

Important Plant Biodiversity of the Southern Part of India

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Abstract: *In India, Western Ghats is a mountain range that covers an area of 140,000 km² in a stretch of 1,600 km parallel to the western coast of the Indian peninsula, traverse the States of Kerala, Tamil Nadu, Karnataka, Goa, Maharashtra and Gujarat. It is a UNESCO World Heritage Site and is one of the eight "hottest hot-spots" of biological diversity in the world. Total 256 plants were identified with different aspects of botanical view. Western Ghats have common, endemic and endangered species of flora and already listed those who were worked in that aspect. This research only cluster samples from various separate 05 places only selected in Tamil Nadu state and finally concluded as; ornamental plants – 80%, invasive plants were 14% and cultivated 6% by the tribal community. In the origin of evaluation; lower plants – 3%, gymnosperms were 4%, Ferns were 5% and Angiosperms were identified 88%. In taxonomical aspect; most high no. of trees were 59, herbs were 52, Shrubs were 43 and few of cactus were 7 in numbers out of 256 plants.*

Keywords: Western Ghats, Plants, Biodiversity, Tamil Nadu.

1. Introduction

Biodiversity is the total variability within and among species of all living organisms and their habitats. It is estimated that there are between 300,000 and 500,000 species of higher plants (i.e flowering and cone bearing plants), of which approximately 250,000 have been identified or described. (Botanic Gardens Conservation International, 2017)

Plants define the habitat of a site, providing structure, shelter and food as well as contributing to the overall biodiversity. They include flowering plants (trees, shrubs, grasses and herbaceous plants), as well as the gymnosperms (which include conifers), ferns and related species, and also the bryophytes (mosses and liverworts). While plant diversity is well represented in rural areas, development pressures have reduced the amount of greenspace in urban and peri-urban areas, resulting in a poorer diversity of plant communities. However, there are still many small pockets of greenspace within the built environment with a rich diversity of plant species, and other areas where improvements to greenspace could encourage the establishment of plants. Management of urban greenspace directly influences the micro-environment and can create conditions favourable to a range of plants, which in turn can increase habitats for, and therefore the diversity of, other species groups. (Forest Research, 2018)

In 2016, an alternative hypothesis ("the fractal biodiversity") was proposed to explain the biodiversity latitudinal gradient. In this study, the species pool size and the fractal nature of ecosystems were combined to clarify some general patterns of this gradient. This hypothesis considers temperature, moisture, and net primary production (NPP) as the main variables of an ecosystem niche and as the axis of the ecological hypervolume. In this way, it is possible to build fractal hypervolumes, whose fractal dimension rises up to three moving towards the equator. Hotspots; A biodiversity hotspot is a region with a high level of endemic species that have experienced great habitat loss.

In India, **Western Ghats** also known as **Sahyadri** (Benevolent Mountains) is a mountain range that covers an area of 140,000 km² in a stretch of 1,600 km parallel to the western coast of the Indian peninsula, traverse the States of Kerala, Tamil Nadu, Karnataka, Goa, Maharashtra and Gujarat.^[1] It is a UNESCO World Heritage Site and is one of the eight "hottest hot-spots" of biological diversity in the world.^{[2][3]} A total of thirty-nine areas including national parks, wildlife sanctuaries and reserve forests were designated as world heritage sites - twenty in Kerala, ten in Karnataka, five in Tamil Nadu and four in Maharashtra.^{[6][7]}

The range starts near the Songadh town of Gujarat, south of the Tapti river, and runs approximately 1,600 km (990 mi) through the states of Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu ending at Marunthuvazh Malai, at Swamithope, near the southern tip of India. These hills cover 160,000 km² (62,000 sq mi) and form the catchment area for complex riverine drainage systems that drain almost 40% of India. The Western Ghats block southwest monsoon winds from reaching the Deccan Plateau.^[8] The average elevation is around 1,200 m (3,900 ft).^[9] The area is one of the world's ten "Hottest biodiversity hotspots" and has over 7,402 species of flowering plants, 1,814 species of non-flowering plants, 139 mammal species, 508 bird species, 179 amphibian species, 6,000 insects species and 290 freshwater fish species; it is likely that many undiscovered species live in the Western Ghats. At least 325 globally threatened species occur in the Western Ghats.^{[10][11][12]}

Biodiversity protection; Historically the Western Ghats were well-covered in dense forests that provided wild foods and natural habitats for native tribal people. Its inaccessibility made it difficult for people from the plains to cultivate the land and build settlements. After the arrival of the British in the area, large swathes of territory were cleared for agricultural plantations and timber. The forest in the Western Ghats has been severely fragmented due to human activities, especially clear felling for tea, coffee, and teak plantations during 1860 to 1950. Species that are rare, endemic and habitat specialists are more adversely affected

and tend to be lost faster than other species. Complex and species rich habitats like the tropical rainforest are much more adversely affected than other habitats.^[24]

