KFRI Research Report 75

DISTRIBUTION OF IMPORTANT FOREST TREE SPECIES IN KERALA (SOUTHERN CIRCLE)

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PEECHI, THRISSUR

July 1991 Pages: 17

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ABSTRACT

Occurrence of one hundred and twenty four taxa of indigenous trees is reported from the Southern Circle of the forests of Kerala with notes on their distribution within the area. With the shrinkage in forest cover, many trees are becoming rare and getting confined to isolated patches. Developmental activities iike construction of dams and the subsequent alterations in the reservoir catchnents are threatening their surviai. It is suggested that urgent steps are to be taken to grow them.

1. INTRODUCTION

Many of our valuable tree species are becoming rare and getting confined to isolated patches. To assess the occurrence ot trees in our forests, a study was initiated in the Central circle or the Kerala Forest Department and one hundred and eight trees were reported earlier (Nair and Sasidharan, 1985). The present study, a continuation of the earlier study, was undertaken by way of exploration trips conducted in the river basins of Neyyar, Karamana, Vamanapurarn, Shendhurni and Kolathupuzha. in total, one hundred and twenty four species are reported here and those endemics to the Western Ghats are marked 't'.

2. PHYSIOGRAPHY OF THE STUDY AREA

The region includes the towering Agastyar peak, the Chemunji mottai and Ponmudi hills, the lush vegetation along the feeder streams on the upper slopes of Neyyar, Karamanna and Vamanapuram rivers, a series of estates both surviving and abandoned, the reserviors at Kallikkad and Paepara, vast expanses of Rubber, Eucalypt and Albizia plantations, clusters of Kani settlements in aepietea forest patches and small townships adjacent to the rubber estates and paddy fields. Undisturbed evergreen forests could be observed above 1,000m on the steep western slopes of the hills. The hills and slopes immediately below the peaks show a mosaic of secondary vegetation patterns. Shifting cultivation by the Kanikkars and the 'malamkrishi' (hill cultivation) by the artluent lowland dwellers anc attempts to raise plantations of coffee are the main causes assigned to the origin of these mosacis. Large streatches of land covered with grasses are also Common along the hills of this region.

The evergreen forests along the foothills are confined to the stremsides and deep depressions. Except these, the general 1andscape offers a very dry look, the ground totally covered with tall grasses and scattered, stunted and slender trees of the

moist deciduous type. Seasonal fires burn the dry grassess and litter, char the seedlings and harden the soil.

3. FOREST TYPES

Though clear cut demarcations are not possible, the forests or Southern Circle can be broadly classified into the following types of Champion and Seth **(1968).**

3.1 West coast tropical evergreen forests

This forest type can be seen on the higher slopes and ridges, especially along the upper sources of Neyyar, Karamana and Vamanapuram rivers and below the peak. of Agastyarkudam, Chemunji and Ponmudi and are charactrised by the abundance of different species. Lofty trees of ***Antiaris toxicaria, Artocarpus hirsuta, Bombax ceiba. Calophyllun apetalum. Cullenia exarillata, Elaeocarpus tuberculatus, Hopea parviflora, Mesua ferrea, Palaquium ellipticum, Poeciloneuron indicum, Toona ciliata, Vateria indica,*** etc. occupy the top canopy. The second storey is dominated by medium-sized trees of ***Actinodaphne bourdiilonii, Aporosa lindleyana, Aglaia elaegnoidea, Carallia brachiata, Canarium strictum, Cinnaimomum verum, Garcinia morella, Gordonia obtusa,*** etc.The ground flora is composed of numerous herbs and terns.

3.2. Southern subtropical hi11 forests (subtropical montane forests)

They are confined to above 1,200 m on the hill tops and are also typicsl in having low structured trees laiden with lichen., mosses and orchids and exposed to high winds and frequentiy covered with clouds. These forests are mainly dominated by species like ***Brysophyllum tetrandum, Callicarpa tomentosa, Euphorbia santapui. Maesa indica. Neolitsea cassia***, etc. Large population of ***Bentinckia codapana*** can also be observed on the steep rocky slopes.

