

A CONTRIBUTION TO THE BOTANY OF QUILON DISTRICT, KERALA

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INTRODUCTION

Quilon District extends from 9° 28' to 8° 45' N and 76° 28' to 77° 17' E. It is bounded in the south by Trivandrum, in the north by Alleppey, Kottayam and Idukki districts of Kerala, in the east by Tirunelveli District of Tamil Nadu and in the west by the Arabian Sea.

TOPOGRAPHY

Considering the physical features, this district can be divided into three natural divisions : 1. The low-land, bordering the seacoast, 2. The mid-land, east of the low-lands, and 3. The high-land on the extreme east which is also a part of the Western Ghats. The height of the ghats generally decreases from north to south. There are several peaks above 1000 m the highest being Devarmalai (1922 m).

The Achencoil gap or, as it is known, the Aryankavu pass is in the eastern part of Pathanapuram taluk of this district and gives an easy access by rail and road to Shencottah in Tamil Nadu. Kallada and Ithikkara are the major rivers of this district. The Sasthamcotta lake, the only major fresh water lake of the state, is situated about 25 km away from Quilon town. The major backwaters of this district are Ashtamudi, Paravur, Nadayara and Edava (the latter two are partly in Quilon taluk).

GEOLOGY AND SOIL

The district forms part of the Archean metamorphic complex. Quilon limestone and

Warkalli formation consisting of sand stones, grits, white and coloured clays, and sometimes carrying thin intercalations of lignite, carbonaceous and resinous materials.

The soils of the district are of three major types :—Sandy loam, Laterite, Hill and forest soil. The laterite soils cover Kottarakkara, Kunnathur and parts of Quilon, Pathanapuram and Pathanamthitta taluks. In Karunagappally and part of Quilon taluk sandy loam is seen. In Pathanamthitta and Pathanapuram taluks hill and forest soil predominates. In the hills, loamy soil with a great admixture of humus is present. The swampy paddy lands contain clayey soil. In the valleys and deltas, the soil is alluvial and often saline in nature.

CLIMATE

The hottest period is March-April. The maximum average temperature of the district is about 35° C and the minimum about 17° C. The Hot season is followed by the South-West Monsoon. From December to February is the North-East Monsoon. The normal average annual rainfall in the district is 2,778.8 mm. However, the annual rainfall may reach as high as 7620 mm in some of the evergreen forest areas (various Forest Working Plans).

BOTANICAL HISTORY

A comprehensive account on the flora of this district is lacking. Valuable collections of Wight, Beddome, Lawson, Bourdillon, Barber, Rama Rao, Narayanaswamy, Barnes, Cherian Jacob, Deb, Vivekananthan, Chandrabose,

N. C. Nair and a few others from this district are present in the Madras Herbarium (MH).

Bourdillon (1893) describes the plants of the forest area river by river. Again, Bourdillon (1908), Rama Rao (1914), Gamble and Fischer (1915-36) and Hooker *et al.* (1872-97) are the other works dealing with some of the plants occurring in this district.

VEGETATION

I. Coastal Vegetation :

Quilon is famous for its "Backwaters" and it's once rich 'mangroves'. Vegetation along the coastal region can be divided mainly into two inshore ecosystems : Strand and Estuarine.

Strand vegetation : This is characterised by open mat-forming pioneers. This vegetation can be divided into two sub-types : Strand sand and Strand rock.

Strand sand is seen along the sea coast of this district. Common herbs found in this zone are *Alternanthera sessilis* (L.) R. Br., *Cyperus iria* L., *Cyperus compressus* L., *Gloriosa superba* L., *Glinus oppositifolius* (L.) A. DC., *Ipomoea pes-caprae* Sweet and *Polycarpaea corymbosa* (L.) Lamk. The shrubs include *Calotropis gigantea* (L.) R. Br., *Cassia auriculata* L. and *Hibiscus hirtus* L. The common trees seen are *Calophyllum inophyllum* L., *Hopea wightiana* Wight & Arn., *Derris indica* (Lamk.) Bennet, *Thespesia populnea* (L.) Sol. ex Correa, etc. The strand rock is poor in vegetation and it needs further study.

