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**ILLUSTRATED MANUAL ON TREE FLORA OF KERALA  
SUPPLEMENTED WITH COMPUTER-AIDED IDENTIFICATION**

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## Abstract

Identification of trees at sight is often required by Biologists, Ecologists, Foresters *et al.* This cannot be achieved with conventional floras, where identification keys are invariably based on floral and vegetative characters. Therefore a Computer-aided identification program (*TreeID*) was developed exclusively on easily observable field and vegetative characters which are always present, except for the short leafless period of deciduous trees. The *TreeID* is a menu driven Multi-entry key and all characters are of equal value and one need not follow the sequence or order followed in the case of dichotomous keys. Pictures of all key characters used in the identification program are provided for easy selection and comparison and one need not get familiarised with the so called “botanical jargons” for identifying trees. Photographs depicting diagnostic features of trees such as bark, blaze, leafy twigs with flowers, fruit, etc. are provided for easily comparing with the matching characters and confirmation. Therefore, the chance of misidentifying the trees included in the *TreeID* is rather remote. Search facility is provided to find out family, genera and species. There is also provision to find trees based on local/trade names. A help menu is provided in the CD on how to use the *TreeID*

The Manual and the Computer-aided Identification Package deal with 650 trees attaining a height of 4 m or more with a clear bole. The 650 trees include 72 common exotics, introduced as agricultural, forestry or ornamental/avenue trees. One hundred and fifteen trees belong to the Red Listed Categories and many of them are known only by their type collections made a century ago. We were able to locate most of the Red Listed trees. Two new trees discovered during the study are named as *Humboldtia sanjappae* and *Stereospermum colais* var. *shendurunii* (in press). In the Manual Dichotomous parallel keys based on generative and vegetative characters are provided for the identification of families, genera, species and infraspecific taxa. The correct botanical name with author(s) name and citation are provided with basionym and synonym(s), if any. References to monographs/revisions and floristic studies in Kerala are cited. Local name(s) are also given, if known. Description, habitats (vegetation wise), geographical distribution and District-wise occurrence in Kerala are provided along with flowering and fruiting periods. The species belonging to Red Listed categories are indicated to the IUCN (1994) category to which they are assigned.

## 1. Introduction

The Western Ghats region comprising the forests of Kerala has been recognised as one of the bio-diversity centres in India. The estimated number of flowering plants in Kerala constitutes nearly one-fourth of the total 17,000 flowering plants of India. Among the flowering plants of Kerala, 20 per cent are trees and 30 per cent of them are Western Ghats endemics. Since the publication of *Forest Trees of Travancore* (Bourdillon, 1908), there has been no serious attempt to study the tree flora in detail. Identification of trees in tropical forests has always been a challenge. The height of the trees, inconspicuous flowers, short flowering period, etc. make the task more difficult. This resulted in the poor representation of specimens of tree species in the National and Regional Herbaria. They are often represented by the type specimens or the ones collected by Forest Botanists like Beddome, Bourdillon, Barber, *et al.* made a century ago. The poor representation and lack of recent collections prompted Botanists to consider several trees as rare and threatened.

Identification of trees at sight is often required by Foresters, Wildlife biologists, Ecologists, *et al.* Botanists traditionally follow the Linnaean style of delimiting taxa based on floral characters and often ignore field and vegetative characters which are more helpful in the identification. Hence, Botanists are now giving importance to field characters for identification of trees. Field keys have been developed for field identification of trees (Balasubramanian *et al.*, 1985; Pascal & Ramesh, 1987). One of the 'weaknesses' of plant taxonomy has been the excess use of technical terms in the identification keys and description of species, which makes the conventional floras more useful only to Botanists. Computer-aided multi-entry identification keys are very convenient than conventional dichotomous keys.

Nowadays, Laptop computers are used by field Biologists for identification of plants. Therefore a study was undertaken to prepare a Manual on the Tree Flora of Kerala and a Multi-entry Computer-aided Identification Program to ease the identification of trees in the field as well as in the laboratory. The Ministry of Environment and Forests, Govt. of India granted financial support for the study. The Computer-aided package for the identification of trees of Kerala is exclusively based on vegetative and field characters such as bark, bole, buttress, blaze, exudation, branching pattern, thorns, prickles, leaves, etc. to make it more user friendly.

## 2. Review of literature

*Coloquis dos Simples* (Garcia de Orta, 1565), a checklist on the medicinal plants of India, is the first published Botanical work on the plants of the Western Ghats. Subsequently after a century, a more elaborate work on the plants of

Malabar coast, *Hortus Indicus Malabaricus*, was brought out by van Rheede (1678-1703). Major contributions to the floristic studies in India were made by the Britishers. Among the Botanists who worked on the flora of Peninsular India, the contributions of Robert Wight are the most outstanding. His major publications are *Illustrations of Indian Botany* (1840) and *Icones Plantarum Indiae Orientalis* (1838-1853). Wight together with Arnott published *Prodromus Florae Peninsulae Indiae Orientalis* (1834) in which several new taxa were described. The other notable contributions during the 19<sup>th</sup> century were *The Flora Sylvatica for Southern India* (Beddome, 1869-1874), *Icones Plantarum Indiae Orientalis* (Beddome, 1868-1874), *Flora Indica* (Roxburgh, 1820; 1824). *Flora of British India* was published by J.D Hooker during 1872-1897. This seven volume publication dealt with the Phanerogams of the erstwhile British India. Subsequently *Flora of the Presidency of Madras* (Gamble & Fischer, 1915-1936) was published. *The Forest Trees of Travancore* by Bourdillon (1908) is the first comprehensive work on the tree flora of Travancore and it dealt with 582 indigenous trees. The other important works on the flora of southern Peninsular India are: *Flowering Plants of Travancore* (Rama Rao, 1914), *Flora of Anamalai Hills, Coimbatore District, Madras Presidency* (Fischer, 1921) and *Flora of South Indian Hill Stations* (Fyson, 1932).

With the view of preparing a complete and comprehensive Flora of India, the Botanical Survey of India initiated District Flora studies along with revision of families and genera. So far five volumes of *Flora of India* covering the families from Ranunculaceae to Connaraceae have been published (Sharma *et al.*, 1993; Sharma & Balakrishnan, 1993; Sharma & Sanjappa, 1993; Hajra *et al.*, 1997; Singh *et al.*, 2000). The floristic studies in most of the Districts and Protected Areas in Kerala have either been completed or in the process of completion. The notable publications on the flora of Kerala are: *Flora of Calicut* (Manilal & Sivarajan, 1982), *Flora of Cannanore* (Ramachandran & Nair, 1988), *Flora of Silent Valley* (Manilal, 1988), *Flora of Palghat* (Vajravelu, 1990), *Flora of Thiruvananthapuram District* (Mohanan & Henry, 1994), *Flora of Thenmala Division* (Subramaniyan, 1995), *Flowering Plants of Thrissur Forests* (Sasidharan & Sivarajan, 1996), *Flora of Nilambur* (Sivarajan & Philip Mathew, 1997), and *Flora of Agasthyamala* (Mohanan & Sivadasan, 2002). The flora of protected areas such as *Shenduruny Wildlife Sanctuary* (Sasidharan, 1997); *Periyar Tiger Reserve* (Sasidharan, 1998), *Chinnar Wildlife Sanctuary* (Sasidharan 1999), *Parambikulam Wildlife Sanctuary* (Sasidharan, 2002) have been studied recently. In the Checklist on the Flowering Plants of Kerala (Sasidharan, 2004), there are 734 taxa recorded from Kerala after the publication of the *Flora of the Presidency of Madras*. Among the 734 taxa, 310 are new and 424 new record of occurrence. Though about 20 per cent of the flowering plants are trees, there are only 29 trees including six infra-specific taxa among the new taxa published after the *Flora of the Presidency of Madras* (Gamble & Fischer, 1915-1935).

### 3. Study area

#### 3.1. Location

The Kerala State lies along the south-west corner of Peninsular India, between 8° 18' and 12° 48' N latitude and between 74° 52' and 77° 22'E longitude. The boundaries of the State are the Lakshadweep Sea in the west, Tamil Nadu in the south and east and Karnataka in the north. The State has an area of 38,863 km<sup>2</sup>, which is about 1.18 per cent of the total area of the country and is administratively divided into 14 districts. Due to the long tract of the Western Ghats along the eastern side and the Lakshadweep along the western side, the physiography of the State is highly diversified. The State has a complex topography with mountains, valleys, ridges and scarps. The altitude varies from sea level to 2695 m asl. Based on the altitude, the land is divided into high ranges (above 750 m sea level); highlands (between 75-750 m asl); midland (between 7.5-75 m asl) and lowlands (below 7.5 m asl). The highlands with an average height of 900 m have several peaks over 1,800 m and constitute about 33 per cent of the land area followed by midland (42 percent); high ranges (15 per cent) and lowland (10 per cent) [Kerala Land Use Board, 1997]. A narrow strip of land bordering the sea constitutes the low land area of the State and this region holds the backwaters and estuaries. Mangroves and coastal vegetation are confined to this region. The wider eastern highland region constitutes the important region with regard to the Biodiversity.

#### 3.2. Geology and soil

The Mountain ranges traversing through the State are considered as the post Jurassic uplifts due to the continental movements. These regions show similarities with some of the mountains in Sri Lanka. Precambrian rock consisting mainly of gneisses, charconites and schists is an important feature of this region. The soil formation has been influenced by climate, geology, relief and biotic interactions. Due to high heterogeneity in the topography, the soil differs from place to place. Soil along the coastal plains are beaches, sand stones, swamps, marshes and coastal laterite. The soil along the midland is composed of laterite soil. It is subjected to exposure from various physical factors. It contains high concentration of metals like Iron, Aluminium, Manganese, etc. with relatively low concentrations of lighter elements and organic contents. The soil in this region is more or less sandy or clayey in texture and moderately drained. The soil in the hills and uplands is deep and well drained with high gravel content. It is rich in minerals and organic contents. Soil type influences the distribution of plants in this region. The alluvial soil drained from slopes forms deep deposits in the river valleys and plateau. The peculiar low altitude marshy areas in the uplands are due to this phenomenon

### **3.3. Climate**

The State receives both south-west and north-east monsoons. The mean annual rainfall is 2693 mm. The highest rainfall was recorded (5883 mm) at Neriamangalam and the lowest (651 mm) at Chinnar in Idukki district. The southern parts of Kerala experience comparatively higher rate of south-west and north-east monsoon while the northern districts receive very little rains from the north-east monsoon. The western part of the State is facing the Lakshadweep sea, hence southwest monsoon is more active and accounts for 60 per cent of the annual rainfall on an average. The number of rainy days varies from 45 to 172 in a year.

The mean annual temperature varies from 25.4°C to 31°C in the central parts of Kerala, while the temperature drops to 15°C in the hills. March, April and May are the summer months and the temperature raises to 40°C in the central plains. The mean relative humidity varies between 85 and 95 per cent during June and lowers to 70 per cent in summer months.

### **3.4. Vegetation**

The varied topographical features, high rainfall and geologic conditions have favoured the formation of different ecosystems from shola forests on the mountain valleys to the mangrove forests along sea coasts and estuaries. The most outstanding feature of the State is the formation of tropical rainforests along the windward side of the Southern Western Ghats, which is lying parallel to the west coast. A small extent of area of the State is along the rain shadow region of the Western Ghats, where the vegetation is dominated by dry deciduous forests and scrub jungles. The wetlands are mostly confined to the low land region of the State.

Champion and Seth (1968) identified 26 forest types in Kerala of which the major ones with respect to tree growth are the west coast tropical evergreen, west coast semi-evergreen, southern moist mixed deciduous, southern dry mixed deciduous, southern montane wet temperate forests, southern subtropical hill forests, mangrove forests and Myristica swamp forests. Based on dynamics they recognised secondary forests such as secondary evergreen, secondary moist deciduous, secondary dry deciduous, etc. The important features of the vegetation types are briefly mentioned below.

#### **West-coast tropical evergreen forests**

Evergreen forests are characterised by profusion of species, particularly trees and woody climbers, and the canopy is closed. The secondary species and exotic weeds are absent. The lower shrubby layer is composed mostly of seedlings and saplings of tree species. The evergreen forests are found between 400 and 1,200



m altitude. It has been observed that there is difference in the physiognomy and composition of species with respect to altitude. The evergreen forests below 700 m are occurring in patches and mostly confined to the sides of water courses where the soil is rather deep. Though there is no marked dominance of any group of trees in evergreen forests below 700 m elevation, there is dominance of certain species in the upper stratum above 700 m forming associations. The important associations are: (i) *Vateria* - *Calophyllum* - *Cullenia*, (ii) *Mesua* - *Cullenia* - *Palaquium* and (iii) *Mesua* - *Palaquium*. In the forests above 1,100 m there is dominance of Lauraceae and *Heritiera papilio*. Epiphytes and mosses tend to increase with altitude while woody climbers decrease.

#### *Species composition below 700 m altitude*

The upper stratum trees are *Antiaris toxicaria*, *Artocarpus heterophyllus*, *Bischofia javanica*, *Canarium strictum*, *Chrysophyllum roxburghii*, *Cynometra travancorica*, *Diospyros buxifolia*, *Dipterocarpus indicus*, *Drypetes venusta*, *Dysoxylum beddomei*, *Elaeocarpus tuberculatus*, *Hopea parviflora*, *Kingiodendron pinnatum*, *Mangifera indica*, *Mastixia arborea* ssp. *meziana*, *Ormosia travancorica*, *Persea macrantha*, *Alseodaphne semecarpifolia* var. *parvifolia*, *Syzygium chavaran*, *S. gardneri*, *Terminalia travancorensis*, *Vateria indica*, etc.

The middle stratum trees are *Aglaia lawii*, *A. malabarica*, *A. perviridis*, *Alseodaphne parvifolia*, *Aphanamixis polystachya*, *Beilschmiedia bourdillonii*, *Cinnamomum malabattrum*, *Diospyros* spp., *Elaeocarpus glandulosus*, *E. serratus*, *Garcinia gummi-gutta*, *G. morella*, *G. spicata*, *Gymnacranthera farquhariana*, *Holigarna arnottiana*, *Hydnocarpus alpina*, *Knema attenuata*, *Lepisanthes tetraphylla*, *Madhuca nerifolia*, *Myristica beddomei*, *M. malabarica*, *Otonophelium stipulaceum*, *Reinwardtiadendron anamalaiense*, *Sageraea laurina*, *Strombosia ceylanica*, *Syzygium laetum*, *Vepris bilocularis*, *Walsura trifolia*, etc.

#### *Species composition above 700 m altitude*

The upper stratum trees are *Artocarpus heterophyllus*, *Calophyllum polyanthum*, *Chrysophyllum roxburghii*, *Cullenia exarillata*, *Dysoxylum malabaricum*, *Elaeocarpus tuberculatus*, *Fahrenheitia zeylanica*, *Holigarna ferruginea*, *Mesua ferrea*, *Palaquium ellipticum*, *Persea macrantha*, *Poeciloneuron indicum*, *Prunus ceylanica*, *Toona ciliata*, *Vateria indica*, etc.

The middle stratum trees include *Actinodaphne malabarica*, *Agrostistachys borneensis*, *Beilschmiedia wightii*, *Bhesa indica*, *Dimorphocalyx lawianus*, *Diospyros paniculata*, *D. sylvatica*, *Drypetes malabarica*, *Melicope lunu-ankenda*, *Glochidion ellipticum*, *Gordonia obtusa*, *Hydnocarpus macrocarpus*, *Litsea bourdillonii*, *L. floribunda*, *L. oleoides*, *Mallotus tetracoccus*, *Meliosma pinnata*, *M. simplicifolia*, *Trichilia connaroides*, *Turpinia malabarica*, etc.

### West-coast semi-evergreen forests

This forest type is found below 700 m asl. It is intermediate between evergreen and moist deciduous types where several species which are common in evergreen forests and some of the trees in the moist deciduous forests are also seen. In this type also a three layer stratification of the trees are met with.

The upper stratum is composed mainly of *Aglaia barberi*, *Antiaris toxicaria*, *Artocarpus hirsutus*, *A. gomezianus* ssp. *zeylanicus*, *Bischofia javanica*, *Bombax ceiba*, *Carallia brachiata*, *Chukrasia tabularis*, *Dimocarpus longan*, *Diospyros buxifolia*, *D. crumenata*, *Drypetes confertiflora*, *Dysoxylum beddomei*, *Hopea parviflora*, *Mimusops elengi*, *Polyalthia fragrans*, *Prunus ceylanica*, *Pterospermum reticulatum*, *P. rubiginosum*, *Sageraea dalzellii*, *Otonephelium stipulaceum*, *Terminalia bellirica*, *Tetrameles nudiflora*, *Toona ciliata*, *Vitex altissima*, etc.

Trees in the middle stratum are *Aglaia barberi*, *Aglaia lawii*, *Aporosa lindleyana*, *Diospyros bourdillonii*, *D. assimilis*, *D. montana*, *D. paniculata*, *Flacourtia montana*, *Ficus callosa*, *F. nervosa*, *Harpullia arborea*, *Holigarna grahamii*, *Holoptelea integrifolia*, *Hydnocarpus alpina*, *H. pentandra*, *Margaritaria indica*, *Nothopegia colebrookeana*, *Olea dioica*, *Oroxylum indicum*, *Pajanelia longifolia*, *Schleichera oleosa*, etc.

### Southern moist mixed deciduous forests

This forest type is seen below 700 m altitude. During wet season, because of the thick foliage, the canopy looks similar to that of semi-evergreen forests and therefore scarcely distinguishable. However, during dry season the moist deciduous forests reveal their true identity as the trees shed their leaves. The leafless period varies from a few weeks up to 5 months depending on the species. Among the trees, *Bombax insigne*, *Hymenodictyon obovatum* and *Lagerstroemia microcarpa* have a leafless period up to five months. *Terminalia paniculata* and *Dalbergia sissoides* have a leafless period of less than 2 weeks. In Moist deciduous forests also three tier stratification for trees can be met with.

The trees in the upper stratum are *Albizia lebeck*, *A. odoratissima*, *A. procera*, *Alstonia scholaris*, *Bombax ceiba*, *B. insigne*, *Dalbergia sissoides*, *Dillenia pentagyna*, *Gmelina arborea*, *Grewia tiliifolia*, *Haldina cordifolia*, *Hymenodictyon orixense*, *Lagerstroemia microcarpa*, *Lannea coromandelica*, *Melia dubia*, *Pterocarpus marsupium*, *Radermachera xylocarpa*, *Stereospermum colais*, *Tectona grandis*, *Terminalia bellirica*, *T. elliptica*, *T. paniculata*, *Tetrameles nudiflora* and *Xylia xylocarpa*.

The middle stratum is composed mainly of *Bauhinia malabarica*, *B. racemosa*, *Briedelia retusa*, *Cassia fistula*, *Careya arborea*, *Cleistanthus collinus*, *Dalbergia lanceolaria*, *Ficus callosa*, *F. exasperata*, *F. racemosa*, *Garuga pinnata*, *Hymenodictyon obovatum*, *Macaranga peltata*, *Milusa tomentosa*, *Olea dioica*,

*Phyllanthus emblica*, *Sapindus trifoliata*, *Schleichera oleosa*, *Spondias pinnata*, *Sterculia guttata*, *S. villosa*, *Streblus asper*, *Strychnos nux-vomica*, *Trema orientalis*, *Zanthoxylum rhetsa*, etc.

#### Southern montane wet temperate forests

This type is characterized by the short-boled and highly branched trees. The branches are densely clothed with moss and other epiphytes. There is no stratification of trees. Leaves of trees in general are small. Climbers are few.

The characteristic species are *Actinodaphne bourdillonii*, *Cinnamomum sulphuratum*, *Elaeocarpus munronii*, *Elaeocarpus recurvatus*, *Euonymus indicus*, *Fagraea ceylanica*, *Gordonia obtusa*, *Mahonia leschenaultii*, *Michelia champaca*, *Pittosporum neelgherrense*, *Myrsine wightiana*, *Rhododendron arboreum* ssp. *nilagiricum*, *Symplocos cochinchinensis* ssp. *laurina*, *Syzygium densiflorum*, *Turpinia nepalensis*, etc.

#### Southern dry mixed deciduous forests (dry deciduous forests)

The forest type is characterised predominantly by hardwood deciduous tree species. The canopy is open with poor undergrowth. Bamboos are barely represented. The canopy level is vague in this type also. The lower storey consists of mostly shrubs and small trees.

The most characteristic species present invariably in the forest type are *Acacia ferruginea*, *A. leucophloea*, *Albizia amara*, *Anogeissus latifolia*, *Boswellia serrata*, *Cassia fistula*, *Chloroxylon swietenia*, *Commiphora pubescens*, *Diospyros ovalifolia*, *D. cordifolia*, *Ficus mollis*, *Garuga floribunda*, *Gyrocarpus asiaticus*, *Hardwickia binata*, *Ixora pavetta*, *Manilkara hexandra*, *Premna tomentosa*, *Santalum album*, *Sapindus emarginatus*, *Shorea roxburghii*, *Sterculia urens*, *Strychnos potatorum*, *Terminalia chebula*, etc.

#### Southern hill-top tropical evergreen forests

This forest type is confined to places above 1,500 m elevation. There is no stratification of tree canopy into different tiers. The trees are not very large and often highly branched. Epiphytes are common on branches of trees.

The frequently occurring trees are *Actinodaphne bourdillonii*, *Actinodaphne campanulata*, *Aglaiia bourdillonii*, *Ardisia rhomboidea*, *Bhesa indica*, *Elaeocarpus venustus*, *Garcinia imberti*, *Garcinia rubro-echinata*, *Garcinia travancorica*, *Gordonia obtusa*, *Isonandra candolleana*, *Mastixia arborea*, *Meliosma pinnata* ssp. *barbulata*, *Neolitsea cassia*, *Neolitsea scrobiculata*, *Poeciloneuron indicum*, *Symplocos cochinchinensis* ssp. *laurina*, *Syzygium calophyllifolium*, *Syzygium cumini*, *Syzygium densiflorum*, *Turpinia nepalensis*, *Vernonia travancorica*, etc.

## Mangroves or tidal swamp forests

Mangroves are mostly confined to the estuaries and banks of backwaters where the influence of tidal waves is pronounced. Kerala had a substantial area under mangroves. However, due to alternative land use, this unique vegetation now occupies only 17 km<sup>2</sup> area (Basha, 1991). Common trees in the mangroves are *Avicennia marina*, *Avicennia officinalis*, *A. marina*, *Bruguiera cylindrica*, *Bruguiera gymnorrhiza*, *Cerbera manghas*, *Excoecaria agallocha*, *Rhizophora apiculata*, *Rhizophora mucronata*, *Sonneratia caseolaris*, etc.

## 4. Methodology

A checklist of the trees recorded from Kerala has been compiled. Woody plants attaining a height of more than 4 m with a clear bole are considered as trees. The list includes 72 exotics introduced as horticultural, ornamental/avenue trees. Because of their long history of introduction and extensive cultivation, they have become part of the Flora of the State. The habitat often influences the growth of trees. Trees growing in the dry habitats are usually smaller in size. The same species when growing in moist locality may attain bigger size. Similarly a small tree may be a large shrub in poor sites.

Field characters such as bark surface, colour, blaze, exudation, etc. are not known for many species. Field characters of trees were studied through intensive field trips. There are 115 trees placed under various threatened categories including "Extinct" as well as Critically Endangered. During the study we were able to locate most of these species.

### *Manual on Tree Flora of Kerala*

Being a Manual on the Trees, every effort has been taken to make it useful to Botanists, Biologists and other users. The trees being lofty, collection of flowering/fruited specimens is rather difficult. Flowering and fruited specimens collected during the study period as well as the ones collected by the author earlier were made use of for the preparation of the Manual. Authentic specimens and type specimens of tree species available at Madras Herbarium, Coimbatore were also referred. Scanned images of types of the tree species from Royal Botanic Garden Herbarium, Kew, were also studied for confirming the identity of rare trees which are collected for the first time after their type collections. The herbarium specimens prepared during the study are deposited in the Kerala Forest Research Institute, Peechi.

Dichotomous parallel keys to identify families, genera, species and infraspecific taxa based on generative and vegetative characters are provided in the Manual. The families are arranged according to the system of classification by Bentham and Hooker (1862-1883) with delimitation to certain families, following their

current concepts. The key to families is divided into Gymnosperms and Angiosperms. Families of Angiosperms are grouped under Polypetalae, Gamopetalae and Monochlamydeae. Genera under families and species under genera are arranged in alphabetical order. Latest revisions/monographs have been followed with respect to the circumscription and delimitation of genera and species. The nomenclature is updated. Basionyms and synonym(s), if any, are also provided. References to the revisions/monographs and floristic studies in Kerala are cited. Abbreviations to the citations are according to Stafleu and Cowan (1976-1981). As local names are preferred in forestry and timber trade, every effort has been made to include the local names, trade/English name(s). Pictures depicting the diagnostic field characters are also provided along with fruiting/flowering twigs. Photos of herbarium specimens are provided in the case of a few very rare trees, which could not be located during the study.

#### *The CD on Computer-aided Identification*

The CD is designed to identify trees with easily observable field and vegetative key characters through a multi-entry, menu driven program (*TreeID*). The major characters used in the preparation of the Computer-aided Multi-entry key are: arrangement of leaves (phyllotaxy) - opposite, subopposite, alternate, verticillate or clustered at the apex of branchlets; the leaf type like simple entire, bilobed, 3 or more lobed, simple odd pinnate, simple even pinnate, bipinnate or tripinnate; leaf apex type are acute, acuminate, obtusely acute or acuminate, apiculate, mucronate, caudate, obtuse, retuse, rounded or emarginate; leaf base types are acute, attenuate, oblique, cordate, sagitate, auriculate, rounded, truncate and peltate; leaf shapes (form) include elliptic, oblong, ovate, obovate, oblanceolate, lanceolate, elliptic-lanceolate, linear-lanceolate, rhomboid, pandurate, orbicular, etc.; leaf margin may be entire, serrate, dentate, ciliate, wavy, revolute or undulate. Petiole may be pulvinate, appendaged, winged, glandular or with outgrowth at apex. The venation may be basally 3-5 ribbed or penni-nerved. Glands are often found in the nerve axils, base or throughout the surface of leaves. Thus from a leafy twig as many as 70 characters can be observed. Other characters used for keying out species are: outer and inner features of bark, colour, exudation, habitats, etc. All characters used in the key are arranged in different groups and displayed as *icons* on the main menu. By clicking an *icon* all the characters in that group will be displayed. One can select the most matching characters from a group by clicking over the character. The selected characters will be displayed in the *Selection Table* placed at the right side of the main menu. If a selected character in the selection table is doubtful, it can be removed by using the *Clear* button and also the entire selected characters with *All Clear* button in the selection table.

For identifying a tree, select as many characters possible from the main menu. The characters such as bark, blaze, size and shape of leaves in the identification program are of mature trees. Therefore, observe the bark and leaf features of mature trees. After selecting the characters click the *Find Tree* icon. The scientific name and pictures of the species sharing the selected characters will appear in the *Result Window*. If the list in the result window shows more species, return to main menu, select a few more characters and repeat the process. The list in the result window will be reduced and finally to the tree to be identified. When there are more pictures for a tree, view other images using *Next icon* and *Previous icon*. Correct nomenclature with author citations, reference to monographs, revisions and floristic studies pertaining to Kerala, detailed description, local name(s), habitat(s), geographic distribution and occurrence in Kerala, altitude and phenology are also provided. *Search* facility is provided for family, genera and species. A distribution map of the species in Kerala showing representative districts and protected areas is also given. *Glossary* for all the technical terms used in the identification program is also provided. There is also a help menu on how to use the *TreeID* program.

## 5. Results and Discussion

The Manual on the Tree flora and the Computer-aided Identification Programme deal with 650 trees recorded from Kerala. Among these, 72 are exotics which are widely cultivated in homesteads, raised in plantations or grown as ornamental trees. In the Manual, there are Dichotomous parallel keys based on generative as well as vegetative characters for the identification of families, genera and species. Nomenclature is updated. Detailed description, habitat, geographical distribution as well as occurrence in Kerala are also provided. Local names are also given for most of the trees. Species belonging to Red Listed Categories are indicated by the category to which it is assigned.

The Computer-aided Identification Programme is based exclusively on easily observable vegetative and field characters. For most of the trees there is particular altitudinal range and preferred vegetation types. Therefore altitude and vegetation types are also included in the identification program. Pictures of all key characters used in the identification program are provided for easy comparison and selection. Any number of matching characters can be selected for finding trees.

Most of the trees are occurring between 300 and 900 m asl. *Persea macrantha* and *Syzygium cumini* are found from sea level to 2000 m asl. *Bombax ceiba* and *Tetrameles nudiflora* occur in a wide range of habitats like plains, sacred groves, dry deciduous, moist deciduous, semi-evergreen and evergreen forests. However, they are more common in the moist deciduous forests. Habitat wise evergreen

forest abodes 316 species; semi-evergreen forest 182; deciduous forest 184 and shola forest 73 species. Twelve trees are common in the Mangroves. As many as 92 trees are recorded from the non-forest areas in the plains. Some of the trees occurring in evergreen forest will occur in the semi-evergreen forest as well as shola forest. Thus a species may occur in more than one habitat.

The Western Ghats, considered as a megadiversity centre, is also a biodiversity hotspot. It is estimated that 32 per cent of the flora of the Western Ghats are endemics (Nayar, 1996). The forests of Kerala are along the southern Western Ghats. Among the 578 indigenous tree species, 231 are endemics. Genera such as *Blepharistemma*, *Poeciloneuron* and *Otonophelium* are endemic to the Western Ghats. Lauraceae with 38 endemics is the dominant among the families with respect to endemism. Myrtaceae has 18 species; Euphorbiaceae 14; Anacardiaceae and Ebenaceae have 11 each; Dipterocarpaceae 10; Meliaceae 9; Annonaceae, Sapotaceae and Clusiaceae have 8 species each.

