

## Biodiversity conservation : The need of the hour

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### Introduction

"When animals come to us asking for our help, will we know what they are saying? When the plant speaks to us in their delicate language, will we be able to answer them? When the planet herself sings to us in our dreams, will we be able to wake ourselves, and act?" - Gary Lawless

According to U.S. office of technology Assessment (1987) Biological diversity is defined as The variety and variability among the living organisms and the ecological complexes in which they occur "It is believed that about 100 million species exists on earth but out of these only 1.7 million species of plant, animals and microorganisms have been discovered so far. The developing countries of the world have more biological diversity in comparison to the developed ones, the reason being the industrialization, Which results in the destruction of natural habitats. It is also believed that tropics are rich in biodiversity in comparison to temperate areas, the question evolves why is it so? The answer is that tropical areas receive more solar energy in comparison to temperate ones and have much stable climate, which makes conditions favourable for biodiversity richness.

We all know that about 70% of earth surface is covered with water, which consists of millions of life forms. Aquatic biodiversity encompasses fresh water ecosystems, including lakes, ponds and reservoirs rivers and streams, ground water and wetlands. It also

consists of marine ecosystem, including oceans, estuaries, salt marshes coral reefs, sea grass beds and mangrove forests. It is estimated that the deep sea floor consists of about ten million species, most of which are yet to be discovered in the freshwater lakes of South America an estimated 40 percent of all freshwater fishes have not yet been classified (Europess encyclopedia, 1999).

### Why is biodiversity important?

Biodiversity has enormous economic and aesthetic value and is largely responsible for maintaining and supporting overall environmental health. Human beings have long depended on resources for food, medicines and materials as well as for recreational and commercial purposes such as tourism and fishing.

Our mother planet earth consists about 3,00,000 green plants, 8,00,000 insects, 23,000 fishes, 9000 birds, 6,500 reptiles, 4100 mammals and few thousand microbes. India, one of the 12 mega biodiversity countries, contains approximately 850 bacteria, 23,000 fungi, 25,000 algae 1600 lichens 2664 bryophytes, 1022 pteridophytes, 64 gymnosperms, 15,000 angiosperms, 53,430 insects, 5050 molluscs, 2,546 Pisces, 204 amphibians, 1,228 Aves and 372 identified mammalian species (Pandey *et al.*, 1996).

"Flowers are mother nature's gift to us. Imagine a world without flowers! How dull and boring it would be. The spring season is a

spectacular sight when flowers like Roses, lilies, Gulmohars, Chrysanthemums are in full bloom! The sheer joy of seeing flowers of different sizes, shapes and colours is something to be experienced. Besides pollination, flowers facilitate a cleaner and more healthy environment for all of us to live in".

### **Threats to biodiversity**

With the elevation in living standards of human beings, nature is being badly affected. Species extinction is one of the fastest growing problems related to our environment along with Global warming, acid rain etc. The stark difference between species extinction and other ecological problems is that species extinction is irreversible i.e. once the particular species is extinct it is forever.

Human activities are causing species to disappear at an alarming rate. It has been estimated that between 1975 and 2015, species extinction will occur at a rate of 1 to 11 percent per decade. Aquatic species are at a higher risk of extinction than mammals and birds. Losses of this magnitude has an impact on entire ecosystem, depriving valuable resources used to provide food, medicines and industrial materials to human beings.

What are the reasons behind the extinction of a particular species? The reason ranges from overpopulation to deforestation. Our activities are threatening the existence of other species on this very little planet!

On one hand, 10% of the wildlife Sanctuaries and National parks are in various position of denotification and on the other, is an era of liberalization, different states vying with each other to attract investment. India's ongoing economic liberalization programme may have won its many friends abroad, but it has turned out to be the worst enemy of its wildlife habitats, say international environmentalists.

Across the country, essential forest habitat is being lost to mines, water logging, hydro and irrigation

schemes, power plants, tea plantations etc. whereas aquatic bodies are becoming more and more polluted under human pressure.

"Walk through the forest and you would hardly find a mature tree, same goes with aquatic life. Very rare or no river have mature fishes. Each and every species is on decline, every thing is degenerating under human pressure".

Quoting an official note by former Prime minister, Smt. Indira Gandhi which reads" I have come to learn that some parts of our forests have been taken over by industries and I hope you will put an end to it".

