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Plant Biodiversity: Connecting Life

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Abstract— Presently there is been outstanding richness in plant biodiversity but the continual outgrowth of humans has led in unstable exploitation of globe's biodiversity, exaggerated by change in climate, ocean pollution and other anthropogenetic ecological impacts. Many species of plants are at the risk of extinction due to commercialization, habitat fragmentation and degradation. Hence there is necessity of efficient conservation for existing of human life and the management of ecosystem. Today although there are some conservation initiatives biodiversity remain declined. The diversity hotspots are the major source of endemic plant species having unique traits where successful conservation advances need to be strengthened and accordingly funded. This review outlines the importance of biodiversity modeling integration of conservation policy.

Keywords— Conservation; Diversity; Extinction; Species; Hotspots.

I. INTRODUCTION

The existence of life on earth is unique, while having this remarkable feature of life is its diversity. The inhabitants on earth includes approximately 9 million of floras and faunas, but human actions are dismantling ecosystem, deleting genes, species. Globe's biodiversity is hence deteriorating at unexpected rate, therefore the diversity hotspots must be spotted to handle biodiversity loss and initiate in conservation strategy. Tropical forests was considered 'hotspots'assessed by exclusion levels of plant endemism and severe habitat loss [1] thus expanding globally [2]. Presently, 35 biodiversity hotspot have been recognized, occurring in tropical forest. The hotspots have overall lost 86% of their natural habitat and defined to be drastically threatened by vanishing species elicited by climate change [3]. This alarming rate and contiguous conservation evaluation necessitates in safeguarding of species. [4]. Biodiversity in genes, species and ecosystem constitutes life on globe providing various essential materials to society viz., food, timber, medicines and fiber followed by other benefits in agriculture through pollination and pest control, carbon storage, human physical and mental healthcare, safeguards long-term benefits naturally by adapting to environment changes with socio-economic contributions [5,6,7].

However biodiversity continues to decline though worldwide conservation campaigns are increasing [8,9]. In this review we outline the importance of biodiversity, causes for the loss, conservation approaches and integration future challenges.

II. BIODIVERSITY AND LEVEL OF ORGANISATION

In short biodiversity is referred to life connecting all life forms. It is not easy to define as its complex with various integral functioning element evolving resilient ecosystems. The levels of biodiversity organization help us understand different aspects of biodiversity (Figure1.). The three attributes of biodiversity are composition, structure and function [10].

A. Genetic Diversity

Is all different genes contained in all living species, including individual plants, animals, fungi and microorganism. Genetic diversity can be assessed by employing biochemical and molecular markers in specific individuals[11]. The perspectives into the level and structure of genetic variation and evolutionary process associated with species can be understood thoroughly.

B. Species Diversity

Is all different species as well as the difference within and between different species. It is reported that the higher species richness is very well known in tropical forests [12]. In tropics species richness is constrained by several components viz., glacial events, ecological niche, forest productivity, severity of forest cover and species behaviour [13, 14].

C. Ecosystem Diversity

Is all the different habitats, biological communities and ecological processes, as well as variation within individual ecosystems. Many forest ecosystems exist in nature. Various hypotheses explains the role of species in ecosystem [15, 16, 17, 18, 19].

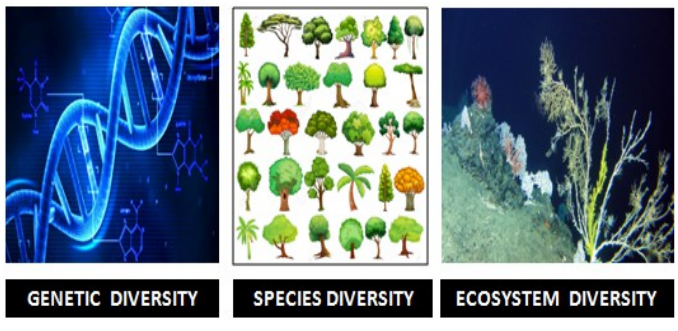

Figure 1. Levels of Biodiversity Organization

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III. IMPORTAMCE OF BIODIVERSITY

Plant is fundamental source of renewable energy. Human utilize products like food, medicines and raw materials, where as plant extracts are used in the manufacture of glue, soaps, cosmetics, dyes, lubricants and polishes. The plants also provide an important source of renewable energy.

A. Source of Food

The value of Plant biodiversity is serving food for humans and other organisms. At global level 250,000 species is estimated flowering plants, around 3000 are considered as food source and only 200 species of these have been domesticated. In the conventional agri-ecosystems new domesticated variety of plant and cultivars emerged from wild species. The results of the crosses have finally increased genetic diversity for crop improvement. The cultivated species would not have retained without altering of genes between wild species and cultivars [20].

B. Crop Genetic Resources

The genetically modified characters in the crops for high yield, good quality, and biotic / abiotic stress have good value for hybridization and breeding programmes. The north-east foot hills a large number of rice varieties are developed resistant to pests and disease.

C. *Medicinal Plants*

Many plants extracts are used from the medicinal crops, mainly found the in the hot-spots of the tropics and endemic. The local people would rely on such plant species for traditional medicines. Aconitum, Dioscorea and Ephedra species are some of the many endangered plants. The collection of medicinal plants from the remote and interior areas provides employment and fetches earnings.