Estuarine vegetation is characterised by two distinct soil vegetational types : Estuarine proper and Proestuarine. In the first type, the land is always subjected to waves and hence growth of plants in this region is very difficult. The latter type, is a composite one which is related to the tidal influence and shows three distinct sub types : Tidal mangrove, Prohaline and Euhaline (Rao and Sastry, 1974).

Tidal mangrove is characterised by the presence of *Avicennia officinalis* L., *Carallia brachiata* (Lour.) Merr., *Rhizophora mucronata* Lamk., *R. apiculata* Bl. and *Lumnitzera racemosa* Willd.

Prohaline is best represented by plants like *Barringtonia racemosa* Roxb., *B. acutangula* Gaertn., *Cissus quadrangularis* L., *Crinum asiaticum* L., *Tylophora tenuis* Bl. and *Xyris indica* L., *Kandelia candel* (L.) Druce is reported from Quilon.

Euhaline is represented by highly salt tolerant plants such as *Acanthus ilicifolius* L., *Acrostichum aureum* L., *Ceratopteris siliquosa* Pierre, *Pandanus fascicularis* L. and *Samadera indica* Gaertn.

II. Vegetation of the Mid-lands :

Extensive areas of Mid-land are under cultivation and have thus lost their original natural features. However, their general characteristics can be seen from what still remains.

A specific aquatic vegetation, frequently affected by anthropogenic influence is seen along the rivers, ponds, irrigation canals and paddy fields. The common hydrophytes such as *Azolla pinnata* R. Br., *Eichhornia crassipes* (Mart.) Solms, *Pistia stratiotes* L., *Spirodela polyrhiza* (L.) Schlied., *Salvinia molesta* Mitch. and *Wolffia arrhiza* Horkel ex Wimmer are floating types. Suspended aquatic plants like *Utricularia australis* R. Br., anchored submerged forms like *Blyxa octandra* (Roxb.) Thw., *Hydrilla verticillata* (L. f.) Royle, *Vallisneria spiralis* L. etc., anchored floating types such as *Nymphoides cristata* (Roxb.) Kuntze, *N. indica* (L.) Kuntze, *Nymphaea nouchali* Burm. f., etc. and emergent amphibians like *Aeschynomene indica* L., *Limnophila heterophylla* (Roxb.) Benth., *Eriocaulon setaceum* L., etc., are seen. The common wet-land hydrophytes are *Ammannia baccifera* L., *Eriocaulon truncatum* Ham., *Lagenandra ovata* (L.) Thw., *Limnophila aromatica*

(Lam.) Merr., *Ludwigia perrensis* L., *Monochoria vaginalis* (Burm. f.) Presl, *Sphaeranthus indica* L. and members of Poaceae and Cyperaceae. *Dicraea stylosa* Wight and *Tristicha ramosissima* Willis commonly occur in rivers. *Drosera burmannii* Vahl, *D. indica* L. and *Striga asiatica* (L.) Kuntze are some of the interesting plants occurring in marshy places.

III. Vegetation of the Highlands :

1. *West-coast tropical evergreen forest* : The general altitudinal distribution of evergreen forest in Quilon District is from 200—1000 m, and the main development is confined to the middle region. The chief population met within the lower area is that of *Hopea parviflora* Bedd. and *Vateria indica* L. Other large trees occurring in these forests include *Artocarpus hirsutus* Lamk., *Dipterocarpus indicus* Bedd., *Dysoxylum malabaricum* Bedd., *Lophopetalum wightianum* Arn. and *Persea macrantha* Kosterm. Medium sized trees found are *Polyalthia fragrans* (Dalz.) Bedd., *Dimocarpus longan* Lour., *Knema attenuata* Warb., *Xylopia parviflora* Hook. f. & Thoms., etc. *Ochlandra travancorica* Gamble and *O. scriptoria* C. E. C. Fischer are the chief reeds. Shrubs like *Costus speciosus* Sm., *Helicteres isora* L., *Leea indica* (Burm. f.) Merr., are common. Woody climbers include *Bauhinia phoenicea* Heyne and *Calamus* spp.