Based on the various publications (Henry *et al.*, 1979; Nayar & Sastry, 1987, 1988, 1990; Nayar, 1997; Sasidharan, 2005) 115 trees included in the Manual are belonging to the Red Listed categories. *Ilex malabarica* is considered as "Extinct." As per IUCN (1994) Red Listed Categories, 19 species are critically Endangered; 51 Endangered; 30 Vulnerable and 30 Low Risk/Near threatened. Among the families Myrtaceae has 13 Red Listed species; Dipterocarpaceae (10) and Anacardiaceae (8). During the study most of the Red Listed Category species were collected. Species such as *Atuna indica*, *Actinodaphne lawsonii*, *Dialium travancoricum*, *Ilex malabarica*, *Buchanania barberi*, *Syzygium stocksii*, *S. myhendrae*, *S. palghatense*, *Inga cynometroides*, *Litsea mysorensis*, *Neolitsea fischeri*, *Diospyros oocarpa*, *D. racemosa*, *Hopea utilis*, etc. were collected for the first time after their type collections. However, species such as *Holigarna beddomei*, *Drypetes gardneriana*, *Diospyros sulcata*, *Litsea beddomei*, *L. nigrescens*, *L. laevigata*, *Syzygium benthamianum*, *S. rubicundam*, etc. could not be located during the study. There is no report on recent collection of these species.

Conventional botanical keys invariably use technical terms or "botanical jargons" for keying out taxa. People not conversant with the botanical terms will find it difficult to identify plants with botanical keys. For identifying trees with the computer-aided Identification program, one need not be conversant with the botanical terms. Select the matching key characters of the tree to be identified by comparing with the pictures of the key characters from different *icons* and click the *find tree* button. Trees sharing the selected characters will be displayed along with their pictures for comparison and confirmation. Therefore, the chance of wrongly identifying trees is rather remote. Detailed botanical description, habitat, altitudinal range, known distribution localities, etc. are also provided for confirmation.

## 6. Systematic treatment

### Key to Families

1. Ovules not enclosed in an ovary, on the surface of megasporophyll, stigma absent.....GYMNOSPERMS (Podocarpaceae)
1. Ovules inside an ovary, stigma present ..... ANGIOSPERMS

### ANGIOSPERMS

1. Perianth 2 or more seriate, outer sepaloid and inner petaloid ..... **Dichlamydeae**
1. Perianth 1 seriate or absent, when 2 seriate similar.....**Monochlamydeae**

### Dichlamydeae

1. Inner perianth lobes(petals) free; stamens from the thalamus.....**Polypetalae**
1. Inner perianth lobes (petals) united; stamens epipetalous..... **Gamopetalae**

### Polypetalae

1. Ovary superior .....2
1. Ovary inferior or half inferior (perigynous).....49
2. Carpels free or ovary 1-celled .....3
2. Ovary 2 or more celled .....26
3. Ovule 1 .....4
3. Ovules 2 or more.....9
4. Flowers unisexual, dioecious; seeds horse-shoe shaped, tubercled along the margins; leaves 3-ribbed ..... **Menispermaceae**
4. Flowers polygamous; seeds not horse-shoe shaped or tubercled along the margins; leaves penni-nerved.....5
5. Petals and sepals similar; fruit a follicle, seeds attached to a thread .....**Magnoliaceae**
5. Petals and sepals dissimilar; seeds not attached by a thread .....6
6. Fruit samaroid, oblong or orbicular .....**Simaroubaceae**
6. Fruit not samaroid .....7
7. Stamens with connectival appendage; fruitlets free or fused, endosperm ruminant .....**Annonaceae**(p.p.)
7. Stamens without connectival appendage; endosperm smooth.....8
8. Stamens more than 20; leaves opposite .....**Clusiaceae** (Calophyllum)
8. Stamens 10 or less; leaves alternate .....**Anacardiaceae**
9. Gynophore or gynandrophore present.....10
9. Gymnophore and gynophore absent; ovary sessile .....11
10. Seeds embedded in pulp; fruit fleshy, indehiscent .....**Capparaceae**
10. Seeds not embedded in pulp; fruit follicles, dehiscent.....**Sterculiaceae** (p.p.)
11. Carpels 3 or more .....12
11. Carpel one .....13
12. Anthers with connectival appendage; endosperm ruminant ....**Annonaceae** (p.p.)
12. Anthers without connectival appendage; endosperm smooth.....**Dilleniaceae**



13.	Fruit dehiscent.....	14
13.	Fruit indehiscent.....	19
14.	Fruit a legume.....	15
14.	Fruit otherwise.....	17
15.	Corolla papilionaceous.....	<b>Fabaceae</b>
15.	Corolla not papilionaceous.....	16
16.	Flowers irregular, sepals and petals imbricate.....	<b>Caesalpiniaceae</b>
16.	Flowers regular, sepals and petals valvate.....	<b>Mimosaceae</b>
17.	Seeds covered with pulp.....	18
17.	Seeds not covered with pulp; flowers in drooping spikes.....	<b>Flacourtiaceae</b> (Homalium)
18.	Flowers in racemes or umbels often paniced; fruit with pungent aromatic smell.....	<b>Pittosporaceae</b>
18.	Flowers in axillary fascicle; fruit without pungent aromatic smell.....	<b>Flacourtiaceae</b> (Casearia)
19.	Fruit a hard rinded berry; petals with scales at base.....	<b>Flacourtiaceae</b> (Hydnocarpus)
19.	Fruit otherwise; petals without scales.....	20
20.	Stamens over 15.....	21
20.	Stamens 10 or less.....	24
21.	Flowers unisexual; petals 0.....	<b>Flacourtiaceae</b> (Flacourtia)
21.	Flowers bisexual; petals present.....	22
22.	Stigma lobed; ovules on 3 parietal placentae.....	<b>Flacourtiaceae</b> (Scolopia)
22.	Stigma entire; ovules basal or pendulous.....	23
23.	Flowers irregular, stamens in one unilateral bundle; ovary attached to the side of the calyx tube, ovules erect.....	<b>Chrysobalanaceae</b>
23.	Flowers regular, stamens arranged around the ovary, ovules pendulous.....	<b>Rosaceae</b>
24.	Stamens opposite to the petals.....	<b>Olacaceae</b>
24.	Stamens alternate with the petals.....	25
25.	Leaves simple; stamens in one row; ovules pendulous.....	<b>Icacinaceae</b>
25.	Leaves pinnate; stamens (6), in 2 rows; ovules basal.....	<b>Berberidaceae</b>
26.	Cells of ovary 3 or more ovuled.....	27
26.	Cells of ovary 1 or 2 ovuled.....	36
27.	Seeds embedded in cottony wool.....	28
27.	Seeds not embedded in cottony wool.....	29
28.	Stamens numerous, not arranged in phalanges; style undivided; leaves simple, lobed;.....	<b>Cochlospermaceae</b>
28.	Stamens arranged in 5 phalanges; style 5 branched at apex; leaves digitate.....	<b>Bombacaceae</b> (p.p.)
29.	Leaves 3-foliolate or pinnate.....	30
29.	Leaves simple.....	32
30.	Style 1; Fruit a capsule, seeds winged.....	<b>Meliaceae</b> (p.p.)
30.	Styles 3 or 5; fruit an indehiscent berry, seeds not winged.....	31
31.	Styles 3; leaves opposite.....	<b>Staphyleaceae</b>
31.	Styles 5; leaves alternate.....	<b>Averrhoaceae</b>
32.	Leaves opposite, margin serrate or crenate.....	<b>Celastraceae</b> (p.p.)
32.	Leaves alternate, margin entire.....	33

33.	Ovary stipitate.....	<b>Sterculiaceae</b> (p.p.)	
33.	Ovary sessile .....		34
34.	Flowers fascicled on old wood; fruit a spiny capsule, over 8 cm across .....	<b>Bombacaceae</b> (Cullenia)	
34.	Flowers axillary or terminal; fruit not as above .....		35
35.	Stamens on or at the apex of staminal tube, anthers 1-celled .....	<b>Malvaceae</b>	
35.	Stamens shortly connate at the base in to 3 to 5 phalanges, anthers 2-celled .....	<b>Theaceae</b>	
36.	Stamens 15 or more.....		37
36.	Stamens 10 or less.....		40
37.	Leaves opposite .....	<b>Clusiaceae</b> (p.p.)	
37.	Leaves alternate .....		38
38.	Anthers without aristae or connective prolonged in to subulate appendages .....	<b>Tiliaceae</b>	
38.	Anthers aristae or connective prolonged in to subulate appendages .....		39
39.	Petals entire or shortly lobed; fruits a nut or capsule; leaves entire .....	<b>Dipterocarpaceae</b>	
39.	Petals laciniate; fruit a berry or drupe with woody tubercled pyrenes; leaves serrate .....	<b>Elaeocarpaceae</b>	
40.	Leaves opposite .....	<b>Celastraceae</b> (p.p.)	
40.	Leaves alternate .....		41
41.	Flowers irregular, sepals unisexual, inner 2 large and petaloid; petals adnate to the staminal column .....	<b>Xanthophyllaceae</b>	
41.	Flowers regular, petals not adnate to staminal column .....		42
42.	Stamens as many as and opposite to the petals.....		43
42.	Stamens twice or as many as the petals and alternate with them .....		44
43.	Ovule one in each cell, placentation basal.....	<b>Rhamnaceae</b>	
43.	Ovules 2 in each cell, placentation axile.....	<b>Sabiaceae</b>	
44.	Petals with an erect ligule at base .....	<b>Erythroxylaceae</b>	
44.	Petals without ligulate appendage .....		45
45.	Leaves with punctate glands; anthers gland tipped.....	<b>Rutaceae</b>	
45.	Leaves and anthers eglandular .....		46
46.	Leaves simple; filaments adnate to the petals.....	<b>Aquifoliaceae</b>	
46.	Leaves pinnate, 3 or more foliate.....		47
47.	Filaments united a form distinct staminal tube.....	<b>Meliaceae</b> (p.p.)	
47.	Filaments free or united at the base only .....		48
48.	Disc tumid, petals often scaly at base .....	<b>Sapindaceae</b>	
48.	Disc cupular, adnate to the stamens; petals without scales at base.	<b>Burseraceae</b>	
49.	Stamens more than 15.....		50
49.	Stamens 10 or less.....		53
50.	Leaves opposite or subopposite .....		51
50.	Leaves alternate .....	<b>Lecythidaceae</b>	
51.	Leaves with intramarginal nerves, often glandular punctuate; if alternate then bark peeling off in stripes .....	<b>Myrtaceae</b>	
51.	Leaves without intramarginal nerves, not glandular punctuate.....		52
52.	Fruit a capsule, seeds winged .....	<b>Lythraceae</b>	
52.	Fruit a fleshy berry, seeds not winged.....	<b>Sonneratiaceae</b>	

53.	Ovary 1-celled .....	54
53.	Ovary 2 or more celled .....	57
54.	Flowers unisexual; ovules numerous; parietal .....	<b>Datisceae</b>
54.	Flowers bisexual or unisexual, monoecious; ovules less than 15 .....	55
55.	Ovules 2-5; stamens 8 or 10 .....	<b>Combretaceae</b>
55.	Ovule solitary; stamens 4-5 or over 15.....	56
56.	Stamens 4 or 5, petals less than twice the length of calyx lobes.....	<b>Cornaceae</b>
56.	Stamens 15 or more; petals much longer than the calyx.....	<b>Alangiaceae</b>
57.	Leaves simple; petals often lacerate at apex, if entire then with knee roots .....	<b>Rhizophoraceae</b>
57.	Leaves digitate or pinnate; petals entire, knee roots absent.....	<b>Araliaceae</b>

### **Gamopetalae**

1.	Ovary inferior .....	2
1.	Ovary superior .....	7
2	Flowers arranged in a head; calyx modified in to papus; fruit an achene .....	<b>Asteraceae</b>
2.	Flowers solitary or inflorescence otherwise; calyx regular; fruit other than achene .....	3
3.	Leaves opposite .....	4
3.	Leaves alternate .....	5
4.	Stipules inter or intra petiolar .....	<b>Rubiaceae</b>
4.	Stipules absent or inconspicuous .....	<b>Caprifoliaceae</b>
5.	Ovary 1-celled; stamens 5 .....	<b>Myrsinaceae</b>
5.	Ovary (2)-3-5-celled; stamens 10 or more.....	6
6.	Staminal filaments unequal, anthers opening longitudinally.....	<b>Symplocaceae</b>
6.	Staminal filaments equal, anthers produced at apex into cylindrical tubes with terminal openings .....	<b>Vacciniaceae</b>
7.	Stamens more than the number of corolla lobes .....	8
7.	Stamens as many as the corolla lobes.....	10
8.	Flowers unisexual.....	<b>Ebenaceae</b>
8.	Flowers bisexual .....	9
9.	Ovary 5-celled, ovules many in each cells; fruit a capsule.....	<b>Ericaceae</b>
9	Ovary 2-8-celled; ovules solitary in each cell; fruit an indehiscent berry .....	<b>Sapotaceae</b>
10.	Corolla actinomorphic.....	11
10.	Corolla zygomorphic.....	16
11.	Leaves opposite or whorled .....	12
11.	Leaves alternate .....	15
12.	Stamens 2.....	<b>Oleaceae</b>
12.	Stamens 4, 5 or 6.....	13
13.	Calyx persistent, inflated and encloses the fruit.....	<b>Verbenaceae</b> (Tectona)
13.	Calyx deciduous, never inflated in fruit.....	14
14.	Plants with milky latex; corolla often appendaged at mouth; seeds usually with coma.....	<b>Apocynaceae</b> (p.p.)
14.	Plants without milky latex; corolla without appendages; seeds without coma .....	<b>Loganiaceae</b>

- 15. Plants with milky latex, carpels free, united only at the tip ... **Apocynaceae** (p.p.)
- 15. Plants without milky latex; ovaries united completely ..... **Boraginaceae**
- 16. Fruit dehiscent; seeds winged ..... **Bignoniaceae**
- 16. Fruit indehiscent or dehiscent; seeds not winged ..... 17
- 17. Flowers in cymes, racemes or panicles, corolla 2-lipped or subequally 5-lobed; fruit an indehiscent drupe ..... **Verbenaceae** (p.p.)
- 17. Flowers sessile in capitate peduncled heads; corolla subequally 4-lobed; fruit a 2-valved capsule ..... **Avicenniaceae**

**Monochlamydeae**

- 1. Flowers bisexual ..... 2
- 1. Flowers unisexual ..... 5
- 2. Ovary inferior; stamens attached to the perianth lobes; leaves opposite ..... **Santalaceae**
- 2. Ovary superior; stamens free from perianth lobes ..... 3
- 3. Perianth lobes valvate, recurved and revolute; stamens 4, uniseriate, anthers opening by slits ..... **Proteaceae**
- 3. Perianth lobes imbricate, straight, stamens 2-4 seriate ..... 4
- 4. Perianth lobes united at the base only, 2-seriate; stamens often glandular, anthers opening by valves ..... **Lauraceae**
- 4. Perianth with long tubular base, lobes uniseriate; anthers opening by slits ..... **Thymeleaceae**
- 5. Branches slender, green, jointed; leaves reduced to small scale and whorled at nodes ..... **Casuarinaceae**
- 5. Branchlets otherwise; leaves well developed ..... 6
- 6. Perianth absent; inflorescence a catkin like spike ..... 7
- 6. Perianth present; inflorescence otherwise ..... 8
- 7. Ovary 1-celled; ovules 4 or more; seeds with silky hairs ..... **Salicaceae**
- 7. Ovary 2-6-celled; ovule solitary; seeds without silky hairs ..... **Betulaceae**
- 8. Ovary 1-celled; ovule 1 ..... 9
- 8. Ovary 2 or 3-celled; ovule 1 or 2 in each cell ..... **Euphorbiaceae**
- 9. Stamens connate in a column; seeds with aril ..... **Myristicaceae**
- 9. Stamens free; seeds without aril ..... 10
- 10. Stamens alternating with clavate staminodes; fruit with wing like perianth lobes ..... **Hernandiaceae**
- 10. Staminodes absent; fruit without wing like perianth lobes ..... 11
- 11. Stamens 1, inflexed in bud; style 1 or 2; trees with milky or watery exudates; flowers arranged on receptacle ..... **Moraceae**
- 11. Stamens 4-8, erect in bud; trees without milky or watery exudation; flowers in cymes or fascicles ..... **Ulmaceae**

## DILLENACEAE

1. Flowers to 10 cm across..... **Dillenia indica**
1. Flowers to 5 cm across..... 2
2. Petals white, stamens purple ..... **Dillenia bracteata**
2. Petals and stamens yellow ..... **Dillenia pentagyna**

**Dillenia bracteata** Wight, Ic. t. 358. 1840-43; Hook. f., Fl. Brit. India 1: 37. 1872; Gamble, Fl. Pres. Madras 7 (5). 1915; Ramach. & Nair, Fl. Cannanore Dist. 3. 1988; Majumdar in Sharma *et al.*, Fl. Ind. 1: 154. 1993; Subram., Fl. Thenmala Division 2. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 9. 1997.

*Local name:* Kattupunna

Trees, to 20 m high, bark greyish-brown; young shoots tomentose; leaf scars clasp the branches half the circumference. Leaves simple, alternate, spiral; stipules lateral, deciduous; petiole 10-50 mm long, stout, pubescent, grooved above; lamina 15-45 x 5-20 cm, obovate to elliptic-obovate, base cuneate, acute, or obtuse, apex acute, acuminate or obtuse, margin serrate or rarely entire, coriaceous, glabrescent at maturity; lateral nerves 12-20 pairs, parallel, prominent; intercostae subscalariform, faint. Flowers bisexual, yellow, 2.5-3 cm across, in racemes or in 2-7 flowered clusters on old branches; pedicels 4-10 mm long; bracts lanceolate or spatulate, hirsute, early caducous; sepals 5, ovate, 8-12 x 5-9 mm, coriaceous, reddish, silky pubescent; petals 5, obovate, 15-20 x 5-10 mm, white turning to yellow; stamens numerous, cohering slightly at base, in 2 series, purple blue; anthers linear, opening by small slits; carpels 5, cohering at the axis, ovules many; styles 5, free, 9 mm. Pseudocarp orange, subglobose, enclosed within sepals, 2.5-3 cm across. Fruits 8 x 5 mm; 1-2 seed, 5 x 4.5 mm, ovoid, dark reddish-brown to black, arillate, glabrous.

*Flowering & Fruiting:* December-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kannur, Kollam, Wayanad

*Endemic to:* Western Ghats

**Dillenia indica** L., Sp. Pl. 535. 1753; Hook. f., Fl. Brit. India 1: 36. 1872; Gamble, Fl. Pres. Madras 7(5). 1915; Ramach. & Nair, Fl. Cannanore Dist. 36. 1988; Majumdar in Sharma *et al.*, Fl. Ind. 1: 155. 1993. *Dillenia speciosa* Thunb., Trans. Linn. Soc. London 1: 200. 1791.

*Local names:* Syalita, Chalita

Evergreen trees, to 25 m high, bole straight; branches spreading; bark smooth, peeling off in small thin hard scales; branchlets appressed silky hairy. Leaves simple, alternate, estipulate; petiole 15-75 mm long, stout, sheathing, winged, tomentose, grooved above; lamina 18.5-30 x 5-10 cm, elliptic, oblanceolate, elliptic-oblanceolate or oblong-lanceolate, base cuneate, acute or attenuate, apex acute or acuminate, margin serrate to dentate, glabrous above, strigose or pubescent beneath; lateral nerves many, parallel, prominent, intercostae scalariform, faint. Flowers bisexual, 12-15 cm across, solitary, white, terminal; pedicel 4-8 cm long, silky hairy; bracts to 5 mm long, solitary, median on pedicels, lanceolate; sepals 5, 4-6 x 3-5 cm, obovate, orbicular or elliptic, thick, fleshy; petals 5, 7-9 x 5-6 cm,

obovate or oblong, white, veins green; stamens many, cohering slightly at base, in 2 series, outer 13-15 mm long, inner ones 20-22 mm long, inner ones arching over the short outer ones; carpels 14-20, cohering at the axis, ovules many; styles free, 18-25 mm long, flattened, oblanceolate to linear-lanceolate, spreading, white. Pseudocarps yellowish-green, globular with enclosed sepals, 10-12 cm across. Fruit an aggregate of berries, 3.5 × 1.5 cm; seeds 5, 6×4 mm, reniform, compressed, reddish, echinate with hairy margins.

*Flowering & Fruiting:* May-February

*Habitat:* Along streamsides in evergreen forests; often grown in Parks

*Distribution*

*Kerala:* Kannur, Kozhikkode

*Geographical:* Indo-Malesia

**Dillenia pentagyna** Roxb., Pl. Corom. t. 20. 1795; Hook. f., Fl. Brit. India 1: 38. 1872; Gamble, Fl. Pres. Madras 8(6). 1915; Manilal & Sivar., Fl. Calicut 25. 1982; Mohanan, Fl. Quilon Dist. 60. 1984; Ansari, Fl. Kasaragod Dist. 52. 1985; Ramach. & Nair, Fl. Cannanore Dist. 36. 1988; Manilal, Fl. Silent Valley 2. 1988; Antony, Fl. Kottayam Dist. 55. 1989; Vajr., Fl. Palghat Dist. 44. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 15. 1994; Majumdar in Sharma *et al.*, Fl. Ind. 1: 156. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 42. 1994; Subram., Fl. Thenmala Division 2. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 25. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 10. 1997; Sivar. & Mathew, Fl. Nilambur 34. 1997; Sasidh., Fl. Periyar Tiger Reserve 2. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 1. 2002; Mohanan & Sivad., Fl. Agasthyamala 49. 2002.

*Local names:* Malampunna, Vazhapunna, Pattipunna

Deciduous trees, to 25 m high, bark 15-20 mm, thick, surface grey, molted with white, smooth; blaze pink-red; branchlets stout, with prominent 'V' shaped leaf scars. Leaves simple, alternate, spiral, clustered at the tip of branchlets, estipulate; petiole 15-60 mm long, sheathing, stout, glabrous, winged; lamina 15-60 x 10-25 cm, obovate to oblong-lanceolate, scarious, base acute or attenuate, apex obtuse, margin serrate, rarely entire, glabrous above, puberulent beneath; lateral nerves many, parallel, prominent, intercostae scalariform, faint. Flowers bisexual, fascicled on old branches, 2.5-3 cm across, yellow, fragrant; pedicels 2.5-6 cm long; bracts hairy; sepals 5, 8-12 mm long, obovate or elliptic, glabrous, accrescent; petals 5, 10-20 x 7-12 mm, obovate, obtuse, bright yellow; stamens numerous, yellow in 2 series, outer series with 60-90 stamens, each 2.5-4 mm long, inner series with up to 10 stamens, each 6-9 mm long; carpels 5-10, cohering at the axis, arranged on the narrow conical receptacle, unilocular, ovules many; styles free, 4 mm long. Fruit aggregate of berries, drooping, subglobose, 15 x 13 mm, indehiscent, fleshy, yellow, orange or red, subtended by persistent sepals; seeds numerous, 5 x 3.5 mm, ovoid, black, glabrous, exarillate.

*Flowering & Fruiting:* February-June

*Habitat:* Deciduous forests

*Distribution*

*Kerala:* Kasaragode, Kottayam, Kollam, Palakkad, Pathanamthitta, Trivandrum, Thrissur, Kannur, Malappuram, Idukki, Wayanad

*Geographical:* Indo-Malesia

## MAGNOLIACEAE

1. Leaves lanceolate or elliptic lanceolate, acuminate, petiole 2-2.5 cm long; trees mostly under cultivation ..... **Michelia champaca**
1. Leaves obovate to oblong, acute, petiole 0.8-1.2 cm long; trees in the shola forests ..... **Michelia nilagirica**

**Michelia champaca** L., Sp. Pl. 536. 1753; Hook. f., Fl. Brit. India 1: 42. 1872; Gamble, Fl. Pres. Madras 9 (6). 1915; Manilal & Sivar., Fl. Calicut 26. 1982; Mohanan, Fl. Quilon Dist. 60. 1984; Antony, Fl. Kottayam Dist. 55. 1989; Vajr., Fl. Palghat Dist. 45. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 17. 1994; Raju in Sharma *et al.*, Fl. Ind. 1: 175. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 43. 1994; Sasidh., Fl. Periyar Tiger Reserve 3. 1998; Sunil, Fl. Pl. Alappuzha Dist. 21. 2000.

*Michelia rheedei* Wight, Illustr. 1: 14. 1840.

*Local name:* Chembakam

Evergreen trees, to 30 m high, bole straight; bark 10-12 mm thick, surface grey with numerous pits; blaze yellow; branchlets lenticellate, scarious; lenticels elliptic. Leaves simple, alternate; stipules 1-2.5 cm long, lateral, adnate to the petiole, ovate, subglabrous, enclosing leaf buds, deciduous, leaving annular scar; petiole 10-30 mm long, slender, pubescent, grooved above; lamina 8-25 x 4-10 cm, ovate, ovate-lanceolate, elliptic-lanceolate or elliptic-oblong, base acute, apex acuminate, margin entire, wavy, glabrous above, puberulent beneath, surface alveolate, coriaceous; lateral nerves 8-18 pairs, pinnate, prominent; intercostae reticulate, prominent. Flowers bisexual, yellow or white, fragrant, 4-5 cm across, axillary or terminal, solitary; flower bud enclosed by a greenish-yellow, spathaceous, pubescent, coriaceous, deciduous bracts; pedicels 16 mm long, stout, perianth parts 12-15, 4.5-8 cm long, oblanceolate, or oblong-lanceolate, gradually acute towards the centre, fleshy; stamens numerous, subcalvate; filaments short, flat; connective appendage up to 1 mm long; anthers 8-6 mm long; carpels many, superior, ovoid-oblong, densely hairy. Fruit an aggregate of capsules 1.5 x 1 cm, laxly arranged, ovoid to ellipsoid, white sparkle; seeds 3-4, enclose by fleshy red aril.

*Flowering & Fruiting:* March-July

*Habitat:* Evergreen forests, also grown as garden plant

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and China

**Michelia nilagirica** Zenk., Pl. Ind. 21. t.20. 1835; Hook. f., Fl. Brit. India 1: 44. 1872; Gamble, Fl. Pres. Madras 9 (6). 1915; Vajr., Fl. Palghat Dist. 45. 1990; Raju in Sharma *et al.*, Fl. Ind. 1: 175. 1993; Sasidh., Fl. Periyar Tiger Reserve 3. 1998.

*Local names:* Kattuchempakam, Vellachempakam

Trees, 20 m high, blaze yellow; branchlets tomentose, lenticellate. Leaves simple, alternate, spiral; stipules 1-1.5 cm long, oblong, coriaceous, woolly, enclosing buds, deciduous, leaving an annular scar; petiole 15-20 mm long, slender, tomentose, grooved above; lamina 5-13 x 3-5.5 cm, obovate to elliptic-obovate, base cuneate or acute, apex acuminate or caudate acuminate, acumen twisted, margin entire,

surface alveolate, glabrous above, villous beneath, coriaceous; lateral nerves 13-18 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers bisexual, white, 7-10 cm across, axillary or terminal, solitary, enclosed by densely pubescent, spathaceous bracts; pedicel 8 mm long, stout; perianth lobes 9-12, 3-5 x 1.2-1.5 cm, obovate, inner smaller; stamens numerous, crowded at the base of gynophore; filaments short, flat; anthers up to 8 mm long, connective appendage 0.5 mm long; carpels many, superior, ovoid, sessile, pubescent. Fruit an aggregate of capsules, 0.8 x 0.8 cm, globose; seed one, scarlet.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Trivandrum

*Endemic to:* Western Ghats

### ANNONACEAE

- |     |   |                                     |
|-----|---|-------------------------------------|
| 1.  | Carpel 1; petals united at base to form a cup.....  | <b>Cyathocalyx zeylanica</b>        |
| 1.  | Carpels 3 or more; petals not united at the base .....  | 2                                   |
| 2.  | Inner petals clawed, lozenge shaped.....  | 3                                   |
| 2.  | Inner petals without claw, not lozenge shaped .....   | 6                                   |
| 3.  | Stamens and carpels numerous, connective widened above the anthers.....   | 4                                   |
| 3.  | Stamens and carpels 12 or less, connective not widened above the anthers .....                                      |                                     |
|     | .....   | <b>Orophea erythrocarpa</b>         |
| 4.  | Ovules 1 or 2 per carpels .....   | <b>Goniothalamus rhynchantherus</b> |
| 4.  | Ovules 4-8 per carpels .....  | 5                                   |
| 5.  | Inner and outer petals yellow; leaves glabrous, trees in dry localities .....                                       |                                     |
|     | .....   | <b>Mitrephora heyneana</b>          |
| 5.  | Inner petals white spotted with crimson; leaves tomentose along the nerves beneath, trees in moist localities ..... | <b>Mitrephora grandiflora</b>       |
| 6.  | Connective widened above the anthers and concealing them .....  | 7                                   |
| 6.  | Connective narrowed above the anthers, not concealing them .....  | 9                                   |
| 7.  | Outer petals very smaller than inner petals .....   | 8                                   |
| 7.  | Outer petals equal to the inner petals .....  | <b>Alphonsea sclerocarpa</b>        |
| 8.  | Young shoots and leaves tomentose; flowers greenish-yellow  | <b>Milium tomentosa</b>             |
| 8.  | Young shoots and leaves glabrous; flowers pink.....   | <b>Milium wightiana</b>             |
| 9.  | Petals imbricate .....  | 10                                  |
| 9.  | Petals valvate .....  | 11                                  |
| 10. | Stamens <i>ca.</i> 25.....  | <b>Sageraea laurina</b>             |
| 10. | Stamens <i>ca.</i> 12 .....   | <b>Sageraea grandiflora</b>         |
| 11. | Carpels fused in the fruit, petals fleshy .....   | 12                                  |
| 11. | Carpels free in the fruit, petals not fleshy.....   | 16                                  |
| 12. | Petals 6, 2-seriate, broadly ovate or ovate .....   | 13                                  |
| 12. | Petals 3, (inner 3 absent or reduced to scales) linear or oblong .....  | 14                                  |
| 13. | Petals broadly ovate, subcordate at base; fruit with echinate processes .....                                       |                                     |
|     | .....   | <b>Annona muricata</b>              |
| 13. | Petals ovate, base obtuse; fruit smooth .....   | <b>Annona glabra</b>                |
| 14. | Fruit with convex areoles separated by grooves.....   | <b>Annona squamosa</b>              |



14. Fruit without convex projections ..... 15
15. Leaves acuminate at apex, branchlets sericeous when young, ripe fruits yellowish-red ..... **Annona reticulata**
15. Leaves elliptic to orbicular, obtuse or rounded at both ends, young shoots tomentose, ripe fruits green ..... **Annona cherimola**
16. Flowers sessile or subsessile, pedicels less than 4 mm long ..... 17
16. Pedicels more than 1 cm long ..... 18
17. Sepals united at the base, petals linear, rounded at base ..... **Xylopia parvifolia**
17. Sepals free, petals ovate acute or oblong acute ..... **Meiogyne pannosa**
18. Ovules several in the ovary ..... **Cananga odorata**
18. Ovules 1 or 2 in the ovary ..... 19
19. Leaves ovate-lanceolate, acuminate, margins strongly undulate (cultivated) .....  
..... **Polyalthia longifolia**
19. Leaves elliptic-oblong or oblong-lanceolate, margins straight (native) ..... 20
20. Petals over 2 cm long, linear oblong ..... 21
20. Petals 1 cm or less long, ovate or oblong-lanceolate ..... 23
21. Flowers in cymes ..... **Polyalthia fragrans**
21. Flowers solitary or in fascicles ..... 22
22. Petals 0.4-1 cm broad, smooth; pedicels slender ..... **Polyalthia coffeoides**
22. Petals 1.5-2 cm broad, rugose; pedicels thick ..... **Polyalthia shendurunii**
23. Leaves oblong, apex obtuse or obtusely acute; bark corky; flowers greenish-yellow, suffused with pink ..... **Polyalthia suberosa**
23. Leaves oblong-lanceolate, acute or acuminate; bark not corky; flowers green .....  
..... **Polyalthia cerasoides**

**Alphonsea sclerocarpa** Thw., Enum. Pl. Zeyl. 11. 1858; Hook. f., Fl. Brit. India 1: 89. 1872; Gamble, Fl. Pres. Madras 23(16). 1915; Debika in Sharma *et al.*, Fl. Ind. 1: 211. 1993; Sasidh., Fl. Chinnar Wildlife Sanctuary 11. 1999.