D. Environment Assessment

Biodiversity contributes to human welfare and constancy of society by recycling chemical elements carbon, oxygen and nitrogen by behaving as buffer against variance in weather, climate etc. outside the control of humans. When habitat declines ecological process slows down. The biological diversity helps in viability for existent and risk aversion. Therefore the conservation acts for the environment protection is an important for the biodiversity to be maintained and protected, as this would enrich the diversity pattern. The consequence of strategic approaches provides a sensible, streamlined-healthy, efficient and coherent approach in attaining good environmental outcomes including conservation agreements, strategic assessments, bilateral agreements assessment planning and bioregional planning.

IV. BIODIVERSITY THREATS AND CONSERVATION

A. Causes For the Loss of Biodiversity

Due to human population the consumption is high as result of there is threat in biodiversity. As there is increase in population over and over gradually there is increase in consumption by humans creating the endanger of existing species and ecosystems: degradation and loss (industry agriculture, forestry, mining, aquaculture), fragmentation, over exploitation (hunting, fishing), spreading of invasive species, pollution and climate change (Figure 2).

Figure 2. – Biodiversity Threat and Loss

B. Conservation

Humans must involve in preserving biodiversity because it be benefited by biological resources and ecosystem services. Conservation strategies is been practiced over time successfully [20]. Recently conventional methods of conservation like establishment of national parks is evolving awareness in diverse benefits with ecological restoration being practiced [21]. There are various advancements in conserving the wild and extinct species it can be by in-situ or ex-situ depending on the methods being adapted and used in regular activities. In-situ conservation includes protected area lakes, biosphere reserve, wild life sanctuaries, where as Ex-situ conservations mainly the storage of seeds and pollen by cryopreservation in seed/pollen banks or it can also be the collection of species and conserving in the field gene banks (Figure.3).

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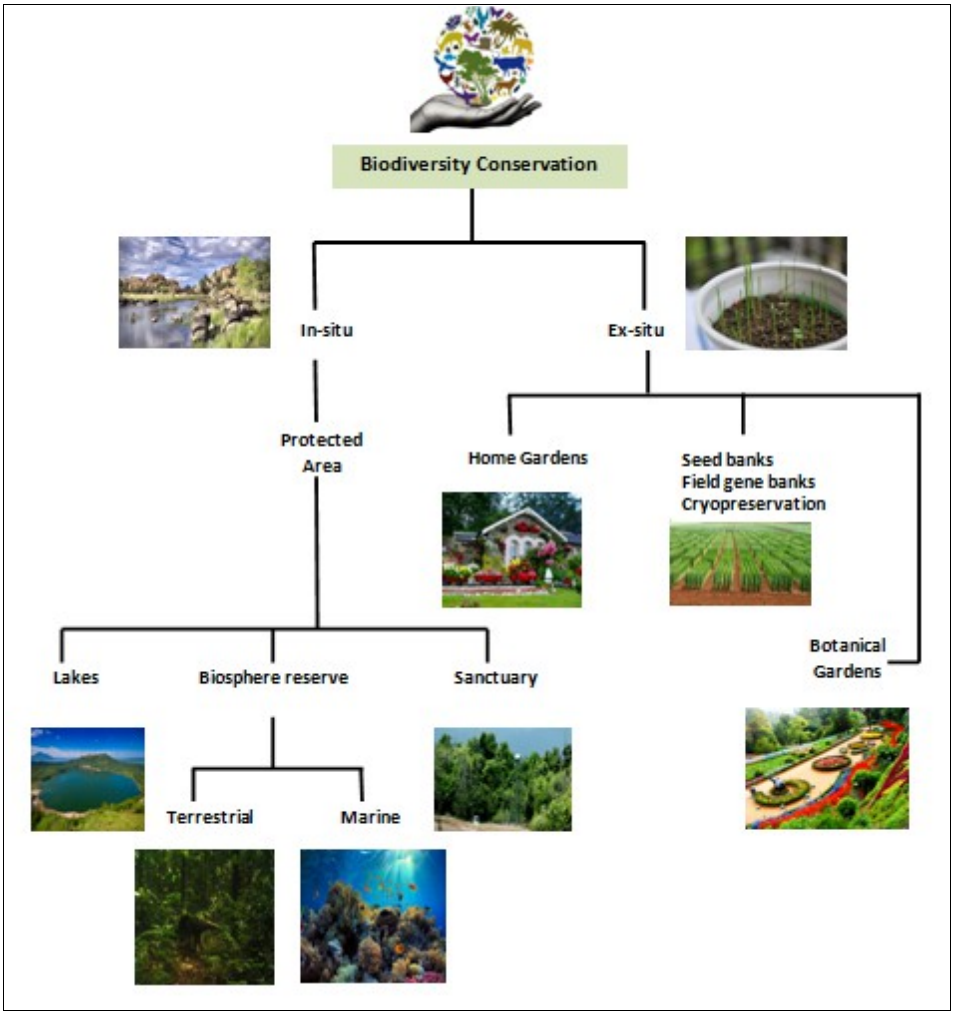

Figure 3. Biodiversity Conservation Strategies

V. CONCLUSION

The importance is given to biodiversity as there is sharp exposure of habitats and high essentiality of species found in the biogeographically region. This shows that there is threat in this region globally, hence biodiversity should be recognized and assessed, preventing the biodiversity threat. The actual spatial distribution of the species getting extinct needs to be explored well before it's too late and conserved.

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Conflict of interest

The authors declare that they have no conflicts of interest.

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