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FLORISTIC STUDIES IN TRICHUR DISTRICT, KERALA

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INTRODUCTION

Trichur District in Kerala lies between 10° 9′ and 10° 48′ N and 76° O′ and 76° 56′ E in the western side of Peninsular India. It is bounded by Palghat District in the north and northeast, Coimbatore District in the east; Kottayam and Ernakulam Districts in the south and Arabian Sea in the west with an altitudinal range from sea level to *ca* 1500 m. Based on topography, this district can be broadly divided into hilly regions in the east, cultivable lands with aquatic areas in the central region and the coastal belt in the west. In the hilly eastern region, the Chalakkara-Ebanad Valley is on the northern side of the Machad Mala ridge which runs east-west and the Vazhani Valley is on the southern side of it. Thanipadam and Panancherry valleys lie on either side of Paravattani Hills which run east-west. The Anaikal Mangattu Komban—Valivara ridge runs east-west on the northern side of Chimony Valley. The Parambikulam, the Sholaiyar and Karapara river valleys converge at Orukombankutty. The central region of the district consists mainly of cultivated lands, thereby encouraging the occurrence of aquatic plants with numerous aquatic situations. The coastal belt is mostly sandy and followed by backwater spots. The rivers, Karumali, Manali, Wadakkancherry and Manalar form the sources of drainage in the northern part of the hilly region of the district. The Chalakudi river is joined by Parambikulam river, Sholaiyar river, Karapara river, Anakayam river, Charpathode stream and Kannankuzhithode stream and drains the southern areas of the district.

ENVIRONMENT

In general, the climate is equitable throughout the years. Hottest months are March to May when the average temperature is about 29° to 32° C in the lower regions and about 24° to 27° C in the hilly regions. The temperature drops to 21° C during December-February in the lower regions and in the hilly regions, it falls to less than 13° C. The district receives rains both from the South-West and North-East monsoons. The South-West monsoon is active from June to August. The North-East monsoon starts towards the end of October and lasts for nearly two months. The months of January to April are practically without rain. The pre-monsoon showers start in May. Most of the hilly regions are rocky and some of the ridges and hill tops are barren without vegetation. The higher slopes are very often mixed with boulders and have a fair amount of humus soil in the crevices. The lower slopes and valleys have mostly red laterite. The river valleys and banks of the streams have large deposits of alluvial soil. In the low lying areas there is an accumulation of clayey-loam forming marshy conditions. Sandy soil is found in the coastal belt and it is clayey in saltish back-water areas. The changing pattern of the forests is noticeable near the construction of dams, distribution canals, hydro-electric power lines, conversion of forests into cultivable lands by way of terracing and plantation etc.

The rehabilitation of the tribal people has also involved some deforestation.

VEGETATION

Depending on altitudes the hilly region consists mostly of wet evergreen forests, semi-evergreen forests and moist deciduous forests. The wet evergreen forests are found in places where the conditions for vegetative growth are optimum. Well distributed rainfall and retentive soil influence the distribution of this type of forests. These are characterised by the presence of lofty evergreen trees, woody lianas, and rich undergrowth. This type of forest is found in Anakayam, Karapara and Sholaiyar valleys. In Sholaiyar valley, these forests extend up to the top of the ridge separating the Sholaiyar, Parambikulam valleys and also on the southern slopes of the ridge facing Sholaiyar.

The chief species of top canopy in these forests are *Artocarpus hirsutus* Lam., *Cullenia exarillata* A. Robyns, *Elaeocarpus tuberculatus* Roxb., *Lophopetalum wightianum* Arn., *Mangifera indica* L., *Mesua ferrea* L., *Persea macrantha* (Nees) Kosterm., *Toona ciliata* Roem. and *Vateria indica* L. The chief species of lower canopy are *Aporosa lindleyana* (Wight) Baillon, *Baccaurea courtallensis* Muell.-Arg., *Canarium strictum* Roxb., *Cinnamomum verum* J. S. Presl, *Elaeocarpus serratus* L., *Holigarna arnottiana* Hook. f., *Hydnocarpus laurifolia* (Dennst.) Sleumer, *Mallotus philippensis* (Lamk.) Muell.-Arg. etc. The ground vegetation consists of *Globba ophioglossa* Wight, *Melochia corchorifolia* L., *Rhynchoglossum notonianum* (Wall. ex DC.) Burtt, *Spilanthes paniculata* Wall. ex DC., *Synedrella nodiflora* Gaertn. and *Zingiber officinale* Rosc. The common epiphytic orchids are *Luisia teretifolia* Gaud., *Oberonia ensiformis* (Rees) Lindl., *O. santapaui* Kapadia, *Pholidota imbricata* Lindl., *Sarcanthus pauciflorus* Wight, *Thelasis pygmaea* Lindl. The terrestrial orchids are *Habenaria digitata* Lindl. and *Peristylus goodyeroides* (D. Don) Lindl.

