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"HOTSPOT", THE KEY TO PRESERVING BIOLOGICAL DIVERSITY

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Abstract

Biodiversity is the variety and variability among living organisms from all sources. A biodiversity hot spot is a biogeographic region that is unusually rich in species, most of which are endemic and are under a constant threat of being overexploited. The term 'biodiversity hotspot' was coined by Norman Myers in the late 1980s. The biological wealth of our planet has been declining rapidly due to human activities. The IUCN Red List documents the extinction of 784 species in the last 500 years. Ecologists warn that if the present trends continue, nearly half of all the species on earth might be wiped out within the next 100 years. Thus conservation strategies are a crucial step toward minimizing biodiversity loss. Based on the observation that some parts of the world have far more species than others, there is an area-based approach of a hotspot that is applied for maintaining a large proportion of biological diversity. These sites should support nearly 60% of the world's flora and faunal species, with a very high share of those species as endemics. According to these criteria, 34 hotspots have been identified all over the world. The hotspot concept works as it is foundational to the area-specific conservation strategy. Besides these, there is an optimal allocation of expenditures, well-defined conservation missions, and continuous taxonomic and threat assessment of flora and faunal resources make hotspot to play an important role in conservation prioritization.

Key Words: Hotspot, Endemic, Conservation, Diversity, Extinction.

INTRODUCTION

Biodiversity is the variability among living organisms from all sources including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part, this includes diversity within species, between species and of ecosystems. According to the millennium ecosystem assessment, the total number of species on earth ranges from 5-30 million, and only 1.7 to 2 million species have been formally identified. To ecologists and conservation biologists, biodiversity is a measurable parameter relevant to an understanding of community structure, environmental processes, and ecosystem functions (Mayer 2006). The use of the word 'hotspot' first appears in a seminal work by the noted conservation scientist and activist Norman Myers in an article entitled 'Threatened Biotas: Hotspots in Tropical Forests', published in *The Environmentalist* in 1988 (Myers 1988). A biodiversity hotspot is a biogeographic region that is unusually rich in species, most of which are endemic and are under a constant threat of being overexploited. Myers identified ten specific regions of tropical forests as hotspots that possessed exceptionally high levels of endemic plants and were threatened with significant habitat loss. The hotspot concept is itself a combination of three different and independent concepts: the concept of endemism dependent rarity, the concept of biological diversity, and the concept of vulnerability. However, hotspots represent conservation priorities in terrestrial ecosystems but remain largely unexplored in marine habitats (Worm et al., 2003) where the amount of data is still poor (Mittermeier et al., 2011). The objective of this study is to review the general concept of hotspots, its origin, and distribution and how it is being used as a tool for minimising biodiversity loss.

WHY THE CONCEPT ARISES?

The biological wealth of our planet has been declining rapidly due to habitat change and their over-exploitation, pollution, invasive species, and in particular climate change. The combined effect of these anthropogenic pressures may have already started a critical transition toward a tipping point (Barnosky et al., 2012).In particular, the climate is modifying rapidly forcing biodiversity to adapt either through the change of habitat and life cycles or the development of new physical traits (Berteaux et al., 2010).The IUCN documents the extinction of 784 species including 338 vertebrates, 359 invertebrates, and 87 plants in the last 500 years. Adding to this scenario of extinction, it is the fact that more than 15000 species worldwide are facing the threat of extinction. Ecologists warn that if the present trends continue, nearly half of all the species on earth might be wiped out within the next 100 years. Thus conservation strategies are a crucial step toward minimizing biodiversity loss. Based on the observation that some parts of the world have far more species than others, this area-based approach of the hotspot is applied to any geographical scale for maintaining a large proportion of the world's biological diversity. As reported by Myers (2003) at the end of his article, ''Edward O. Wilson, one of the leading authorities on conservation, described the hotspot approach as 'the most important contribution to conservation biology of the last century''.

METHOD OF DETERMINING HOTSPOT

Biodiversity hotspots are particular areas where extraordinary concentrations of biodiversity exist. Although hotspots have also been identified in different ways (Hoekstra et al., 2005), these areas are usually defined by one or more species-based