

Biodiversity and its significance

BIODIVERSITY

- ✓ Biodiversity is the abbreviated word for “biological diversity” (bio-life or living organisms, diversity-variety). Thus biodiversity is the total variety of life on our planet, the total number of races, varieties and species. The sum of total of various types of microbes, plants and animals (producers, consumers and decomposers) in a system.

Biomes can be considered life zones, environment with similar climatic, topographic and soil conditions and roughly comparable biological communities (Eg. Grassland, forest). The biomes shelter an astounding variety of living organisms (from driest desert to dripping rain forest, from highest mountain to deepest ocean trenches, life occurs in a marvelous spectrum of size, shape, colour and inter relationship). The variety of living organisms, the biodiversity, makes the world beautiful.

There are 1.4 million species known presently. But based on new discoveries, by research expeditions, mainly in tropics, taxonomists estimate there are between 3-50 million different species may be alive today. Insects make up more than one half of all known species and may comprise more than 90% of all species on earth.

- ✓ The concept of biodiversity may be analyzed in 3 different levels. They are

- 1 ecosystem diversity

- 2 species diversity

- 3 genetic diversity

Ecosystem or ecological diversity means the richness and complexity of a biological community, including tropic levels, ecological processes (which capture energy), food webs and material recycling.

Species diversity describes the number of kinds of organisms within individual communities or ecosystems.

Genetic diversity is a measure of the variety of versions of same gene within individual species.

Biodiversity Hotspots:

Most of the world's biodiversity are near the equator especially tropical rain forest and coral reefs. Of all the world's species, only 10-15% live in North America and Europe.

The Malaysian Peninsula, for instance, has at least 8000 species of flowering plants, while Britain, with an area twice as large, has only 1400 species. South America has 200 000 species of plants.

Areas isolated by water, desert or mountain can also have high conc. of unique species and biodiversity. New Zealand, South Africa and California are all mid-latitude area isolated by barriers that prevent mixing up of biological communities from other region and produce rich, unusual collection of species.

✓ **Significance of Biodiversity:**

Biosphere is a life supporting system to the human race. Each species in the biosphere has its own significance.

It is the combination of different organisms that enables the biosphere to sustain human race.

Biodiversity is vital for a healthy biosphere.

Biodiversity is must for the stability and proper functioning of the biosphere.

Besides these biodiversity is so important due to having consumptive use values, productive use values, social values, ethical values and aesthetic values.

Benefits of biodiversity:

We benefit from other organism in many ways. Even insignificant organisms can play irreplaceable roles in ecological systems or the source of genes or drugs that someday become indispensable.

Food: Many wild plant species could make important contributions to human food suppliers either as they are or as a source of material to improve domestic crops. About 80,000 edible plants could be used by human.

Drugs and medicine: Living organisms provides many useful drugs and medicines. The United Nations Development Programme derived from developing world plants, animals and microbes to be more than \$30 billion per year.

Eg. For natural medicinal products

Penicillin – fungus is the source – Antibiotic

Quinine – chincona bark - Malaria treatment

Morphine – poppy bark – Analgesic

Twenty years before, once the drugs were not introduced, childhood leukemia was fatal. Now the remission rate for childhood leukemia is 99%.

Ecological benefits:

Human life is inextricably linked to ecological services provided by other organisms. Soil formation, waste disposal, air and water purification, solar energy absorption, nutrient cycling and food production all depend on biodiversity. In many environments, high diversity may help biological communities to withstand environmental stress better and to recover more quickly than those with fewer species.

Source : <http://nprcet.org/e%20content/eee/EVS.pdf>