Xournals

Academic Journal of Forestry Sciences

ISSN UA | Volume 01 | Issue 01 | June-2018

Biodiversity of Forests: A necessity of the Life

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Available online at: www.xournals.com

Received 24th November 2017 | Revised 18th February 2018 | Accepted 23th March 2018

Abstract:

Forest biodiversity is defined as all life forms that are found in forested areas and ecological roles are played by them. The maintenance of biodiversity is very important for controlling the ecosystem and environment. In some term, this biodiversity provides market values to the society because biodiversity has a direct relation with the productivity as the biodiversity increase, there is also increase in the productivity. But now, the biodiversity is being lost because of large population. Large population has the large need such as land area for living, agriculture areas and industrial areas etc. due to which deforestation occur. And many species of plants and animals have been extinct from the earth. This paper shows the relation between forest and its biodiversity. It also explains the role of Government in maintaining the biodiversity of forest.

Keywords: *Biodiversity, Ecosystem, Market Values, Deforestation*

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Introduction

The diversity between and within the species is known as biodiversity which is related to the ecosystem services production. A wide variety of goods and services that are provided by the forest and agroforest ecosystems supported by the biodiversity. Other than these, the prevention of soil erosion, pest control, pollination, clean water, food, and climate change mitigation, control of disease vectors, and local ecosystem resilience and stability are also controlled by the biodiversity.

In general, forest biodiversity is defined as all forms of life that is found in the forests including plants, animals, fungi and microorganisms. The role of these life in the nature is also included in the forest biodiversity. Approximately 50% known vertebrates are contained by the tropical forests. This tropical forest region contains 60% plant species, and 90% world's total species. Tropical forests supports at least 2/3 of the world's biodiversity.

Need of Biological Diversity

Biodiversity is considered as the base of the ecosystem services by which the life support system of the human is established. In 2005, Ministry of External Affairs (MEA) divided the ecosystem services into four categories which are as follows:

1. Provisioning Services: In which food, fresh water, wood, medicines and fibers are covered.
2. Regulating Services: That deal with the disease control, climate regulation, water purification, and flood regulation and erosion control.
3. Cultural Services: Education recreation types matter are handled.
4. Supporting Services like Nutrient cycling, soil formation, primary productivity etc.

According to the use, biodiversity is classified into two ways: Market values and ecological values.

Market Values Biodiversity- It serves as an input for the economic activities like agriculture, construction and medicine.

Ecological Values Biodiversity- It is also called quality of life values that reflect the ways in which our lives makes richer simply by biodiversity.

According to survey, biodiversity does not support the economy and not provide any market value. The nation would be suffer from a great loss if the species and population become extinct **(Singh and Kushwaha, 2008).**

Effects of Biodiversity on Forest Ecosystem

The positive relation is seen between the diversity and productivity of forests. In 21 studies reviewed and resulted as 76% of 21 studies indicate that biodiversity has direct relationship with primary productivity. Increasing the biodiversity show the increment in the primary productivity. The soil fertility, partitioning of resources and nutrition retention are improved with the various mechanisms. In the ecosystems, not all species contribute. But significant functional roles are played by many species. The enhancement in the belowground plants and microbial biomass by the plant diversity. While the decomposer activity and diversity give the greater diversity of primary consumers. According to relation, there is low number of species relative to the system shows the low levels of productivity **(Thompson *et al*, 2011).**

Depletion of Biodiversity

Biodiversity depletion is a major problem that is seen all over the world. Many plant and animal species are extinct from the forest due to which the biodiversity is being lost. By the human intervention, the rate of extinction is increasing due to which habitat loss and climate change. In the world, there are many factors which are responsible for the forest degradation and also in the depletion of biodiversity. These factors are as: industrial revolution, human population and increasing the population of domestic animal due to which the demand of fuel wood, timber, fodder, and non-wood forest products are increasing day by day that results in the over-harvesting and degradation. Approximately, 10 million ha area is converted into the cultivation and a large area of forest is diverted for the development and infrastructures projects. From these factors, only biodiversity is not lost, they also fragments the forest due to which species loss, disruption of gene flow between the populations of species **(Singh and Kushwaha, 2008).**

Role of Government

In recent, the biodiversity of forest is decreasing because of the activity of human beings. So, all countries in the world should work together in reducing the forest less and participate in the protection of biodiversity. In 1992, United Nation Convention on Biological Diversity (CBD) was made in which national and international processes was established for maintaining the biodiversity. The importance of prediction and prevention is emphasized by CBD for eliminating the root causes of biodiversity

reduction. It also works for monitoring and assessment of biodiversity by the contracting parties.