In marshy and aquatic situations, plants like *Aneilema montanum* (Wight) C. B. Cl., *Biophytum sensitivum* (L.) DC., *Carex speciosa* Kunth, *Coix lacryma-jobi* L., *Cyanotis cristata* (L.) D. Don, *Cyperus pangorei* Rottb., *Eriocaulon truncatum* Ham., *Floscopa scandens* Lour., *Lindernia ciliata* (Colsm.) Pennell, *Murdannia nudiflora* (L.) Brenan, *M. pauciflora* (Wight) Bruekner, *Hygrophila auriculata* (Schum.) Heine, *Jussiaea prostrata* Leveille, *Pouzolzia zeylanica* (L.) Benn. and *Pycreus stramineus* C. B. Cl. are common.

The vegetation in the Parambikulam Valley constitutes a rich growth of ferns and fern-allies. The most common among them are *Adiantum philippense* L., *Angiopteris evecta* (Forst.) Hoffm., *Bolbitis virens* (Wall. ex Hook. et Grev.) Schott, *Ceratopteris thalictroides* (L.) Brongn., *Cheilanthes mysurensis* Wall., *Leptochilus decurrens* Bl., *Lygodium flexuosum* (L.) Sw., *Microlepia speluncae* (L.) Moore, and *Selaginella repanda* (Desv.) Spring.

Gymnosperms occurring in these forests are large lianas of *Gnetum ula* Brongn. and *Cycas circinalis* L. which is very sparsely distributed.

The semi-evergreen forests contain a mixture of tree species typical of both the wet evergreen and moist deciduous elements. Small patches of this type of forests are observed on the top of the Machad and Parvattani ridges and also in the valleys and moist pockets in otherwise deciduous areas. The chief species of top canopy are *Adina cordifolia* (Roxb.) Hook. f. ex Brandis, *Holoptelea integrifolia* (Roxb.) Planch., *Hopea parviflora* Bedd., *Miliusa velutina* (Dunal) Hook. f. & Thoms., *Spondias pinnata* (L. f.) Kurz, *Tectona grandis* L. f. and *Toona ciliata* Roem. The associated plants commonly found in the lower canopy are *Aporosa lindleyana* (Wight) Baillon, *Cinnamomum verum* J. S. Presl, *Mallotus philippensis* (Lamk.) Muell.-Arg. and *Xanthophyllum flavescens* Roxb. The undergrowths are *Antidesma acidum* Retz., *Croton malabaricus* Bedd., *Glycosmis mauritiana*

(Lamk.) Tanaka, *Ixora notoniana* Wall. ex G. Don and *Leea indica* (Burm. f.) Merrill. Lianas like *Entada pursaetha* DC. and *Butea parviflora* Roxb. are common.

The moist deciduous forests are found in the Parambikulam Valley, a greater part of Kodasseri Reserve, the whole minor reserves along the western boundary, almost the whole of Machad and Parvattany ranges, and the greater part of Palampilly range. The chief feature of this type of forests is a leafless period during the dry season when the upper canopy is almost entirely leafless. Teak is found in the forests of Parambikulam Valley. *Dalbergia latifolia* Roxb. is also found to some extent in the forests near Orukomban. The entire Parambikulam Valley is a bamboo area containing typical bamboo brakes.

The chief species of top the storey of these forests are *Adina cordifolia* (Roxb.) Hook. f. ex Brandis, *Dalbergia latifolia* Roxb., *Holoptelea integrifolia* (Roxb.) Planch., *Lagerstroemia reginae* Roxb., *Pterocarpus marsupium* Roxb., *Radermachera xylocarpa* (Roxb.) K. Schum., *Tectona grandis* L. f., *Terminalia paniculata* Roth, *Vitex altissima* L. f. and *Xylia xylocarpa* (Roxb.) Taub. The chief species of lower canopy are *Bridelia crenulata* Roxb., *Careya arborea* Roxb., *Cassia fistula L.*, *Dillenia pentagyna* Roxb., *Gmelina arborea* Roxb., *Sterculia urens* Roxb. and *Strychnos nux-vomica* L. The ground floor vegetation consists of *Cleome monophylla* L., *Cynoglossum zeylanicum* (Hornem.) Thunb. ex Lehm, *Desmodium triflorum* (L.) DC., *Drymaria cordata* (L.) Willd. ex Roem. & Schult., *Euphorbia thymifolia* L., *Indigofera tinctoria* L., *Justicia trinervia* Vahl, *Orthosiphon glabratus* Benth. and *Oxalis corniculata* L. The chief climbers are *Butea parviflora* Roxb., *Calycopteris floribunda* (Roxb.) Poir., *Caesalpinia bonduc* (L.) Roxb., *Croton laccifer* L. and *Cryptolepis buchanani* Roem. & Schult.