3.3. Southern hill top tropical evergreen forests

This is a transitional stage from tropical to subtropical forests and can be observed around 1,000 m. *Cullenia exarillata, Elaeocarpus serratus, Gluta travancorica, Persea macrantha, Mesua ferrea.* etc. are the representative species.

3.4 West coast semievergreen forests

This forest type is met with adjoining the evergreen forests and along the sides of rivers. A mixture of both evergreen and deciduous trees are found in the forest type. *Alstonia scholaris, Artocarpus heterophyllus, Baccaurea courtallensis, Calophyllum inophyllum, Carallia brachiata, Hopea parviflora, Hydnocarpus pentandra, Knema attenuata, Grewia ti1iifolia, Terminalia paniculata, Vitex pinnata,* etc. dominate.

3.5. Southern secondary moist mixed deciduous forests

At lower elevations, deciduous forests can be observed with scattered trees like *Buchanania lanzan, Bridelia retusa, Careya arborea. Dalbergia latifolia, Olea dioica, Terminalia bellirica, Phyllanthus emblica,* etc. The ground is covered with grasses like *Cyrtococcum oxyphyllum, Imperata cylindrica* and *Pennisetum polystachyon.*

3.6. Wet bamboo (reed) breakes

At higher slopes, aggressive growth of reeds can be observed in the canopy gaps. *Ochlandra travancorica, O.scriptoria and O. wightii* are the common species.

3.7. Myristica swamps

Myristica swamps are observed in the valleys subjected to inundation, The floor is characterised by the looped knee roots. of the dominating *Myristica* species. *Myristica dactyloides, M.*

fatua, Knema attenuata, Lophopetalum wightianum, Hydnocarpus alpina, etc. are common trees in these swamps.

3.8. Southern tropical moist deciduous riverine forests

Occurring along the iversides are the riverine forests characterised by species like *Agrostistachys meeboldii, Ixora nigricans, Lagerstroemia microcarpa, L. speciosa* and large patches of *Homonoia riparia.*

4. SPECIES ENUMERATION

Actinodaphne malabarica Balakr. (LAURACEAE)

Frequent, in evergreen, forests at higher altitudes. E

Aglaia elaegnoidea (Juss.) Benth.
var. *bourdillonii* (Gamble) KKN Nair (SAPINDACEAE)

Rare, in evergreen forests of Chemunji and Agastyar peak. E

Ailanthus triphysa (L.) Benth. (SIMROUBACEAE)

Fairly common in evergreens.

Albizia lebbeck (L.) Benth. (MIMOSACEAE)

Occasional, in moist deciduous forests.

Albizia odoratissima (L.) Benth. (MIMOSACEAE)

Occasional, in moist deciduous forests.

Albizia procera (Roxb.) Benth. (MIMOSACEAE)

Occasional, in moist deciduous forests.

Alstonia scholaris (L.) Roxb. (APOCYNACEAE)

Frequent, in moist deciduous, semievergreen
and evergreen forests.

Anogeissus latifolia Wall. (COMBRETACEAE)
Rare in moist deciduous forests.

Antiaris toxicaria Lesch. (MORACEAE)
Sporadic, in evergreen and semievergreen forests.

Aphanomixis polystachya (Wall.) Parker (MELIACEAE)
Occasional, in evergreens and semievergreens.

Aporusa lindleyana (Wt.) Baill. (EUPHORBIACEAE)
Not uncommon, in evergreen and senievergreen forests.

Artocarpus gomezianus Wall. ex Trecul
ssp. *zeylanicus* Jarret (MORACEAE)
Rare, in evergreens and semievergreens.

Artocarpus heterophyllus Lamk. (MORACEAE)
Frequent, in evergreen forests.