To conserve the biological diversity, and promoting the sustainable use of their components is the main purpose of convention. It also encourage to share the benefits that are aroused from the utilization of genetic resources. Signatory nations of CBD in which India was the first signatories should undertake the record of their biological diversity for providing the basic information about its distribution and abundance.

Other than CBD, United Nations Environment Programme (UNEP) was advised for all countries by which the biodiversity monitoring system construction can be enhanced and able to establish the biodiversity evolution indices. It is also carried out the assessments on biodiversity **(Wu et al, 2013).**

Sustainable Forest Management (SFM)

It is a broad and evolving process that manage the ecosystem of the forests. The goal of SFM is to provide the balance between social, economic and environment and also includes the maintenance of biodiversity, productivity and resilience. In the forest ecosystem ecology, it has been noticed that forest management has an effect at landscape scales. There are many techniques such as reduced-impact logging, protecting advanced regeneration, and assisted regeneration are suitable for the forest resilience improvement, soil condition and regeneration, and timber harvesting. The guidelines for the restoration, management, and rehabilitation of degraded and secondary tropical forests and for the conservation and sustainable use of biodiversity in tropical timber production forests have given on the basis of knowledge and experience **(Thompson, 2011)**.

Review of Literature

Singh and Kushwaha (2008) stated that the conservation of biodiversity is an important factor for the forest and species rich country like India. It is essential to set up a coordinated programme to can monitor and manage the biodiversity in a systemic way and the concern from the side of people to participate in a large way. For improving the livelihood condition, education should be provided and capacity should be built by which people can aware form the economic benefits resulting from the conservation efforts.

Thompson et al (2011) stated in their paper that they highlighted many example of biodiversity effect in the forests as increase the biodiversity can increase the rate of pollination, rate of pest control, reduce the pest population, and also increase the productivity. It means if there is no degradation in the ecosystem, the flow of goods and services will improve and maintain. In the end of the paper, the economic valuation of forest ecosystem services and biodiversity help to clarify the balance between conflicting environmental, social and economic goals that develop and implement policies. It also improve the ecosystem management for the conservation of biodiversity.

Paquette and Messier (2011) analyze the effect of biodiversity on the production of tree in temperate, mixed and boreal forests of eastern Canada by the use of mechanisms like niche complementarity. They concluded in the end that complementarity may be less important in the temperate forests growing in stable and productive environment while the stressful environment of forests may be beneficial interaction between species.

Aerts and Honnay (2011) Biodiversity ecosystem functioning (BEF) that is a useful framework for the evaluation of forest restoration. With the different aspects of forest restoration, all BEF cannot attain the sufficient attention. For knowing about the functional traits of plants and their mutual interactions that affects ecosystem's functioning, mechanistic should be understood. There is urgent need to understand the role of genetic diversity in ecosystem functioning and the interaction between the below ground biodiversity and forests functioning.

Wu et al (2013) studied on the China's biodiversity and concluded that in the world several forest biodiversity index system has been proposed. But the problem is still remain with the forest biodiversity assessment. The availability of data in the forest biodiversity index system is limited because of the late establishment that create hurdles in the assessment of forest biodiversity. In the end of the paper, author gave suggestion to develop the long-term monitoring stations. There should construct the framework of forest biodiversity index system.

Alroy (2017) proposed that in the future, the destruction of habitat in the tropics will be the cause of mass extinction. In their paper, they analyzed the global extinction rates and quantifying effects on the local and regional scales and concluded that 11 groups of organisms has been extinct globally due to the disturbance of tropical forest habitats. Because of the disturbed data, about 41% of the tree and animal species were absent from the dataset.

Schulze *et al* (2014) proposed that forest management systems are profitable that contribute to the specific biodiversity. The management like 'cut and leave' consider as positive effects on the biodiversity but it is undesirable because of the less wood transfer to the

timber market. In clear cut management, erosion is not a major problem if harvested area have slash.

Conclusion

Biodiversity plays a vital role in the forest activity management. For the study this paper conclude that Biodiversity increase the rate of pollination, rate of pest control, reduce the pest population, and it also increase the productivity. In the management of forest biodiversity, increasing population and their demands is a major problem. Because of the demand, deforestation is increasing due to which biodiversity is being depleted in the form of extinction of many plants and animals species. For the management of the biodiversity, Government has been started many programs. Common committee 'United Nation Convention on Biological Diversity' of all countries also works on the biodiversity. In spite of many programs, the deforestation is not in control. So, there is a need of awareness among the people. People should be aware from the terrible future without the trees and animals.

"Save Forests, They will save you"

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