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

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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 like construction of dams and the subsequent alterations in the reservoir catchments are threatening their survival. 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 of trees in our forests, a study was initiated in the Central circle of 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, Vamanapuram, Shendurni 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 reservoirs 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 arltluent lowland dwellers anc attempts to raise plantations of coffee are the main causes assigned to the origin of these mosacis. Large stretches 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 landscape 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 grasses 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 characterised by the abundance of different species. Lofty trees of *Antiaris toxicaria*, *Artocarpus hirsuta*, *Bombax ceiba*, *Calophyllum 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*, *Aglaielaegnoidea*, *Carallia brachiata*, *Canarium strictum*, *Cinnamomum verum*, *Garcinia morella*, *Gordonia obtusa*, etc. The ground flora is composed of numerous herbs and ferns.

3.2 Southern subtropical hill forests (subtropical montane forests)

They are confined to above 1,200 m on the hill tops and are also typically having low structured trees laden with lichen., mosses and orchids and exposed to high winds and frequently covered with clouds. These forests are mainly dominated by species like *Bryophyllum 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 tiliifolia, 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.  
(Family: **LAURACEAE**)
Frequent, in evergreen, forests at higher altitudes.

*A. elaegnoidea* (Juss.) Benth.  
*var. bourdillonii* (Gamble) KKN Nair  
(Family: **SAPINDACEAE**)
Rare, in evergreen forests of Chemunji and Agastyar peak.

*Ailanthus triphysa* (L.) Benth.  
(Family: **SIMROUBACEAE**)
Fairly common in evergreens.

*Albizia lebbeck* (L.) Benth.  
(Family: **MIMOSACEAE**)
Occasional, in moist deciduous forests.

*Albizia odoratissima* (L.) Benth.  
(Family: **MIMOSACEAE**)
Occasional, in moist deciduous forests.

*Albizia procera* (Roxb.) Benth.  
(Family: **MIMOSACEAE**)
Occasional, in moist deciduous forests.

*Alstonia scholaris* (L.) Roxb.  
(Family: **APOCYNACEAE**)
Frequent, in moist deciduous, semi-evergreen and evergreen forests.
**Anogeissus latifolia** Wall.  
Rare in moist deciduous forests.

**Antiaris toxicaria** Lesch.  
Sporadic, in evergreen and semievergreen forests.

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

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

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

**Artocarpus heterophyllus** Lamk.  
Frequent, in evergreen forests.

**Artocarpus hirsutus** Lamk.  
Common, in evergreens, semievergreens and occasional in moist deciduous forests near stream sides.

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

**Bauhinia malabarica** Roxb.  
Occasional, in moist deciduous forests and semievergreens at low elevations.

**Bombax ceiba** L.  
Common in evergreens and occasional in moist deciduous forests.

**Bridelia squamosa** (Lamk.) Graham  
Fairly common in semievergreens and frequent in moist deciduous forests.
Buchanania lanzan Spreng. (ANACARDIACEAE)
Frequent in semievergreen forests; very common near Bonacaud.

Calophyllum 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 forests.

Chionanthus courtallensis Bedd. (OLEACEAE)
Fairly common, in semievergreens and disturbed evergreens.

Chukrasia tabularis A. Juss. (MELIACEAE)
Frequent, in evergreen and semi-evergreen forests.

Cinnamomum verum J.S. Persl. (LAURACEAE)
Occasional, in evergreens and semievergreens.

Cullen ia exarillata Robyns (BOMBACACEAE)
Fairly common, in the evergreens at higher altitudes.

Cynometra bourdilloni Gamble (CAESALPINIACEAE)
Rare, in the evergreen forests.

Cynometra travancorica Bedd. (CAESALPINIACEAE)
Rare, in evergreen forests.
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.

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

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

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

Diospyros paniculata 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.

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

Elaeocarpus tuberculatus Roxb. (ELAEOCARPACEAE)
Fairly common, in evergreens and semievergreens.
*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)  
Occasional, in evergreens.

