL GRADIENTS

- ✦ Species diversity decreases from equator to poles.
- ✦ Tropical regions [23.5°N to 23.5°S] richer in biodiversity compared to poles.
- ✦ Amazon Rain forest is the largest and greatest biodiversity.

SPECIES AREA RELATIONSHIP

- ✦ Alexander von Humboldt suggested that species richness increases with increased in explored area.
- ✦ The relation between species-richness and area is rectangular hyperbola $\log S = \log C + z \log A$
 $z = \text{Slope of line}$



Reasons for Loss of Biodiversity

Habitat Loss And Fragmentation: Fragmentation of forest affects the animals that migrate and link in large territories.

Overexploitation: Conversions of human needs into greed lead to over exploitation.

Alien – Species Invasion: Causes decline or extinction of native species by alien species.

Co – Extinction: Species are linked to each other so extinction of one species in the hierarchy affects the associated species.

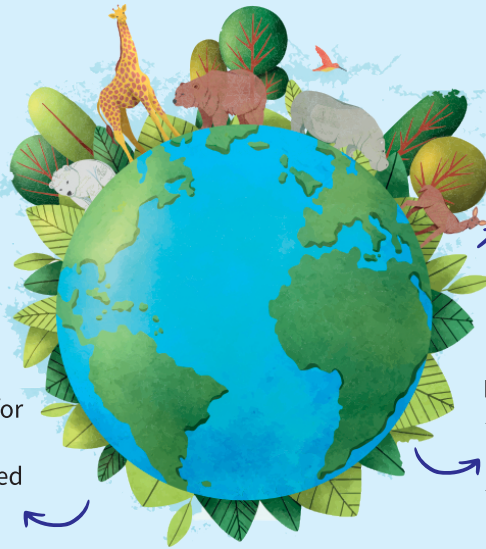
The Earth Is Heading Towards Sixth Mass Extinction Due To Anthropogenic Reasons.

Reasons of Conserving Biodiversity



Narrowly utilitarian

- ✦ Humans depend on plants for economic needs.
- ✦ Nearly 25% drugs are derived from plants.



Oxygen provider



aesthetic pleasures



pollination

Broadly utilitarian

- ✦ Biodiversity plays a major role in ecosystem services.
- ✦ Amazon forests is referred to as lungs of the planet.

Ethical

- ✦ Every species has its own intrinsic value.
- ✦ We as a human have moral duty to protect these species.

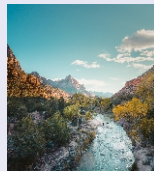


Conservation of Biodiversity

In-Situ Conservation

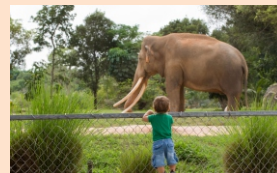
Animals on plants protected in their natural habitat.

Eg:- national park, sanctuary, biosphere reserves etc



Ex-Situ Conservation

Off – site conservation. Organisms are protected outside their natural environment eg:- botanical garden, zoological parts, gene- bank etc.



The Earth Summit

Biodiversity knows no political boundaries and its conservation is therefore a collective responsibility of all nations. The historic Convention on Biological Diversity ('The Earth Summit') held in Rio de Janeiro in 1992, called upon all nations to take appropriate measures for conservation of biodiversity and sustainable utilisation of its benefits. In a follow-up, the World Summit on Sustainable Development held in 2002 in Johannesburg, South Africa, 190 countries pledged their commitment to achieve by 2010, a significant reduction in the current rate of biodiversity loss at global, regional and local levels.