Between 500-1000 m, populations of *Culenia exarillata* A. Robyns and *Palaquium ellipticum* Engl., occur together with *Gluta travancorica* Bedd., *Dysoxylum ficiforme* Gamble, *Elaeocarpus serratus* L., *Hydnocarpus laurifolia* Sleumer etc., *Arenga wightii* Griff., *Clausena heptaphylla* Wight & Arn., *Leea guineensis* G. Don, *Ochlandra travancorica* Gamble and *Pinanga dicksonii* (Roxb.) Scheffer are the other undergrowths.

Ground orchids and ferns are common in this type of forests occurring in Kulathupuzha, Thenmala, Konni, Ankumoozhey and Moozhiar.

2. *Southern hill-top tropical evergreen forest* : This is more or less inferior a wet evergreen forest with the trees usually not more than 15 m high. Rainfall as well as humidity are high in this region. Strong winds may be an important factor in reducing the height of the canopy. Moozhiar Pamba region as well as the south east part of Kulathupuzha reserve have this type of forest.

Mesua ferrea L., is the dominant species. Other trees include *Dysoxylum malabaricum* Bedd., *Holigarna beddomei* Hook. f., *Semecarpus anacardium* L., *Toona ciliata* Roemer, etc. Reeds are common and wherever they occur the ground vegetation is sparsely developed.

3. *West-coast semi-evergreen forest* : Both the elements of evergreen and deciduous forests are present in this type of forest, but the evergreen predominates. Such forests are usually found at altitudes ranging from 100-1000 m. Lower storey is mainly evergreen. The bamboos are usually present. Climbers are common and epiphytes abundant. *Toona ciliata* Roemer, *Terminalia paniculata* Roth, *Bischofia javanica* Bl., *Hopea parviflora* Bedd., *Lagerstroemia reginae* Roxb., *Termanalia bellirica* (Gaertn.) Roxb. and *T. chebula* Retz. are the common trees. *Bridelia crenulata* Roxb., *Gmelina arborea* Roxb., *Trema orientalis* Bl., *Polyalthia fragrans* Bedd., *Spondias pinnata* (L. f.) Kurz and *Xanthophyllum flavescens* Roxb., form the lower canopy.

Bambusa arundinacea (Retz.) Roxb., and *Ochlandra wightii* C. E. C. Fischer are typical of these forests. Giant climbers include *Gnetum ula* Brongn., *Butea parviflora* Roxb., *Wagatea spicata* Dalz. etc.

4. *Southern moist mixed deciduous forests* : Moist mixed deciduous forests are very characteristic and has replaced evergreen forests in several places. It can be seen even up to 800 m elevations. Rainfall is more than 3000 mm. Most of the forests of Quilon District come under this type. Main feature of this

type is the leafless period during dry season (March-April) when a number of tree species flower.

Dalbergia latifolia Roxb., *D. sissooides* W. & A., *Pterocarpus marsupium* Roxb., *Tectona grandis* L. f., *Terminalia paniculata* Roth, *T. chebula* Retz., *T. bellirica* Roxb. and *Xylia xylocarpa* Taub., are the chief tree species in this forest. *Buchanania lanzan* Spr., *Careya arborea* Roxb., *Cycas circinalis* L., *Cyathea gigantea* (Hook.) Holttum, *Dillenia pentagyna* Roxb., *Mallotus philippensis* Muell.-Arg., *Olea dioica* Roxb. etc., form the middle layer. *Bambusa arundinacea* Roxb., also occurs.