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

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

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

*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.

*Gmelina arborea* Roxb.  
(VERBENACEAE)  
Rare, in most deciduous forests.
**Grewia tiliifolia** Vahl
Occasional, in moist deciduous and semievergreen forests.

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

**Heritiera papilio** Bedd.
Rare, in the moist deciduous forests.

**Hologarna arnottiana** Hook. f.
Frequent, along river banks in semievergreen forests.

**Holoptelia integrifoia** (Roxb.) Planch.
Rare, in moist deciduous forests at low elevations.

**Homalium jainii** Henry et Chandrab.
Occasional, in the evergreen, forests on the lower slopes of Ponmudi hills.

**Hopea parviflora** Bedd.
Common, along river banks in semievergreen and evergreen forests.

**Hopea racophloea** Dyer
Occasional, in evergreen forests.

**Humboldtia unijuga** Bedd.
Very common, in the evergreen forests along the base of Agastyar Peak.

**Humboldtia vahlana** Wt.
Frequent, along stream sides at lower altitudes.

**Hydnocarpus alpina** Wt.
Occasional, along river banks in evergreen forests.
**Knema attenuata** (Hook. f. et Thorns.) Warb. (MYRISTICACEAE)
Frequent, in evergreens and waterlogged areas.

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

**Hydnocarpus pentandra** (Buch.-Ham.) Oken (FLACOURTIACEAE)
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.

**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.
Rare, in evergreen and semievergreen forests

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

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

Pithecellobium monadelphum Jt. et Arn.
Frequent, along slopes in moist deciduous forests.

Pittosporum nilghirense Wt. et Arn.
Frequent, along slopes in moist deciduous forests.

Poeciloneuron indicum Bedd.
Fairly common at medium altitudes.

Polyalthia coffeoides Benth. et Hook. f.
Fairly common, at medium altitudes.

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

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

Pterocarpus marsupium Roxb.
Rare, in evergreen and semievergreen forests.

Pterospermum reticulatum Wt. et Arn.
Rare, in evergreen and semievergreen forests.

Radermachera xylocarpa (Roxb.) K. Schum.
Rare, in semievergreen and moist deciduous forests.
Schleichera oleosa Oken
(SAPINDACEAE)
Rare, in the moist deciduous and semievergreen forests,
Occasionally abundant, especially in Sheandurni Valley.

Semecarpus anacardium L. f.
(ANACARDIACEAE)
Fairly common, in evergreen forests at medium altitudes.

Semecarpus tranvancorica Bedd.
(ANACARDIACEAE)
Occasional 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.

Syzygium munronii (Wt.) Candrab.
(MYRTACEAE)
Occasional, in evergreen forests.
**Tectona grandis** L. f.  
Very rare, other than in cultivation.

**Terminalia bellirica** (Geartn.) Roxb.  
Occasional, in moist deciduous and semievergreen forests.

**Terminalia crenulata** Heyne ex Roxb.  
Frequent, in moist deciduous forests

**Tetrameles nudiflora** R. Er. et Benn.  
Rare, in moist deciduous and semievergreen forests.

**Toona ciliata** Roem.  
Not uncommon in semievergreen and frequent in moist deciduous forests.

**Trema orientalis** (L.) Bl.  
Occasional, as secondary growth in forest clearings

**Trewia nudiflora** L.  
Not uncommon, in semievergreen and moist deciduous forest.

**Turpinia malabarica** Gamble  
Frequent, in evergreen and semievergreen forests.

**Vateria indica** L.  
Frequent in evergreens; abundant in and around Kolathupuzha

**Vepris bilocularis** (Wt. et Arn.) Engl.  
Occasional, in evergreen forests.

**Vernonia travancorica** Hook. f.  
Fairly common, in the moist deciduous forests.

**Vitex altissima** L. f.
Frequent, in semievergreen forests

*Xyilia 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 enumerated 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 like 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 Xyilia 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 undisturbed 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. Characteristic 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-Aripppa 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