Species are not uniformly distributed over Earth's surface; diversity varies greatly from, place to place. Factors including overexploitation of species, the introduction of exotic species, pollution from urban, industrial and agricultural area, as well as habitat loss and alteration through damming and water diversion all contribute to the declining levels of biodiversity as a result, valuable natural resources are becoming increasingly susceptible to both natural and artificial environmental changes.

Main reasons for losing our biodiversity includes overpopulation and industrialization. These so called developmental activities results in deforestation, building of roads, urbanization, environmental pollution etc. due to which a particular species loses its habitat and ultimately our country is deprived of one precious species. It is estimated that about 27,000 species are being driven towards extinction each year, which means that about 75 species are being lost every day from our planet earth.

We are losing our biological diversity, especially because cities and industries are located at sites good for excursion, such as along rivers or near oceans, where biological diversity is often high.

Thus, conservation strategies to protect and conserve aquatic life are necessary to maintain the balance of nature and support the availability of resources for future generations.

**Some major factors that increase or decrease biological diversity**

**(A) Factors that tend to increase biodiversity**

- (i) A physically diverse habitat.
- (ii) Moderate amount of disturbance {such as fire or storm in a forest or a sudden flow of water (from a storm) in to a pond}
- (iii) A small variation in environmental conditions (Temperature, precipitation, nutrient supply etc.)
- (iv) High diversity at one trophic level, increasing the diversity at another trophic level (many kinds of trees provide habitats for many kinds of birds and insects).
- (v) An environment highly modified by life (for e.g. A rich organic soil).
- (vi) Middle stages of succession.
- (vii) Evolution.

**(B) Factors that tends to decrease diversity**

- (i) Environmental stress.
- (ii) Extreme environments (conditions near to the limit of what living things can withstand).
- (iii) A severe limitation in the supply of an essential resource.
- (iv) Extreme amounts of disturbance.
- (v) Recent introduction of exotic species (species from other areas).
- (vi) Geographic isolation (being on a real or ecological island).

**Source :** Environmental Science (Earth as a living planet) 2000

The term rare, endangered, vulnerable, threatened etc. can be used for knowing the status of species. These terms are not sharply defined and there is a considerable degree of overlap between these categories. Following are some terms with their definitions used to indicate the status of a particular

species.

- (1) **Endangered** Species in danger of extinction
- (2) **Vulnerable** Species believed likely to move in to the endangered category in the near future if the causal factors continue operating.
- (3) **Rare** Species with small world population that are not at present endangered or vulnerable, but are at risk.
- (4) **Out of danger** Formerly included in one of the above categories, but which are now considered relatively secure because effective conservation measures have been taken or the previous threat to their survival have been removed.
- (5) **Indeterminate** Suspected of belonging to one of the first three categories, but for which insufficient information is currently available.

**Why is it necessary to preserve biological diversity?**

Now a day's people are aware about preserving biological diversity and efforts are being done for the same. But when this conflict of balancing economic development with conservation of biodiversity arises the question evolves what type of biodiversity should we save and how should we save it? The answer can be found by evaluating the value of diversity, which we are going to preserve. The evaluation can be done on the basis of its economics, religious, aesthetic, medicinal values etc.

**Reasons for preserving biodiversity**

- (1) All living things are interrelated with each other through food chains, which depends upon uninterrupted functioning of natural systems, any type of interferences in these food chains may results in

unbalancing of supply of energy and nutrients.

(2) All species in this planet have an inherent right to exist.

(3) For economic and social development of our country sustainable use of biodiversity is must.

(4) It is our duty to preserve biodiversity for our future generations, so that they may also take benefit of it.

(5) We should treat all species equal and show humanity towards them.

#### **How should we preserve biodiversity?**

(1) Public awareness is must to preserve biodiversity.

(2) We must discourage the purchase of products that contribute to the loss of biological diversity.

(3) We should educate children, regarding the importance of biodiversity and its preservation.

(4) Population control may also help us to preserve biodiversity.

(5) Sustainable use of biodiversity may also result in its preservation up to some extent.

(6) Afforestation programs can also help saving our biodiversity.

(7) Reduction in environmental pollution may also be beneficial in preserving our biodiversity.

Preserving the biodiversity is not a single-handed approach, therefore to protect and to preserve biodiversity we all should join hands and make combined efforts to achieve this goal.

**"Diversity is one of the most impressive features of animal kingdom and even with in a single species, huge variations can be encountered. Animals maintain the delicate ecological balance. It is our duty to protect wildlife as there are several species of animals facing extinction, thanks to man's encroachment of the forests".**

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