Small trees 10-15 m, branches rugose, glabrous; branchlets drooping. Leaves simple, alternate, distichous, estipulate; petiole 6-8 mm long, slender, glabrous; lamina 3.5-10 x 1.5-4 cm, oblong, oblong-lanceolate, elliptic ovate; base cuneate or attenuate; apex obtuse, entire, coriaceous, glabrous; lateral nerves 5-10 pairs, slender, pinnate, prominent; intercostae reticulate. Flowers bisexual, greenish-yellow, fascicled on very short axillary peduncle or in leaf opposed cymes; peduncle 15 mm long; pedicel 3-6 mm long, pubescent; sepals 3, 1 x 1 mm, united at base, orbicular, reflexed, pubescent; petals 6(3+3) ovate, acute, ochraceous, outer and inner whorls subequal 9 x 4 mm, base pouched, tip slightly recurved, pubescent; torus terete; stamens 15-25, 1-2 mm long, sessile, connectives flat at top, not concealing the anthers; carpels 3-6, oblong, *ca.* 2 mm long, muricate; ovules *ca.* 8 in 2 rows; style short, glabrous; stigma sessile, capitate. Fruits aggregate of berries, 3-4 x 2-3 cm, subglobose, 3-5 in a cluster, rugose, minutely fulvous tomentose, yellow, stalk 5-8 mm long, stout; seeds 6, biseriate, red.

*Flowering & Fruiting:* March-October

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Trivandrum

*Geographical:* South India and Sri Lanka

**Annona cherimola** Mill., Gard. ed. 8. 1768.

*Local name:* Cherimola

Trees, to 8 m high; branchlets rusty tomentose. Leaves simple, alternate, estipulate; petiole 6-12 mm long, slender, glabrous; lamina 5-14 x 4-9 cm, elliptic, ovate or ovate-lanceolate, base round or obtuse, shortly decurrent on petiole, apex acute, acuminate or obtuse, margin entire, pubescent above and velvety tomentose beneath, sub-coriaceous; lateral nerves 11-14 pairs, pinnate, intercostae reticulate. Flowers bisexual, green, solitary or upto 5 in extra-axillary or leaf opposed clusters; pedicels 1-1.3 cm long, tomentose; sepals 3, 2-4 mm long, connate, tomentose on outer side, glabrous within; petals 3+3, 1.5-3 cm long, greenish with out, puberulous, basally purple-spotted with in, fleshy; stamens many; connectives concealing the anthers; pistils many, linear-oblong, stigma spathulate. Fruit an aggregate of berry, 12 x 8 cm, globose or subglobose, turning yellow or reddish, smooth; areoles rather flat, separated by a reticulation of often raised ridges; pulp yellowish; seeds black-brown.

*Flowering & Fruiting:* March-December

*Habitat:* Cultivated

*Distribution*

*Kerala:* Idukki, Trivandrum, Wayanad

*Geographical:* Native of South America

**Annona glabra** L., Sp. Pl. 537. 1753; Antony, Fl. Kottayam Dist. 56. 1989; Sivar. & Sunil, Rheedeia 3: 90. 1993; Debika in Sharma et al., Fl. Ind. 1: 206. 1993; Sunil, Fl. Pl. Alappuzha Dist. 23. 2000.

*Annona palustris* L., Sp. Pl. (ed. 2) 757. 1762.

*Local name:* Kattu-aatha, Pond apple

Trees, to 10 m high; bark grey, blaze creamy. Leaves simple, alternate, estipulate; petiole 8-25 mm long, stout, glabrous; lamina 6-20 x 3-8 cm, elliptic, elliptic-ovate, oblong-lanceolate or ovate-lanceolate, base obtuse, round or decurrent, apex acute, acuminate or obtuse, margin entire, glabrous, coriaceous; lateral nerves 8-12 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, yellowish-green, solitary, internodal or terminal on a short branchlets; pedicel 15-20 mm long, sepals 3, 5 x 7 mm, valvate, semiorbicular or ovate, glabrous; petals 3+3; outer petals 1.5-3 cm long, ovate, green and glabrous outside, yellow and minutely puberulous inside; inner petals 1.2-2.5 cm, elliptic-oblong, puberulous, yellow outside, carmine inside, minutely puberulous on both surface; stamens many, 3-4 mm long, connectives at apex slightly convex; carpels many, connate at anthesis. Fruit an aggregate of berry, 5-12 x 5-8 cm, ovoid, round at apex, yellow to orange, smooth, pulp yellow; seeds many, elliptic, black.

*Flowering & Fruiting:* January-June

*Habitat:* Introduced, also became naturalised along the backwaters

*Distribution*

*Kerala:* Alappuzha, Kannur, Kollam, Trivandrum

*Geographical:* Native of Tropical America and West Indies

**Annona muricata** L., Sp. Pl. 536. 1753; Manilal & Sivar., Fl. Calicut 27. 1982; Antony, Fl. Kottayam Dist. 59. 1989; Debika in Sharma *et al.*, Fl. Ind. 1: 206. 1993; Sivar. & Mathew, Fl. Nilambur 45. 1997; Sunil, Fl. Pl. Alappuzha Dist. 24. 2000.

*Local names:* Mullanchakka, Mullathi

Trees, to 10 m high, bark pale brown; young twigs glabrescent. Leaves simple, alternate, distichous, estipulate; petiole 4-8 mm long, slender, glabrous, grooved above; lamina 7-14.5 x 3-5.5 cm, oblong-obovate, elliptic-oblong or elliptic-obovate, base acute, apex acute to acuminate, coriaceous, margin entire, lateral veins 8-10 pairs, slender, pinnate, prominent, intercostae reticulate, domatia present. Flowers yellowish-green, solitary, axillary or from mature branches; sepals 3, triangular, persistent; petals 6(3+3) ovate-acute, yellow, thick, glabrous, outer ones 2.5-3.5 x 2-2.5 cm, base cordate, apex acuminate, inner petals ca. 1.5 x 1 cm, shortly stipitate; stamens many, 4-5 mm long, linear, filaments broad at base, with capitate top of the connective; ovary superior, ca. 4 mm long, linear, slightly curved, strigose, style broad at base, stigma entire. Fruit ovoid to obovoid, 15-25 x 10-15 cm, green, covered with curved spines, stalks 2-3 cm long, stout; seeds many, reddish-brown, ca. 1.5 cm long.

*Flowering & Fruiting:* April-October

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Central America and West Indies, introduced elsewhere

***Annona reticulata*** L., Sp. Pl. 537. 1753; Hook. f., Fl. Brit. India 1: 78. 1872; Gamble, Fl. Pres. Madras 20(14). 1915; Manilal & Sivar., Fl. Calicut 27. 1982; Ansari, Fl. Kasaragod Dist. 53. 1985; Ramach. & Nair, Fl. Cannanore Dist. 42. 1988; Vajr., Fl. Palghat Dist. 49. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 30. 1994; Debika in Sharma *et al.*, Fl. Ind. 1: 207. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 44. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 34. 1996; Sunil, Fl. Pl. Alappuzha Dist. 24. 2000.

*Local names:* Manilanilam, Ramasita

Trees, to 8 m high; bark pale brown. Leaves simple, alternate, distichous, estipulate; petiole 10-20 mm long, stout, glabrous, grooved above; lamina 10-20 x 3.5-7 cm, ovate-lanceolate or oblong-lanceolate, base acute, obtuse or decurrent, apex acuminate, margin entire, pubescent on both sides when young, glabrous above and pubescent beneath at maturity, coriaceous; lateral nerves 10-14 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, green, several from internodal cymes, rarely leaf opposed; sepals 3, 2-3 mm long, pubescent out side, glabrous within; petals 3 + 3, outer ones 1.5-2 cm, puberulous; inner ones reduced; stamens many, 1-1.3 mm long; anther cells hidden by the overlapping connectives; carpels many. Fruit an aggregate of berry, to 10 cm across, spherical or ovoid, yellowish-red; areoles flat, rather separated by reticulations of raised ridges; pulp yellowish; seeds black-brown.

*Flowering & Fruiting:* May-August

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Central America and West Indies

***Annona squamosa*** L., Sp. Pl. 537. 1753; Hook. f., Fl. Brit. India 1: 78. 1872; Gamble, Fl. Pres. Madras 20(14). 1915; Manilal & Sivar., Fl. Calicut 27. 1982; Mohanan, Fl. Quilon Dist. 61. 1984; Antony, Fl. Kottayam Dist. 57. 1989; Vajr., Fl. Palghat Dist.

49. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 30. 1994; Debika in Sharma *et al.*, Fl. Ind. 1: 207. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 44. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 34. 1996; Sivar. & Mathew, Fl. Nilambur 45. 1997; Sunil, Fl. Pl. Alappuzha Dist. 27. 2000.

*Local names:* Aatha, Seethappazhmaram, Aathi

Trees, to 6 m high, brownish or brownish-black; branchlets sericeous, glabrous when mature. Leaves simple, alternate, distichous, estipulate; petiole 6-20 mm long, stout, glabrous, grooved above; lamina 5-17 x 2-7 cm, ovate, ovate-lanceolate or elliptic-oblong, base acute, obtuse, cuneate, or round, apex acute or obtuse, margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 8-12 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, axillary, solitary or a few together, leaf-opposed; pedicels 1-3 cm long, glabrous; sepals 3, 2-3 x 3-4 mm, broadly ovate, shortly acuminate, pubescent outside; petals 6 [3+3], outer 3 petals, 1.5-3 x 3-0.5 cm, linear-oblong, keeled inside, thick, greenish-white or yellow, reddish at base inside, pubescent outside, inner three petals usually missing or rudimentary, ovate, *ca.* 1 mm long; stamens many, *ca.* 1 mm long, anther thecae narrow, with ovoid top of connectives; carpels many, superior, *ca.* 1 mm long, subconnate, ovoid, pubescent, 1-ovuled, style oblong, stigma entire. Fruit an aggregate of berry, 8-10 cm across, ovoid, greenish, glabrous, tuberculate with rounded tips, glaucous, pulp white; seeds many, black, shiny.

*Flowering & Fruiting:* June-October

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Central America and West Indies

**Cananga odorata** (Lam.) Hook. f. & Thoms. Fl. Ind. 130. 1855 & Hook. f., Fl. Brit. India 1: 56. 1872; Manilal & Sivar., Fl. Calicut 27. 1982; Mohanan, Fl. Quilon Dist. 65. 1984; Antony, Fl. Kottayam Dist. 58. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 30. 1994; Debika in Sharma *et al.*, Fl. Ind. 1: 254. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 45. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 34. 1996; Sunil, Fl. Pl. Alappuzha Dist. 29. 2000.

*Uvaria odorata* Lam., Encycl. Meth. Bot. 1:595.1785.

*Canangium odoratum* (Lam.) Baill. *ex* King, J. Asiat. Soc. Bengal 61: 41. 1892.

*Local names:* Langilangi, Kanangamaram

Trees, 15-20 m tall; bole straight, bark greyish-white, blaze creamy yellow, branches spreading, minutely puberulous with greyish, crispate, mostly fascicled hairs when young, glabrate with age. Leaves simple, alternate, distichous, estipulate; petiole 10-20 mm long, slender, grooved above, minutely puberulous; lamina 9-21 x 4-9 cm, oblong, elliptic, ovate or elliptic-lanceolate; base obtuse or oblique; apex acuminate or acute; margin entire, undulate, glabrous, coriaceous; lateral nerves 8-11 pairs, pinnate, prominent; intercostae scalariform, obscure. Flowers bisexual, yellowish-green, fragrant, to 6 cm across, several in peduncled, axillary cymes; bracts subulate, 1-2 mm long, puberulous on both sides, cauducous; pedicel 2-5 cm long, slender; sepals 3, 4-6 mm long, ovate, pubescent, reflexed, shortly connate at base; petals 6 (3 + 3), 3.5-5 x 0.5-1.5 cm, green, turning yellow, linear or lanceolate, valvate, puberulous; inner ones smaller, subequal; torus some what

convex; stamens many, closely arranged, to 3.5 mm, connectives broadly appendaged, acute, concealing anthers; carpels many, glabrous at the very base, ovules many attached to the suture, stylules slender, terminated by a club-shaped stigma. Fruit aggregate of berry, 3-15 in a cluster, 1-15 x 0.5-1 cm, globose, glabrous, pulpy, black; seeds 2-12, transversely compressed, yellowish-brown.

*Flowering & Fruiting:* December-May

*Habitat:* Grown as ornamental plant

*Distribution*

*Kerala:* All districts

*Geographical:* Myanmar to Australia and New Zealand, through Malesia

**Cyathocalyx zeylanica** Champ. ex Hook. f. & Thoms., Fl. Ind. 127. 1855 & Hook. f., Fl. Brit. India 1: 53. 1872; Gamble, Fl. Pres. Madras 13(9). 1915; Mohanan, Fl. Quilon Dist. 62. 1984; Vajr., Fl. Palghat Dist. 46. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 20.1994; Debika in Sharma *et al.*, Fl. Ind. 1:256.1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 45. 1994; Subram., Fl. Thenmala Division 3. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 26. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 11. 1997; Mohanan & Sivad., Fl. Agasthyamala 52. 2002.

*Local names:* Kodavazha, Elappati

Medium sized evergreen trees, 10-20 m tall, bark greyish-brown, smooth, blaze dull yellow, branches horizontal, confined to the top of the trunk; young branches drooping. Leaves simple, alternate, distichous, estipulate; petiole 7-10 mm, slender, pubescent when young, canaliculate above; lamina 13-27 x 4-9 cm, elliptic-oblong or oblong-lanceolate; base obliquely obtuse, cuneate or acute; apex acuminate or caudate-acuminate; margin entire, coriaceous, glabrous, shiny above; lateral nerves 8-13 pairs, slender, prominent beneath, pinnate; intercostae reticulate, midrib and nerves pubescent beneath when young. Flowers, bisexual, solitary, or in pairs, extra axillary, pale green; pedicels stout, 1-5 cm long, brown pubescent when young; sepals combined in to a 3 lobed cup, rusty tomentellous, glabrous inside; petals 6 (3+3), constricted above base, connivent with their spoon shaped base over and closely appressed to stamens and carpels, thinly fleshy, clawed, ovate-lanceolate, subacute, golden pubescent outside, puberulous inside; outer petals 2.5-4 x 7-0.8 cm; inner petals as long as or slightly longer and narrower than outer, fused by their very bases; torus glabrous, flat with a cavity in the centre; stamens numerous, connective broad, concealing the anthers, cuneate at the base, truncate at the top, ca.2 mm long, anther theca linear; carpels solitary on a concave torus, cylindric, ca 4 mm long; ovary pubescent, ovules many, style short, stigma peltate, dark red. Fruit a berry, ovoid, 7 x 5 cm, slightly constricted in the middle, fleshy, yellowish, turning black, glabrous, seeds 8-10 in 2 rows, compressed, testa reddish-brown, bony, smooth, transversely rugose on sides.

*Flowering & Fruiting:* January-June

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Palakkad, Trivandrum, Thrissur

*Geographical:* South India and Sri Lanka

**Goniothalamus rhynchantherus** Dunn, Bull. Misc. Inform. Kew 1914: 182. 1914 & Gamble, Fl. Pres. Madras 19(13). 1915; Mohanan, Fl. Quilon Dist. 62. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 20. 1994; Debika in Sharma *et al.*, Fl. Ind. 1: 237. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 46. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 12. 1997; Sasidh., Fl. Periyar Tiger Reserve 5. 1998; Gopalan & Henry, End. Pl. India SW Ghats 213. 2000; Mohanan & Sivad., Fl. Agasthyamala 54. 2002.

Trees, 5-8 m tall, bark smooth, black. Leaves simple, alternate, distichous, estipulate; petiole 6-10 mm long, slender, glabrous, grooved above; lamina 9-22 x 3.5-6.5 cm, oblong, elliptic-oblong or ovate, base acute, obtusely acuminate or cuspidate-acuminate, margin entire, recurved, coriaceous, glabrous; lateral nerves 12-15 pairs, pinnate, faint, intercostae reticulate. Flowers bisexual, axillary, solitary, fragrant, 2.5 cm across; petiole stout, 0.5-1 cm long, glabrous, sepals 3, 8 x 9 mm, broadly ovate, connate at base, acute at apex, appressed golden brown pubescent outside, glabrous inside; petals 6 (3+3), outer petals 2-3 cm long, obovate, adnate to 2/3 from apex, acute, densely silvery white or golden sericeous pubescent outside, glabrous inside except the margin, inner petals smaller, shortly clawed, cohering in a veluted cap over the stamens and ovary; stamens many, closely packed, 1.5-2 mm long, anthers beaked, remote, hidden by the connective, connectives pubescent, produced into a beak; carpels many, awl-shaped, densely pubescent, 2-3 mm long, ribbed, style 3-4 mm long, subulate, stigma pointed, entire, ovules 1 or 2. Fruit aggregate, fruitlets many, 15 x 8 mm, obovoid, sometimes constricted, glabrous; seed one, ovoid, shiny, reddish-brown.

*Flowering & Fruiting:* March-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Trivandrum, Idukki

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Meiogyne pannosa** (Dalz.) Sinclair, Sarawak Mus. J. 5: 604. 1951; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 46. 1994; Subram., Fl. Thenmala Division 5. 1995; Mohanan, Fl. Quilon Dist. 63. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 23. 1994; Debika in Sharma *et al.*, Fl. Ind. 1: 266. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 27. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 15. 1997; Ramach. & Nair, Fl. Cannanore Dist. 39. 1988; Sivar. & Mathew, Fl. Nilambur 39. 1997; Sasidh. & Anto in Manoharan *et al.*, Silent Valley-Whispers of Reason 136. 1999; Sasidh., Fl. Periyar Tiger Reserve 5. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 3. 2002; Mohanan & Sivad., Fl. Agasthyamala 56. 2002.

*Unona pannosa* Dalz. in Hook.'s J. Bot. Kew. Gard. Misc. 3: 207. 1851; Hook. f., Fl. Brit. India 1: 58. 1872; Gamble, Fl. Pres. Madras 14(10). 1915.

*Desmos pannosus* (Dalz.) Safford, Bull. Torrey Bot. Club 39: 506. 1912; Antony, Fl. Kottayam Dist. 58. 1989.

*Local name:* Panthal maram

Small trees, 5-9 m tall, bark smooth, greyish, mottled with green, blaze dull yellow, young shoots puberulous, branchlets slender. Leaves simple, alternate, distichous, estipulate; petiole 5-9 mm long, slender, pubescent; lamina 2.5-7 x 1.5-3 cm,

elliptic ovate, ovate or ovate lanceolate; base obtuse or rounded; apex acuminate or caudate acuminate; margin entire, coriaceous, glabrous and glossy above, slender, prominent, pinnate, regular; intercostae reticulate. Flowers subsessile, axillary or terminal, solitary, dull yellowish-green or dirty white; sepals 3, 4-6 x 4-5 mm, ovate, tomentose outside, glabrous inside, connate at base; petals 6 (3+3), 2.5-5 x 0.5-1.5 cm, outer spreading, clawed, inner erect and smaller, oblong-lanceolate or ovate-lanceolate, densely silky tomentose; stamens numerous, cuneate, connective broad, concealing the anthers, capitate; carpels many, sessile or subsessile, oblong, 2-2.5 mm long, strigose; ovules 2-8 in one row, stigma capitate. Fruit aggregate, fruitlets 12 x 8 mm, obovoid, fulvous tomentose, apiculate; seeds 1-3, globose, shiny.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Kottayam, Idukki, Palakkad, Pathanamthitta, Thrissur Malappuram, Kannur, Trivandrum

*Endemic to:* Western Ghats

**Miliusa tomentosa** (Roxb.) Finet & Gagnep., Bull. Soc. Bot. France 4: 153. 1906; Sinclair, Gard. Bull. Singapore 14: 378. 1955; Vajr., Fl. Palghat Dist. 47. 1990; Debika in Sharma *et al.*, Fl. Ind. 1: 221. 1993; Sasidh., Fl. Shenduruny Wildlife Sanctuary 16. 1997; Sivar. & Mathew, Fl. Nilambur 40. 1997; Sasidh., Fl. Periyar Tiger Reserve 8. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 12. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 3. 2002.

*Uvaria tomentosa* Roxb., Pl. Corom. t. 35. 1795.

*Saccopetalum tomentosum* (Roxb.) Hook. f. & Thoms., Fl. Ind. 152. 1855 & Hook. f., Fl. Brit. India 1: 88. 1872; Gamble, Fl. Pres. Madras 22(16). 1915; Ansari, Fl. Kasaragod Dist. 56. 1985.

*Local names:* Kanakaitha, Kaithamavu, Thavidi

Large deciduous trees 15-20 m tall; bark 15-25 mm thick, brownish-black, longitudinally grooved; blaze yellowish; young parts tomentose. Leaves simple, alternate, distichous; petiole 2-6 mm long, slender, pubescent; lamina 8-17 x 2-10 cm, ovate or oblong-ovate; base cuneate to round or subacute; apex acute, margin entire chartaceous, tomentose above when young, glabrous with age except midrib, tomentose beneath; lateral nerves 8-10 pairs, pinnate, slender, prominent beneath, intercostae reticulate; intramarginal nerves present. Flowers bisexual, greenish-yellow, solitary or a few together, leaf opposed or subterminal cymes, pedicels 3-7 cm long, very slender, tomentose; sepals 3, 5 x 1.5 mm, linear-lanceolate, tomentose; petals 6 (3+3), outer petals sepalloid, linear-lanceolate, 4-7 mm long, tomentose, inner ones ovate-oblong, saccate at base, obtuse, 1.5-2 x 0.5 cm, tomentose on both sides, outer petal shorter than inner; stamens many, connectives apiculate, not concealing the anthers; carpels many, stalked, broadly ovate, brown tomentose; ovules 4-6, in two rows, style absent, stigma capitate. Fruit aggregate of berries, fruitlets 2.5 cm across, subglobose, tapering to base, succulent, purple, stalk stout, 1-1.5 cm long; seeds 4-5.

*Flowering & Fruiting:* October-May

*Habitat:* Moist and dry deciduous forests

*Distribution*

*Kerala:* Malappuram, Palakkad, Thrissur, Kollam, Kasaragode, Idukki  
*Geographical:* India, Nepal and Sri Lanka

**Miliusa wightiana** Hook. f. & Thoms., Fl. Ind. 149. 1855 & Hook. f., Fl. Brit. India 1: 87. 1872; Gamble, Fl. Pres. Madras 21(15). 1915; Vajr., Fl. Palghat Dist. 47. 1990; Debika in Sharma *et al.*, Fl. Ind. 1: 222. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 47. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 15. 1997; Mohanan & Sivad., Fl. Agasthyamala 58. 2002.

Small evergreen trees, 10-15 m tall; bark black; branches glabrous; young parts pubescent. Leaves simple, alternate, distichous, estipulate; petiole 2-6 mm, slender, pubescent; lamina 2.5-9.5 x 1-4 cm, oblong-lanceolate; base obtuse; apex obtusely acuminate; margin entire, coriaceous, glabrous except nerves beneath, lateral nerves 5-8 pairs, pinnate, slender, prominent and slightly pubescent beneath; intercostae reticulate. Flowers bisexual, green, solitary, axillary; pedicels 1.5-2.5 cm long, slender, glabrous; sepals 3, minute, valvate, reflexed; petals 6 (3+3); outer petals like the sepals; inner ones ovate-oblong, 10-15 x 6-8 mm, connate at base, puberulous outside, inner petal longer than outer, glabrous within; stamens many, much broader, connectives hardly apiculate, anther subdidymous, cells not concealed; carpels many, oblong, glabrous, 1-2 ovuled, style short, stigma oblong. Fruit aggregate, fruitlets pisiform, glabrous, granulate; seeds 1-2.

*Flowering & Fruiting:* September-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Palakkad, Trivandrum, Kollam

*Endemic to:* Western Ghats

**Mitrephora grandiflora** Bedd., Ic. t. 101. 1868-1874; Hook. f., Fl. Brit. India 1: 78. 1872; Gamble, Fl. Pres. Madras 19(14). 1915; Mohanan, Fl. Quilon Dist. 63. 1984; Debika in Sharma *et al.*, Fl. Ind. 1: 243. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 29. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 16. 1997.

*Local name:* Manjara

Trees 7-12 m tall; bark black, smooth; branchlets horizontal; young shoots golden-brown, tomentose. Leaves simple, alternate, distichous, estipulate; petiole 1 mm, pubescent when young, stout, slightly grooved above; lamina 4-15 x 3-7.5 cm, elliptic, elliptic-lanceolate, ovate or ovate-lanceolate; base obtuse, round or truncate; apex acute or slightly acuminate; margin entire, glabrous, coriaceous, glabrous and shining above, glabrescent beneath with hairy glands in the axil of leaves; lateral veins 6-10 pairs, pinnate, intercostae reticulate, intramarginal nerves present, nerves pubescent and prominent beneath. Flowers bisexual, white, turning yellow, solitary or in groups of 2-3 in leaf opposed cymes; pedicels 1 cm long; sepals 3, densely tomentose, connate at base, broadly ovate or orbicular 4-5 mm across, yellowish-brown pubescent; petals 6 (3+3), outer petals 3 x 2 cm, obovate-acute, white, turning yellow, pubescent outside, subglabrous inside; inner ones 1-1.5 x 0.3-0.5 cm lozenge shaped, triangular at apex with long broad claw, veluted and cohering, white with red streaks, tomentose on both sides, inner petal dissimilar to the outer, forming a mitriform cap over the stamens and carpels, cauducous; torus convex; stamens many, oblong, 1 mm long, connectives flat at top, hiding the



anther cells; carpels many, oblong-ovate, 2 mm long, strigose; ovules 4-6; stigma club shaped. Fruit aggregate of berries, fruitlets globose, tomentose; seeds 1-2.

*Flowering & Fruiting:* January-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Thrissur, Kozhikkode

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Mitrephora heyneana** (Hook. f. & Thoms.) Thw., Enum. Pl. Zeyl. 8. 1864; Gamble, Fl. Pres. Madras 19(14). 1915; Debika in Sharma *et al.*, Fl. Ind. 1: 244. 1993; Sasidh., Fl. Chinnar Wildlife Sanctuary 12. 1999.

*Orophea heyneana* Hook. f. & Thoms., Fl. Ind. 110. 1855; Hook. f., Fl. Brit. India 1: 77. 1872.

*Local name:* Thutta

Trees 7-12 m tall; bark 5-6 mm thick, smooth, pale brown; branches ascending, puberulous when young, later glabrous. Leaves simple, alternate, distichous, estipulate; petiole 4-7 mm, slender, pubescent when young, glabrous when mature, canaliculate above; lamina 5-12 x 2.5-6 cm, ovate-lanceolate or ovate; base obtuse or round; apex acuminate; margin entire, glabrous above, pubescent beneath when young, glabrous when mature, coriaceous; lateral nerves 6-10 pairs, pinnate, slender, intercostae, reticulate, slightly prominent beneath. Flowers bisexual, solitary or 2-3 together in axillary or leaf-opposed cymes, yellowish; pedicels 3-5 mm long, tomentose; sepals 3, minute, ovate or orbicular, brown pubescent; petals 6 (3+3), outer petals 10-15 x 5-8 mm, elliptic obovate or ovate-lanceolate, yellow, pubescent outside and downy on innersides, inner petals 5-8 x 3-5 mm, clawed, cohering, dissimilar to outer, trapezoid, yellow streaked with pink, upper half densely tomentose inside; stamens many, oblong-cuneate, anthers concealed by flat connectives; carpels 6-9, oblong, strigose, style short, stigma globular, sessile, ovules in two rows; Fruit aggregate of berries, fruitlets 1.5 x 1.2 cm, sessile or subsessile, obovoid to subglobose, apiculate, some times constructed between seeds, yellow pubescent, pedicels thick; seeds 1-3.

*Flowering & Fruiting:* February-June

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Geographical:* South India and Sri Lanka

**Orophea erythrocarpa** Bedd., Trans. Linn. Soc. London 20: 5. 1846 & Madras J. Lit. Sci. (n.s.) 6: 71. 1861 & Ic. t. 68. 1868-1874; Hook. f., Fl. Brit. India 1: 91. 1872; Gamble, Fl. Pres. Madras 24(17). 1915; Ramach. & Nair, Fl. Cannanore Dist. 40. 1988; Kebler, Blumea 33: 47. 1988; Debika in Sharma *et al.*, Fl. Ind. 1: 224. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 24. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 29. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 16. 1997; Sasidh., Fl. Periyar Tiger Reserve 8. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 4. 2002; Mohanan & Sivad., Fl. Agasthyamala 59. 2002.

