

## **BIODIVERSITY**

- ❖ Biodiversity is the variety and differences among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part.
- ❖ It is virtually synonymous with “Life on earth”.
- ❖ Biologists most often define "biological diversity" or "biodiversity" as the "totality of genes, species, and ecosystems of a region".
- ❖ The biodiversity found on Earth today consists of many millions of distinct biological species, which is the product of nearly 3.5 billion years of evolution.

### **Levels of Biodiversity**

#### **1) Genetic diversity**

- ❖ It is a level of biodiversity that refers to the total number of genetic characteristics in the genetic makeup of a species.
- ❖ It is distinguished from genetic variability, which describes the tendency of genetic characteristics to vary.

#### **2) Species diversity**

- ❖ It refers to the variety of species within a region.
- ❖ Species diversity is an index that incorporates the number of species in an area and also their relative abundance.
- ❖ It is generally a much more useful value than species richness.

#### **3) Community and Ecosystem diversity**

- ❖ Ecosystem diversity refers to the diversity of a place at the level of ecosystems. This has 3 perspective:
  - ❖ Alpha Diversity: Within community diversity. Alpha diversity refers to the diversity of organisms sharing the same Community/Habitat.
  - ❖ Beta Diversity: Between community diversity. It refers to the diversity of organisms sharing two habitats.
  - ❖ Gamma Diversity: Diversity of the habitat over the total landscape or geographical area is called gamma diversity.

## **Values of Biodiversity**

Food: About 80,000 edible plants and about 90% of present day food crops have been domesticated from wild.

Drugs & Medicines: About 75% of world's population depends on plants or plant extracts.

Fuel: Forests have been used since ages for fuel wood. Fossil fuels are also products of Biodiversity.

Social Value: Many of the plants like Tulsi, Lotus, Peepal etc are considered holy and sacred.

- ❖ About 2.1 million species have been identified till date, while many more species are believed

to exist.

- ❖ According to UNEP estimate, approximately 9.0 – 52 million of species exist on Earth

- ❖ India's position is 10th in the world & 4th in Asia in terms of Plant diversity.

## **HOT- SPOTS OF BIODIVERSITY**

- ❖ A biodiversity hotspot is a biogeographic region with a significant reservoir of biodiversity that

is threatened with destruction.

- ❖ An area is designated as a hot spot when it contains at least 0.5% of plant species as endemic.

- ❖ There are 25 such hot spots of biodiversity on a global level, out of which two are present in India.

- ❖ These are: Indo- Burma (earlier The Eastern Himalayas) ,The western Ghats & Sri Lanka..

- ❖ These hot spots covering less than 2% of the world's land area are found to have about 50% of

the terrestrial biodiversity.

### **Criteria for determining hot-spots**

- ❖ No. of Endemic Species i.e. the species which are found no where else.

- ❖ Degree of threat, which is measured in terms of Habitat loss.

### **E.g. Indo- Burma (Eastern Himalayas) Hotspot**

- ❖ The hotspot includes all of Cambodia, Vietnam & Laos, and nearly the entire areas of Thailand, Myanmar & Bhutan as well as part of Nepal, far eastern India and extreme southern China.

❖ In addition, it covers several offshore Islands including Mainan Islands in the south China Sea

and Andaman & Nicobar Islands in Indian Ocean.

❖ Indo-Burma is one of the most threatened biodiversity hotspots, due to the rate of resource exploitation and habitat loss.

### **E.g. Western Ghats and Sri Lanka**

❖ Western Ghats and Sri Lanka, also known as the “Sahyadri Hills” encompasses the montane forests in the southwestern parts of India and on the neighboring Islands of Sri Lanka.

❖ The entire extent of hotspot was originally about 1,82,500 square kms, but due to tremendous

population pressure, now only 12,445 square Km or 6.8% is in pristine condition.

❖ The important populations include Asian elephant, Indian tigers and the endangered lion tailed

macaque