Artocarpus hirsutus Lamk. (MORACEAE)
Common, in evergreens, semievergreens and occasional in moist deciduous forests near stream sides. E

Atuna travancorica (Bedd.) Kosterm. (CHRYSOBALANACEA)
Very rare, in evergreen forests. E

Bauhinia malabarica Roxb. (CAESALPINIACEAE)
Occasional, in moist deciduous forests and semievergreens at low elevations.

Bombax ceiba L. (BOMBACACEAE)
Common in evergreens and occasional in moist deciduous forests.

Bridelia squamosa (Lamk.) Graham (EUPHORBIACEAE)
Fairly common in semievergreens and frequent in moist deciduous forests.

Buchananialanzan Spreng . (ANACARDIACEAE)

Frequent in semievergreen forests; very common near Bonacaud.

Calophyllam apetalum Willd. (CLUSIACEAE)

Occasional, along river banks of semievergreen and evergreen forests.

Canarium strictum Roxb. (BURSERACEAE)

Occasional, in evergreen and semievergreen forests.

Carallia brachiata (Lour.) Merr. (RHIZOPHORACEAE)

Sporadic, in evergreen and semievergreen forests.

Careya arborea Roxb (LECYTHIDACEAE)

Fairly common, in moist deciduous and semievergreen forests.

Cassia fistula L. (CAESALPINIACEAE)

Occasional, in moist deciduous fcrests.

Chionanthus courtallensis Bedd. (OLEACEAE)

Fairly common,in semievergreens and disturbed evergreens. E

Chukrasia tabularis A. Juss. (MELIACEAE)

Frequent, in evergreen and sesievergreen forests.

Cinnamomum verum J.S.Persl. (LAURACEAE)

Occasional, in evergreens and secievergreens.

Cullen ia exarillata Robyns (BOMBACACEAE)

Fairly common, in the evergreens at higher altitudes.

Cynometra bourdilloni Gamble (CAESALPINIACEAE)

Rare, in the evergreen forests. E

Cynometra travancorica Bedd. (CAESALPINIACEAE)

Rare, in evergreen forests. E

Dalbergia lanceolaria L.f. (PAPILIONACEAE)
Occasional, in moist deciduous forest.

Dalbergia latifolia Roxb. (PAPILIONACEAE)
Frequent in moist deciduous and occasional in semievergreen forests.

Dialium travancoricum Bourd. (CAESALPINIACEAE)
Rare, at the lower slopes of Ponmudi hills. E

Dillenia pentagyna Roxb. (DILLENIACEAE)
Frequent in moist deciduous and occasional in semievergreen forests.

Diospyros buxifolia (BI.) Hiern (EBENACEAE)
Occasional in evergreen and semievergreen forests.

Diospyros ferrea (WilId.) Bakh. (EBENACEAE)
Fairly common, in evergreen forests at higher elevations.

Diospyrospaniculata Dalz. (EBENACEAE)
Rare, in evergreen forests at low elevations.

Elaeocarpus glandulosus Wall. ex Merr. (ELAEOCARPACEAE)
Occasional, in moist deciduous and semievergreen forests.

Elaeocarpus munronii (Wt.) Hast. (ELAEOCARPACEAE)
Frequent; in moist deciduous forests. E

Elaeocarpus serratus L. (ELAEOCARFACEAE)
Fairly common in evergreen forests.

Elaeocarpus tuberculatus Roxb. (ELAEOCARPACEAE)
Fairly common, in evergreens and seaievergreens.

Emblica officinalis Gaertn. (EUPHORBIACEAE)
Not uncommon, in moist deciduous forests.

Erythrina stricta Roxb. (PAPILIONACEAE)
Not uncommon, in moist deciduous forests
and semievergreens.

Euodia lunu-akenda (Gaertn.) Merr. (RUTACEAE)
Occasional, in evergreens and semievergreens.

Garcinia echinocarpa Thw. (CLUSIACEAE)
Rare, in evergreen forests at higher altitudes.