Trees to 8 m tall; bark black, smooth; young plants softly pubescent. Leaves simple, alternate, distichous, estipulate; petiole 3-4 mm, pubescent, stout, slightly grooved above, lamina 4-13 x 2-4.5 cm, ovate, elliptic or oblong; base round or truncate; apex acuminate or acute, margin entire, glabrous above, pubescent beneath, especially on midrib beneath, membranous; lateral nerves 6-8 pairs, pinnate, prominent, puberulent beneath, intercostae scalariform. Flowers, bisexual, yellowish 3-4 together, axillary or supra-axillary, tomentose racemes, 7 mm across; pedicels 1-2 cm long, villous; sepals 3, broadly ovate, tomentose, 1.5 mm; petals 6 (3+3); outer petals 4 x 3 mm, orbicular, brown tomentose outside, glabrous inside; inner rhomboid, clawed, curved inward, pubescent at tips, nectaries of inner petals free, oblong, horizontal; stamens 12 in 2 rows, outer 6 imperfect, very small, connectives slightly apiculate at top; carpels 6, red, ovate-oblong, densely strigose; ovules 2; style short, stigma sessile; Fruit aggregate, fruitlets oblong, sessile, reddish, ca. 2.5 cm long; seed one, scrobiculate.

*Flowering & Fruiting:* February-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Kannur, Kollam, Thrissur, Palakkad, Trivandrum  
*Geographical:* Peninsular India and Sri Lanka

***Polyalthia cerasoides*** (Roxb.) Bedd., Fl. Sylv. t. 1. 1869; Gamble, Fl. Pres. Madras 17(12). 1915; Vajr., Fl. Palghat Dist. 48. 1990; Debika in Sharma *et al.*, Fl. Ind. 1: 270. 1993; Subram., Fl. Thenmala Division 4. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 18. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 12. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 5. 2002.

*Uvaria cerasoides* Roxb., Pl. Corom. 33. 19. 1795.

*Guatteria cerasoides* (Roxb.) Dunal, Monogr. Anonac. 127. 1817; Hook. f., Fl. Brit. India 139. 1855.

*Local name:* Narela

Medium sized evergreen trees, to 15 m; bark black or pale grey, smooth; branches horizontal, young branches minutely tomentose, old glabrous. Leaves simple, alternate, distichous, estipulate; petiole 3-5 mm, slender, tomentose, grooved above; lamina 4-20 x 2-4 cm, oblong-lanceolate or ovate; base obtuse or acute; apex acute or acuminate; margin entire, coriaceous, glabrous above and pubescent beneath; lateral veins 4-12 pairs, ascending, slender, pinnate, slightly raised beneath, intercostae reticulate, obscure. Flowers bisexual, green, axillary or extra axillary, solitary or 2-3 fascicled, 8-13 mm across; sepals 3, free, ovate, 5-8 x 3-4 mm, appressed hairy outside, glabrous inside, petals 6 (3+3), 6-8 x 4 mm, puberulous, outer ones oblong or ovate, inner ones linear or lanceolate, vaulted, slightly inflexed, dull green; torus convex; stamens numerous, cuneate, anther thecae extrorse, cells remote, connectives almost flat at top, concealing the anthers; carpels many, oblong-linear, stalked, 1.5-2 mm long, dark red, covered with stiff hairs, ovule 1, basal, ascending; stigma clavate, slightly curved. Fruit an aggregate of berries, red, fruitlets 15-18 mm long, ellipsoid to broadly ovoid, puberulent; seed 1, globose.

*Flowering & Fruiting:* January-March

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kollam  
*Geographical:* India to South East Asia

**Polyalthia coffeoides** (Thw. ex Hook. f. & Thoms.) Hook. f. & Thoms. in Hook.f., Fl. Brit. India 1: 62. 1872; Gamble, Fl. Pres. Madras 16(11). 1915; Ramach. & Nair, Fl. Cannanore Dist. 41. 1988; Manilal, Fl. Silent Valley 3. 1988; Vajr., Fl. Palghat Dist. 48. 1990; Debika in Sharma *et al.*, Fl. Ind. 1: 270. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 47. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 33. 1996; Sivar. & Mathew, Fl. Nilambur 41. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 18. 1997; Sasidh., Fl. Periyar Tiger Reserve 9. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 5. 2002; Mohanan & Sivad., Fl. Agasthyamala 60. 2002.

*Guatteria coffeoides* Thw. ex Hook. f. & Thoms., Fl. Ind. 141. 1855.

*Local names:* Nedunar, Villa

Trees 15-25 m tall; bole straight with knots and tubercles; bark smooth, dark green, often mottled with greyish-white, young shoots slender, minutely puberulous; blaze yellow; branches horizontal. Leaves simple, alternate, distichous, estipulate, young leaves red at first; petiole 10-13 mm, stout, glabrous, grooved above; lamina 10-27 x 3.5-8.5 cm oblong, oblong-lanceolate or elliptic-lanceolate, base obtuse, cuneate-round or acute; apex acute or acuminate, margin entire, slightly undulate; coriaceous, glabrous and shiny above, lateral nerves 8-14 pairs, prominent beneath, pinnate, ascending; intercostae scalariform, obscure. Flowers bisexual greenish-yellow, solitary, extra axillary or some times fascicled on woody tubercles on trunk; pedicels 1-4 cm long, slender, pubescent; sepals 3, 2 x 5 mm, suborbicular, tomentose; petals 6 (3+3), 3-5 x 0.5-1 cm, greenish-yellow, flat and strap shaped, subequal; torus convex, stamens numerous, 1 mm long, cuneate, connectives subglobose at top, concealing the anthers, anther cells remote; carpels numerous, 3-4 mm long, densely pubescent, oblong, stalked, stigma capitate; ovule one, basal and ascending. Fruit aggregate of berries, 2.5 x 1.5 cm, ovoid, apiculate, dark purple; seed one, broadly ovoid, grooved, smooth and shiny.

*Flowering & Fruiting:* May-August

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Malappuram, Trivandrum, Kozhikkode, Thrissur, Palakkad, Kollam, Kannur, Idukki, Wayanad

*Geographical:* South India and Sri Lanka

**Polyalthia fragrans** (Dalz.) Bedd., Fl. Sylv. t. 74. 1871; Hook. f., Fl. Brit. India 1: 63. 1872; Gamble, Fl. Pres. Madras 16(11). 1915; Mohanan, Fl. Quilon Dist. 63. 1984; Vajr., Fl. Palghat Dist. 48. 1990; Subram., Fl. Thenmala Division 3. 1995; Anil Kumar, Fl. Pathanamthitta Dist. 26. 1994; Debika in Sharma *et al.*, Fl. Ind. 1: 271. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 33. 1996; Sivar. & Mathew, Fl. Nilambur 41. 1997; Sasidh., Fl. Periyar Tiger Reserve 9. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 5. 2002; Mohanan & Sivad., Fl. Agasthyamala 61. 2002.

*Guatteria fragrans* Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 3: 200. 1851.

*Local names:* Chella, Kodangi, Nedunar

Tall trees, to 30 m; bole straight, buttressed; bark, 10-12 mm thick, surface blackish-grey, mottled with white, smooth, lenticellate; blaze yellow with triangular rays, aromatic; branches horizontal, spreading; young branches tomentose. Leaves simple, alternate, distichous, estipulate; petiole 10-15 mm long, stout, grooved above, glabrous; lamina 9-27 x 3-12 cm, elliptic to oblong-lanceolate; base acute, obtuse or rounded; apex acute to shortly acuminate; margin entire, glabrous and shiny above, slightly pubescent on the costae and veins beneath, lateral veins 16-21 pairs, close, prominent beneath, intercostae subscalariform. Flowers bisexual, greenish-yellow, fragrant, in few flowered cymes from the axils of fallen leaves or on tubercles; sepals 3, orbicular, 4 x 3 mm, pubescent; petals 6 (3+3), subequal, linear-lanceolate, tomentose; stamens numerous, cuneate, connectives concealing the anther cells, anther cells remote; carpels many, oblong-ovoid, slightly curved, stipitate, strigose, stigma broad, slightly bifid, blunt, ovules basal and ascending. Fruit aggregate of berries; berry 3-5, 1.5-2 cm, obliquely ellipsoid to broadly ovoid, blunt, hoary puberulous, ash coloured; seed one, orbicular, ovoid.

*Flowering & Fruiting:* September-January

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Thrissur, Pathanamthitta, Malappuram, Trivandrum

*Endemic to:* Southern Western Ghats

***Polyalthia longifolia*** (Sonner.) Thw. Enum. Pl. Zeyl. 398. 1864; Hook. f., Fl. Brit. India 1: 62. 1872; Gamble, Fl. Pres. Madras 16(11). 1915; Manilal & Sivar., Fl. Calicut 28. 1982; Mohanan, Fl. Quilon Dist. 64. 1984; Antony, Fl. Kottayam Dist. 58. 1989; Vajr., Fl. Palghat Dist. 49. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 48. 1994; Debika in Sharma *et al.*, Fl. Ind. 1: 274. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 34. 1996; Sivar. & Mathew, Fl. Nilambur 42. 1997; Sunil, Fl. Pl. Alappuzha Dist. 33. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 5. 2002.

*Uvaria longifolia* Sonner., Voy. Aux. Indes 2: 233. pl. 131. 1782.

*Local names:* Aranamaram, Cherunna

Tall trees, height 15-20 m; internode 2-2.7 cm; bole straight; crown conical; bark 2 cm thick, grayish-brown, smooth; young branches spreading, pendulous, slender, glabrous or sparsely puberulous when young. Leaves simple, alternate, distichous, estipulate; petiole 10-15 mm, pubescent when young, slender; lamina 15-23 x 2-4 cm, ovate-lanceolate or lanceolate; base round; apex acuminate; margin entire, strongly undulate, glabrous, shining above and dull beneath, coriaceous, lateral nerves up to 30 pairs, obscure, pinnate, intercostae reticulate. Flowers bisexual, green; 2.5-3 mm long, numerous, in umbels or fascicles at the axis of fallen leaves; pedicels slender, 2-3 cm long, slightly pubescent; bracts submedian; sepals 3, 4 x 4 mm, ovate-triangular, pubescent, connate at base; petals 6 (3+3), subequal, linear, broad at base, puberulous; outer petals 65 x 2 mm; inner ones 10-25 x 2.5 mm; stamens numerous, cuneate, connective dilated and thickened beyond the cells; carpels many, puberulous, ovoid, style oblong; stigma sessile; ovule one. Fruit aggregate of berries; berry 2.5 x 1.5 cm ovoid to ellipsoid, obtuse at both ends, glabrous, reddish to black; seed one, almost ovoid, smooth or slightly grooved, pale brown, shiny.

*Flowering & Fruiting:* March-August

*Habitat:* Grown as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Sri Lanka; introduced to many Tropical countries

**Polyalthia shendurunii** Basha & Sasidh., *Rheedea* 4: 21. 1994; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 19. 1997.

Trees to 15 m tall; bole with warty tubercles; bark smooth, brownish-black. Leaves simple, alternate distichous, estipulate; petiole 5-10 mm long, stout, pubescent; lamina 15-26 x 6-8.5 cm, oblong or elliptic-lanceolate; base rounded or truncate; apex acuminate, acumen to 3 cm long, margin entire, glabrous, midrib impressed and channelled above, lateral veins 10-14 pairs, pinnate, raised beneath; intercostae subscalariform. Flowers bisexual, greenish to yellow, on twigs solitary and or up to 10 in fascicles on tubercles on the trunk; pedicels 3-5 cm long and 2-3 mm thick, tomentose; bract 3-4 x 2.5-3 mm towards the lower half of the pedicel, ovate-acute, tomentose; sepals 3, 1.5-2 x 1-1.3 cm, deltoid-ovate, acuminate, reflexed, connate at base, persistent; petals 6 (3+3) subequal; outer slightly smaller, oblong, acute or acuminate, coriaceous, minutely rugose and appressed-tomentose on both sides, greenish-yellow to yellow, inner 8-9 x 1.5-2 cm; stamens numerous, closely arranged, 3 mm long; anthers and connectives hirsute, more on the ventral surface, appendage glabrous, anther cells concealed below the overlapping connectives; carpels many, each 2.5 mm long; ovule solitary, basal; style indistinct; stigma orbicular, depressed at middle, margins shortly lobed, glabrous. Fruit aggregate of berries, pedicel 4-5 mm across; fruitlets to 7, 3 x 2.5 cm, oblong-ovoid, glabrous; stalk *ca.* 1.8 cm long; seed oblong, 2.8 x 1.8 cm.

*Flowering & Fruiting:* January-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Trivandrum

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)

**Polyalthia suberosa** (Roxb.) Thw., *Enum. Pl. Zeyl.* 398. 1864; Hook. f., *Fl. Brit. India* 1: 65. 1872; Gamble, *Fl. Pres. Madras* 16(12). 1915; Mohanan, *Fl. Quilon Dist.* 64. 1984; Anil Kumar, *Fl. Pathanamthitta Dist.* 27. 1994; Debika in Sharma *et al.*, *Fl. Ind.* 1: 278. 1993; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 48. 1994; Mohanan & Sivad., *Fl. Agasthyamala* 62. 2002.

*Uvaria suberosa* Roxb., *Pl. Corom. t.* 34. 1795.

*Guatteria suberosa* (Roxb.) Dunal, *Monogr. Anonac.* 128. 1817.

Small trees, 4-6 m tall, branching from base; bark fissured, corky, rough; young branches rufous tomentose. Leaves simple, alternate, distichous, estipulate; petiole 2-3 mm long, brown pubescent, slender; lamina 3-12 x 1-3.5 cm oblong, elliptic-oblong or oblong-lanceolate, base slightly narrowed, oblique or obtuse, apex obtuse or obtusely acute, margin entire, undulate, glabrous and shiny above, pubescent and pale beneath, submembranous; lateral veins 9-12 pairs, pinnate, faint; intercostae reticulate. Flowers bisexual, yellowish-green, mostly suffused with

purple, solitary, rarely in pairs, extra-axillary, 8-10 mm long; pedicels slender, 1.5-2.5 cm long; sepals 3, spreading, ovate, acute, ca. 2 x 1 mm, pubescent outside, glabrous inside, petals 6 (3+3); outer petals ovate to oblong-lanceolate, acute, slightly reflexed, ca. 6 x 4-5 mm, thickly coriaceous, silky pubescent outside, glabrous inside; inner ones slightly longer; torus convex; stamens numerous, ca. 1 mm long, connectives slightly convex at top concealing the anther cells; carpels many, ca. 2 mm long, pubescent, ovule one, style oblong, stigma triangular, flat. Fruit aggregate of berries; fruitlets subglobose, purple ca. 5 mm across, puberulous, stalks slender, 0.5-1 cm long; seeds 1, globose, smooth.

*Flowering & Fruiting:* September-March

*Habitat:* Sacred groves, also in the Plains

*Distribution*

*Kerala:* Pathanamthitta, Trivandrum, Kollam

*Geographical:* Indo-Malesia

**Sageraea grandiflora** Dunn, Bull. Misc. Inform. Kew 1914: 182. 1914 & Gamble, Fl. Pres. Madras 12(8). 1915; Ramach. *et al.*, J. Econ. Tax. Bot. 5: 140. 1984; Mohanan, Fl. Quilon Dist. 65. 1984; Debika in Sharma *et al.*, Fl. Ind. 1: 282. 1993; Sasidh., Fl. Shenduruny Wildlife Sanctuary 19. 1997; Sasidh., Fl. Periyar Tiger Reserve 9. 1998.

Trees to 20 m tall; bark black, smooth. Leaves simple, alternate, distichous, stipulate; petiole 8-20 mm long, stout, glabrous, grooved above, blade 18-35 x 7-12.5 cm, broadly oblong; base round, acute or obtuse; apex acute or short-acuminate, margin entire, glabrous, coriaceous, shining above; lateral nerves 10-16 pairs, slender, faint, pinnate; intercostae reticulate. Flowers bisexual, yellow, fascicled axillary or on woody tubercles; pedicels to 2.5 cm long; sepals 3, 2-3 x 5 mm, orbicular, ciliate, connate at base; petals 6 (3+3), 13 x 8 mm, orbicular, concave, ciliate along margins; inner petals similar but smaller than outer, glabrous; stamens 12, anthers oblong, connective prolonged, not concealing the anthers; carpels 3-6, free, strigose; style absent, stigma globose. Fruit an aggregate of berries; fruitlets 3.5 cm across, globose, smooth; seed one.

*Flowering & Fruiting:* January-February

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)

**Sageraea laurina** Dalz. in Hook.'s J. Bot. Kew. Gard. Misc. 3: 207. 1851.

*Sageraea laurifolia* (Graham) Blatt., J. Bomb. Nat. Hist. Soc. 34: 294. 1930; Debika in Sharma *et al.*, Fl. Ind. 1: 282. 1993; Sivar. & Mathew, Fl. Nilambur 42. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 6. 2002.

*Guatteria laurifolia* Graham, Cat. 4. 1839, non Dunal 1817.

*Sageraea dalzellii* Bedd., Ic. t.42.1868-1874; Gamble, Fl. Pres. Madras 12(8). 1915; Sasidh. & Sivar., Fl. Pl. Thrissur For. 33. 1996.

*Bocagea dalzellii* (Bedd.) Hook. f. & Thoms. in Hook.f., Fl. Brit. India 1: 92. 1872, p. p.

*Local names:* Manjarei, Manjanara

Trees, to 20 m; bole pyramidal; bark surface black, smooth, often blotched with grey; blaze creamy yellow; young shoots glabrous. Leaves simple, alternate, distichous, drooping, estipulate; petiole 10-12 mm, stout, glabrous, grooved above; lamina 10-30 x 3.5-10 cm, elliptic or broadly oblong; base acute, attenuate or obtuse; apex acute; margin entire, glabrous, coriaceous, shining above; lateral nerves 10-15 pairs, pinnate, prominent; intercostae reticulate. Flowers bisexual, yellow, 15-18 mm across, in axillary fascicles with a few scaly bracts at the base of the pedicels; sepals 3, 3 x 5 mm orbicular, ciliate, slightly connate at base; outer petals yellow, 13 x 8 mm, orbicular, concave, ciliate along margin, inner petals similar but smaller than the outer; torus scarcely elevated; stamens upto 25, in 2 or more rows; outer sometimes sterile and flattened, connectives produced, not concealing the anthers, anthers oblong; carpels 3-6, hairy, ovules 1-8, style absent, stigma capitate. Fruit an aggregate of berries, green, fruitlets 7-7.5 x 3.5 cm, globose; seed one.

*Flowering & Fruiting:* March-September

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Thrissur, Malappuram, Palakkad

*Endemic to:* Western Ghats

*Status:* Lower risk: near threatened (IUCN, 2000)

**Xylopia parvifolia** (Wight) Hook.f. & Thoms., Fl. Ind. 125. 1855 & in Hook.f., Fl. Brit. India 1: 84. 1872; Gamble, Fl. Pres. Madras 16(15). 1915; Debika in Sharma *et al.*, Fl. Ind. 1: 305. 1993; Sasidh., Fl. Shenduruny Wildlife Sanctuary 22. 1997.

*Patonia parvifolia* Wight, Illustr. 1: 19. 1838.

*Local names:* Kallupottan, Ilapongu

Trees, 15-25 m tall; bole buttressed, bark 5-6 mm thick, grey; blaze brownish; young branches brown pubescent. Leaves simple, alternate, distichous; lamina 6-10 x 2.5-3 cm. Petiole 5-8 mm, slender, pubescent when young and glabrous at maturity, grooved above; lamina 6-10 x 2.5-3 cm ovate, oblong-lanceolate, base acute, apex acuminate, margin entire, coriaceous, glabrous, shiny above; lateral nerves 8-9 pairs, pinnate, very slender, faint, intercostae reticulate. Flowers bisexual, yellowish-brown, 2-5 together in axillary fascicles, 15-18 mm across; pedicels very short, pubescent; bracts longer than the sepals; sepals 3, connate up to middle, ovate, acute, 1.5-2 x 2.5-3 mm, pubescent out side, glabrous inside; petals 6 (3+3) outer petals linear, slightly clawed and dilated at base, 10-13 x 1.5-2 mm, brown pubescent outside, hairy inside; inner ones a little shorter and narrower, linear, concave and spoon-shaped at base, densely tomentose; stamens numerous, *ca.* 2 mm long, connectives flat, concealing the anther cells, round, anthers transversely septate; carpels 5, linear, *ca.* 4 mm long, slightly pubescent, ovules 4-6; style linear, stigma fusiform. Fruit aggregate of berries, green, fruitlets 1-4 together, subsessile, obovoid, blunt at apex, tapering to base, 2.5-3.8 cm long, pubescent, stalk 1-2 mm long, woody; seeds 4-6, oblong.

*Flowering & Fruiting:* August-November

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam

*Geographical:* South India and Sri Lanka

## MENISPERMACEAE

**Cocculus laurifolius** DC., Syst. Nat. 1: 530. 1817; Hook. f., Fl. Brit. India 1: 101. 1872; Gamble, Fl. Pres. Madras 29(21). 1915; Vajr., Fl. Palghat Dist. 51. 1990; Gangop. in Sharma *et al.*, Fl. Ind. 1: 319. 1993; Sasidh., Fl. Periyar Tiger Reserve 12. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 7. 2002.

*Local name:* Marpink

Trees up to 6 m tall; branches drooping; branchlets glabrous. Leaves simple, alternate, spiral; petiole 3-8 mm, slender; lamina 7-12 x 3-5.5 cm, elliptic or elliptic-oblong, base acute or cuneate, apex acute or acuminate, margin entire, glabrous, shining above, chartaceous; basal nerves 3, strong, almost parallel to the margin beyond the middle of lamina; intercostae reticulate, slender, faint. Flowers unisexual, in axillary panicles; sepals 6, ovate, obtuse; petals 6, 2 x 1.5 mm, broadly obtuse, glabrous; stamens 6 in male flowers; free, anthers ovate, within curved margins; staminodes 12 in female flowers, seriate, outer staminodes ovate, trilobed, with a small middle-lobe; inner smaller, cup shaped; ovaries 3, free, curved, 1-ovuled; stigma sessile, curved out. Fruit a drupe, rotund, glabrous, depressed at either ends; seed 1; endocarp with small curved aperture on both sides, finely ridged on dorsal surface.

*Flowering & Fruiting:* October-July

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* Indo-Malesia and East Asia

## BERBERIDACEAE

**Mahonia leschenaultii** (Wall. ex Wight & Arn.) Takeda ex Gamble, Fl. Pres. Madras 32(23). 1915; Guha Bakshi in Sharma *et al.*, Fl. Ind. 1: 410. 1993.

*Berberis leschenaultii* Wall. ex Wight & Arn., Prodr. 16. 1834.

*Berberis nepalensis* Spreng. in L., Syst. Veg. (ed.16) 2: 120. 1825, var. *leschenaultii* Hook. f. & Thoms. in Hook.f., Fl. Brit. India 1: 109. 1872.

*Local names:* Mullukadambu, Mullumanjanathi

Evergreen trees, 4-7 m tall; bark light brown, corky, vertically and horizontally fissured; blaze sulphur yellow. Leaves compound, imparipinnate, verticelled at the tips of branches; rachis 17-33 cm, slender, glabrous, base sheathing with 2 subulate stipules; leaflets 7-17, opposite, sessile; lamina 3-9 x 1-5 cm, ovate, ovate-lanceolate or oblong-ovate; base obliquely truncate, rounded, subcordate or very obtuse; apex cuspidate; margin spinose, glabrous, rigid, coriaceous, shining above, pale beneath; 3-5 nerved from the base, raised beneath; secondary laterals 3-5 pairs, pinnate; intercostae reticulate, faint. Flowers bisexual, yellow, in racemes generally fascicled at the apices of stem, in umbel fashion, erect or oblique, often paniculate, 7.5-40 cm; pedicels 6-16 mm, with 2-3 appressed bracts; sepals 6, imbricate in 2 series; petals 6, imbricate in 2 series; nectaries distinct; stamens 6, free, anthers-cells opening by recurved valves; ovary single celled; ovules 5-6, basal, erect; style stout; stigma peltate. Fruit a berry, 8 mm across, broadly ellipsoid-globose, purple, pruinose, bitter, 3-5 seeded.

*Flowering & Fruiting:* June-December

*Habitat:* Shola forests

*Distribution*



Kerala: Idukki

Endemic to: Southern Western Ghats

### CAPPARACEAE

1. Leaflets abruptly acuminate; berry smooth.....**Capparis adansonii** ssp. **odora**
1. Leaflets caudate acuminate; berry scurfy..... **Capparis magna**

**Crataeva adansonii** DC. ssp. **odora** (Buch.-Ham.) Jacobs, Blumea 12: 198. 1964; Manilal & Sivar., Fl. Calicut 32. 1982; Vajr., Fl. Palghat Dist. 57. 1990; Sundara Raghavan in Sharma & Balakr., Fl. Ind. 2: 322. 1993; Sasidh., Fl. Chinnar Wildlife Sanctuary 20. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 14. 2002.

*Crataeva odora* Buch.-Ham., Trans. Linn. Soc. London 15: 118. 1827.

*Crataeva religiosa* var. *roxburghii* (R. Br.) Hook.f. & Thoms. in Hook.f., Fl. Brit. India 1: 172. 1872.

*Crataeva religiosa* sensu Dunn in Gamble, Fl. Pres. Madras 47(34). 1918, p.p. non G. Forst. 1786.

Local name: Mavalingam

Small trees; bark smooth, grey; blaze dull yellow, speckled. Leaves digitately trifoliate, alternate, estipulate; rachis 5-7 cm long, slender, glabrous; petiolule 5-7 mm, slender, glabrous; leaflets 11-15 x 3-4 cm, obovate, or ovate-lanceolate, base oblique, obtuse or subacute, apex acuminate, margin entire, glabrous, chartaceous; lateral nerves 6-8 pairs, parallel, slender, prominent, intercostae reticulate, faint. Flowers bisexual, white, in terminal corymbs; pedicel 2.5-5 cm long; sepals 4, 5 mm long, free, oblong, adnate to the lobed disc; petals 4, ca.1.5 cm, white, long-clawed, obovate; disc incurved, nectariferous; stamens many, free, not much longer than the petals, inserted at the base of gynophore; gynophore to 2.5 cm long; filaments to 4 cm long; anthers basifixed; gynophore 1-3 cm long; ovary ellipsoid, superior 1-[2]-celled, ovules many; stigma sessile, capitate. Fruit a berry, globose, 2-2.5 cm across, smooth, turning to red; seeds brown, reniform, smooth.

Flowering & Fruiting: March-August

Habitat: Dry deciduous forests

Distribution

Kerala: Idukki, Palakkad, Kozhikkode

Geographical: South Asia

**Crataeva magna** (Lour.) DC., Prodr. 1: 243. 1824; Mohanan, Fl. Quilon Dist. 71. 1984; Ansari, Fl. Kasaragod Dist. 63. 1985; Ramach. & Nair, Fl. Cannanore Dist. 47. 1988; Antony, Fl. Kottayam Dist. 65. 1989; Vajr., Fl. Palghat Dist. 58. 1990; Sundara Raghavan in Sharma & Balakr., Fl. Ind. 2: 324. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 42. 1996; Sivar. & Mathew, Fl. Nilambur 54. 1997; Sasidh., Fl. Periyar Tiger Reserve 16. 1998; Sunil, Fl. Pl. Alappuzha Dist. 53. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 14. 2002.

*Capparis magna* Lour., Fl. Cochinch. 330. 1790.

*Crataeva nurvala* Buch.-Ham., Trans. Linn. Soc. London 15: 121. 1827; Manilal & Sivar., Fl. Calicut 32. 1982; Anil Kumar, Fl. Pathanamthitta Dist. 39. 1994.

*Crataeva religiosa* var. *nurvala* (Buch.-Ham.) Hook. f. & Thoms. in Hook.f., Fl. Brit. India 1: 172. 1872.

*Local name:* Neermathalam

Trees, to 10 m high, bark 2-3 mm thick, surface grey, smooth, longitudinally wrinkled; blaze dull yellow. Leaves digitately trifoliate, alternate, estipulate; rachis 4-12 cm long, slender, grooved above, glabrous; petiolule 4-7 mm long, slender; leaflets 10-20 x 3.5-6 cm, unequal, ovate, ovate-lanceolate or broadly elliptic, base acute, or subacute, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 9-15 pairs, slender, parallel, prominent, intercostae reticulate, faint. Flowers bisexual, creamy white, in terminal corymbs; pedicel to 5 cm long; sepals 4, 3 mm long, free, oblong, adnate to the lobed disc; petals 4, *ca.* 2 cm long, creamy white, often tinged with purple, long-clawed, obovate; disc incurved, nectariferous; stamens many, free, longer than the petals, inserted at the base of gynophore; anthers basifixed, filaments spreading; gynophore 4-5 cm long at anthesis, slender; ovary superior, ellipsoid, 1-[2]-celled, ovules many; stigma sessile, capitate. Fruit a berry, globose or ovoid, yellowish-grey, rind woody, scurfy, 4-5 x 2.5-3.5 cm; seeds brown, embedded in pulp.

*Flowering & Fruiting:* March-April

*Habitat:* Riverbanks in semi-evergreen forests, also in the Plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and China

#### COCHLOSPERMACEAE

***Cochlospermum religiosum*** (L.) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.): 14. 1931; Manilal & Sivar., Fl. Calicut 36. 1982; Paul & Nayar, Fasc. Fl. Ind. 19: 16. 1988; Vajr., Fl. Palghat Dist. 58. 1990; Balakr. in Sharma & Balakr., Fl. Ind. 2: 383. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 43. 1996; Sasidh., Fl. Periyar Tiger Reserve 16. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 22. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 14. 2002.

*Bombax religiosum* L., Sp. Pl. 512. 1753.

*Cochlospermum gossypium* DC., Prodr. 1: 527. 1824; Hook. f., Fl. Brit. India 1: 90. 1872; Gamble, Fl. Pres. Madras 50(36). 1915.

