

Biodiversity

B.Sc. Part –I, Paper-I, Group- B

By- Dr. Vandana Kumari, Department of Zoology, R.C.S. college, Manjhaul

Introduction

- Biodiversity is variety of life on earth, it includes all organisms, species and populations, it also includes the variability of living organism within species, between species and between ecosystems.
- According to United Nations Earth Summit (1992)-

‘Biodiversity is defined as ‘the variability among living organism from all sources, including terrestrial, marine and other aquatic ecosystem and the ecological complexes of which they are a part; this include diversity within species, between species and of ecosystem.’

There are two main components that contribute to biodiversity- species richness and species evenness.

Levels of Biodiversity

Biodiversity is considered to exist at three levels-

- Genetic level
- Species level
- Ecosystem level

Genetic Diversity

- Genetic diversity is the total genetic information contained in the genes of all the species.
- It deals with the variations in genes within a particular species.
- It allows the species to adapt to the changing environments.
- Genetic diversity aims to ensure that some species survive drastic changes and thus able to carry on desirable genes.

The survival of individuals ensures the survival of the population.

Genetic diversity provides us varieties of butterflies, flowers, corals etc.

Species diversity

- It refers to varieties of living organism on earth. It refers to both the number of species and number of individuals within each species.
- Species differ in their genetic makeup and do not inter breed. They differ from one another.
- Closely related species have some common hereditary characters as in chimpanzees and humans 98.4 % of genes are similar.
- It is the ratio of one species population over total no. of organisms across all species in the given biome.
- Zero depicts infinite diversity and one represents only one species present

Community/Ecosystem diversity

- This refers to different types of habitats natural communities and ecological processes in the biosphere.
- A habitat is combination of interrelated factors , the climate, vegetation and geography of a region.
- There are several kinds of habitats around the world. Ex. Grassland, wetlands, deserts, mangrove etc.
- Change in climatic conditions also influences change in vegetation.
- Every species adapt itself to particular kind of environment.
- The change in environment make the species to adapt itself best to the changing environment, and thus the variety of diversity of species in the ecosystem is influenced by the nature of the ecosystem.

Measurement of biodiversity

- Biodiversity is measured by two major components-
- Species richness- Species richness describes the number of different species present in an area.
- More species = greater richness
- Species evenness- Species evenness describes the relative abundance of the different species in an area.
- Similar abundance = more evenness

Species richness

- It is the measure of number of species found in a community, it gives how much species there are in an area These are as follows-
- Alfa diversity- It refers to the diversity within a particular area or ecosystem and usually expressed by the number of the species.
- Beta diversity- It is a comparison of diversity between ecosystems, usually measured as the change in amount of species between the ecosystem.
- Gamma diversity- It is the measure of overall diversity for the different ecosystem within a region.

Species evenness

- It measures the proportion of species at a given site.
- Evenness compares the similarity of the population size of each of the species present.