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Biodiversity – Importance, Threats and Conservation: A Review

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Abstract -

“Biological Diversity” means the variability among living organism from all sources including terrestrial and the aquatic ecosystems and the ecological complexes, this includes diversity within species, between species and of ecosystem. Bio-diversity as described in definition includes all forms of biological entities inhabiting the Earth-including prokaryotes and eukaryotes – wild plants and animals, micro-organisms domesticated animals and cultivated plants and even genetic material like seeds and germplasm. Indian society has realized the importance of its biodiversity. Agriculture, livestock, forestry, fisheries these ecosystems are rich in biodiversity. So far attention has been aid for the conservation of biodiversity through National Parks, sanctuaries, biosphere reserves and other protected areas. Threats to biodiversity came from many sources, most human but some natural. This review highlights importance, threats and conservation of Biodiversity for future sustainable development.

Key words – Biodiversity, Importance, Threats, Ecosystem, Conservation.

Introduction-

Biodiversity is the result of the evolutionary plasticity of living organisms, and increased geometrically, proliferating by trial and error, controlled by natural selection, filling almost every one of the habitable ecological niches created in a like wise evolving world environment.

Biodiversity comprises every form of life from the tiniest microbes to the mightiest beasts and the gigantic trees. The biodiversity exists at three different levels. These are :

- i) Species diversity, embraces the variety of living organisms on earth,
- ii) Genetic diversity, which is concerned with the variation in genes within a particular species
- iii) Ecosystem diversity, which is related to the variety of habitats.

Methodology-

Various reference books, Online Articles, Research paper were reviewed.

Importance of Biodiversity –

India occupies a unique position among global biodiversity as a megabiodiversity nation. A large number of species are native to India. About 5000 species of flowering plants belonging to 141 genera and 47 families had birth in India. We are equally rich in insect, amphibian, reptiles, bird and mammalian species of great economic potential. India ranks first amongst the 12 regions of diversity of crop plants and seventh in the contribution of agricultural species. India is rich in marine biodiversity among the coastline of 7500 km and supporting the most productive ecosystems such as mangroves, coral reefs, estuaries, lagoons and backwaters. Near about 45 species of mangrove plants among 342 species of coral reefs that belongs to 76 genera have been reported and about 50% of the global reef building corals are found in our India. Indian biodiversity is a Rich source of several life-saving drugs and chemicals. About 90% of all Indian medicines are obtained from plants. The flora and fauna including bacteria, algae, fungi, gymnosperms, flowering plants, protozoa, corals, sponges, anemones are being picked by companies, institutions for natural products to develop drugs.

Three main approaches have been used to determine the value of biological resources:

- 1) **Consumptive-use valuation** : Involve assessing the value of resources, such as firewood, fodder, and game meat, that are consumed directly, without passing through a market.
- 2) **Productive-use valuation** : Involves assessing the values of products that are commercially harvested and marketed, such as timber, fish, game meat, ivory and medicinal plants.
- 3) **Non-consumptive use valuation** : Involves assessing direct values of ecosystem function's, such as watershed protection, photosynthesis, climate regulation, soil production, along with the intangible values of keeping options open for the future and the pleasure of knowing that certain species exist.

Threats to Biodiversity-

The root causes of biodiversity loss are found in basic economic, demographic and political trends and these could be explained under two things : first, most organisms are highly adapted to their habitat; if the habitat is changed dramatically, most or all of the plants, animals and micro-organisms that once occupied it will depart and die out. Second, human demand for commodities such as hardwood, wildlife, fibre, agriculture products etc., for that he is changing the habitats by cutting them down. Ploughing them up, overgrazing them, building on them, damming them, spilling oil into them, changing their climates, exposing them to increased ultraviolet radiation, and so on. That the extinction rate is rapidly increasing can be seen simply from statistics on the destruction of tropical forests, the locus of at least half of the planet's biodiversity. Human beings have the capacity to alter the parts of the habitats with the invention of powerful machinery, large scale burning of fossil fuel combined with large scale production, use and abuse of chemicals. Human beings have greatly increased capacity to alter the rate and extent of habitat change. Number of species of animals and plants have no longer been able to cope with these changes and have become extinct. It has been estimated that 140 plants and animal species are lost every day in the world. The roots of biodiversity destruction does not lie so much in population increase, but in the relations between the communities within each nation, and between the nations themselves. This is responsible for cornering the huge biological resources for the advantages of a small minority within the poor nations, and for the wasteful consumption patterns of the North. Eighteen million hectares of the Amazonian forest has been cleared in Brazil to meet the greed of the European and American coffee demand. Germany causes the degradation for 200,000 hectares of rain forest a year for timber wood. Adverse terms of trade, protectionist policies of North, dumping of environmentally destructive technologies and materials in the South, and a host of other factors continue to cause severe widespread biodiversity destruction.