*Local names:* Chembanji, Parapanji, Parappoola, Appakudukka

Deciduous trees, to 10 m tall, bark 20-25 mm thick, surface dark grey, fibrous; branchlets thick. Leaves simple, palmately 3-5 lobed, alternate, estipulate; petiole 6-20 cm long, stout, swollen at base, pubescent; lamina 5-15 x 7-20 cm, base cordate, lobes, elliptic or elliptic-lanceolate, tips acute or acuminate, margin entire or crenate, serrate, glabrous above, densely white tomentose below, coriaceous; 5-7 nerved from the base, palmate, lateral nerves 7-10 in each lobe, parallel, prominent, intercostae scalariform, faint. Flowers bisexual, 7.5-10 cm across, bright yellow, in grey tomentose terminal panicles; sepals 5, 2.5 x 1.5 cm, unequal, obovate, densely tomentose, deciduous; petals 5, 5 x 3 cm, obovate, deeply emarginate, contorted; stamens many, inserted on an eglandular disc, shortly connate at base into 8-10 clusters; filaments 1.5-2.5 cm long; anthers linear, opening by apical slit; ovary superior, globose, glabrate, 3-5-celled, ovules many; style 1, to 1 cm, filiform; stigma somewhat lobed. Fruit a capsule, 6-8 x 4.5-5.5 cm, 5-valved, obovoid, pear

shaped, straight, leathery, brown; seeds many, 6 mm long, black, curved, embedded in white cotton.

*Flowering & Fruiting:* February-March

*Habitat:* Moist and dry deciduous forests

*Distribution*

*Kerala:* Palakkad, Thrissur, Kozhikkode, Idukki

*Geographical:* Indo-Malesia

### FLACOURTIACEAE

- |     |   |                               |
|-----|---|-------------------------------|
| 1.  | Petals present .....  | 2                             |
| 1.  | Petals absent.....  | 8                             |
| 2.  | Fruit a hard rinded globose berry, more than 4 cm across.....                       | 3                             |
| 2.  | Fruit a capsule or fleshy berry, less than 2 cm across.....                         | 5                             |
| 3.  | Scale of petals lobed, stamens many.....  | <b>Hydnocarpus macrocarpa</b> |
| 3.  | Scale of petals not lobed, stamens 5-8 .....  | 4                             |
| 4.  | Leaf margin entire, scale as long as the petal.....                                 | <b>Hydnocarpus alpina</b>     |
| 4.  | Leaf margin crenate or serrate, scale half the length of petal.....                 | <b>Hydnocarpus pentandra</b>  |
| 5.  | Fruit a berry, trunk armed with branched thorns .....                               | <b>Scolopia crenata</b>       |
| 5.  | Fruit a capsule, trunk unarmed.....   | 6                             |
| 6.  | Stamen solitary against each petals .....   | <b>Homalium zeylanicum</b>    |
| 6.  | Stamens in groups of 3 or more against each petals .....                            | 7                             |
| 7.  | Flowers 10 mm across, stamens 6 or 7 against each petals .....                      | <b>Homalium jainii</b>        |
| 7.  | Flowers 5 mm across, stamens 3 or 4 against each petals .....                       | <b>Homalium travancoricum</b> |
| 8.  | Flowers unisexual, fruit indehiscent .....  | <b>Flacourtia montana</b>     |
| 8.  | Flowers bisexual, fruit dehiscent.....  | 9                             |
| 9.  | Leaves hairy.....   | 11                            |
| 9.  | Leaves glabrous .....   | 12                            |
| 10. | Leaves white rufous-villous, unequally rounded at base; mature capsule yellow ..... | <b>Casearia tomentosa</b>     |
| 10. | Leaves brown pubescent, acute at base; mature capsule orange .....                  | <b>Casearia wynadensis</b>    |
| 11. | Mature capsule bright orange; ribbed .....  | <b>Casearia championii</b>    |
| 11. | Mature capsule yellow; not ribbed.....  | 13                            |
| 12. | Lateral veins 10-13 pairs; pedicel densely tomentose .....                          | <b>Casearia rubescens</b>     |
| 12. | Lateral veins 5-8 pairs; pedicel glabrous or hairy on joints only .....             | 14                            |
| 13. | Leaf apex acuminate; stipule small scale like; fruit ellipsoid.....                 | <b>Casearia ovata</b>         |
| 13. | Leaf apex obtuse or obtusely acute; stipule lanceolate; fruit ovoid .....           | 15                            |
| 14. | Leaves elliptic; calyx pubescent.....   | <b>Casearia graveolens</b>    |
| 14. | Leaves obovate; calyx glabrous.....   | <b>Casearia thwaitesii</b>    |

**Casearia championii** Thw., Enum. Pl. Zeyl. 19. 1858; Balakr. in Sharma & Balakr., Fl. Ind. 2: 391. 1993.

*Casearia bourdillonii* Mukherjee, Bull. Bot. Soc. Bengal 19: 109. 1965, p.p; Manilal, Fl. Silent Valley 8. 1988; Sasidh., Fl. Periyar Tiger Reserve 17. 1998.

*Casearia varians* Bedd., Fl. Sylv. t. 208. 1872; Gamble, Fl. Pres. Madras 521(368). 1919.

*Local name:* Vella-kunnan

Small trees, to 10 m high, bark greyish, smooth, reddish-brown inside; young shoot glabrous. Leaves simple, alternate, stipulate; stipules small, lateral, cauducous; petiole 10-15 mm, slender, glabrous, grooved above; lamina 10-18 x 4-7 cm, elliptic-oblong, oblanceolate or elliptic-oblanceolate, base cuneate, apex acuminate, margin entire, glabrous, chartaceous; lateral nerves 10-12 pairs, pinnate, prominent, glabrous; intercostae reticulate. Flowers, 5 mm across, greenish-yellow, 3-9 together in axillary fascicles; pedicels hairy; calyx 4-5 lobed, sepals 3 mm across, margin ciliate; petals absent; stamens 8-10, alternating with as many staminodes, tufted at their apex, forming a ring attached below to the calyx tube; anthers with connectives produced into a small beak; ovary ovoid, 1-celled; style simple. Fruit a capsule 1.8 x 1.6 cm, globose, bright orange, ribs not prominent; seeds many, trigonus, red.

*Flowering & Fruiting:* May-September

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India and Sri Lanka

***Casearia graveolens*** Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 4: 107. 1852; Hook. f., Fl. Brit. India 2: 592. 1879; Gamble, Fl. Pres. Madras 520(367). 1919; Balakr. in Sharma & Balakr., Fl. Ind. 2: 394. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 60. 1994; Subram., Fl. Thenmala Division 14. 1995.

*Local name:* Cherukunnan

Small deciduous trees, bark dark-grey, peeling off in square flakes; young branches obtusely angular, glabrous. Leaves simple, alternate, distichous; stipules small, lateral, lanceolate-subulate, cauducous; petiole 5-13 mm, lamina 10-20 x 6-10 cm, elliptic, base acute or rounded, apex acute or obtuse, margin crenate-serrate, glabrous, coriaceous, pellucid gland dotted. Flowers bisexual, small, greenish-yellow, in axillary fascicles; pedicels short, jointed, pubescent below joint; calyx 5 lobed, persistent, pubescent, obtuse; petals absent; stamens 8, alternating with staminodes, stamens and staminodes forming a ring attached below the calyx tube; ovary free, unilocular, many ovuled; style simple. Fruit a capsule, 3-valved, 2-2.5 cm long, ellipsoid, glabrous, yellow.

*Flowering & Fruiting:* November-March

*Habitat:* Deciduous forests

*Distribution*

*Kerala:* Kollam, Trivandrum

*Geographical:* Pakistan to Indo-China

***Casearia ovata*** (Lam.) Willd., Sp. Pl. 2: 629. 1799; Mohanan, Fl. Quilon Dist. 72. 1984; Balakr. in Sharma & Balakr., Fl. Ind. 2: 399. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 41. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 60. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 44. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 26. 1997; Sasidh., Fl. Periyar Tiger Reserve 17. 1998; Sasidh.,

Fl. Chinnar Wildlife Sanctuary 22. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 15. 2002.

*Anavinga ovata* Lam., Encycl. 1: 148. 1789.

*Casearia esculenta* Roxb., Fl. Ind. 2: 422. 1832; Hook. f., Fl. Brit. India 2:592. 1879,p.p; Gamble, Fl. Pres. Madras 521(367). 1915; Manilal, Fl. Silent Valley 9. 1988; Ramach. & Nair, Fl. Cannanore Dist. 49. 1988; Vajr., Fl. Palghat Dist. 59. 1990; Subram., Fl. Thenmala Division 14. 1995; Mohanan & Sivad., Fl. Agasthyamala 73. 2002.

*Local names:* Malampavatta, Vellakunnan

Trees, to 10 m, bark green mottled; young shoots glabrous. Leaves simple, alternate, distichous; stipules small, scale-like, lateral, cauducous; petiole 6-20 mm, slender, glabrous, slightly grooved above; lamina 7-16 x 4-7 cm, elliptic-oblong, elliptic-obovate, elliptic-ovate, obovate or ovate, base acute or rounded, apex acuminate, acumen twisted and folded, margin entire or distantly serrate, glabrous, chartaceous; midrib red, pellucid gland dotted; lateral veins 6-8 pairs, pinnate, prominent, intercostae reticulate, faint. Flowers small, bisexual, greenish, in axillary fascicles; calyx 4-5 lobed, glabrous; petals absent; stamens 8-10, united into a short tube with alternating staminodes, forming a ring attached below to the calyx tube, tufted at their apex; ovary ovoid, 1-celled; style simple. Fruit a succulent capsule to 1.5 cm long, orange yellow; seeds many.

*Flowering & Fruiting:* January-May

*Habitat:* Evergreen, semi-evergreen and shola forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Kannur, Palakkad, Trivandrum, Thrissur, Idukki

*Geographical:* India and Sri Lanka

***Casearia rubescens*** Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 4: 108. 1852; Gamble, Fl. Pres. Madras 520(367). 1919; Balakr. in Sharma & Balakr., Fl. Ind. 2: 396. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 44. 1996; Sunil, Fl. Pl. Alappuzha Dist. 61. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 15. 2002; Mohanan & Sivad., Fl. Agasthyamala 73. 2002.

Tress, to 8 m tall; bark greyish-brown, smooth, lenticellate. Leaves simple, alternate, distichous; stipules small, scale-like, lateral, cauducous; petiole up to 15 mm, slender, glabrous, grooved above, reddish; blade 7-14 x 4-6 cm, oblong, base round, obliquely obtuse or truncate, apex acute or acuminate, margin entire, glabrous, coriaceous, pellucid gland-dotted; lateral nerves 10-12 pairs, pinnate, prominent, intercostae scalariform, reddish. Flowers bisexual, greenish-yellow, 5 mm across, 2-6 together in axillary fascicles; pedicel 3.5 mm long, tomentose; calyx 5-lobed, lobes 2 x 1.5 mm, ovate, obtuse, tomentose outside, ciliate; petals absent; stamens 10, filaments 1 mm long, triangular sparsely hairy at base, alternating with as many staminodes tufted at their apex, forming a ring attached below to the calyx tube; ovary 2 x 2 mm, globular, ovules 9; stigma hardly wider than style. Fruit a succulent capsule, 15 x 8 mm, orange-yellow, ellipsoidal, smooth, narrowly 3 furrowed, glabrous.

*Flowering & Fruiting:* February-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

Kerala: Trivandrum, Thrissur, Alappuzha, Palakkad  
Endemic to: Southern Western Ghats

**Casearia thwaitesii** Briq., Ann. Cons. Jard. Bot. Geneve 62. 1898; Balakr. in Sharma & Balakr., Fl. Ind. 2: 397. 1993.

*Casearia coriacea* Thw., Enum. Pl. Zeyl. 20. 1858, non Vent. 1803; Gamble, Fl. Pres. Madras 521(368). 1919; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 60. 1994; Sasidh., Fl. Periyar Tiger Reserve 17. 1998; Mohanan & Sivad., Fl. Agasthyamala 72. 2002.

Trees to 12 m tall; bark yellowish-white, smooth, lenticellate. Leaves simple, alternate, distichous; stipules small, lateral, cauducous; petiole 5-15 mm, slender, glabrous, red when young; lamina 3.5-9 x 2-4.5 cm, obovate, base cuneate or attenuate, apex obtuse or obtusely acute, margin entire, glabrous above, glaucous beneath, subcoriaceous, pellucid gland dotted; lateral veins 5-6 pairs, pinnate, intercostae reticulate, slender, prominent. Flowers bisexual, small, 5 mm across, greenish-yellow, 3-6 together in axillary fascicles; calyx 4 lobed; lobes obovate, obtuse, persistent; petals absent; stamens 8, alternating with as many staminodes, forming a ring attached below to the calyx tube, tufted at their apex; filaments 1.5 mm long, subulate, pubescent; ovary terete, 1-celled, ovules 4; style simple. Fruit a succulent capsule, ovoid, smooth, greenish-yellow; seeds many.

*Flowering & Fruiting:* January-March

*Habitat:* Shola forests

*Distribution*

Kerala: Idukki, Trivandrum

*Geographical:* India and Sri Lanka

**Casearia tomentosa** Roxb., Fl. Ind. 2: 421. 1832; Hook. f., Fl. Brit. India 2: 593. 1879; Gamble, Fl. Pres. Madras 521(368). 1919; Vajr., Fl. Palghat Dist. 59. 1990; Balakr. in Sharma & Balakr., Fl. Ind. 2: 397. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 44. 1996; Sivar. & Mathew, Fl. Nilambur 57. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 15. 2002.

*Casearia elliptica* Willd., Sp. Pl. 2: 628. 1799 (nom. Illieg., based on *Anavinga lanceolata* Lam.) ; Manilal & Sivar., Fl. Calicut 36. 1982.

*Local name:* Anakkarana

Small trees to 7 m; bark grey, thick; branchlets tomentose. Leaves simple, alternate, distichous; stipules minute, scale-like, pubescent, cauducous; petiole 5-10 mm long, pubescent; lamina 6-15 x 3-6 cm, oblong or elliptic-lanceolate, base acute to rounded, apex acuminate, margin serrate or entire, glabrous above, pubescent beneath, coriaceous; lateral nerves 7-10 pairs; intercostae reticulate. Flowers bisexual, greenish-white, in axillary fascicles; pedicels densely pubescent; calyx pubescent; lobes 4, broadly elliptic; stamens 8, alternating with staminodes tufted at their apex, forming a ring attached below to the calyx tube; filaments glabrous; staminodes clavate, villous at apex; ovary ovoid, 1-celled; style simple; stigma subglobose. Fruit a capsule, 2 x 1.2 cm, greenish-yellow, oblong, ribbed.

*Flowering & Fruiting:* October-April

*Habitat:* Moist deciduous forests and forest plantations

*Distribution*

*Kerala:* Malappuram, Palakkad, Kozhikkode, Thrissur  
*Geographical:* Indo-Malesia to Australia

**Casearia wynadensis** Bedd., Ic. t. 160. 1868-1874; Hook. f., Fl. Brit. India 2: 594. 1879; Gamble, Fl. Pres. Madras 521(368). 1919; Ramach. & Nair, Fl. Cannanore Dist. 49. 1988; Manilal, Fl. Silent Valley 9. 1988; Vajr., Fl. Palghat Dist. 60. 1990; Balakr. in Sharma & Balakr., Fl. Ind. 2: 399. 1993; Sasidh., Fl. Parambikulam Wildlife Sanctuary 15. 2002.

*Local name:* Kari-kunnan

Small trees to 7 m; branchlets pubescent. Leaves simple, alternate; stipules small, lateral, cauducous; petiole 4-10 mm, slender, tomentose; lamina 7-18 x 3-5.5 cm, lanceolate or oblanceolate, base acute, apex acuminate; margin entire or serrate, tomentose, pellucid transparent glands, membranous; lateral nerves 7-10 pairs, slender, pinnate, puberulent; intercostae reticulate, rufous villous. Flowers bisexual, small, greenish, 6-8 fascicled on axils of older leaves; peduncle 4 mm long, pubescent; calyx 3 mm long, lobes 4, ovate, glabrous within; petals absent; stamens 8, hairy, 2 mm long, alternating with staminodes, tufted at their apex, forming a ring attached below to the calyx tube; ovary oblong, 1-celled, ovules many; style to 3 mm, simple, hairy; stigma 4 lobbed. Fruit a capsule, small, 2-2.5 x 1 cm, oblong, greenish-yellow, 3-valved.

*Flowering & Fruiting:* April-June

*Habitat:* Semievergreen and Moist deciduous forests

*Distribution*

*Kerala:* Palakkad, Kannur, Thrissur, Wayanad

*Endemic to:* Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Flacourtia montana** Graham, Cat. Pl. Bombay 10. 1839; Fl. Ind. 1:192.1872; Gamble, Fl. Pres. Madras 54(39). 1915; Ansari, Fl. Kasaragod Dist. 65.1985; Manilal, Fl. Silent Valley 10. 1988; Mitra in Sharma & Balakr., Fl. Ind. 2: 406. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 43. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 44. 1996; Sivar. & Mathew, Fl. Nilambur 58. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 26. 1997; Sasidh., Fl. Periyar Tiger Reserve 18. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 16. 2002; Mohanan & Sivad., Fl. Agasthyamala 74. 2002.

*Local names:* Charalpazham, Kattuloika

Thorny trees to 8 m, thorns about 5 cm long, bark grey, thin, smooth. Leaves simple, alternate, spiral; petiole 5-10, stout, glabrous; lamina 12-22 x 6-8, ovate, elliptic, base acute or rounded, apex acute or acuminate, margin crenate-serrate, coriaceous, glabrous except midrib below, shining above; 3-5 nerves from the base, prominent, lateral veins 4-6 pairs, pinnate, prominent, intercostae scalariform, slender, prominent. Flowers unisexual, small, in axillary congested pubescent cymes; sepals 4 or 5 tomentose, small, imbricate; petals absent; stamens many; anthers versatile; ovary superior, urn shaped, glabrous, incompletely 2-5 locular, ovules 2 in each cell; styles 5, reflexed, notched at tip. Fruit a berry, globose, obtusely ribbed, 1-1.5 cm across, bright red, of an agreeable acid flavour; seeds few, reddish.

*Flowering & Fruiting:* April-June

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Pathanamthitta, Malappuram, Palakkad, Kollam, Thrissur, Kozhikkode, Trivandrum

*Endemic to:* Peninsular India

**Homalium jainii** Henry & Swamin., J. Bomb. Nat. Hist. Soc. 78. 570. 1981; Mitra in Sharma & Balakr., Fl. Ind. 2: 412. 1993; Gopalan & Henry, End. Pl. India SW Ghats 246. 2000; Mohanan & Sivad., Fl. Agasthyamala 74. 2002.

Trees, to 30 m high, bark grey, blaze yellow; branches glabrous. Leaf simple, alternate, estipulate; petiole 6-12 mm, slender, red, grooved above; lamina 4-11 x 1.5-4.5 cm, elliptic-lanceolate, base acute, apex acuminate, margin entire, glabrous, shining, coriaceous; lateral nerves 7-9 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, 10-12 mm across, greenish-yellow, scattered in short, grey tomentose simple racemes up to 20 cm long; pedicel 10 mm, slender, articulate, red; bracts 4 x 2 mm, ovate-oblong, subacute, grey-tomentose, cauducous; calyx green, tube obconic, grey-tomentose, lobes 6-9, 5-8 mm, oblong to spatulate, obtuse at apex, nerved, tomentose, accrescent; petals 6-9, 4-7 x 1.5-3 mm, triangular-oblong, similar to the sepals, but smaller than sepals, tomentose, connivent after anthesis, green; disc glands obovate, slightly lobed, opposite to sepals, velvety; stamens in fascicles of 6-7 before each petal; 3 between disc glands, rest inserted at the base of the petals above the disc glands; filaments 4-5 mm long, sparsely pilose; ovary tomentose; styles 6-9.

*Flowering & Fruiting:* October-December

*Habitat:* Along banks of rivers in evergreen forests

*Distribution*

*Kerala:* Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Homalium travancoricum** Bedd., Fl. Sylv. t. 211.1872; Hook. f., Fl. Brit. India 2: 598.1879; Gamble, Fl. Pres. Madras 522(369). 1919; Mitra in Sharma & Balakr., Fl. Ind. 2: 415. 1993; Sasidh., Fl. Shenduruny Wildlife Sanctuary 26. 1997.

Trees, to 15 m high, bark 3-4 mm thick, pale brown, smooth; blaze red; branchlets often inflated due to the inhabitation of ants. Leaves simple, alternate; petiole 8-16 mm, slender, glabrous; lamina 5-10 x 2.5-6, ovate, elliptic-oblong or obovate, base acute or obtuse, apex bluntly acute or acuminate, margin crenate or serrate, glabrous, coriaceous; lateral nerves 5-8 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, small, greenish-white, in axillary spicate racemes; calyx tube turbinate, 4 mm long, adnate to the base of the ovary; lobes 5-7, margin ciliate; petals 5-7, white, 4 mm long, inserted in the throat of the calyx; stamens in 3-4 fascicles opposite to each petal and alternating with glandular staminodes; ovary half-inferior, pubescent, 1-celled; styles 4, filiform; stigmas capitellate. Fruit a capsule; seeds small.

*Flowering & Fruiting:* March-November

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Trivandrum



*Endemic to:* Southern Western Ghats  
*Status:* Vulnerable (IUCN, 2000)

**Homalium zeylanicum** (Gard.) Benth., J. Linn. Soc. Bot. 4: 35. 1860; Hook. f., Fl. Brit. India 2: 596. 1879; Gamble, Fl. Pres. Madras 522(369). 1915; Mohanan, Fl. Quilon Dist. 73. 1984; Manilal, Fl. Silent Valley 10. 1988; Vajr., Fl. Palghat Dist. 61. 1990; Mitra in Sharma & Balakr., Fl. Ind. 2: 410. 1993; Subram., Fl. Thenmala Division 16. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 45. 1996; Sivar. & Mathew, Fl. Nilambur 58. 1997; Sasidh., Fl. Periyar Tiger Reserve 18. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 16. 2002.

*Blackwellia zeylanica* Gard., Calcutta J. Nat. Hist. 7: 452. 1847.

*Homalium tetrandra* Wight, Ic. t. 1851.1852.

*Local names:* Kaluvaluka, Manthalamukhi

Evergreen trees, to 30 m high, bole straight; bark 15 16 mm thick, pale brown, smooth, orange-yellow inside; branchlets puberulus; internode 1-2 cm. Leaves simple, alternate; petiole 8-20 mm, slender, slightly grooved above, pubescent; lamina 8-14 x 4.75 cm, broadly elliptic, base narrow, apex abruptly acuminate, margin crenate, glabrous, coriaceous. Lateral nerves 6-8 pairs, pinnate, arched towards the margin forming intramarginal nerves, prominent beneath, intercostae reticulate. Flowers small, greenish-white, bisexual, in axillary racemes; sepals 4, ovate-laminate, pubescent; petals 4, oblanceolate, pubescent, inserted at the throat of the calyx; stamens 4, antitepalous, alternating with globular staminodes; ovary pubescent; half superior, single celled, ovules many on 4 parietal placenta; styles 4. Fruit a capsule; seeds small, albumen fleshy.

*Flowering & Fruiting:* February-July

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Thrissur, Kollam, Malappuram

*Geographical:* South India and Sri Lanka

**Hydnocarpus alpina** Wight, Ic. t. 942. 1845; Hook. f., Fl. Brit. India 1: 197. 1872; Gamble, Fl. Pres. Madras 52(37). 1915; Manilal & Sivar., Fl. Calicut 36. 1982; Manilal, Fl. Silent Valley 11. 1988; Vajr., Fl. Palghat Dist. 61. 1990; Mitra in Sharma & Balakr., Fl. Ind. 2:418.1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 61. 1994; Subram., Fl. Thenmala Division 16. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 45. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 27. 1997; Sasidh., Fl. Periyar Tiger Reserve 18. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 17. 2002; Mohanan & Sivad., Fl. Agasthyamala 75. 2002.

*Hydnocarpus pendula* Manilal *et al.*, Trop. Plant. Sci. Res. 1: 355. 1983.

*Local names:* Attuchankala, Kattumarotti, Pinervetty

Trees to 15 m; bark 5-6 mm thick, smooth, greyish-brown, slightly rough; branchlets puberulus. Young leaves copper red. Leaves simple, alternate, drooping; stipules lateral, deciduous; petiole 5-10 mm, stout, swollen tipped, grooved above and glabrous; lamina 8-25 x 5-10 cm, ovate, elliptic-oblong or ovate-lanceolate, base oblique, round or acute, apex acute or acuminate, margin entire, glabrous, glossy, coriaceous, lateral nerves 7-10 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers unisexual 22-25 mm across, yellowish-white, solitary

or in stout axillary fascicles; pedicel 1.5-2 cm long, deflexed, pubescent; sepals 5, 8 mm long, oblong, pubescent, imbricate; petals 5, 1 cm long, narrow, glabrous, with a scale at the base; scales linear, as long as petals, sparsely hairy; stamens 5-15; filaments glabrous; connectives broad; ovary 1-celled, tomentose, stigmas 5, free, radiating, recurved. Fruit a berry, 5-7 cm across, densely tomentose, dark brown.

*Flowering & Fruiting:* February-July

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kollam, Thrissur, Kozhikkode, Trivandrum

*Geographical:* South India and Sri Lanka

**Hydnocarpus macrocarpa** (Bedd.) Warb. in Engl. & Prantl, Nat. Pflanzenf. 3(6a): 21. 1893; Mitra in Sharma & Balakr., Fl. Ind. 2: 421. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 61. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 45. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 27. 1997; Sivar. & Mathew, Fl. Nilambur 59. 1997.

*Asteriastigma macrocarpa* Bedd., For. Man. Bot. t. 266. 1873 & Ic. t. 242. 1868-1874; Gamble, Fl. Pres. Madras 52(38). 1915.

*Taraktogenos macrocarpa* (Bedd.) Balakr., J. Bomb. Nat. Hist. Soc. 67: 57. 1970.

*Local names:* Malamkummatti, Vellananku, Malamarotti

Evergreen trees, to 20 m tall. Leaves simple, alternate, estipulate; petiole 10-25 cm, slender, grooved above, pubescent when young; lamina 13.5-30 x 4.5-10 cm, broadly oblong, base acute, obtuse or subtruncate, unequal side, apex obtusely acuminate, margin entire, glabrous, coriaceous; lateral nerves 6-7 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers polygamous, white in axillary fascicles or on old branches; sepals 4, imbricate; petals 12-16, greenish-yellow with 3-lobed scales at the base inside; stamens many; ovary sessile, 1-celled; stigmas 6, bilobed. Fruits a berry, 12-15 cm across, globose, dark brown, woody; seeds many, angular.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Trivandrum, Thrissur, Kollam, Malappuram

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Hydnocarpus pentandra** (Buch.-Ham.) Oken, Allg. Naturf. 3: 1381. 1841; Mohanan, Fl. Quilon Dist. 73. 1984; Ramach. & Nair, Fl. Cannanore Dist. 50. 1988; Ansari, Fl. Kasaragod Dist. 65. 1985; Antony, Fl. Kottayam Dist. 68. 1989; Vajr., Fl. Palghat Dist. 61. 1990; Mitra in Sharma & Balakr., Fl. Ind. 2: 422. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 44. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 62. 1994; Subram., Fl. Thenmala Division 15. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 46. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 27. 1997; Sivar. & Mathew, Fl. Nilambur 59. 1997; Sasidh., Fl. Periyar Tiger Reserve 19. 1998; Sunil, Fl. Pl. Alappuzha Dist. 62. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 17. 2002.

*Chilmoria pentandra* Buch.-Ham., Trans. Linn. Soc. London 13. 501. 1822.

*Hydnocarpus laurifolia* (Dennst.) Sleum. in Engl., Bot. Jahrb. Syst. 69: 33. 1938.  
*Hydnocarpus wightiana* Blume, Rumph. 4: 22. 1848; Hook. f., Fl. Brit. India 1: 196.  
1872; Gamble, Fl. Pres. Madras 52(37). 1915.

*Local names:* Koti, Marotti, Neerutti, Niralam, Thamana

Dioecious trees, to 25 m high, bole fluted; bark 4-5 mm thick, surface pale brown mottled with white patches, smooth, brittle; blaze creamy yellow; branchlets pubescent. Leaves simple, alternate; stipules small, lateral, cauducous; petiole 8-10 mm, stout, pubescent, grooved above; lamina 8-17 x 3-8 cm, elliptic, elliptic-lanceolate or elliptic-oblong, base acute, obtuse or round, apex acuminate, margin crenate, serrate or entire, glabrous, coriaceous, lateral nerves 6-8 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers unisexual, 5-10 mm across, greenish-yellow, solitary or in small fascicle; sepals 5, broadly ovate, pubescent; petals 5, broadly ovate, greenish-yellow, fringed with soft white hairs, with a scale at the base; scales half as long as petals, densely hairy; stamens 5-15; filaments subulate, hairy at the base; anthers of female flowers possess no pollen; ovary globose, 1-celled, tomentose; stigma sessile and two lobbed. Fruit a berry 5-7 cm across, globose, rind thick, brown, rough with uneven surface; seeds numerous, yellowish, obtusely angular.

*Flowering & Fruiting:* December-May

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Endemic to:* Western Ghats

***Scolopia crenata*** (Wight & Arn.) Clos, Ann. Sci. Nat. Bot. ser. 4, 8: 250. 1857; Hook. f., Fl. Brit. India 1: 191. 1872; Gamble, Fl. Pres. Madras 52(38). 1915; Sleumer, Blumea 20: 39. 1972; Mohanan, Fl. Quilon Dist. 74. 1984; Ramach. & Nair, Fl. Cannanore Dist. 50. 1988; Manilal, Fl. Silent Valley 12. 1988; Vajr., Fl. Palghat Dist. 62. 1990; Mitra in Sharma & Balakr., Fl. Ind. 2: 430. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 45. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 62. 1994; Subram., Fl. Thenmala Division 12. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 46. 1996; Sivar. & Mathew, Fl. Nilambur 61. 1997; Sasidh., Fl. Periyar Tiger Reserve 19. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 23. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 17. 2002; Mohanan & Sivad., Fl. Agasthyamala 75. 2002.