The Government of India established many protected areas including 2 biosphere reserves, 13 National parks to restrict human access, several wildlife sanctuaries to protect specific endangered species and many Reserve Forests, which are all managed by the forest departments of their respective state to preserve some of the ecoregions still undeveloped. The Nilgiri Biosphere Reserve comprising 5,500 square kilometres (2,100 sq mi) of the evergreen forests of Nagarhole and deciduous forests of Bandipur in Karnataka, adjoining regions of Wayanad-Mukurthi in Kerala and Mudumalai National Park-Sathyamangalam in Tamil Nadu forms the largest contiguous protected area in the Western Ghats. Silent Valley in Kerala is among the last tracts of virgin tropical evergreen forest in India.^{[16][17]} Flora - 7,402 species of flowering plants occurring in the Western Ghats, 5,588 species are native or indigenous and 376 are exotics naturalised and 1,438 species are cultivated or planted as ornamentals. Among the indigenous species, 2,253 species are endemic to India and of them, 1,273 species are exclusively confined to the Western Ghats. Apart from 593 confirmed subspecies and varieties; 66 species, 5 subspecies

and 14 varieties of doubtful occurrence are also reported and therefore amounting 8,080 taxa of flowering plants.

2. Materials and Methods

Research design: Descriptive Cross sectional study

Research Period: 06 months

Research Data Collection:

Data collected from field visits and interview of informants

Data recorded in MS Excel

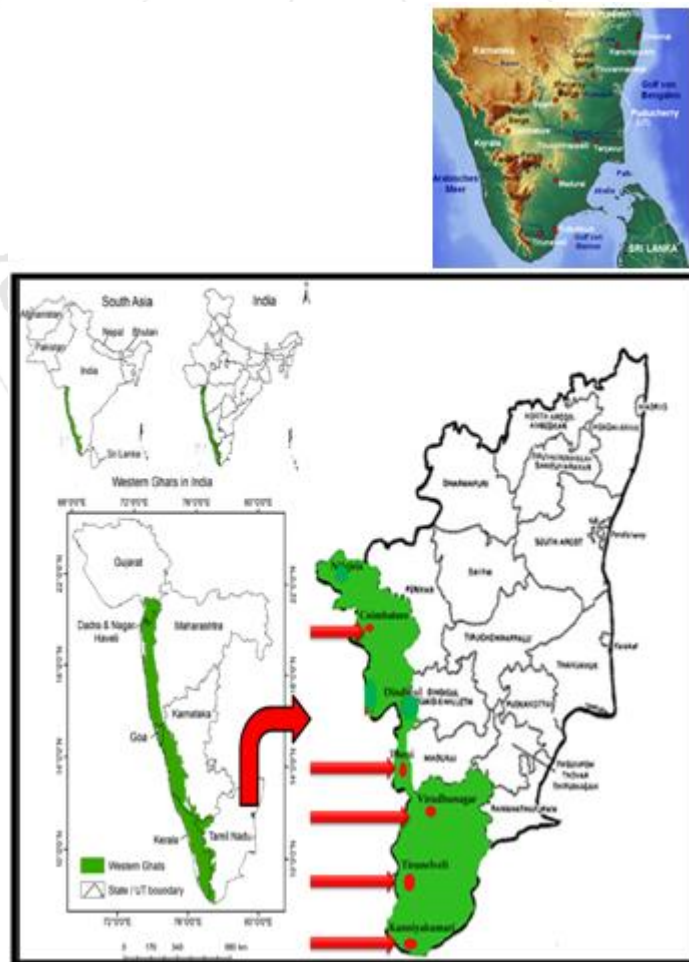
Data Analysis with Simple Descriptive statistics

Research Area:

Area sample defined as cluster samples of random simple sampling method of location of Western Ghats of Tamil Nadu state.

Five clusters defined in different district covered.