Garcinia gummi-gutta (L.) Robs. (CLUSIACEAE)
Occasiona1, in evergreens.

Garcinia morella (Gaertn.) Desr. (CLUSIACEAE)
Frequent, along river sides in evergreen and
semievergreen forests.

Garcinia xanthochymus Hook. f. et Thons. (CLUSIIACEAE)
Rare, in moist deciduous forests.

Garcinia travancorica Bedd. (CLUSIACEAE)
Frequent, in evergreens at higher altitudes;
abundant at Chemunji hill slopes. E

Gordonia obtusa Wall. ex Wt. et Arn. (TERNSTROEMIACE)
Frequent in evergreen forests, very common at
Bonacaud and vicinities.

Gluta travancorica Bedd. (ANACARDIACEAE)
Fairly common in the evergreens especially near stream sides. E

Gmelina arborea Roxb. (VERBENACEAE)
Rare, in most deciduous forests.

Grewia tiliifolia Vahl (TILIACEAE)
Occasional, in moist deciduous and semievergreen forests.

Haldina cordifolia (Roxb.) Ridsdale (RUBIACEAE)
Occasional, in moist deciduous and semievergreen forests.

Heritiera papilio Bedd. (STERCULIACEAE)
Rare, in the moist deciduous forests. E

Holigarna arnottiana Hook. f. (ANACARDIACEAE)
Frequent, along river banks in semievergreen forests. E

Holoptelia integrifoiia (Roxb.) Planch. (ULMACEAE)
Rare, in moist deciduous forests at low elevations.

Homalium jainii Henry *et* Chandrab. (SAMYDACEAE)
Occasional, in the evergreen, forests on the lower slopes of Ponmudi hi1 Is. E

Hopea parviflora Bedd. (DIPTEROCARPACEAE
Common, along river banks in semievergreen and evergreen forests. E

Hopea racophloea Dyer (DIPTEROCARPACEAE
Occasional, in evergreen forests. E

Humboldtia unijuga Bedd. (CAESALPINIACEAE)
Very common, in the evergreen forests along the base of Agastyar Peak. E

Humboldtia vahliana Wt. (CAESALPINIACEAE)
Frequent, along stream sides at lower altitudes. E

Hydnocarpus alpina Wt. (FLACOURTIACEAE)
Occasional, along river banks in evergreen forests.

Hydnocarpus macrocarpa (Bedd.) Warb. (FLACOURTIACEA)
Rare, in the evergreen forests towards higher altitudes. E

Hydnocarpus pentandra (Buch.- Ham.) Oken (FLACOURTIACEA).
Common, along riverbanks at lower elevations.

Hymenodyctyon excelsum (Roxb.) Wall (RUBIACEAE)
Not common, in moist areas of deciduous forests.

Kingiodendron pinnatum (Roxb. ex DC.)Harms. (CAESALPINIACEAE)
Frequent, in the evergreen forests.

Knema attenuata (Hook.f. et Thorns.) Warb. (MYRISTICACEAE)
Frequent, in evergreens and waterlogged areas.

Lagerstroemia microcarpa Wt . (LYTHRACEAE)
Occasional, in semievergreen forests at lower elevations.

Lagerstroemia parviflora Roxb. (LYTHRACEAE)
Occasional, along river banks in moist deciduous forests.

Lagerstroemia speciosa (L.) Pers. (LYTHRACEAE)
Frequent, along stream sides at low elevations.

Lannea coromandelica (Houtt.) Merr. (ANACARDIACEAE
Occasional, in moist deciduous forests.

Litsea bourdillonii Gamble (LAURACEAE)
Frequent, in evergreen forests at higher altitudes. E

Lophopetalum wightianum Arn. (CELASTRACEAE)
Frequent, in evergreen and semievergreen forests
and abundant in water logged areas

Macaranga peltata Muell.-Arg (EUPHORBIACEAE)
Occasional, in secondary forests.

