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An Overview Of Plant Diversity Of Kerala State

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Plant diversity reaches an astonishing level in tropical forests. At the same time, it is changing at an unprecedented rate as a complex response to several human-impacts. Documenting such impacts, which date back to antiquity and even to pre-history, on genetic diversity of forests is a difficult matter and little quantitative data exist. Primary forests of Asia, particularly those of the Western Ghats and the Eastern Ghats of peninsular India are disappearing at an alarming rate due to human-impacts.

Consequently, forests comprising inferior species replace them or the land use pattern gets changed. The disappearance of tropical forests comes at a time when our knowledge on their structure and dynamics is woefully inadequate. While understanding plant diversity of human-impacted forests is necessary for the assessment of potential impacts, amelioration of effects of disturbance, optimization of productivity and rehabilitation of ecosystem.

The 'mega-diversity' status of tropical forests is generated by species interaction such as competition, niche diversification and by high humidity and temperature. The trees in tropical forests have vital roles (both structural and functional) in maintaining the equilibrium of the ecosystem. Hence, tree diversity is fundamental to total forest biodiversity. In addition, the trees provide resources and habitat structure for almost all other forest species. So, plant diversity inventories of tropical forests mainly focus on trees as against non-trees, which are stated to contribute little to the total species diversity in tropical forests.

Nevertheless, non-trees such as Lianas also form an important structural and functional component of tropical forests. Also, some tropical forests might possess the most herb-rich plant communities on earth and ground herbs might prove to be a good indicator of forest succession status. To substantiate the latter statement, the available data is not sufficient. Hence, investigations involving the whole plot plant diversity in tropical forests are essential; but, such studies are fewer and the scales of such inventories also vary considerably.

Quantitative plant diversity inventories on different plant communities of Indian tropical forests are available from various forests of the Western Ghats and on the Coromandel Coast of India. While, the Indian Eastern Ghats is poorly studied for these aspects except those of the Shervarayan hills and of the Karajan hills.

Kerala State

Kerala is the southern-most state along the Western Coast of Peninsular India. It lies between 8°18' - 12°48' N and 74°52' - 77°22' E. The state has a total area of 38,863 km^2, which constitute 1.8% of the total geographical area of India. Situated in the south-west region of Indian Peninsula, the state is bounded on the north and north-east by Karnataka, east (Western Ghats) and south by Tamil Nadu, and west by the Arabian Sea. The state has about 590 km of coastal belt.

Based on physiographic, the state can be divided into three climatically distinct regions, viz. lowlands or coastal zone (below 20–300 m), midlands (300–600 m) and highlands (above 600 m). However, administratively, the state is divided into 14 districts, namely, Thiruvananthapuram, Alappuzha,Ernakulam,Idukki,Palakkad,Kollam, Pathanamthitta, Kottayam, Kozhikode,Thrissur, Malappuram, Wayanad, Kasaragodand Kannur.

The state forms part of the Western Ghats, one of the 34 globally recognized biodiversity hotspot regions. Western Ghats covers 72.08% (28,008 km^2) of the total geographical area of the state. Anaimudi, the tallest peak in southern India (2,695 m) is situated in the Anamalai high ranges of Western Ghats in Idukki district.

Kerala has a warm-humid tropical climate. The mean daily temperature ranges from 19.8° to 37°C. However, at higher altitudes the temperature often drops to 7°C during winter. A warm-humid climate with perennial water resource and nutrient rich soil has attributed to diverse vegetation with enormous species diversity in the state.

The average annual rainfall of the state ranges from 101.6 to 362 cm. The state receives maximum rainfall (around 65%) during south-west monsoon from June to August, and the rest from September to December during north-east monsoon. The atmospheric relative humidity varies from 70–90%. Kerala has many lakes and rivers. There are 44 main rivers that originate from the Western Ghats, and empty themselves into the Arabian Sea, and 21 major lakes and many backwater canals in the state.

The high ranges and foot hills of Western Ghats, and upland region (100–300 m) harbour the major forest cover of Kerala. At present, the state has an area of 11,125.5 km^2, which constitute 28.63% of the total geographical area.

The predominant forest types of Kerala are: Wet evergreen, Moist deciduous, Semi evergreen, dry deciduous and Shola-grassland complex. Besides, the state has scattered patches of mangroves along the coastal line, and Myristica swamps, a rare and unique type of evergreen vegetation, in Achenkoil and Kulathupuzha valleys of Kollam district, and adjacent Kottur range of Thiruvananthapuram district.

There are 2 Biosphere Reserves, 3 National Parks, 13 Wildlife Sanctuaries, 2 Tiger Reserves and 4 Elephant Reserves in Kerala. The state has a total of 3,213.24 km^2 forest area under Protected Areas Network.

Based on floristic composition the state of Kerala comes under the Malabar phyto-geographical province. The state harbours 5094 taxa under 1537 genera and 221 families of flowering plants. A total of 1709 taxa that are endemic to Peninsular India are found in Kerala; of which 237 species distributed in 47 families are exclusively endemic to the present political boundary of the state (Nayar& al., 2008). There are about 1170 species with established medicinal properties.

The flowering plants of Kerala include 858 exotics that have been introduced as agriculture, forestry as well as accidentally entered species; of which around 200 species have become naturalised in the state. Gymnosperms are represented by just 5 species belonging to3 genera. The state also harbours 337 species of pteridophytes, and 465 taxa of bryophytes.

Nowadays, due to population growth there is a huge pressure on land, forest and biodiversity of Kerala; anthropogenic activities, such as urbanization (conversion of land from rural to urban), encroachment (of water bodies, forest and agricultural fields), plantations, hydel projects, imbalance in shifting cultivation, transportation and tourism pose considerable degree of

threat to the biodiversity. These activities disturb the ecological balance and ultimately resulting in massive destruction of flora and fauna.

The Kerala state forest department and other competent authorities of the state should enforce strictly the environmental and biodiversity acts/laws to protect the existing biodiversity of the state. Efforts should also be taken to create awareness among the people about the importance of conserving forests and environment and sustainable utilization of biological resources for the sustenance and make them involve in conservation activities.

The ENVIS Centre on Floral Diversity has published the "Bibliography and Abstracts of Papers on Flora of Kerala" (Lakshminarasimhan& al., 2013), which is a comprehensive compilation of 1373 references with abstract published on flora, forestry, phytogeography, endemism, ecology, conservation, and economic and ethnobotany of Kerala state, which would help those who are interested in biodiversity and conservation.

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