*Phoberos crenatus* Wight & Arn., Prodr. 29. 1834.

*Local names:* Kakkamaram, Saralamaram, Charalu

Evergreen trees, to 15 m high, armed with often branched thorns; bark greyish-brown, flaking off in irregular thick scales; blaze yellow with pink tinge; branchlets with transverse lenticels. Leaves simple, alternate, estipulate; petiole 8-15 mm, slender, glabrous; lamina 5-14 x 2.5-6 cm, lanceolate, elliptic-lanceolate, ovate or obovate, base rounded or acute, apex abruptly acuminate, caudate-acuminate or acute margin crenate or serrate, glabrous, coriaceous, 3-5-ribbed from the base, lateral nerves 3-8 pairs, pinnate, faint, intercostae reticulate, faint. Flowers bisexual, 1.5 cm across, white, in axillary racemes of 5-7 cm long; rachis ferruginous tomentose; pedicel 6 mm long, puberulus; sepals 4-6, 3 x 2 cm, ovate, ciliate; petals 4-6, 1.5 mm long, oblong, glabrous; stamens numerous, free; anthers

1 mm long; connective produced into a reddish hood; disc extra-staminal, glandular pubescent; ovary one celled, few ovuled; style 4 mm long, thick, grooved; stigma 3-fid. Fruit a berry, globose, 10 x 8 mm across, with persistent style; seeds few.

*Flowering & Fruiting:* October-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Trivandrum Malappuram, Thrissur, Idukki, Palakkad, Kannur, Pathanamthitta

*Geographical:* Indo-Malesia

## PITTOSPORACEAE

**Pittosporum neelgherrense** Wight & Arn., Prodr. 154. 1834; Hook. f., Fl. Brit. India 1: 198. 1872; Gamble, Fl. Pres. Madras 55(40). 1915; Manilal, Fl. Silent Valley 12. 1988; Nayar & Giri in Sharma & Balakr., Fl. Ind. 2: 446. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 63. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 47. 1996; Sasidh., Fl. Periyar Tiger Reserve 19. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 17. 2002; Mohanan & Sivad., Fl. Agasthyamala 76. 2002.

*Local name:* Analivenga

Small trees to 8 m tall; bark brownish-black, lenticellate, with pungent aromatic smell. Leaves simple, alternate, estipulate; petiole 5-20 mm, slender, glabrous, grooved above; lamina 5-12 x 1.5-4 cm, narrowly elliptic, elliptic-obovate or elliptic-lanceolate, base attenuate or acute, apex acuminate, margin entire, glabrous, thinly coriaceous; lateral nerves 8-14 pairs, slender, faint, pinnate, midrib grooved above and slightly raised beneath, intercostae reticulate. Flowers bisexual, in slender simple racemes; pedicels 5 mm long, glabrous; sepals 5, 1.5 mm long, subulate, margin ciliate; petals yellow, 8 x 1.5 mm, oblong-lanceolate; ovary superior, densely tomentose with brown hairs, 1-celled; stigma 2-lobbed. Fruit a capsule, 2 valved, 1 cm across, yellow, woody, globular or slightly compressed; seeds 4-8, orange-red, smooth.

*Flowering & Fruiting:* January-June

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Trivandrum, Palakkad, Thrissur, Wayanad

*Endemic to:* South West India

## XANTHOPHYLLACEAE

**Xanthophyllum arnottianum** Wight, Illustr. 1: 50. t.23. 1840; Manilal, Fl. Silent Valley 16. 1988; Anil Kumar, Fl. Pathanamthitta Dist. 54. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 48. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 28.1997; Sivar. & Mathew, Fl. Nilambur 64. 1997; Sasidh., Fl. Periyar Tiger Reserve 21. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 19. 2002; Mohanan & Sivad., Fl. Agasthyamala 80. 2002.

*Xanthophyllum flavescens* sensu Bennett in Hook.f., Fl. Brit. India 1: 209. 1874, non Roxb. 1814; Gamble, Fl. Pres. Madras 59(42).1915; Ramach. & Nair, Fl. Cannanore Dist. 51. 1988; Antony, Fl. Kottayam Dist. 70. 1989; Vajr., Fl. Palghat Dist. 66. 1990; Banerjee & Balakr. in Sharma & Balakr., Fl. Ind. 2: 497.1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 66. 1994; Subram., Fl. Thenmala Division 19. 1995; Sunil, Fl. Pl. Alappuzha Dist. 64. 2000.

*Xanthophyllum angustifolium* Wight, Ill. 1:50. t. 23.1840; Mohanan, Fl. Quilon Dist. 75. 1984.

*Local names:* Madakka, Mottal

Trees, to 10 m high, bark 5-6 mm thick, greenish-grey, smooth, semi-fibrous, blaze dull yellow; branchlets puberulus. Leaves simple, alternate, spiral, estipulate; petiole 4-7 mm, slender, glabrous, lamina 5-15 x 2.5-7.5 cm, ovate-lanceolate or oblong-lanceolate, base acute or obtuse, apex acuminate, margin entire, glabrous, coriaceous, lateral nerves 5-7 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, in terminal or axillary paniced racemes, yellowish-

white; sepals 5, subequal, suborbicular, finely tomentose; petals 5, yellow, unequal, lower boat-shaped; stamens 8; filament free, 2 hypogynous, to the base of petals in pairs, others adnate to the base of the petals; disc 5-lobed; ovary superior, stipitate, globose, densely strigose, 1-celled, ovules 4, 2 erect and 2 pendulous; style curved. Fruit a drupe, 12-18 mm across, globose, green, rugose, 1-seeded.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* All districts

*Endemic to:* Western Ghats

### CLUSIACEAE

- |     |   |  |
|-----|---|--|
| 1.  | Flowers solitary, fascicled, in umbels or short spikes .....  | 2  |
| 1.  | Flowers in racemes or panicles .....  | 16   |
| 2.  | Lateral nerves of leaves indistinct, flowers 3.5 cm or more across .....  | 3  |
| 2.  | Lateral nerves of leaves distinct, flowers less than 2 cm across, petiole with an upward growth at the base.....  | 6  |
| 3.  | Flowers 8-12 cm across .....  | 4  |
| 3.  | Flowers 4-5 cm across .....   | 5  |
| 4.  | Flowers sessile; leaves 17-30 x 4-8 cm.....   | <b>Mesua thwaitesii</b>                        |
| 4.  | Flowers pedicelled; leaves 10-15 x 2-4 cm.....  | <b>Mesua ferrea</b> var. <b>ferrea</b>         |
| 5.  | Sepals pilose; leaves 5-8 x 1.5-2 cm.....   | <b>Mesua ferrea</b> var. <b>coromandeliana</b> |
| 5.  | Sepals glabrous; leaves 7-12 x 2-4 cm .....   | <b>Mesua pulchella</b>                         |
| 6.  | Flowers 5 merous, stamens in five phalanges .....   | 7  |
| 6.  | Flowers 4 merous, stamens in four phalanges, uniseriate or monadelphous .....   | 8  |
| 7.  | Flowers in spikes; leaf base rounded or obtuse .....  | <b>Garcinia spicata</b>                        |
| 7.  | Flowers in fascicles, petioles over 2 cm long; leaf base cuneate .....  | <b>Garcinia xanthochymus</b>                   |
| 8.  | Ovary warted or grooved .....   | 9  |
| 8.  | Ovary smooth, entire.....   | 11   |
| 9.  | Fruit with echinate process.....  | <b>Garcinia rubro-echinata</b>                 |
| 9.  | Fruit vertically grooved.....   | 10   |
| 10. | Ovary 4-5-celled, staminodes in 4 bundles .....   | <b>Garcinia cowa</b>                           |
| 10. | Ovary 6-12-celled, staminodes in an irregular ring .....  | <b>Garcinia gummi-gutta</b>                    |
| 11. | Anther cells contiguous, dehiscens longitudinal or by 2 short lateral clefts.....   | 12   |
| 11. | Anthers peltate, dehiscens circumscissile .....   | 14   |
| 12. | Leaf base attenuate; staminodes in a ring around the ovary, ovary 2-locular.....  | <b>Garcinia imberti</b>                        |
| 12. | Leaf base acute, obtuse or rounded; staminodes in 4 groups, ovary 4 or more loculed .....   | 13   |
| 13. | Leaves linear-oblong, less than 2.5 cm long, lateral nerves many, close and parallel, margins revolute; ovary 4-celled, stigma entire... <b>Garcinia travancorica</b> |  |
| 13. | Leaves elliptic or elliptic oblong, lateral nerves fairly distant apart, margin straight; ovary 5-8-celled, stigma 5-8 lobed..... <b>Garcinia mangostana</b>          |  |
| 14. | Pedicels 3-4 mm long, anthers dehiscing longitudinally, fruits 3 cm or more across .....  | <b>Garcinia indica</b>                         |

14. Flowers sessile, anthers dehiscens lateral or circumcissile; fruits less than 2 cm across ..... 15
15. Anther dehiscens circumcissile, stigma peltate; leaves elliptic.. **Garcinia morella**
15. Anther dehiscens lateral, stigma sessile; leaves linear-lanceolate **Garcinia wightii**
16. Leaves with many close and parallel lateral nerves; style 1 ..... 17
16. Lateral nerves of leaves indistinct; styles 2 ..... **Poeciloneuron indicum**
17. Fruit globose, ca 2.5 cm across; leaves broadly elliptic to ovate-elliptic, retuse at apex, ..... **Calophyllum inophyllum**
17. Fruit ovoid or ellipsoid; leaves acute or acuminate at apex..... 18
18. Sepals 4, petals absent ..... **Calophyllum calaba**
18. Sepals 4 or 6, petals 4..... 19
19. Leaves obovate to rhomboid, base narrowly cuneate; peduncle and sepals glabrous..... **Calophyllum austro-indicum**
19. Leaves ovate to elliptic-lanceolate, base attenuate; peduncle puberulous, sepals ciliate ..... **Calophyllum polyanthum**

**Calophyllum austroindicum** Kosterm. ex Stevens, J. Arnold Arbor. 61: 250. 1980; Nair *et al.*, J. Econ. Tax. Bot. 5: 263. 1984; Manilal, Fl. Silent Valley 18. 1988; Vajr., Fl. Palghat Dist. 69. 1990; Singh in Sharma & Sanjappa, Fl. Ind. 3: 90. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 69. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 51. 1996.

*Calophyllum trapezifolium* sensu Anders. in Hook.f., Fl. Brit. India 1: 275. 1874, non Thw. 1858; Gamble, Fl. Pres. Madras 76 (55). 1915; Mahesh., Bull. Bot. Surv. India 2: 144. 1960.

Evergreen trees, to 25 m high, bark rough, 2 cm thick, dark orange yellow to yellowish-brown, rough with shallow vertical irregular fissures; exudation almost clear resin-like; branchlets quadrangular. Leaves simple, opposite, decussate, estipulate; petiole 6-10 mm, stout, glabrous, grooved above; lamina 2.5-5 x 1.2-3 cm, obovate, obovate or subrhomboid, base tapering or cuneate, apex acute or round, margin entire, coriaceous, glossy; lateral nerves many, parallel, very close, prominent. Flowers bisexual, white, in short axillary and terminal panicles; peduncles stout, angular; pedicels to 25 mm long, stout, basal bracts minute, caudicous; sepals 4, the outer 2 strongly concave, thick, 6-7 mm long; inner ones petaloid, as long as petals; petals 4, 8-10 mm long, ovate-oblong, slightly narrowed at base, inner pairs shorter; stamens many, 6-7 mm long; ovary superior, globose-ellipsoid, 1-celled, ovule 1; style 7 mm long; stigma peltate, small. Fruit a drupe, 16-18 mm x 17 mm, ovoid, purple, pericarp thin, mesocarp juicy, acidic; seed subglobose, surrounded by a thin, jelly-like endosperm.

*Flowering & Fruiting:* November-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Palakkad, Trivandrum, Thrissur, Wayanad

*Endemic to:* Southern Western Ghats

**Calophyllum calaba** L., Sp. Pl. 514. 1753; Anil Kumar, Fl. Pathanamthitta Dist. 58. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 51. 1996; Sivar. & Mathew, Fl. Nilambur 67. 1997; Sasidh., Fl. Periyar Tiger Reserve 24. 1998; Sasidh., Fl.

Chinnar Wildlife Sanctuary 30. 1999; Sunil, Fl. Pl. Alappuzha Dist. 73. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 21. 2002; Mohanan & Sivad., Fl. Agasthyamala 81. 2002.

*Calophyllum apetalum* Willd., Ges. Naturf. Fr. Berlin Mag. 5: 79. 1811; Mohanan, Fl. Quilon Dist. 79. 1984; Singh in Sharma & Sanjappa, Fl. Ind. 3:88.1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 69. 1994; Vajr., Fl. Palghat Dist. 69. 1990.

*Calophyllum decipiens* Wight, Ic. t. 106. 1839; Gamble, Fl. Pres. Madras 76(54). 1915.

*Calophyllum wightianum* Wall. ex Planch. & Triana, Ann. Sci. Nat. Bot. ser. 4. 15: 256. 1862; Hook. f., Fl. Brit. India 1: 274. 1874.

*Local names:* Aattupunna, Manjapunna, Valuzhavam

Trees, to 20 m high, bark 15-18 mm thick, surface yellowish-brown, reddish-brown inside rough, deeply fissured; blaze brown to whitish; exudation yellow; branchlets slender, quadrangular, finely, minutely tomentellous to almost glabrous. Leaves simple, opposite, decussate, estipulate; petiole 4-12 mm long, stout, minutely tomentellous, glabrescent or glabrous, canaliculated above; lamina 5-11 x 3-5 cm, obovate, ovate-oblong or oblong, base acute, cuneate, cuneate-subacute or cuneate-round, apex retuse or obtuse, margin entire, glabrous, coriaceous; lateral nerves many, parallel, very close, slender, prominent, intercostae obscure. Flowers bisexual, white, 10-12 mm across, in axillary panicles; peduncle densely rusty pubescent, 5-10 mm long, slender; pedicels 5-20 mm long, with small deciduous bracts at the base, glabrous or sparsely pubescent; sepals 4, white, 8 x 5 mm oblong or obovate, concave, sometimes slightly pilose outside, inner ones thinner, narrower, up to 7 mm long; petals absent; stamens numerous, filaments 4-6 mm long, slender; anthers large; ovary superior, globose, 1-celled, ovule 1, erect; style slender, 3 mm long; stigma peltate, concave. Fruit a drupe, 10-12 mm, ovoid, bright orange or yellowish-orange; pericarp thin, pleasantly sweet, edible; seed ovoid to ellipsoid, pale brown.

*Flowering & Fruiting:* September-May

*Habitat:* Evergreen and semi-evergreen forests and sacred groves

*Distribution*

*Kerala:* All Districts

*Endemic to:* Western Ghats

**Calophyllum inophyllum** L., Sp. Pl. 513. 1753; Hook. f., Fl. Brit. India 1: 273. 1874; Gamble, Fl. Pres. Madras 76(55). 1915; Manilal & Sivar., Fl. Calicut 41. 1982; Mohanan, Fl. Quilon Dist. 79. 1984; Ansari, Fl. Kasaragod Dist. 69. 1985; Ramach. & Nair, Fl. Cannanore Dist. 54. 1988; Antony, Fl. Kottayam Dist. 72. 1989; Singh in Sharma & Sanjappa, Fl. Ind. 3: 92. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 70. 1994; Sunil, Fl. Pl. Alappuzha Dist. 74. 2000.

*Calophyllum bintagor* Roxb., Fl. Ind. 2: 606. 1832.

*Calophyllum blumei* Wight, Illustr. 1: 128. 1840.

*Local names:* Pinna, Punna

Glabrous trees, to 20 m high, bark blackish-brown, deeply fissured and cracked; exudation yellow, clear. Leaves simple, opposite, decussate, estipulate; petiole 10-30 mm, stout, grooved above, glabrous; lamina 15-20 x 3-6 cm, elliptic-oblong, obovate or obovate-elliptic, base acute, cuneate-round or decurrent, apex round, retuse, subacute or often emarginate, margin entire, glabrous, shining, coriaceous; lateral nerves many, parallel, close, slender, prominent, intercostae obscure.



Flowers bisexual, white, fragrant, in axillary racemes or in racemose panicles; peduncle 1-4 cm long, rather slender; pedicel slender, 2-6 cm long; sepals 4, outer ones 4-6 mm long, concave, inner longer, reflexed, petaloid; petals 4, spreading, upto 15 mm long, obovate to elliptic; stamens many, connate at the very base into 4-6 bundles; ovary superior, globose, reddish-purple after pollination, 1-celled, ovule 1, erect; style long, twisted, stigma large, mushroom shaped. Fruit a drupe, globose, 2-3 cm across, yellowish or greenish, smooth; pericarp pulpy, astringent.

*Flowering & Fruiting:* December-January

*Habitat:* In plains along the banks of rivers and sea coasts

*Distribution*

*Kerala:* All Districts

*Geographical:* Paleotropics

**Calophyllum polyanthum** Wall. ex Choisy, Descr. Guttif. Ind. 43. 1849; Mohanan, Fl. Quilon Dist. 79. 1984; Manilal, Fl. Silent Valley 19. 1988; Singh in Sharma & Sanjappa, Fl. Ind. 3: 94. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 52. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 30. 1997; Sivar. & Mathew, Fl. Nilambur 68. 1997; Sasidh., Fl. Periyar Tiger Reserve 24. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 21. 2002; Mohanan & Sivad., Fl. Agasthyamala 82. 2002.

*Calophyllum elatum* Bedd., Fl. Sylv. t. 2.1869; Gamble, Fl. Pres. Madras 76(54). 1915.

*Calophyllum tomentosum* sensu Hook.f., Fl. Brit. India 1: 274. 1874, non Wight 1839.

*Local names:* Malampunna, Kattupunna, Punna, Pinnapai, Punnapine

Lofty trees, to 35 m high, bole straight, sometimes with small buttresses; bark 15-16 mm thick, surface yellowish-brown, deeply spirally fissured; blaze red with white streaks; branchlets subquadrangular, minutely brown tomentose. Leaves simple, opposite, decussate, estipulate; petiole 12-25 mm long, slender, grooved above, glabrescent; lamina 8-12.5 x 3-8 cm, elliptic, elliptic-lanceolate, base acute, apex acute or acuminate, margin entire, glabrous, shining, coriaceous; lateral nerves many, slender, parallel, close, prominent, intercostae obscure. Flowers bisexual, white, in panicles or racemes, terminal and from the axils of the upper leaves; peduncle slender; pedicel 1-1.5 cm long, slender, white, sparsely to densely tomentellous; sepals 4, concave, elliptic, outer ones reflexed, ciliolate, inner 2 petaloid, 7.5 mm long; petals 4, 5 mm across, white, orbicular, early cauducous, inner ones smaller; stamens numerous, 4 mm long; filaments united at the base; ovary superior, slender, 1-celled, ovule one, erect; style 2 mm long, flexuous; stigma peltate, concave, obscurely lobed. Fruit a drupe, 2-2.5 cm long, obliquely ovoid, dark purple, smooth.

*Flowering & Fruiting:* June-September

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Palakkad, Idukki, Thrissur, Malappuram, Trivandrum

*Geographical:* Indo-Malesia and China

**Garcinia cowa** Roxb. ex DC., Prodr. 1: 561. 1824; Hook. f., Fl. Brit. India 1: 202. 1874; Gamble, Fl. Pres. Madras 74(53). 1915; Vajr., Fl. Palghat Dist. 70. 1990; Singh in Sharma & Sanjappa, Fl. Ind. 3: 108. 1993; Sasidh., Fl. Periyar Tiger Reserve 25. 1998.

*Local name:* Cowa

Evergreen trees, to 15 m high, bark smooth, surface greyish-brown; blaze creamy-yellow; exudation yellow, sticky, scanty; branches horizontal; branchlets quadrangular, drooping. Leaves simple, opposite, decussate, estipulate; petiole 8-13 mm long, stout, glabrous; lamina 8-17 x 2.5-7 cm, elliptic-oblong, oblanceolate or broadly lanceolate, base acute, attenuate or cuneate, apex acute or obtuse, margin entire, glabrous, thickly coriaceous; lateral nerves 15-21 pairs, pinnate, ascending, slender, prominent, looped along the margin forming intramarginal nerve, intercostae reticulate, obscure. Flowers dioecious, small, yellow; male flowers: to 1 cm across, 3-8 in axillary or terminal fascicles; pedicels about 6 mm long; sepals 4, 4-6 mm long, unequal, broadly ovate, fleshy, yellow; petals 4, 8-10 mm long, oblong, yellow flushed with pink or red; stamens numerous on a convex fleshy receptacle; anthers oblong; filaments short; rudimentary pistil absent; female flowers: upto 1.5 cm across, 2-5 in terminal fascicles, longer than male flowers, yellow; pedicel short; staminodes in a ring of 4 bundles of 3-8 around the ovary; filaments unequal; ovary superior, subglobose, 6-8 locular, ovules one in each cell; stigma sessile, flat, deeply divided into 6-8, papillose, wedge shaped rays. Fruit a berry, 2-4 cm across, depressed, globose, with 4-8 vertical grooves, smooth, yellow, ridged, beaked; seeds 4-8, oblong with a soft aril.

*Flowering & Fruiting:* December-September

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Palakkad, Wayanad

*Geographical:* India to Indo-China

***Garcinia gummi-gutta*** (L.) Robs., Brittonia 20: 103. 1968; Mohanan, Fl. Quilon Dist. 80. 1984; Ansari, Fl. Kasaragod Dist. 70. 1985; Manilal, Fl. Silent Valley 19. 1988; Ramach. & Nair, Fl. Cannanore Dist. 54. 1988; Antony, Fl. Kottayam Dist. 72. 1989; Vajr., Fl. Palghat Dist. 70. 1990; Singh in Sharma & Sanjappa, Fl. Ind. 3:110.1993; Anil Kumar, Fl. Pathanamthitta Dist. 61. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 71. 1994; Subram., Fl. Thenmala Division 24. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 52. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 30. 1997; Sivar. & Mathew, Fl. Nilambur 68. 1997; Sasidh., Fl. Periyar Tiger Reserve 25. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 30. 1999; Sunil, Fl. Pl. Alappuzha Dist. 79. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 22. 2002; Mohanan & Sivad., Fl. Agasthyamala 84. 2002.

*Cambogia gummi-gutta* L., Gen. Pl. (ed.5) 522. 1754.

*Garcinia cambogia* (Gaertn.) Desr. in Lam., Encycl. 3: 701. 1792; Hook. f., Fl. Brit. India 1: 261. 1874; Gamble, Fl. Pres. Madras 73(53). 1915.

*Mangostana cambogia* Gaertn., Fruct. 2: 106. 1790.

*Garcinia cambogia* (Gaertn.) Desr. var. *conicarpa* (Wight) Anders. in Hook.f., Fl. Brit. India 1: 262. 1874.

*Garcinia conicarpa* Wight, Ic. t. 121. 1839.

*Local names:* Gorakkapuli, Pinar, Kodampuli, Kudapuli, Marapuli, Meenpuli, Perumpuli, Pinampuli

Evergreen trees, to 20 m high, bark 4 mm thick, black, rough, thinly scaly; blaze creamy yellow; exudation pale yellow, sticky; branchlets terete, glabrous, drooping. Leaves simple, opposite, decussate, estipulate; petiole 5-20 mm long, stout,

channelled above, ligulate process at the base small, glabrous; lamina 7-15 x 2-8 cm, elliptic or elliptic-oblongate or lanceolate, base cuneate, or attenuate, apex acute or shortly obtusely acuminate, margin entire, glabrous, coriaceous, shining; lateral 10-16 pairs, pinnate, slender, ascending, prominent, arched towards the margin forming intramarginal nerve, intercostae reticulate, faint. Flowers polygamodioecious, yellowish-white; male flowers: 3-5 in short axillary fascicles; pedicels 7-15 mm long, thickened towards tip, often reflexed; sepals 4, fleshy with membranous margin, coriaceous, ovate or obovate, outer 2 smaller than inner; petals 4, twice as long as the sepals, concave with narrow membranous margin; stamens 10-20 or more, inserted on a short convex receptacle, monadelphous, forming a globular head; anthers *ca.* 0.5 mm long, basifixed; rudimentary pistil absent or minute; female flowers: 1-3 in terminal and axillary fascicles, larger than male flowers; pedicels 4-6 mm long; sepals and petals as in male; staminodes 10-20, filaments unequal, connate at base in a ring around the ovary or grouped in unequal bundles; anthers bilocular; ovary superior, globular, 8-10 locular, ovule one in each locule; stigmatic rays 8-10, spreading, free nearly to the base, margin tuberculate. Fruit a berry, ovoid to subglobose, 4-5 cm diameter, yellow or red, 8-10 grooved, grooves ending about the middle, pericarp very thick, fleshy; seeds 6-8, ovoid, compressed, pale brown, veined; aril succulent, white or red.

*Flowering & Fruiting:* January-September

*Habitat:* Evergreen forests, along stream banks, also cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* South India and Sri Lanka

**Garcinia imberti** Bourd., J. Bomb. Nat. Hist. Soc. 12: 349. 1899; Gamble, Fl. Pres. Madras 74(53). 1915; Singh in Sharma & Sanjappa, Fl. Ind. 3: 112. 1993; Sasidh., Fl. Shenduruny Wildlife Sanctuary 31. 1997; Mohanan *et al.*, Indian J. For 20: 383. 1997; Gopalan & Henry, End. Pl. India SW Ghats 206. 2000; Mohanan & Sivad., Fl. Agasthyamala 85. 2002.

*Local name:* Manjakanji

Evergreen trees, to 15 m high, bark 6 mm thick, brown mottled with white, rough, vertically fissured; exudation sweet-scented; branchlets quadrangular, glabrous. Leaves simple, opposite, decussate, estipulate; petiole 2-5 mm long, slender, glabrous, grooved above; lamina 4-10 x 1.5-4 cm, elliptic or oblanceolate, base narrow or cuneate, apex acuminate or obtusely acuminate, margin entire, glabrous, shining, coriaceous; lateral nerves 15-25, slender, pinnate, ascending, close, prominent, looped near the margin forming intramarginal nerve, intercostae obscure. Flowers yellow, polygamodioecious, sessile; male flowers: 3-9 in terminal fascicles, 4-5 mm across; sepals 4, in 2 rows, orbicular or suborbicular, concave, outer 2 smaller, 1.5-2 mm long, inner ones larger, 2.5-3 mm long, greenish-yellow; petals 4, 3-4 mm long, imbricate, broadly ovate or orbicular, concave, yellow; stamens 16-20, monadelphous in a central mass round the rudimentary pistil, 1-2 mm in diameter, stalk 0.5-1 mm long; female flowers: usually solitary, terminal, rarely in pairs; sepals and petals as in male flowers; ovary superior, globose, 1.5-2 mm across, 2-loculed, ovule 1 in each locule; stigma sessile, capitate, convex;

staminodes many, united and surrounding the ovary in a ring. Fruit a berry, ca. 2.5 x 2.5 cm, green; seeds 1 or 2, enclosed in a thick leathery covering.

*Flowering & Fruiting:* February-September

*Distribution*

*Kerala:* Trivandrum, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Garcinia indica** (Thouars) Choisy in DC., Prodr. 1: 561. 1824; Hook. f., Fl. Brit. India 1: 261. 1874; Gamble, Fl. Pres. Madras 73(53). 1915; Singh in Sharma & Sanjappa, Fl. Ind. 3: 113. 1993.

*Brindonia indica* Thouars, Dict. Sci. Nat. 5: 340. 1804.

*Garcinia purpurea* (G. Don) Roxb., Fl. Ind. 2: 624. 1832.

*Stalagmitis indica* (Thouars) G. Don, Gen. Hist. 1: 621. 1831.

*Stalagmitis purpurea* G. Don, Gen. Hist. 1: 621. 1831.

*Local names:* Punam puli, Kokkum

Trees, to 15 m high, bole buttressed, bark pale brown, very thin, smooth, rather shiny; branchlets drooping, young branches subterete, irregularly striate. Leaves simple, opposite, decussate, estipulate; petiole 5-12 mm long, slender, glabrous; lamina 6.5-11 x 1.5-4 cm, lanceolate or obovate-oblong, base attenuate, apex acute or acuminate, margin entire, glabrous, shining, membranous; lateral nerves 7-18 pairs, parallel, slender, prominent, intercostae reticulate. Flowers polygamodioecious; male flowers: 4-8 in axillary and terminal fascicles; pedicels 6 mm long; sepals 4, yellowish-orange to pinkish-orange, coriaceous, ovate-rotundate, outer ones 3-4.5 mm long, inner ones 4.5-5 mm long; petals 4, 5-6 mm long, thick; stamens many, inserted on a hemispheric subquadrate torus; filaments short; anthers oblong, truncate, loculi laterally introrse; rudimentary pistil absent or a few equalling the stamens; female flowers: solitary, terminal; pedicels 3 mm long; sepals and petals as in male flowers; staminodes 10-, 18, in 4 unequal, 2 to 3 seriate phalanges alternating with petals, 1-3 mm long; ovary superior, 4-8 locular, subglobose; stigma 4-8 rayed, convex, coronate, rays tuberculate, often 2-seriate. Fruit a berry, 2.5-4 cm across, 4-8 loculed, purple or wine brown, surrounded by persistent calyx; pulp red; seeds 5-8, compressed in acidic pulp.

*Flowering & Fruiting:* November-August

*Habitat:* Cultivated in Kerala

*Distribution*

*Kerala:* Wayanad, Kasaragode

*Geographical:* Central and Northern Western Ghats, cultivated elsewhere

**Garcinia mangostana** L., Sp. Pl. 443. 1753; Hook. f., Fl. Brit. India 1: 260. 1874; Gamble, Fl. Pres. Madras 73(52). 1915; Mohanan, Fl. Quilon Dist. 80. 1984; Antony, Fl. Kottayam Dist. 72. 1989; Singh in Sharma & Sanjappa, Fl. Ind. 3: 148. 1993; Sasidh., Fl. Shenduruny Wildlife Sanctuary 31. 1997.