Madhuca neriifolia (Moor.) H.J. Lam. (SAPOTACEAE)
Frequent, in evergreen and semievergreen forests, often along river banks.

Mallotus philippensis (Lamk.) Muell. - Arg. (EUPHORBIACEAE)
Occasional, in semievergreen and disturbed evergreen forests.

Mangifera indica L. (ANACARDIACEAE)
Frequent, in evergreen forests.

Melia dubia Cav. (MELIACEAE)
Occasional, in semievergreen and moist deciduous forests.

Meliosma simplicifolia (Roxb.) Walp. (SABIACEAE)
Frequent, in evergreen and semievergreen forests.

Mesua ferrea L. (CLUSIACEAE)
Common, at medium elevations.

Mitragyna parvifolia (Roxb.) Kcrth. (RUBIACEAE)
Frequent, in semievergreen forests.

Myristica dactyloides Gaertn. (MYRISTICACEAE)
Frequent, in evergreen forests.

Myristica fatua Houtt. var. *magnifica* (Bedd.) Sinclair (MYRISTICACEAE)
Not uncommon, in evergreens especially near waterlogged areas. E

Neolitsea cassia (L.) Kosterm. (LAURACEAE)
Occasional, in evergreen forests at higher elevations. E

Olea dioica Roxb. (OLEACEAE)
Occasional, in semievergreen and distributed evergreen forests.

Ormosia travancorica Bedd. (PAPILIONACEAE)
Rare, in evergreen and semievergreen forests E

Palaquium ellipticum (Dalz.) Engl. (SAPOTACEAE)
Fairly common in evergreen and occasional
in semievergreen forests.

Persea macrantha (Nees) Kosterm. (LAURACEAE)
Fairly common in evergreen and occasional
in semievergreen forests.

Pithecellobium monadelphum Wt. *et* Arn. (MIMOSACEAE)
Frequent, along slopes in moist deciduous forests.

Pittosporum nilghirense Wt. *et* Arn. (PITTOSFORACEAE)
Frequent, along slopes in moist deciduous forests.

Poeciloneuron indicum Bedd. (BONNETIACEAE)
Fairly common at medium altitudes. E

Polyalthia coffeoides Benth. et Hook. f. (ANNONACEAE)
Fairly common, at medium altitudes. E

Pongamia pinnata (L.) Pierre (PAPILIONACEAE)
Occasional, along stream sides at lower altitudes.

Prunus zeylanica (Wt.) Miq- (ROSACEAE)
Rare, in evergreen and semievergreen forests.

Pterocarpus marsupium Roxb. (PAPILIONACEAE)
Rare, in evergreen and semievergreeen forests.

Pterospermum reticulatum Wt. *et* Arn. (STERCULIACE)
Rare, in evergreen and semievergreen forests.

Radermachera xylocarpa (Roxb.) K. Schum. (BIGNONIACEAE)
Rare, in semievergreen and moist deaciduous forests.

Sch1eichera oleosa Oken (SAPINDACEAE)

Rare, in the moist deciduous and semivergreen forests, Occasionally abundent, especially in Sheandurni Valley.

Semecarpus anacardium L. f. (ANACARDIACEAE)

Fairly common, in evergreen forests at medium altitudes.

Semecarpus tranvancorica Bedd. (ANACARDIACEAE)

Occasianal in evergreen forests.

Spondias indica (Wt. et Arn.) Airy Shaw et Forman (ANACARDIACEAE)

Occasional, in evergreen forests.

Spondias pinnata (L.f.) Kurz (ANACARDIACEAE)

Rare, in the evergreen forests.

Sterculia foetida L. (SIERCULIACEAE)

Frequent, in moist deciduous forests.

Sterculia guttata Roxb. (STERCULIACEAE)

Rare, in semievergreen and moist deciduous forests at low altitudes.

Sterculia villosa Roxb. (STERCULIACEAE)

Fairly, common, in the grassy slopes and moist deciduous forests.

