

Module I

Ecology and Biodiversity

1.4 Definition

Importance of biodiversity

Consequence of biodiversity loss

Classification of biodiversity

Important values of biodiversity



BIO DIVERSITY

1.4 Definition

Bio means 'life' and diversity means 'variety'. It is defined as, "the variety and variability of all living organisms and the eco system in which they occur"

IMPORTANCE OF BIODIVERSITY

1. Bio diversity is very important for human life.
2. Human beings depend on plants, animals, medicines, industrial products
3. It protects the fresh air, clean H₂O and productive loss
4. It is important for forestry, fisheries and agriculture
5. Loss of biodiversity reduces the economic status

CONCSIQUENCE OF BIODIVERSITY LOSS

Biodiversity loss is caused by five primary drivers: habitat loss, invasive species, overexploitation (extreme hunting and fishing pressure), pollution, climate change associated with global warming.

Many Medicinal plant species become extinct due to the collection of drugs for the pharmaceutical company

Tropical forest may destroy due to agriculture, mining and logging.

CLASSIFICATION OF BIODIVERSITY

It is classified into three types

- 1) Genetic diversity
- 2) Species diversity
- 3) Eco system diversity

(1) **Genetic Diversity**

Def: It is defined as, the variation of genetic characteristics within the species.

Genes are the basic units of hereditary information transmitted from one generation to other. They are responsible for both the similarities and the difference between organisms. **“Genetic diversity is the variation of genes within species”**.

(Ex) All rice varieties belong to ‘Oryzasativa’ family. But there are thousands of rice varieties which are differ from each other in their size, shape, colour, nutrient content.

(2) **Species diversity**

It is defined as, the difference between the species level is known as species diversity. Species is a group of plants, animals, fungi and microbes. Species diversity is the number of different species of living things available in an area.

(3) **Ecosystem diversity**

The diversity at the ecological (or) habitat level is known as ecosystem diversity. The ecosystem also shows variations with respect to physical parameters like moisture, temperature, altitude, precipitation etc.

(Ex) River ecosystem.

River ecosystem consists of fish, aquatic insects, mussale and variety of plants.

IMPORTANT VALUES OF BIODIVERSITY

Bio diversity is need for healthy environment. It is must for the stability and proper functioning of the biosphere.

Biodiversity values are classified into 6 types.

- 1) Consumptive use value
- 2) Productive use value
- 3) Ethical value
- 4) Aesthetic value
- 5) Social value
- 6) Option value

I. Consumptive use value

1. It is a direct use value
2. The Biodiversity products are directly consumed.
3. Food: about 80-90% of our food purpose is satisfied by tropical (forest) wild plants.
4. Drugs: 70% of modern medicines are derived from plant and plant extracts. 3000 plant species are used in Unani, Ayurveda & siddha.

According to research about 85% of global community use plants for primary health care.

(Ex) Lifesaving drugs like quinine (Malaria), reserpine (hypertension) penicillin (antibiotic) morphine (pain killer) are derived from plant origin.

II. Productive use value

- (i) Biodiversity products are obtained from plants and animals, which are marketed and sold.
- (ii) (Ex) Animal products like silk, wool, musk, tusk, leather and food is obtained from animals and are sold in foreign countries.

- (iii) Plant products like wood, cotton, fruits, vegetables and ivory, pearls are obtained from animals.
- (iv) On importing edible oils help to improve our economic status.

III. Social Value

- i) It refers to the bio resources which are used to the society.
- ii) These values are related with social life, religion and spiritual activities of the people.
- iii) (ex) Tulsi, lotus, Neem plants are considered as Holy plants.
Cow, snake, peacock is considered as Holy animals.

IV. Ethical value (or) Existence value

- i) It refers to all life must be preserved.
- ii) It means that a species may (or) may not be used but its existence in nature gives us pleasure.
- iii) Ethical value is related with religious and cultural basis.
- iv) (Ex) Vembu, Tulsi, Vengai trees are worshipped by Tamilians.
We are not get directly from, Kangaroo, Zebra, but we feel happiness that these should exist in nature.

V. Aesthetic Value

- i) Most important aesthetic value of biodiversity is eco-tourism
- ii) The beautiful nature of plants and animals insist us to protect biodiversity.
- iii) (Ex) the beautiful sites, pleasant music of birds, colours of butterfly, flowers, peacock are important for their aesthetic value.

VI. Optional Value

- i) It refers that 'any species may be proved to be a valuable species after some day'
- ii) (Ex) the growing biotechnology field is searching a species which is used to cure cancer and AIDS diseases.