Most of the areas in the plains are cultivable lands with several aquatic areas. The aquatic angiosperms commonly found in these areas are *Blyxa echinosperma* (C. B. Cl.) Hook. f., *Nymphaea nouchali* Burm. f., *N. pubescens* Willd., *Nymphoides cristatum* (Roxb.) O. Kuntze and *N. parvifolium* (Griseb.) O. Kuntze. In the cultivated fields, *Rotala leptopetala* (Bl.) Koehne, *Limnophila indica* (L.) Druce, *Utricularia aurea* Lour., *U. reticulata* Sm. and *Monochoria vaginalis* (Burm. f.) Presl ex Kunth var. *plantaginea* (Solms.) Laub. are common.

Around the cultivable lands and along the roadsides in the central plains, the common trees are *Adenanthera pavonina* L., *Annona reticulata* L., *Citharexylum subserratum* Sw., *Derris indica* (Lamk.) Bennet, *Ervatamia heyneana* (Wall.) Cooke, *Ficus benghalensis* L., *Manihot glaziovi* Muell.-Arg., *Morinda coreia* Buch.-Ham. and *Plumeria rubra* L. The common shrubs found in the plains are *Adhatoda zeylanica* Medic., *Bauhinia acuminata* L., *B. tomentosa* L., *Breynia vitis-idaea* (Burm. f.) Fischer, *Calotropis gigantea* (L.) R. Br., *Clerodendrum paniculatum* L., *Flacourtia indica* (Burm. f.) Merr., *Glycosmis arborea* (Roxb.) DC., *Jatropha curcas* L., *Lawsonia inermis* L., *Microcos paniculata* L. and *Solanum torvum* Sw. The climbers commonly found in these areas are *Abrus precatorius* L., *Cardiospermum halicacabum* L., *Cissus repens* Lamk., *C. trilobata* Lamk., *Cyclea peltata* (Lamk.) Hook. f. & Thoms., *Dioscorea pentaphylla* L., *Mukia maderaspatana* (L.) M. Roem., *Pergularia daemia* (Forsk.) Choiv., *Tiliacora acuminata* (Lamk.) Miers, *Uvaria narum* (Dunal) Bl., and *Vigna radiata* (L.) Wilczek var. *sublobata* (Roxb.) Verdc. The common herbaceous plants of these areas are *Acanthospermum hispidum* DC. *Barleria mysorensis* Heyne, *Celosia argentea* L., *Clerodendrum serratum* (L.) Moon, *Euphorbia thymifolia* L., *Grangea maderaspatana* (L.) Poir., *Indigofera uniflora* Buch.-Ham., *Laportea interrupta* (L.) Chew, *Melochia corchorifolia* L., *Ocimum basilicum* L., *O. gratissimum* L., *Orthosiphon viscosus* Benth.,

Polygonum glabrum Willd., *P. tomentosum* Willd., *Sida acuta* Burm. f. and *Solanum nigrum* L.

In marshy areas, the common species seen are *Kyllinga nemoralis* (Forst.) Dandy ex Hutch., *Ludwigia octovalvis* (Jacq.) Raven, *L. hyssopifolia* (G. Don) Exell and *Sphenoclea zeylanica* Gaertn.

In the sandy coastal belt, plants like *Allmania nodiflora* (L.) R. Br. ex Wight, *Alysicarpus vaginalis* (L.) DC., *Bulbostylis barbata* (Rottb.) C. B. Cl., *Cyperus pedunculatus* (R. Br.) Kern, *Emilia sonchifolia* (L.) DC. ex Wight, *Eragrostis riparia* (Willd.) Nees, *Geniosporum tenuiflorum* (L.) Merr., *Ipomoea pes-caprae* Sweet, *Launaea sarmentosa* (Willd.) Alston, *Portulaca oleracea* L., *Phyla nodiflora* (L.) Greene, *Rothia indica* (L.) Druce, *Spinifex littoreus* (Burm. f.) Merr., *Wattakaka volubilis* (L. f.) Stapf and *Zornia gibbosa* Span. are found.

In the backwater areas, *Cocos nucifera* L., is under cultivation. *Acanthus ilicifolius* L. is sporadically found in few pockets.

Thirteen seasonal botanical exploration tours have been made during 1962-66 and 1976-77, especially in Trichur and Chalakudy forest divisions; Parambikulam, Kuriarkutty and Thunakkadavu submergible areas; Peechi Wild Life Sanctuary, plains and coastal regions. 1261 field numbers of vascular plants have been collected, studied and deposited in MH. A new species *Dicraea filifolia* Ramam. & Joseph has been discovered and an African elements *Mitracarpus verticillatus* (Schum. & Thonn.) Vatke has been recorded for the first time from India. The type locality of *Haplothismia exannulata* Airy Shaw has been submerged due to the construction of Parambi-Kulam Dam making this species endangered. Further explorations and studies are planned to complete the work.

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