Syzygium cumini (L.) Skeels (MYRTACEAE)

Fairly common, in the semievergreen forests.

Syzygium gardneri Thw. (MYRTACEAE)

Occasional, in evergreen forests.

Szygium munronii (Wt.) Candrab. (MYRTACEAE)

Occasional, in evergreen forests.

Tectona grandis L. f. **(VERBENACEAE)**

Very rare, other than in cultivation.

Terminalia bellirica (Geartn.) **Roxb.** **(COMBRETACEAE)**

Occasional, in moist deciduous and semievergreen forests.

Terminalia crenulata Heyne ex Roxb. **(COMBRETACEAE)**

Frequent, in moist deciduous forests

TetrameIes nudiflora R. Er. et Benn. **(DATICACEAE)**

Rare, in moist deciduous and semievergreen forests.

Toona ciliata Roem. **(MELIACEAE)**

Not uncommon in semievergreen
and frequent in moist deciduous forests.

Trema orientalis (L.) Bl. **(ULMACEAE)**

Occasional, as secondary growth in forest clearings

Trewia nudiflora **L.** **(EUPHORBIACEAE)**

Not uncommon, in seaievergreen and moist deciducus forests.

Turpinia malabarica Gamble **(STAPHYLEACEAEA)**

Frequent, in evergreen and seaievergreen forests. E

Vateria indica L. **(DIFTERAOCARPACEAE)**

Frequent in evergreens; abundant in and around
Kolathupuzha E

Vepris bilocularis **(Wt. et Arn.) Engl.** **(RUTACEAE)**

Occasional, in evergreen forests.

Vernonia travancorica Hook. f. **(ASTERACEAE)**

Fairly common, in the moist deciduous forests. **E**

Vitex altissima L. f. **(VERBENACEAE)**

Frequent, in semievergreen forests

Xylia xylocarpa (Roxb.) Taub. (MIMOSACEAE)

Very rare, in moist deciduous forests

Zanthoxylum rhetsa (Roxb.) DC. (RUTACEAE)

Rare, in semievergreen forests.

5. RESULTS AND DISCUSSION

A total of 124 taxa of trees occurring in the Southern Circle of Kerala forests is enurmarated in this report. As compared to the Central Circle, the forests of Southern region are less explored. The extent of evergreens is limited to the steep inaccessible slopes where timber extraction is difficult and establishment of plantations practically impossible. The semievergreens do not contain trees of larger girth iike those in Central Circle and the available moist deciduous forests also do not show the luxuriance as seen in central Kerala. Species like Tectona grandis and Xylia xylocarpa could not be located in natural conditions. Likewise, Diospyros bourdillonii, Gmelina arborea,Albizia odoratissima, etc. are of relatively rare occurrence. Even secondary species like Macaranga peltata, Trema orientalis, etc. are very rare in this region. This poor species content in the flora of the region can only be assigned to the increased demand of forest land for plantations and for non-forestry purposes.

However, patches of undisturbued and less disturbed evergreen forests are still available in the upper slopes of Agastyar hills, Kallar Valley and adjacent areas and towards Shangli and Kolathupuzha. Characterstic species like Dipterocarpus indicus Vateria indica, Calophyllum apetalum, Mesua ferrea, Poeciloneuron indicum, Kingiodendron pinnatum, Hopea parviflora, etc. can be seen here in fairly large numbers. But large scale clearance of

Forests along the Ponmudi-Arippa road through Shangii has taken place and the area has been planted with Albizia falcataria. A similar situation prevails. in Kottur reserve of Trivandrum Division with large scale plantations of Albizia and Eucalyptus.

Alteration of vegetation is more or less complete in the reservoir catchment of Paepara and most of the feeder streams are also facing damage. Large tracts of abandoned estates have already turned into settlements and pressure of population is visible in the adjacent forest patches also.

6. LITERATURE CITED

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