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Necessity of Ecological Balance for Widespread Biodiversity

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Abstract

The ecological balance is a stable state between all plants and animals in an ecosystem and destabilization of this stable state is ecological imbalance that in turn exerts serious threats to widespread nature of biodiversity. The ecological balance is sustained by the cyclic flow of materials from abiotic environment to the biosphere and then back to the abiotic environment and upholding the equilibrium of interaction inside food webs. Both these processes must be maintained in the ecosystem and any interference with these cycles disrupts and affects the ecological balance. The ecological balance is currently a necessity to maintain the rich and varied diversity of animals, plants and microbial life, which is essential for mutual survival and existence of all living beings including human.

Keywords: Ecological Balance; Flora; Fauna; Biological Diversity; Ecosystem; Eco-Friendly; Survival.

Introduction

Ecological balance is 'a state of dynamic equilibrium within a community of organisms' and the environment is everything that is around us. Indeed, environment is 'nature' that consists of matter and energy. The interaction of matter and energy forms a system of abiotic (non-living) and biotic (living) components. The biotic components include plants (flora), animals (fauna) and microbes.

The system of abiotic and biotic components together constitutes an ecosystem. In order to maintain this system, an ecosystem needs three kinds of diversity *namely* biological, genetic and functional. Biological diversity refers to the richness of species in a particular area; genetic diversity refers a way for a particular species to adapt itself to changing environments while functional diversity equates to the biophysical processes that happen within the area.

Biodiversity or biological diversity refers to the variety of life on Earth comprising millions of plants, animals, microorganisms and the genes they contain. It simply means the existence of a wide variety of plant and animal species in their natural environments.

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The Convention on Biological Diversity (Glowka *et al*, 1994) defines biodiversity as the variability among living organisms from all sources including, among other things, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.

The biodiversity has already been detailed and described at several angles from time to time by a number of scientists such as Kaushik *et al*, (2008), Odum (1971), Wilson (1988), Nair (1992), Subba Rao (2001), Verma *et al*, (2015, 2016a, 2016b, 2017a, 2017b and 2017c), Prakash *et al*, (2015, 2016a, 2016b and 2017), Verma (2016a, 2016b, 2016c, 2016d. 2017a, 2017b, 2017c and 2017d) etc. but there is a gap in describing the biodiversity with ecological balance. In present discussion, author is trying to fill this gap by discussing the necessity of ecological balance for widespread biodiversity.

Basic Types of Biodiversity

The biodiversity is usually described at three levels *namely* genetic, species and ecosystem and all these three work together to create the unique path for life on the Earth. The genetic diversity is the diversity of the basic units of hereditary information (genes) within a species, which are passed from one generation to next. The genetic diversity results in variations hence the basic source of biodiversity and the amount of genetic variation is therefore the basis of speciation.

The species diversity refers to the variety of species within a region. It is the variability found within the population of a species or between different species of a community. The species is the real basic unit used to classify the organisms and its diversity is the most commonly used level for describing the biodiversity.

The ecosystem diversity is the diversity of habitats, which include the different life forms within. Diversity at the level of community and ecosystem exists along 3 levels. First is alpha diversity (within community diversity), second is beta diversity (between communities diversity) and the third is gamma diversity (diversity of the habitats over the total landscape or geographical area).

Richard (2015) told that genetic diversity plays an important role in the survival and adaptability of a species. Thus, different levels of biodiversity: ecosystem, species and genetic, all have huge potential and a decline in biodiversity will lead to serious economic, ecological and socio-cultural losses. If we want our human race to survive then we must protect all biodiversity because biodiversity has existence value.

Importance of Biodiversity

The living organisms on earth are of great diversity, having diverse qualities and are vital to human existence providing food, shelter, cloths, medicines etc. The importance of widespread biodiversity include productive value, consumptive value, social value, aesthetic value, legal value, ethical value, economic value, ecosystem service value and so on.

Moreover, biodiversity has scientific and evolutionary value also, in which each species provides some clues to scientists as to how life evolved and will continue to evolve on earth. The biodiversity helps scientists to understand how life functions and the role of each species in sustaining ecosystems. The ethical value of biodiversity is based on the concept of '*Live and Let Live'*.

Benefits of Ecological Balance

Ecological balance is 'a state of dynamic equilibrium within a community of organisms in which genetic, species and ecosystem diversity remains relatively stable'. When a natural or human-caused disturbance disrupts the natural balance of an ecosystem then ecological imbalance is caused**.** In fact, the ecological balance actualizes the survival of all organisms.

The ecological balance maintains the entire biota which in turn establishes the healthy environment on the earth necessary for survival. On the other hand, the ecological imbalance causes an irreparable loss and deterioration of natural habitats, unprecedented climatic change, global warming, pollution etc. that in turn deplete the biodiversity. The greenhouse effect, depletion of ozone layer and acid rain are the major effects caused due to disturbance in ecological balance.

Conclusion

Today, the world has assumed the form of a 'global village' due to the metaphoric shrinkage of the geo-political boundaries of nation-states through the use of Information and Communications Technology. But increased and indiscriminate exploitation of natural resources by human beings in an irresponsible manner is creating an imbalance in the nature from ecological point of view.

Human being plays a key role to maintain ecological balance because they have the highest thinking capacity as compared to other living organisms. Humans should understand that sufficient food availability to all living organisms and their stability reflects the existence of ecological balance. Since, this balance is vital as it ensures survival, existence and stability of the environment hence it should be maintained at any cost.

Since human beings are deriving all the benefits from ecological balance and biodiversity and their anthropogenic activities are largely responsible for ecological imbalance and loss of biodiversity hence they should take proper care for the maintenance of ecological balance and preservation of biodiversity in all its forms. The eco-friendly and sustainable positive efforts will definitely provide good health, inclusive and sustainable development as well as safety to the future generation. Harmonious relationships among organisms and environment will reflect healthy and desirable ecological balance.

The ecological balance does mean the proper management of the biosphere by human beings in such a way that it gives maximum benefits to the present generation and also develop its potential so as to meet the needs of the future generations. Humans must develop an eco-friendly approach in order to maintain the ecological balance in a state of dynamic equilibrium.

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