5. *Wet bamboo brakes* (reeds) : There are extensive areas of reeds in the hill slopes with a few evergreen trees here and there. Trees such as *Hopea parviflora* Bedd., *Vateria indica* L., *Mucaranga peltata* Muell.-Arg., and *Terminalia paniculata* Roth are common. The common reeds are *Ochlandra travancorica* Gamble and *O. wightii* C. E. C. Fischer. Forest fires commonly occur in this zone. Reeds form an important forest type near Moozhiar, Ankumoozhey and Punalur.

6. *Grass lands* : The grass lands are extensive and include numerous grasses, herbs and under-shrubs. Stunted trees occur along river-banks. Grass land formation is mainly due to shallow soil, exposure to high wind, annual fires and grazing. Grass lands occur in the hill tops of Murinjakara, Nanattupara, Kattadikunu in Ranni-Konni reserves and extensively in the Goodrical reserve on the south bank of Pampa river from the dam downwards. Grass lands are also seen in Yeroor and Anchal ranges.

It is interesting to note that the well defined evergreen forests give place abruptly to grass lands in the upper reaches of over 1000 m.

7. *Myristica swamps* : This distinct type of vegetation is found at an altitude of nearly 200 m, along the sides of sluggish streams in the flat valleys of Shenduruni, Kulathupuzha and

Anchal ranges. This is one of the highly interesting types of vegetation of India. The ground is completely covered with the looped knee roots which give it the appearance of a mangrove vegetation.

Prominent trees here are members of the Myristicaceae giving the area the name *Myristica* swamps., *Myristica fatua* Houtt. var. *magnifica* (Bedd.) J. Sinclair, *M. malabarica* Lamk., *M. dactyloides* Gaertn., *Gymnacranthera farquhariana* (Hook. f. & Thoms.) Warb., *Carallia brachiata* Merr., *Lagerstroemia reginae* Roxb. and *Lophopetalum wightianum* Arn., are the chief elements. Undergrowth is sparse and consists of aroids, sedges, ferns and grasses along the margin of the swamps.

8. *Plantations* : Extensive areas of forests have been felled and plantations raised. Major plantations of this district include Teak at Konni, Ranni, Kulathupuzha, Punalur, Rubber at Kodumon, Tea at Kallely, Achankoil, Rockwood, Eucalyptus at Kadakkaman, Oil palm at Anchal, Pineapple at Punalur, etc. Soft wood, & Jungle wood species are planted in different parts of the ghat section.

CONCLUSIONS

Though the flora of Quilon combines with that of Malabar and Sri Lanka, there are a few which are peculiar to this region known only from one or two collections and they are :

(a) New Records of Species :

Aeschynomene americana L. and *Centrosema virginianum* (L.) Benth. (For South India); *Cleidema hirta* D. Don, *Indigofera benthamiana* Hance, *Leptaspis urceolata* (Roxb.) R. Br., *Limnocharis flava* (L.) Buch., *Mitracarpus verticillatus* (Schum.) Vatke and *Spermacoce latifolia* Aubl. (For India).

(b) Rare and Endangered and Endemic species :

Buchanania lanceolata Wight, *Dyospyros*

sulcata Bourd., *Drypetes travancorica* (Bourd.) Sant. & Jain, *Dysoxylum ficiforme* Gamble, *Inga cynometroides* Bedd., *Palaquium bourdillonii* Brandis and *Plectronia pergracilis* Gamble (Collected from type locality); *Ampelocissus arnottiana* Planch. (Endangered species); *Blepharistemma corymbosum* Wight (Endemic); *Ceropegia fimbriifera* Bedd. (Rare); *Premna glaberrima* Wight (Endangered); *Semecarpus auriculata* Bedd. (Collected after 85 years); *Vernonia arborea* Ham. (Rare).

(c) New species :

Zornia quilonensis Ravi.

Presence of forest trees in the areas adjoining the sea-coast indicates that a greater part of the district was once covered by dense evergreen forests.

The forests remain undisturbed only in the more remote and less accessible valleys.

The most affected type of vegetation is the *Myristica* swamps, due to the construction of the projects like Kallada and Sabarigiri.

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