- 1) Kanyakumari
- 2) Tirunelveli
- 3) Theni
- 4) Coimbatore
- 5) Virudhunagar



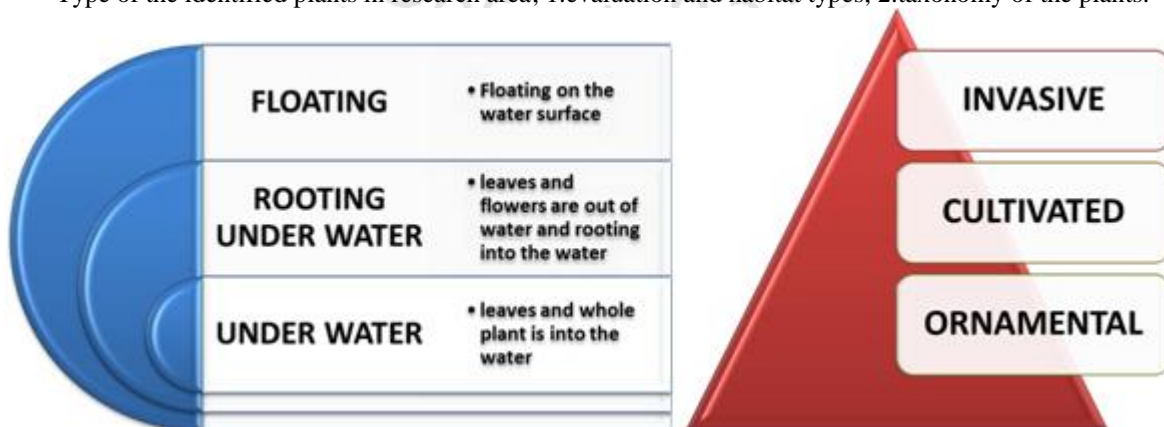
Research locations: Western Ghats



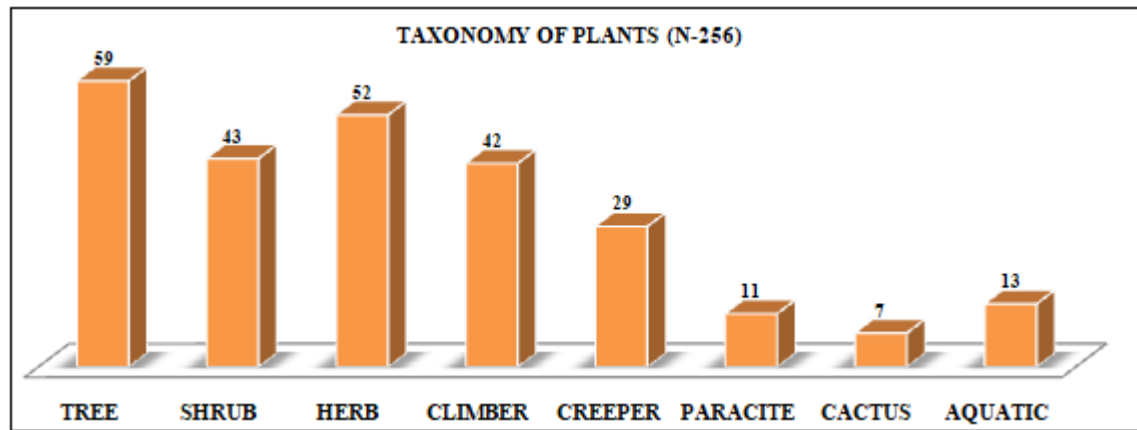
3. Result and Discussion



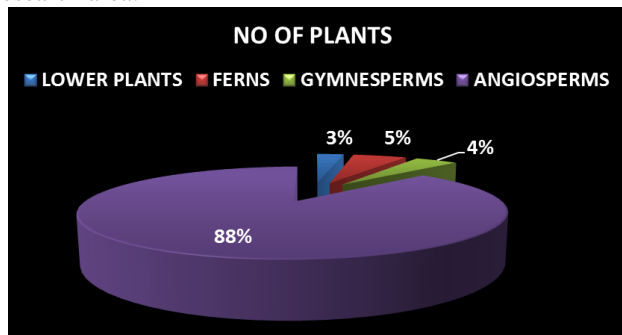
Type of the identified plants in research area; 1.evaluation and habitat types, 2.taxonomy of the plants.



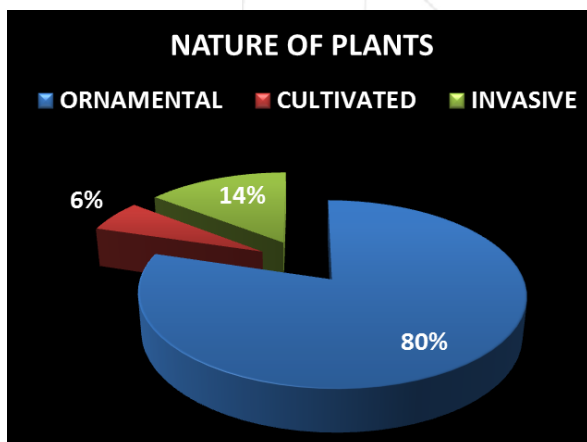
Aquatic plants divided feather three groups by the habit. And total plant survey on invasive, cultivated and ornamental



Taxonomical classification of total identified plants in research area.



In this research identified types of plants according to evaluation origin from lower plants then ferns then gymnosperms and Angiosperms



Nature of plant such as; ornamental plants, cultivated plants by people and invasive plants from other country

4. Conclusion

Total 256 plants were identified with different aspects of botanical view. Western Ghats have common, endemic and endangered species of flora and already listed those who were worked in that aspect. This research only cluster samples from various separate 05 places only selected in Tamil Nadu state and founded as; taxonomical view, evaluation origin of plants, habitat of the plants in respective way. But this is a pilot study of the major research work. This research is helpful to reveal the some flora sources of Western Ghats especially in Tamil Nadu.

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