*Local names:* Mangosta, Mangustan

Evergreen trees, to 20 m high, bark black or dark brown, smooth; exudation yellow, sticky; branchlets decussate, stout, cylindrical, slightly grooved, glabrous. Leaves simple, opposite, decussate, estipulate; petiole 20-25 mm long, stout, glabrous,

slightly grooved above, ligulate projections at base prominent, clasping the branches; lamina 8-25 x 4-12 cm, elliptic to elliptic-oblong or ovate-oblong, base acute, obtuse or rotund, apex acute or shortly acuminate, margin entire, often slightly revolute, glabrous, thickly coriaceous, glossy; lateral nerves numerous, parallel, close, slender, prominent, looped near the margin forming intramarginal nerve, intercostae reticulate, obscure. Flowers polygamodioecious; male flowers : pale green, to 4 cm across, 3-9 in terminal fascicles; pedicels 1.5-2 cm long; bracts orbicular, concave, scarious; sepals 4, erect, unequal, coriaceous, concave; petals 4, larger than sepals, ovate, fleshy, yellow-red inside, green red outside; stamens numerous, inserted on 4 thick, receptacular lobes below the rudimentary pistil; filaments short; anthers ovate-oblong, recurved; rudimentary pistil discoid, fleshy, red, apex conical, as long as stamens; bisexual flowers: 1-2 at the apices of branchlets, purple; pedicel 1.8-2 cm long, stout, woody; sepals 4, rarely 5, decussate, orbicular, concave, thick, persistent, outer pair shorter than inner; petals 4, purple, upto 3 cm long, orbicular, concave, thick, fleshy; stamens many, 1-2 seriate; filaments 4-5 mm long, slender, connate at base; anthers ovate-oblong, apex recurved; ovary superior, globose, smooth, 5-8-locular; ovules solitary, ascending; stigmas sessile, punctate, 5-8 lobed, lobes cuneiform. Fruit a berry; 5-7 cm across, glossy purplish-black, smooth, surrounded at base by sepals, apex crowned by 5-8 lobed stigma; pericarp thick, spongy, reddish, with yellow latex; seeds upto 8, oblong, 1-2 cm long, laterally compressed; aril opaque, very pleasant, juicy, thick, white.

*Flowering & Fruiting:* March-April

*Habitats:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Malaysia, widely cultivated in Tropical Asia

**Garcinia morella** (Gaertn.) Desv. in Lam., *Encycl.* 3: 701. 1792; Hook. f., *Fl. Brit. India* 1: 204. 1874; Gamble, *Fl. Pres. Madras* 74(52). 1915; Mohanan, *Fl. Quilon Dist.* 80. 1984; Manilal, *Fl. Silent Valley* 20. 1988; Ramach. & Nair, *Fl. Cannanore Dist.* 55. 1988; Vajr., *Fl. Palghat Dist.* 71. 1990; Singh in Sharma & Sanjappa, *Fl. Ind.* 3: 119. 1993; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 71. 1994; Subram., *Fl. Thenmala Division* 23. 1995; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 52. 1996; Sivar. & Mathew, *Fl. Nilambur* 69. 1997; Sasidh., *Fl. Periyar Tiger Reserve* 25. 1998; Sasidh., *Fl. Parambikulam Wildlife Sanctuary* 22. 2002; Mohanan & Sivad., *Fl. Agasthyamala* 85. 2002.

*Mangostana morella* Gaertn., *Fruct.* 2: 106. 1790.

*Garcinia pictoria* Roxb., *Fl. Ind.* 2:627. 1832.

*Garcinia gutta* Wight, *Ic. t.* 44. 1840.

*Local names:* Chigiri, Iravi

Evergreen trees, to 18 m high, bark 3-10 mm thick, brownish-grey or brown to dark brown, smooth; blaze dark yellow; exudation dark yellow or orange yellow, sticky; branchlets quadrangular, glabrous. Leaves simple, opposite, decussate, estipulate; petiole 6-15 mm, stout, glabrous, grooved above, thickened, very shortly ligulate at base; lamina 6-16 x 2.5-9 cm, elliptic-obovate or elliptic-oblong, base acute or cuneate, apex obtuse, obtusely acuminate or caudate-acuminate, margin entire,

glabrous, coriaceous; lateral nerves 8-16 pairs, pinnate, arched towards the margin forming intramarginal nerve, slender, prominent, intercostae reticulate, faint. Flowers polygamodioecious, reddish, sessile; male flowers: 2-4 in axillary fascicles or on old wood; sepals 4 orbicular, decussate, outer pairs smaller than the inner, glabrous; petals 4, little larger than sepals, orbicular, veined, concave; stamens 10-12, monadelphous, the filaments combined in to a subquadrangular central column, anthers red, orbicular, plurilocular; pistillode absent; female flowers: axillary, solitary, larger than male flowers; staminodes 10-12 in a ring round the ovary, connate at the base; ovary superior, greenish, globose, smooth, 4-celled, ovule one in each cell; stigma peltate, sessile, irregularly lobed, tubercled, persistent, margin dentate. Fruit a berry, 1.5-2.5 cm long, subglobose, or globose, smooth, yellowish or light pink, surrounded at the base by persistent sepals, crowned by flat tuberculate round stigmas, pulp sweet, acidic; seeds 2-4, kidney shaped, laterally compressed, dark brown, testa muriculate.

*Flowering & Fruiting:* February-August

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Malappuram, Palakkad, Kannur, Thrissur, Idukki, Kollam, Kozhikkode, Wayanad

*Geographical:* Indo-Malesia

***Garcinia rubro-echinata*** Kosterm., Ceylon J. Biol. Sci. 12: 128. 1977; Singh in Sharma & Sanjappa, Fl. Ind. 3: 123. 1993; Sasidh., Fl. Shenduruny Wildlife Sanctuary 31. 1997.

*Garcinia echinocarpa* sensu Hook.f., Fl. Brit. India 1: 264. 1874, non Thw. 1854; Gamble, Fl. Pres. Madras 73(52). 1915; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 71. 1994; Mohanan & Sivad., Fl. Agasthyamala 83. 2002.

*Garcinia echinocarpa* var. *monticola* Mahesh., Bull. Bot. Surv. India 6: 126. 1965.

*Local names:* Para, Pura

Evergreen trees, to 20 m high; with cylindrical stilt roots; bark 5-6 mm thick, surface green, mottled with yellow, red and white, smooth, with numerous small lenticels; exudation yellowish-white, sticky; branchlets angular, apically quadrangular, glabrous. Leaves simple, opposite, decussate, estipulate; petiole 10-30 mm, stout, glabrous, ligulate projections at the base prominent, clasping the branch; lamina 8-15 x 3-7.5 cm, obovate, elliptic or oblong-ovate, base cuneate or acute, apex obtuse or subretuse, margin entire, revolute, glabrous, coriaceous; lateral nerves numerous, parallel, close, prominent, looped near the margin forming intramarginal nerve, intercostae obscure. Flowers polygamodioecious, reddish-green, sessile; male flowers: 2-12 in axillary or terminal clusters; sepals 4, red, orbicular, concave; petals 4, pale green, dark green towards tip, almost twice as long as sepals; stamens 12-40, monadelphous, staminal column short, very thick, anthers red; pistillode absent; female flowers: solitary, terminal, slightly larger than male; staminodes uniseriate, connate in to a ring at base; ovary superior, globose, covered with imbricate fleshy scales, 3-4 locular, ovules one in each cell; style short; stigma massive, white, circular, papillate. Fruit a berry, 3-6 x 2.5-4 cm, subglobose or ellipsoid, green to yellow green, covered with pyramidal spines or broad tubercles,

crowned by short style and thick stigma; endocarp soft, pulp white, sweet; seeds 1-3 large, oblong, veined, light brown.

*Flowering & Fruiting:* February-July

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kannur, Kasaragode, Kollam, Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Garcinia spicata** (Wight & Arn.) Hook. f., J. Linn. Soc. Bot. 14:486.1875; Gamble, Fl. Pres. Madras 74(53). 1915; Singh in Sharma & Sanjappa, Fl. Ind. 3: 125. 1993; Subram., Fl. Thenmala Division 23. 1995; Vajr., Fl. Palghat Dist. 71. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 61. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 53. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 32. 1997; Sasidh., Fl. Periyar Tiger Reserve 25. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 22. 2002.

*Xanthochymus spicatus* Wight & Arn., Prodr. 102. 1834.

*Garcinia ovalifolius* (Roxb.) Hook.f., Fl. Brit. India 1:269. 1874, incl. vars. except *macrantha*, non Oliver 1868.

*Garcinia spicata* (Wight & Arn.) Hook.f. var. *glomerata* Vesque in A. & C. DC., Monogr. Phan. 8: 311. 1893.

*Local name:* Manjananku

Evergreen trees; to 25 m high, bark 10-12 mm, yellowish-brown mottled with white, smooth hoop-ringed, brittle; blaze creamy-yellow; exudation milky, white to yellowish-green, sticky; branches horizontal; branchlets opposite, 6-ribbed; very young twigs and inflorescence densely minutely pubescent. Leaves simple, opposite, decussate, estipulate; petiole 10-20 mm, stout, often pubescent initially, grooved above; lamina 7-22 x 4-8 cm, ovate-elliptic, elliptic-oblong or oblong base acute or obtuse, apex obtuse, emarginate or obtusely acute, margin entire, glabrous, coriaceous; lateral nerves 12-20 pairs, parallel, arched towards the margin forming intramarginal nerve, prominent, secondary laterals prominent, intercostae laxly reticulate, prominent. Flowers polygamodioecious, white, in the axils of leaves or fallen leaves; male flowers: in axillary fascicles or pseudo-spikes; bracts minute, pilose; pedicels slender, 6-12 mm long; sepals 4 or 5, 3 x 4 mm, pale green, suborbicular, concave, the outer two coriaceous, the inner larger, thinner, margin ciliate; petals 5, white, obovate, concave, membranous; stamens in 5 erect, long clawed spatulate fascicles, opposite to petals; anthers didymous; pistillode clavate, smooth; female flowers: solitary, axillary or paired, usually on much more longer pedicels than the male; staminoides 5, small with weak anthers; ovary superior, globose, terete, 4-celled, ovule one in each cell; style 1 mm long; stigma peltate, lobed to the centre, lobes cuneiform. Fruit a berry, broadly oblong, yellowish, smooth, with bad odour, pulp sweet, acidic, bitter after taste, 3-4 cm across,; seeds 1-3, up to 2.5 cm long, oblong, latterly flattened, testa brown, veined.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad, Kollam, Thrissur

*Geographical:* India and Sri Lanka

**Garcinia travancorica** Bedd., Fl. Sylv. t. 173. 1869; Hook. f., Fl. Brit. India 1: 265. 1874; Gamble, Fl. Pres. Madras 74(53). 1915; Singh in Sharma & Sanjappa, Fl. Ind. 3: 128. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 72. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 32. 1997; Gopalan & Henry, End. Pl. India SW Ghats 209. 2000; Mohanan & Sivad., Fl. Agasthyamala 87. 2002.

*Local name:* Malampongu

Evergreen trees, to 15 m high; bark 5-6 mm thick, rough, brown; exudation milky, yellow, sticky; branchlets obtusely 4-angled, shining. Leaves simple, opposite, decussate, estipulate; petiole 6-18 mm, slender, with small ligulate projections at base, glabrous, grooved above; lamina 5-10 x 1.2-2.5 cm, linear-oblong to subspathulate, base acute, apex obtuse or obtusely acute, margin entire, revolute, glabrous, coriaceous; lateral nerves many, parallel, almost right angle to the midrib, slender, close, faint, intercostae reticulate, faint. Flowers polygamodioecious, white; male flowers: in trichotomous, short, few flowered, terminal or subterminal cymes; pedicels short, thickened; sepals 4, orbicular, outer pairs smaller than the inner, concave, decussate; petals 4, about twice as long as sepals, shortly clawed, round; stamens numerous, in four multifid polyandrous masses, anthers bilocular, versatile; filaments short; pistillode columnar, stigma, circular, peltate; female flowers: axillary; solitary or in pairs; sepals and petals as in males; staminodes few, free, filaments complanate, linear, in 2 to 3-chotomous branches, anther loculi often divaricate, oblong; ovary superior, subglobose or pyriform, 4-locular, half-concealed by the large, convex, entire stigma. Fruit a berry, 3.7-5 x 1.2-2.5 cm, oblong to subglobose, contracted into a short, thick style with a broad imbricate stigma at the top; seeds 1-2, brown, smooth, shiny.

*Flowering & Fruiting:* May-September

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Garcinia wightii** Anders. in Hook.f., Fl. Brit. India 1: 205. 1874; Gamble, Fl. Pres. Madras 74(53). 1915; Mohanan, Fl. Quilon Dist. 80. 1984; Singh in Sharma & Sanjappa, Fl. Ind. 3: 129. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 62. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 53. 1996; Sasidh., Fl. Periyar Tiger Reserve 26. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 22. 2002; Mohanan & Sivad., Fl. Agasthyamala 87. 2002.

*Local names:* Attukaruka, Kolivala, Pulimaranga

Trees, to 10 m high, bark 5-6 mm thick, rough, brown, pustular; exudation orange yellow; branchlets 4 angled, glabrous. Leaves simple, opposite, decussate, estipulate; petiole 6-8 mm, slender, glabrous, grooved above; lamina 7.5-14 x 1.2-3 cm, linear, linear-lanceolate or linear-oblong, base acute, decurrent into the petiole, apex acuminate, glabrous, shining, coriaceous; lateral nerves 8-20 pairs, pinnate, slender, ascending, prominent, looped near the margin forming intramarginal nerve, intercostae reticulate, faint. Flowers polygamodioecious, yellow; male flowers: axillary, solitary or often 2-3, sessile; sepals 4, equal, orbicular, concave, thinly



coriaceous; petals 4, 4.5-5 x 3.5 mm, yellow, obovate, distinctly concave; stamens 18-20, often united in a column enclosing the tetragonal stylodium, filaments free above, anthers peltate; pistillode tetragonal; female flowers: axillary, solitary, sessile; sepals and petals as in male flowers; ovary superior, almost globular, usually 4-locular, stigmas sessile, large. Fruit a berry, 11-13 x 9-11 mm, subglobose, smooth, pale green with persistent stigma and sepals; seeds 4, 9.5 x 4.5 mm.

*Flowering & Fruiting:* November-March

*Habitat:* Along stream banks in evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Thrissur, Palakkad, Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Garcinia xanthochymus** Hook.f. ex Anders. in Hook.f., Fl. Brit. India 1: 269. 1874; Singh in Sharma & Sanjappa, Fl. Ind. 3: 129. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 72. 1994.

*Xanthochymus pictorius* Roxb., Pl. Corom. 2:51. t.196.1805, non *G. pictoria* Roxb. 1832.

*Xanthochymus tinctorius* DC., Prodr. 1: 562. 1824, '*pictorius*'.

*Garcinia tinctoria* (DC.) Wight in U.S.D.A. Bur. Pl. Industr. Bull. 137: 50. 1909; Gamble, Fl. Pres. Madras 74(53). 1915.

*Garcinia pictorius* (Roxb.) D. Arcy, Ann. Missouri Bot. Gard. 67: 998. 1980; Manilal, Fl. Silent Valley 20. 1988.

*Local names:* Bhaviyam, Monthanpuli, Thamalam

Evergreen trees, to 20 m; bark 6 mm thick, blackish or dark grey, exfoliating in small flakes; blaze creamy-yellow; exudation white turning yellow; branches horizontal, tips drooping; branchlets 4-angular. Leaves simple, opposite, estipulate; petiole 10-30 mm long, angular, rugulose, prominent ligulate projection at base, glabrous; lamina 12-45 x 4-12 cm, linear oblong, oblong or oblong-lanceolate; base cuneate or acute; apex acute or acuminate; margin entire, glabrous, shining, coriaceous; lateral nerves 15-20 pairs, slender, pinnate, arched near the margin forming intramarginal nerves; intercostae reticulate, prominent, secondary laterals prominent. Flowers polygamodioecious, white; male flowers: 1.5 cm across, 4-10 in fascicles, axillary or from the axils of the fallen leaves; pedicels thick, to 2.5 cm long; sepals [4]-5, orbicular-concave, unequal, apex ciliate; petals 5, 8 mm long, orbicular, incurved, spreading, greenish; stamens in 5 broad bundles of 3-5 each, alternating with 5 fleshy glands; anthers bilocular; female flowers: solitary; staminodes few, complanate; ovary ovoid, acuminate, 5 locular, ovules one in each cell; style short; stigmatic rays 5, oblong, spreading, entire. Fruit a berry, yellow, when ripe, 4.5-5.5 x 4-4.5 cm, stigmatic lobes 5; pulp yellow, acidic, seeds 1-2, reniform, 2.5-3 x 2.5 cm, smooth.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Subtropical hill forests

*Distribution*

*Kerala:* Trivandrum, Palakkad

*Geographical:* Indo-Malesia

**Mesua ferrea** L., Sp. Pl. 515. 1753, var. **ferrea**; Hook. f., Fl. Brit. India 1: 277. 1874; Gamble, Fl. Pres. Madras 77(55). 1915; Mohanan, Fl. Quilon Dist. 81. 1984; Ansari, Fl. Kasaragod Dist. 71. 1985; Singh in Sharma & Sanjappa, Fl. Ind. 3:136.1993; Subram., Fl. Thenmala Division 22. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 53. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 32. 1997; Sivar. & Mathew, Fl. Nilambur 70. 1997; Sunil, Fl. Pl. Alappuzha Dist. 81. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 23. 2002.

*Mesua nagassarium* (Burm.f.) Kosterm., Ceylon J. Sci. 12, 1: 71. 1976; Ramach. & Nair, Fl. Cannanore Dist. 55. 1988; Manilal, Fl. Silent Valley 21. 1988; Vajr., Fl. Palghat Dist. 72. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 62. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 73. 1994; Mohanan & Sivad., Fl. Agasthyamala 88. 2002.

*Local names:* Churuli, Nagapoovu, Nanku, Vayanavu, Nagachempakam

Trees, to 30 m high; bole buttressed, some times fluted; bark reddish-grey, flaking off in thin large scales; blaze pale pink; exudation colourless, aromatic; branchlets slender, terete. Leaves simple, opposite, decussate; petiole 5-12 mm long, slender, glabrous; lamina 6-10 x 3-5 cm, linear-lanceolate, elliptic, elliptic-oblong or oblong-lanceolate, base acute or obtuse, apex acuminate, margin entire, glabrous, shining, coriaceous; lateral nerves many, parallel, close, obscure, intercostae reticulate, obscure. Flowers bisexual, solitary, axillary; pedicel 5 mm long, slender; sepals 4, 6 mm across, orbicular, imbricate, fleshy, concave, densely velvety puberulous outside, persistent; petals 4, 2 x 1.5 cm, white, obovate or obcordate, curled and erose at margin, very finely brown purplish veined, cauducous; stamens numerous, yellow, polyadelphous, 4-5 mm long; anthers large, linear; ovary superior, ovoid, 2-celled, ovule 2 in each cell; style almost as long as ovary, often curved, stigma small, peltate. Fruit a capsule, ovoid to globose with a conical point, striate, 1-celled; sepals enlarged upto 4 cm long, adpressed, pericarp tough, 2 valved; seeds 1-4, smooth with glossy, brown, horny testa.

*Flowering & Fruiting:* April-July

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Mesua ferrea** L. var. **coromandeliana** (Wight) Singh, J. Econ. Tax. Bot. 10: 203. 1987 & in Sharma & Sanjappa, Fl. Ind. 3: 137. 1993; Sasidh., Fl. Chinnar Wildlife Sanctuary 30. 1999; Sasidh., Fl. Periyar Tiger Reserve 26. 1998.

*Mesua ferrea* L. ssp. *pulchella* Vesque var. *coromandeliana* (Wight) Mahesh., Bull. Bot. Surv. India 5: 336. 1964.

*Mesua coromandeliana* Wight, Ic. t. 117. 1839.

*Local names:* Nanku, Veluthapala

Evergreen trees, to 25 m high, bole straight, buttressed, bark greyish-brown, blaze pink; branchlets terete, glabrous, swollen at nodes. Leaves simple, opposite, decussate, estipulate; petiole 6-10 mm, slender, glabrous; lamina 5-10 x 2-3 cm, elliptic or elliptic-lanceolate, base narrowed, acute or obtuse, apex acuminate or caudate-acuminate, margin entire, glabrous, shining, coriaceous; lateral veins many, parallel, close, obscure, intercostae reticulate, obscure. Flowers bisexual,

solitary, axillary, 1.5 cm across, white; pedicel 2-8 mm long, stout; sepals 4, outer 2 oblong, 1 x 1 cm, inner 2 orbicular, 1.5 x 1 cm, glabrous, softly pruinose; petals 4, 2.5-3 x 1.5 cm, white, obovate; stamens numerous, filaments of various length; anthers large; ovary superior, 2-3.5 mm long, globose, 2-locular; ovules 2 per cell; style 5-7 mm long; stigma peltate. Fruit a capsule, 2.5-3 cm long, ovoid, woody, shortly acuminate at apex, subtended by lignified sepals, greenish-yellow, sometimes with a pink tinge; seed one.

*Flowering & Fruiting:* December-February

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* Southern Western Ghats

*Status:* Endangered (Nayar, 1997)

**Mesua pulchella** Planch. & Triana, Ann. Sci. Nat. Bot. ser. 4, 15: 307. 1861; Singh in Sharma & Sanjappa, Fl. Ind. 3: 143. 1993.

*Mesua ferrea* L. ssp. *pulchella* Vesque var. *pulchella* (Planch. & Triana) Mahesh., Bull. Bot. Surv. India 5: 339. 1963.

*Mesua nagassarium* (Burm.f.) Kosterm. var. *pulchella* (Planch. & Triana) Kosterm., Reinwardtia 7: 427. 1969.

Evergreen trees, to 20 high, bole buttressed, bark 8-10 mm thick, brown rough, irregularly flaking, fibrous, blaze light pink, exudation scanty, colourless; branchlets slender, terete. Leaves simple, opposite, decussate, estipulate; petiole 8-10 mm long, slender, slightly grooved above, glabrous; lamina 5-10 x 1-3.5 cm, elliptic or narrowly lanceolate, base acute, apex acuminate, margin entire, glabrous, shining, coriaceous; lateral nerves many, parallel, close, obscure, intercostae reticulate, obscure. Flowers bisexual, 3-3.5 cm across, white, sessile, solitary or in pairs, axillary, fragrant; sepals 4, in pairs, outer pair 7-9 mm long, suborbicular, inner 10-11 mm long, orbicular; petals 4, cuneate-oblong; stamens numerous, yellow; filaments variable; anthers large; ovary superior, 2-celled, ovules 2 in each cell; styles as long as ovary; stigma small, peltate. Fruit a capsule, ovoid to globose, 2.5-3 x 3.4 cm with persistent accrescent sepals; seeds smooth.

*Flowering & Fruiting:* April & December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Idukki

*Geographical:* South India and Sri Lanka

**Mesua thwaitesii** Planch. & Triana, Ann. Sci. Nat. Bot. ser. 4, 15: 305. 1861; Hook. f., Fl. Brit. India 1: 278. 1874; Singh in Sharma & Sanjappa, Fl. Ind. 3: 143. 1993; Sasidh., Fl. Periyar Tiger Reserve 26. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 23. 2002.

*Mesua ferrea* L. var. *thwaitesii* (Planch. & Triana) Vesque in A. & C. DC., Monogr. Phan. 8: 634. 1893; Manilal & Sivar., Fl. Calicut 41. 1982.

*Local name:* Kilinanku

Glabrous trees, to 20 m high; bark dark brown, smooth. Leaves simple, opposite, decussate, estipulate; petiole upto 10 mm, slender, glabrous; lamina 16-30 x 3-11

cm, elliptic-oblong, linear-oblong, base acute, apex acuminate, margin entire, glabrous above, glaucous, white and papillate on the lower surface, coriaceous, lateral nerves many, parallel, close, slender, obscure, intercostae obscure. Flowers bisexual, 8-10 cm across, rose-coloured, showy, sessile in terminal cymes; sepals 4, to 1.5 cm across, across, outer pair smaller than inner petals; petals 4, 3-4 x 2-3 cm, orbicular; stamens numerous, polyadelphous; ovary superior, 2-loculed, ovules 2 in each cell; style long; stigma peltate. Fruit a capsule, 3-5 cm long, depressed or obovoid-globose, apiculate or conical, woody, greenish-yellow, surrounded by enlarged sepals and bracts; seeds 2 or 3, to 3 x 2 cm; planoconvex or trigonus, brown.

*Flowering & Fruiting:* February-December

*Habitat:* Evergreen forests, also in sacred groves

*Distribution*

*Kerala:* Idukki, Kozhikkode, Palakkad

*Geographical:* South India and Sri Lanka

**Pocillonuron indicum** Bedd., J. Linn. Soc. Bot. 8: 267,t.17. 1865 & Fl. Sylv. t.3. 1869; Hook. f., Fl. Brit. India 1: 278. 1874; Gamble, Fl. Pres. Madras 77(56). 1915; Mohanan, Fl. Quilon Dist. 81. 1984; Manilal, Fl. Silent Valley 22. 1988; Ramach. & Nair, Fl. Cannanore Dist. 55. 1988; Vajr., Fl. Palghat Dist. 72. 1990; Singh in Sharma & Sanjappa, Fl. Ind. 3: 146. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 73. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 54. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 33. 1997; Sasidh., Fl. Periyar Tiger Reserve 26. 1998; Mohanan *et al.*, Ann. For. 7: 87. 1999; Mohanan & Sivad., Fl. Agasthyamala 89. 2002.

*Local names:* Poothamkolli, Vayila

Large evergreen trees; to 30 m high; bark 5-6 mm thick, grey to brown, rough; blaze reddish-pink; bole straight, buttressed some times with stilt root; exudation milky, yellow, scanty; branchlets terete, hairy. Leaves simple, opposite, estipulate; petiole 10-30 mm, stout, glabrous, grooved above; lamina 11-25 x 2.5-6.5 cm, elliptic, elliptic-oblong or linear-oblong; base acute or obtuse; apex caudate acuminate; margin entire, glossy, areolate, glabrous; coriaceous, lateral nerves many, close, parallel, slender, obscure; intercostae reticulate. Flowers bisexual, yellowish-white, fragrant, in axillary and terminal panicles; pedicels 1-2 cm, puberulous; bracteoles triangular; sepals 5, 3 mm long, ovate, puberulous without; petals 5, 5-6 mm, elliptic to obovate; stamens numerous, free or slightly connate; filaments 0.5 mm long; anthers 3.5 mm, erect; ovary 1-2 mm, bilocular; ovules 2 in each locule; styles 2, subulate. Fruit a capsule, 2-2.5 cm across, globose, beaked, pink, 1-celled; seed one, fleshy.

*Flowering & Fruiting:* December-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Kannur, Trivandrum, Malappuram, Thrissur

*Endemic to:* Western Ghats

## THEACEAE

1. Flowers 4-5 cm across; fruit a capsule ..... **Gordonia obtusa**
1. Flowers 0.4-1.2 cm across; fruit a berry ..... 2

2. Leaves serrate; stamens 10; berry 0.5 cm across ..... **Eurya nitida**  
 2. Leaves entire; stamens 50 or more; berry 1.2-1.5 cm across .....  
 ..... **Ternstroemia japonica**

**Eurya nitida** Korth. in Temminck, Verh. Nat. Gesch. Bot. 3: 115. t.17. 1840; Mohanan, Fl. Quilon Dist. 82. 1984; Ramach. & Nair, Fl. Cannanore Dist. 56. 1988; Manilal, Fl. Silent Valley 22. 1988; Chauhan & Paul in Sharma & Sanjappa, Fl. Ind. 3: 184. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 63. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 73. 1994; Subram., Fl. Thenmala Division 25,33,39; Sivar. & Mathew, Fl. Nilambur 72. 1997; Sasidh., Fl. Periyar Tiger Reserve 27. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 31. 1999; Mohanan & Sivad., Fl. Agasthyamala 91. 2002.

*Eurya japonica* Thunb. var. *thunbergii* Thw., Enum. Pl. Zeyl. 41. 1858; Hook. f., Fl. Brit. India 1: 284. 1874.

*Eurya japonica* Thunb. var. *nitida* (Korth.) Dyer in Hook.f., Fl. Brit. India 1: 284. 1874.

*Local names:* Kattukarana, Kattu-theyila

Evergreen trees, to 8 m high, bole striate; bark brown. Leaves simple, alternate, exstipulate; petiole 1-7 mm, slender, glabrous, grooved above; lamina 2-7.5 x 1-3 cm, elliptic or elliptic-oblong, base acute or cuneate, apex subacute, margin serrate, coriaceous, glabrous; lateral veins 4-9 pairs, pinnate, prominent, intercostae reticulate, prominent, secondary laterals also prominent. Flowers unisexual, white or greenish-white, 2 or more in axillary fascicles, rarely solitary; pedicel 1-2.5 mm long; bracteoles 2 at the base of calyx; sepals 5, broadly ovate to orbicular, glabrous, ciliate; petals 5, broadly oblong to orbicular, connate at base, imbricate; stamens 12-15, connate at base, adnate to the base of petals, anthers apiculate; ovary superior, globose, glabrous, 3-celled, ovule many in each cell; styles 3, 1.5-2.5 mm long, united basely; stigmas 3-lobed. Fruit a berry, 3-5 mm across, globose, black; seeds small, many, dark brown, angular, reticulate.

*Flowering & Fruiting:* March-December

*Habitat:* Margins of grasslands and shola forests

*Distribution*

*Kerala:* Kannur, Palakkad, Pathanamthitta, Trivandrum, Idukki, Kozhikkode, Kollam, Malappuram

*Geographical:* Indo-Malesia and China

**Gordonia obtusa** Wall. ex Wight & Arn., Prodr. 87. 1834; Hook. f., Fl. Brit. India 1: 291. 1874; Gamble, Fl. Pres. Madras 79(57). 1915; Mohanan, Fl. Quilon Dist. 82. 1984; Ramach. & Nair, Fl. Cannanore Dist. 56. 1988; Manilal, Fl. Silent Valley 22. 1988; Vajr., Fl. Palghat Dist. 73. 1990; Chauhan & Paul in Sharma & Sanjappa, Fl. Ind. 3: 162. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 63. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 74. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 54. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 33. 1997; Sasidh., Fl. Periyar Tiger Reserve 27. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 31. 1999; Mohanan & Sivad., Fl. Agasthyamala 91. 2002.