Conservation of Biodiversity -

conservation efforts towards plants and animals species have not been given adequate attention particularly of those which are of potential economic and scientific value. Global threat to biological diversity have been very recently recognized amongst scientists and environmentalist groups. Presently, biological diversity includes all life forms on the earth and is a life support system, which is essential for the normal functioning of ecosystems and the biosphere as a whole. It has a great significance for its ecological, social, economical, cultural and ethical values, that is why its conservation is being highlighted. Earlier, only small fractions of endangered species, especially mammals and birds were the subject of conservation, but now, in addition to various flora and fauna, varieties of species, are protected with the specific aim of promoting the conservation of biological diversity, because the survival of species are dependent on the existence of the biological diversity. In fact, for the first time, the Declaration at the Stockholm conference, in 1972 highlighted the universal basic legal principles relating to the conservation of biological diversity and subsequently the UN general assembly adopted and solemnly proclaimed the world charter for Nature for conservation of genetic variability of the earth and all life forms and their habitats on the earth. Furthermore, at the national level the India has adopted species protection laws as well as habitat protection or area designation laws for the conservation of biological diversity. Thus, the Forest Act of 1927, the wildlife (protection) Act of 1972, the forest (conservation) Act of 1980 and several other laws have been adapted by the state governments. These legislation's are passed with a view to preventing such deforestation and biological imbalance in eastern and western Ghat, silent valley, mangrove forests at the estuaries and seashores of India, and the temperate forests at the Himalayas range etc. which are the actual abode of biological diversity, quite rich in genetic diversity having global significance. In addition, the Environmental (Protection) Act of 1986, the Water (Prevention and Control of Pollution) Act of 1974, the Air (Prevention and Control of Pollution) Act of 1981 were adopted with a view to environmental protection.

Additionally, the successful conservation depends on public involvement. Indeed, initiatives that do not involve local communities generally are doomed to fail. Indigenous people in many parts of the world are especially reliant on natural resources for their cultural continuity and economic well-being. Their role in conservation should be given particular attention, and they should be given opportunities to participate as major players in the design of conservation programmes affecting their resources. Local people should be closely associated with the authorities

responsible for both the management of biological resources and the establishment and management of protected areas.

Developmental agencies should support national efforts to establish local, sectorial, and national information management systems by demonstrating methodologies, providing training opportunities for taxonomists and biologists, and subsidizing, zing the publication of status reports. Universities, research institutions, and non governmental organizations need to be strengthened so that they can help governments assess their biological resources. Closer working relationships should be established between museums and other taxonomic oriented institutions and those concerned with conservation of biological diversity. The other important aspect to incorporate is rehabilitative strategy for rare, threatened and endangered plant and animal species. There is further need to develop facilities for long and short term conservation through :

1. Establishment of genetic enhancement centres for producing good quality of seeds.
2. Seed-gene banks.
3. Tissue culture gene banks.
4. Cryo-preservation.
5. Pollen storage.
6. Captive breeding.

Conclusion-

Biodiversity provides many important services to humanity and is also often considered to be valuable for its own sake. History shows that, there have been species extinctions , both because of human activities and other reasons. However, human activities are also active in protecting biodiversity, such as in projects to protect tracts of land for wildlife. But the overall threat to biodiversity loss is so great that conservationists face conservation triage, in which they must decide which species to protect. If biodiversity destruction is continue, ecosystems could be collapse, and there is extinction of one more species that is humans.

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