*Gordonia obtusifolia* Wight, Illustr. 1: 99. 1838.

*Local names:* Karikkova, Kattukarana

Trees, to 20 m high, bark greyish-white, 6 mm thick, smooth; branchlets tomentose. Leaves simple, alternate; petiole 2-10 mm, slender, glabrous; lamina 3.5-15 x 1.5-5 cm, elliptic, elliptic-oblong or elliptic-oblongate, base cuneate, acute or attenuate, apex acute, acuminate or obtuse, margin crenate or serrate, glabrous, coriaceous; lateral nerves 8-16 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, white, solitary, terminal or upper axillary; pedicels 2-5 mm long, pubescent; sepals 5, free, unequal, 3-8 x 6-10 mm, orbicular, pubescent outside, glabrous inside; petals 5, 1.5-2 x 0.8-1 cm, obovate, pubescent outside, glabrous inside, notched at the tip, extreme base united; stamens numerous, 4-8 mm long, unequal, adnate to the base of the petals; anthers basifixed; ovary superior, ovoid, tomentose 5-celled, ovule 4-8 in each cell; style 1, stout, ribbed; stigma 6-lobed. Fruit a capsule, 2.5-3 x 1-1.25 cm, oblong with short acumen, 5-angled, valves deeply sulcate above; seeds ellipsoid, winged, wings 6-10 mm long, brownish.

*Flowering & Fruiting:* October-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Palakkad, Kannur, Idukki, Trivandrum, Thrissur, Kozhikkode

*Endemic to:* Western Ghats

***Ternstroemia gymnanthera*** (Wight & Arn.) Bedd., Fl. Sylv. 91, t. 91. 1871; Chauhan & Paul in Sharma & Sanjappa, Fl. Ind. 3: 190. 1993; Mohanan & Sivad., Fl. Agasthyamala 92. 2002.

*Cleyera gymnanthera* Wight & Arn., Prodr. 87. 1834.

*Ternstroemia japonica* auct. non (Thunb.) Thunb., 1794; Hook. f., Fl. Brit. India 1: 280. 1874; Gamble, Fl. Pres. Madras 78(56). 1915; Manilal, Fl. Silent Valley 23. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 74. 1994; Sasidh., Fl. Periyar Tiger Reserve 27. 1998.

Trees, to 15 m high, bark brown, 1.3 cm thick, smooth or tessellated; branchlets reddish, glabrous, terete. Leaves simple, alternate, often clustered at apices of branchlets, estipulate; petiole 5-25 mm, glabrous, stout, reddish; lamina 4-8 x 1.5-3.5 cm, obovate, oblanceolate or elliptic-lanceolate, base cuneate, apex acute or obtuse, retuse, margin entire, slightly revolute, coriaceous, glabrous; lateral nerves 4-5 pairs, pinnate, slender, obscure, intercostae obscure. Flowers unisexual, axillary or extra axillary, solitary, pale yellow, fragrant; pedicels 8-10 mm long, stout, 2-ridged; 2 small ovate bracteoles at the base of calyx; sepals 5, 4-5 x 3-4 mm, broadly ovate to orbicular, coriaceous, glabrous, persistent, connate at the base; petals 5, 6-8 x 5-6 mm, obovate-cuneate, leathery, connate at the base, broadly imbricate; stamens yellow, more than 50, free; filaments adnate to the base of petals; anthers oblong, apiculate; pistillode clavate; ovary superior, 4-5 mm long, 2-3-celled, ovules 2 in each cell; style simple; stigmas 3, sessile. Fruit a berry, ovoid or globose, tipped with persistent style, brown; seeds 3-4, angular, red.

*Flowering & Fruiting:* April-July

*Habitat:* Shola forests and evergreen forests

*Distribution*

*Kerala:* Idukki, Trivandrum, Palakkad, Wayanad

*Geographical:* South East Asia and China

## DIPTEROCARPACEAE

- |     |  |                                   |
|-----|--|-----------------------------------|
| 1   | Stamens 15 or less.....  | 2                                 |
| 1.  | Stamens more than 30.....  | 8                                 |
| 2.  | Fruiting sepals free, distinct, connective of anthers muticous ... <b>Vatica chinensis</b> |                                   |
| 2.  | Fruiting sepals united at base, connective of anthers prolonged in to an awn ....          | 3                                 |
| 3.  | Outer 2 calyx lobes larger and enlarged in to wings in fruit.....                          | 4                                 |
| 3.  | Calyx lobes subequal, not enlarged into wings in fruit .....                               | 7                                 |
| 4.  | Nerve axils with glands or domatia.....  | 5                                 |
| 4.  | Nerve axils without glands or domatia .....  | 6                                 |
| 5.  | Leaf apex obtusely caudate-acuminate, lateral nerves 4 or 5 pairs.....                     |                                   |
|     | <b>Hopea racophloea</b>  |                                   |
| 5.  | Leaf apex acute acuminate, lateral nerves 6 or more paired, panicles tomentose.....        | <b>Hopea parviflora</b>           |
| 6.  | Leaves acute or acuminate at apex, less than 10 x 3.5 cm, lateral nerves 4-8 pairs .....   | <b>Hopea glabra</b>               |
| 6.  | Leaf apex acute or obtuse, 12-20 x 3.5-7.5 cm, lateral nerves 7-9 pairs.....               |                                   |
|     | <b>Hopea ponga</b>   |                                   |
| 7.  | Leaf base obliquely cordate, petals bilobed.....   | <b>Hopea erosa</b>                |
| 7.  | Leaf rounded or acute, petals entire.....  | <b>Hopea utilis</b>               |
| 8.  | Sepals unequal, 2 or 3 enlarged in to wings in fruit .....                                 | 10                                |
| 8.  | Sepals equal, not enlarged in fruit.....   | 9                                 |
| 9.  | Fruits ellipsoid or oblong, obtuse at apex.....  | <b>Vateria indica</b>             |
| 9.  | Fruits ovoid or oblong, narrowed at apex, often curved .....                               | <b>Vateria macrocarpa</b>         |
| 10. | Two sepals enlarged in to wings in fruit .....   | 11                                |
| 10. | Three sepals enlarged in to wings in fruit.....  | <b>Shorea roxburghii</b>          |
| 11. | Shoot apex tomentose, calyx tube ribbed .....  | <b>Dipterocarpus bourdillonii</b> |
| 11. | Shoot apex glabrous, calyx tube smooth .....   | <b>Dipterocarpus indicus</b>      |

**Dipterocarpus bourdillonii** Brandis in Hook., Ic. Pl. t. 25. 1895; Gamble, Fl. Pres. Madras 81(58). 1915; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 210. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 64. 1994; Subram., Fl. Thenmala Division 27. 1995; Sasidh., Fl. Periyar Tiger Reserve 27. 1998.

*Local names:* Charatta-anjili, Kalpayin, Karanjili

Evergreen trees, to 45 m high, bark grey, exfoliating in thick irregular flakes; blaze dull-pink; young parts covered with dense brown tomentum. Leaves simple, alternate; stipules large, lateral, amplexicaul, leaving an annular scar; petiole 38-55 mm long, swollen tipped, tomentose, stout; lamina 20-45 x 12-25 cm, obovate, ovate or ovate-oblong, base obtuse, round or subcordate, apex acute or acuminate, margin entire or wavy, coriaceous, glabrous above and stellate hairy beneath; lateral nerves 12-15 pairs, parallel, prominent, intercostae scalariform, faint. Flowers bisexual, white, 4-5 x 3.7 cm, 3-5 in short axillary racemes; calyx tubular, obconical; lobes 5, linear; petals 5, 3.5-5 cm long, pubescent, valvate; stamens 30; filaments of variable length, broad, compressed, connate at base, tapering gradually and filiform below the anther; anthers hastate, locules subequal; connective nearly as long as the anthers, produced above; ovary superior, 3-celled, ovules 2 in each cell; style filiform, pubescent. Fruit a nut, 2.5 cm across, globose, enclosed at the

base of thickened, accrescent calyx lobes, subacute, very tuberculate below; calyx tube 5-angular, wings 5, purplish-brown.

*Flowering & Fruiting:* January-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Kollam, Palakkad

*Endemic to:* Western Ghats

*Status:* Critically endangered (IUCN, 2000)

**Dipterocarpus indicus** Bedd., Fl. Sylv. t. 94. 1871; Gamble, Fl. Pres. Madras 81(58). 1915; Mohanan, Fl. Quilon Dist. 83. 1984; Vajr., Fl. Palghat Dist. 74. 1990; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 214. 1993; Subram., Fl. Thenmala Division 26. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 55. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 33. 1997; Sasidh., Fl. Periyar Tiger Reserve 28. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 24. 2002; Mohanan & Sivad., Fl. Agasthyamala 93. 2002.

*Dipterocarpus turbinatus* sensu Dyer in Hook.f., Fl. Brit. India 1: 295. 1874 p.p. non Gaertn.f.

*Local names:* Karanjili, Vella-ayani

Lofty evergreen trees, to 35 m high, bole straight; bark pale grey, smooth, exfoliations irregular, brittle; blaze creamy chocolate-yellow; branchlets tomentose. Leaves simple, alternate; stipules large, lateral, leaving an annular stipular scar, tomentose; petiole 17-50 mm, slender, glabrous, swollen tipped; lamina 7-25 x 4-17.5 cm, ovate, base acute, obtuse or cordate, apex acute or acuminate, margin crenate, undulate, glabrous, coriaceous, lateral nerves 10-15 pairs, parallel, prominent, intercostae scalariform, obscure. Flowers bisexual, white, fragrant, 3-5 together in axillary racemes; pedicels 3 cm long; calyx cupular at base, lobes 5, unequal; petals 5, tinged with pink; stamens 30; filaments yellowish, often dilated at base; connective aristate; ovary superior, slightly adherent to the calyx tube, 3-celled, ovules 2 in each cell. Fruit a nut; wings 2, oblong, reddish-brown, to 10 x 2 cm.

*Flowering & Fruiting:* February-July

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Palakkad, Kollam, Pathanamthitta, Thrissur, Idukki, Kozhikkode, Trivandrum

*Endemic to:* Western Ghats

**Hopea erosa** (Bedd.) van Sloot., Reinwardtia 3: 318. 1956; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 222. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 55. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 34. 1997.

*Balanocarpus erosa* Bedd., For. Man. Bot. 237. 1873; Gamble, Fl. Pres. Madras 84(60). 1915.

*Local names:* Karakong, Eeyakam

Evergreen trees, to 25 m; bark 6-7 mm thick, pale brown, smooth, blaze pinkish-yellow. Leaves simple, alternate; stipule minute, lateral, deciduous; petiole 5-10 mm, stout, tomentose; lamina 10-20 x 3-7 cm, oblong or oblong-lanceolate, base



unequally cordate, apex acute or acuminate, margin entire, glabrous, coriaceous, lateral nerves 10-17 pairs, pinnate, arched, prominent, intercostae reticulate, prominent. Flowers greyish-yellow, 1 cm across, subsessile, in unilateral, axillary racemed panicles; calyx tube short, adnate to the torus; sepals 5, suborbicular, subequal, margin ciliate, reddish, imbricate; petals 5, bilobed, pilose outside, glabrous inside, pinkish-white; stamens 15, rarely 10; filaments dilated at the base; anthers short, ovate, exceeded by the apical awn; ovary superior, glabrous, 3-celled, ovules 2 in each cell; style short; stigma thick. Fruit a nut, ovoid or oblong, apiculate, enclosed at the base by the thickened and accrescent sepals which often attain 2.5 cm long and spread horizontally.

*Flowering & Fruiting:* October-January

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Thrissur, Palakkad; Planted in Periya, Wayanad

*Endemic to:* Southern Western Ghats

*Status:* Critically endangered (IUCN, 2000)

**Hopea glabra** Wight & Arn., Prodr. 85. 1834; Hook. f., Fl. Brit. India 1: 309. 1874; Gamble, Fl. Pres. Madras 1867(1292). 1936; Manilal, Fl. Silent Valley 23. 1988; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 222. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 65. 1994.

*Hopea wightiana* Wall. ex Wight & Arn. var. *glabra* (Wight & Arn.) Bedd., Fl. Sylv. t. 96. 1871.

*Local names:* Irumbakam, Karimpongu, Naithambagam

Trees, to 20 m high, bole buttressed; bark 5-6 mm, dark brown; petiole 8-20 mm, slender, glabrous; lamina 6-10 x 2.5-4 cm, elliptic, oblong-lanceolate, base acute, obtuse or round, apex acute or acuminate, margin entire, glabrous, coriaceous, lateral nerves 4-8 pairs, parallel, prominent, intercostae scalariform, prominent. Flowers bisexual, creamy yellow, 1-3 together in axillary racemose panicles; calyx glabrous, sepals 5; petals 5, puberulous outside, margin ciliate; stamens 15, slightly connate; anther orbicular, connective forms a subulate point; ovary superior, pubescent, 3-celled, ovules 2 in each cell; stylopodium puberulous; style glabrous, short, subulate. Fruit a nut, ovoid; wings 2, reddish, 7.6 x 1.9.

*Flowering & Fruiting:* January-July

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Pathanamthitta, Palakkad

*Endemic to:* Western Ghats

*Status:* Endangered (IUCN, 2000)

**Hopea parviflora** Bedd., Fl. Sylv. t. 7. 1869; Hook. f., Fl. Brit. India 1: 308. 1874; Gamble, Fl. Pres. Madras 82(59). 1915; Mohanan, Fl. Quilon Dist. 83. 1984; Ansari, Fl. Kasaragod Dist. 72. 1985; Ramach. & Nair, Fl. Cannanore Dist. 57. 1988; Vajr., Fl. Palghat Dist. 74. 1990; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 228. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 65. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 75. 1994; Subram., Fl. Thenmala Division 27. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 56. 1996; Sivar. & Mathew, Fl. Nilambur 73.

1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 34. 1997; Sasidh., Fl. Periyar Tiger Reserve 28. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 32. 1999; Sunil, Fl. Pl. Alappuzha Dist. 83. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 24. 2002; Mohanan & Sivad., Fl. Agasthyamala 93. 2002.

*Local names:* Irumbakam, Kambakam

Trees, to 35 m high, bole straight, buttressed, bark 6-10 mm, light brown or grey, mottled with white, rough vertically fissured, fibrous; blaze yellowish; branchlets reddish-brown, slightly pubescent. Leaves simple, alternate; stipules small, lateral, deciduous; petiole 10-12 mm, slender, pubescent when young, glabrous when matured, grooved above; lamina 8-11.5 x 3-5 cm, ovate, lanceolate or ovate-lanceolate, base acute obtuse, cordate or subcordate, apex acute or glabrous, apiculate, coriaceous; lateral nerves 8-12 pairs, pinnate, prominent, intercostae scalariform, faint, domatia present. Flowers bisexual, 3-4 mm across, creamy yellow, in unilateral terminal and upper axillary, tomentose racemose panicles; sepals 5, 3 mm long, tomentose outside; petals 5, 6 mm long, oblong, glabrous, fimbriate at apex; stamens 5, rarely 10, slightly connate; connective of anthers produced into a subulate point; ovary superior, glabrous, ovules 2 in each cell; style short, subulate. Fruit a nut, 5-6 mm long, terete, glabrous; wings 2, 6 x 1.8 cm, 8-10 nerved, glabrous.

*Flowering & Fruiting:* January-June

*Habitat:* Evergreen and semi-evergreen forests, along in the plains

*Distribution*

*Kerala:* All districts

*Endemic to:* Southern Western Ghats

**Hopea ponga** (Dennst.) Mabb., Taxon 28: 587. 1979; Manilal & Sivar., Fl. Calicut 42. 1982; Mohanan, Fl. Quilon Dist. 84. 1984; Ansari, Fl. Kasaragod Dist. 72. 1985; Ramach. & Nair, Fl. Cannanore Dist. 58. 1988; Antony, Fl. Kottayam Dist. 73. 1989; Vajr., Fl. Palghat Dist. 74. 1990; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 230. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 66. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 75. 1994; Subram., Fl. Thenmala Division 28. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 56. 1996; Sivar. & Mathew, Fl. Nilambur 73. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 34. 1997; Sasidh., Fl. Periyar Tiger Reserve 28. 1998; Sunil, Fl. Pl. Alappuzha Dist. 83. 2000.

*Artocarpus ponga* Dennst., Schluss. Hort. Malab. 15,18,30. 1818.

*Hopea wightiana* Wall.ex Wight & Arn., Prodr. 85.1834; Hook. f., Fl. Brit. India 1:309.1874; Gamble, Fl. Pres. Madras 82(59). 1915

*Local names:* Naduvalippongu, Kambakam, Naikambakam

Trees, to 20 m high, bole fluted, bark dark grey, smooth, exfoliations large, rectangular or irregular; branchlets pubescent. Leaves simple, alternate; stipules small, lateral, deciduous; petioles 5-15 mm long, stout, glabrous, grooved above; lamina 7.5-24 x 3-7 cm, ovate-lanceolate or ovate-oblong or ovate, base rounded, or obtuse, apex acute, glabrous, coriaceous, lateral nerves 5-10 pairs, pinnate, prominent, intercostae scalariform, faint. Flowers bisexual, yellowish-pink, in axillary unilateral drooping racemose panicles; sepals 5, shortly united at base, ovate, glabrous, two outer sepals obtuse, larger than the 3 acute inner ones; petals 5, 5-8 mm long, ovate-lanceolate, pubescent; stamens 10 or 15, alternate filaments with

two anthers; appendages of anthers filiform, 4 times longer than anthers; ovary superior, puberulous above, 3-celled, ovules 2 in each cell; stylopodium glabrous; style short, subulate. Fruit a nut, ovoid, 10-12 mm long; calyx lobes expanded to forms wings, dark red; 2 longer wings 5.5-10 x 1-1.5 cm, 8-nerved, 3 smaller ones unequal.

*Flowering & Fruiting:* March-June

*Habitat:* Evergreen and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Endemic to:* Western Ghats

*Status:* Endangered (IUCN, 2000)

**Hopea racophloea** Dyer in Hook.f., Fl. Brit. India 1: 310. 1874; Gamble, Fl. Pres. Madras 82(59). 1915; Mohanan, Fl. Quilon Dist. 84. 1984; Manilal, Fl. Silent Valley 24. 1988; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 231. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 75. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 35. 1997; Sivar. & Mathew, Fl. Nilambur 74. 1997.

*Hopea malabarica* Bedd., Ic. t. 185. 1868-1874.

*Local names:* Naduvalippongu, Naikambakam, Thondupoliyan-pongu

Trees, bark dark brown, peeling off in strips, with the lower ends of each strip detached from stem and the upper end still attached to it and curved upwards; branchlets black; echinate galls common. Leaves simple, alternate; stipules small, lateral, deciduous; petiole 5-10 mm, slender, glabrous; lamina 5-11 x 2.5-6 cm, ovate or oblong-lanceolate, base obtuse, round or acute, apex acute or obtusely acuminate, margin entire, glabrous, coriaceous, lateral nerves 4-6 pairs, pinnate, prominent, intercostae scalariform, prominent, domatia present. Flowers bisexual, pinkish-yellow, 2-4 together, in axillary unilateral racemose panicles; sepals 5, equal, spatulate, obtuse, glabrous; petals 5, glabrous inside, hairy outside with a twisted, flattened appendage at apex; stamens 15, slightly connate; connective produced into a subulate point; ovary superior, obconical, 3-celled, ovules 2 in each cell; styles short, subulate; stylopodium nearly as long as ovary, cylindrical, slightly narrowed at base. Fruit a nut, glabrous, closely surrounded by the base of calyx; wings 2, 7.5-8.5 cm long, obtuse, with 7-11 longitudinal nerves, reddish.

*Flowering & Fruiting:* February-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Malappuram, Trivandrum, Palakkad

*Endemic to:* Western Ghats

*Status:* Endangered (IUCN, 2000)

**Hopea utilis** (Bedd.) Bole, Kew Bull. 1951: 146. 1951; Janardh. in Sharma & Sanjappa, Fl. Ind. 3:234.1993; Gopalan & Henry, End. Pl. India SW Ghats 250. 2000.

Trees, to 25 m high, bark surface dark brown, mottled with grey, smooth; young shoots pubescent. Leaves simple, alternate; stipules lateral, cauducous; petiole 10-12 mm long, stout, glabrous; lamina 9-24 x 2.5-10 cm, linear-lanceolate, ovate-lanceolate or oblong-ovate, base round or acute, apex acute, margin entire, glabrous, coriaceous; lateral nerves 10-12 pairs, pinnate, prominent; intercostae

scalariform, faint. Flowers bisexual, yellowish-white, 6-8 mm long, in unilateral axillary, paniced racemes; pedicels short; calyx tube very short, adnate to the receptacle; lobes 5, slightly connate at base, hoary outside, 2 outer ones slightly longer, ovate, more or less obtuse, thickened, 3 inner suborbicular, often mucronate, thin along the margin; petals 5, oblong, obtuse, crenulate, fleshy, pubescent, imbricate; stamens 15; filaments dilated at base, subulate, anthers suborbicular, extended by the apicular awn; ovary superior, pubescent, 3-celled, ovules 2 in each cell; style short, cylindric; stigmas thick. Fruit a nut 10-12 mm across, globose, pointed, shining, with tuberculate, subacute, accrescent calyx lobes.

*Flowering & Fruiting:* March-November

*Habitat:* Along riverbanks in evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Palakkad, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Shorea roxburghii** G.Don, Gen. Hist. 1: 813. 1831; Tewary & Sarkar, J. Econ. Tax. Bot. 11: 104. 1987; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 239. 1993; Sasidh., Fl. Chinnar Wildlife Sanctuary 32. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 24. 2002.

*Shorea talura* Roxb., Fl. Ind. 2: 618. 1832; Hook. f., Fl. Brit. India 1: 304. 1874; Gamble, Fl. Pres. Madras 83(60). 1915.

*Vatica laccifera* Wight & Arn., Prodr. 84.1834.

*Shorea laccifera* (Wight & Arn.) Heyne ex Bedd., Fl. Sylv. t. 6. 1869.

*Local names:* Jal, Thaluram, Varanki

Trees, to 25 m, bark brownish to greyish-brown, longitudinally fissured, blaze creamy-yellow, fibrous; branchlets glabrous. Leaves simple, alternate; stipule large, coriaceous; petiole 10-25 mmlong, stout, glabrous, lamina 6-18 x 3.5-9 cm, elliptic-ovate, elliptic-oblong or elliptic lanceolate, base round or subcordate, apex obtuse or emarginate, margin entire, glabrous, coriaceous; lateral nerves 12-16 pairs, parallel, prominent, intercostae scalariform, faint. Flowers bisexual, light pink, 10-13 mm long, in drooping axillary and terminal panicles; pedicels to 5 mm; sepals 5; 3 lobes much enlarged than the other 2, basally connate, ovate-lanceolate, glabrous, accrescent, imbricate; petals 5, oblong, densely villous without; stamens 15; filaments to 1 mm; anthers 1.5 mm, linear; connectives appendaged, to 1.5 mm; ovary superior, globose, 3-celled, ovules 2 in each cell; style to 4 mm; stigma 3-lobed. Fruit a capsule, enclosed within accrescent sepals; wings oblong, unequal, 4-7 cm, prominently nerved; seed solitary, obovoid 7 x 4 mm.

*Flowering & Fruiting:* February-June

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* Indo-Malesia

**Vateria indica** L., Sp. Pl. 513. 1753; Hook. f., Fl. Brit. India 1: 313. 1874; Gamble, Fl. Pres. Madras 85(61). 1915; Manilal & Sivar., Fl. Calicut 42. 1982; Mohanan, Fl.

Quilon Dist. 84. 1984; Ansari, Fl. Kasaragod Dist. 73. 1985; Manilal, Fl. Silent Valley 24. 1988; Ramach. & Nair, Fl. Cannanore Dist. 58. 1988; Antony, Fl. Kottayam Dist. 73. 1989; Vajr., Fl. Palghat Dist. 75. 1990; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 245. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 66. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 75. 1994; Subram., Fl. Thenmala Division 28. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 56. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 35. 1997; Sasidh., Fl. Periyar Tiger Reserve 28. 1998; Sunil, Fl. Pl. Alappuzha Dist. 84. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 25. 2002; Mohanan & Sivad., Fl. Agasthyamala 94. 2002.

*Vateria malabarica* Blume, Mus. Bot. Lugd.-Bat. 2: 29. 1852.

*Local names:* Payin, Painimaram, Vellappayin, Vellakundirikkam

Evergreen trees, to 30 m high, bark 10-12 mm, greyish, blotched with white and green, smooth; exudation, sticky, resinous; branchlets puberulus. Leaves simple, alternate; stipule narrow, lateral, deciduous; petiole 25-40 mm, stout, stellate pubescent, swollen tipped; lamina 7-20 x 5-9 cm, oblong, base round, obtuse or cordate, apex acuminate or obtusely acute, margin entire, glabrous, coriaceous, lateral nerves 12-18 pairs, parallel, prominent, intercostae scalariform, prominent. Flowers bisexual, white, 2-3 cm across, fragrant, in terminal panicles, densely stellate puberulus; sepals 5, free, lanceolate, covered with stellate hairs; petals 5, white, obovate, spreading, shortly united at base; stamens many, free; filaments hairy; anthers often slightly hairy at base; connective produced into a filiform appendage; ovary superior, ovoid-oblong, tomentose, 3-celled, 2-ovules in each cell; style filiform, glabrous; stigma small. Fruit a capsule, 11-15 x 5-6 cm, pale brown, Ovoid or oblong-ovoid, lanceolate, tip acuminate; seed one.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Endemic to:* Southern Western Ghats

***Vateria macrocarpa*** Gupta, Indian For. 55: 231. 1929; Subram. *et al.*, J. Econ. Tax. Bot. 3: 620. 1982; Vajr., Fl. Palghat Dist. 75. 1990; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 246. 1993.

*Local name:* Vellappayin

Evergreen trees, to 30 m high, bark grey, mottled with white and green, smooth; exudation resinous, pale yellowish-white. Leaves simple, alternate; stipules narrow, lateral, deciduous; petiole 25-60 mm long, stout, minutely pubescent, swollen tipped; lamina 14-40 x 6-20 cm, oblong or oblong-lanceolate, base round, obtuse or subcordate, apex acute, obtuse or shortly acuminate, margin entire, glabrous, coriaceous, lateral nerves 12-20 pairs, parallel, prominent, intercostae scalariform, prominent. Flowers bisexual, white, in panicles; sepals 5, *ca.* 3 mm long; petals *ca.* 1.5 cm long; anthers linear, glabrous; ovary superior, densely tomentose, 3-celled, ovule 2 in each cell; styles slightly longer than stamens. Fruit a capsule, 15 x 5-6 cm, cylindrical, lanceolate, tip acuminate, curved, splitting from the top downwards into valves.

*Flowering & Fruiting:* March-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Palakkad

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Critically endangered (IUCN, 2000)

**Vatica chinensis** L., Mant. Pl. 2: 242. 1771; Gamble, Fl. Pres. Madras 84(61). 1915; Mohanan, Fl. Quilon Dist. 84. 1984; Manilal & Sivar., Fl. Calicut 42. 1982; Janardh. in Sharma & Sanjappa, Fl. Ind. 3: 248. 1993; Sunil, Fl. Pl. Alappuzha Dist. 85. 2000.

*Vatica roxburghiana* (Wight) Blume, Mus. Bot. Lugd.-Bat. 2: 31, t.1849; Hook. f., Fl. Brit. India 1: 302. 1874.

*Vateria roxburghiana* Wight ex Arn., Ann. Nat. Hist. ser. 1, 3: 155. 1839.

*Local names:* Adakkapine, Cherupiney, Payinipasa

Evergreen trees, to 25 m high, bole buttressed; bark pale grey, smooth; exudation resinous; young shoots, buds, outside of perianth exposed in bud, lepidote. Leaves simple, alternate; stipules small, fugacious; petiole 20-50 mm long, stout, glabrous; lamina 9-25 x 3-11 cm, ovate or oblong, base obtuse or broadly cuneate, apex obtusely acute, margin entire, coriaceous, glabrous; lateral nerves 10-14 pairs, parallel, prominent, intercostae scalariform, prominent. Flowers bisexual, white, in axillary spreading panicles; pedicels 5-ribbed; ribs alternating with sepals; calyx tube very short, adnate to the base of the ovary; lobes 5, ovoid-deltoid, acute, pubescent; petals 5, white, oblong; stamens 15 in 2 rows; filaments short, flattened at base; anthers oblong, shortly apiculate; ovary superior, covered with large shallow pits, lepidote, 3-celled, ovules 2 in each cell; style about as long as ovary, ribbed; stigmas densely papillose, obscurely 3-lobed. Fruit a capsule, lepidote, subglobose shortly pointed with 3 obscure, loculicidal furrows, puberulous; pericarp coriaceous; calyx persistent.

*Flowering & Fruiting:* March-June

*Habitat:* Evergreen forests, also planted as avenue tree

*Distribution*

*Kerala:* Kollam, Malappuram, Kozhikkode, Alappuzha, Kannur, Thrissur

*Geographical:* South India and Sri Lanka

*Status:* Critically endangered (IUCN, 2000)

**MALVACEAE**

- 1. Flowers axillary, solitary; stamens all along the staminal column; stigma undivided or 5-branched.....2
- 1. Flowers in terminal panicles; stamens towards the middle of the staminal column or at the apex of the branches of the staminal column; stigma 2 or 3-branched.....3
- 2. Stipule foliaceous, young branches glabrous or minutely tomentose; style 5-branched at apex .....**Hibiscus tiliaceus**
- 2. Stipules small, young shoots covered with brown peltate scales; style unbranched, stigma clavate ..... **Thespesia populnea**
- 3. Staminal column 5 branched, anthers clustered at the apex of the branches; involucellar bracts spreading in fruit..... **Kydia calycina**

3. Staminal column unbranched, anthers attached to the middle of the staminal column; involucellar bracts erect in fruit..... 4
4. Leaves lanceolate, acuminate, entire, basally 3-ribbed.... **Julostylis angustifolia**
4. Leaves broadly ovate or rhomboid, 3-lobed or 3-angled towards apex, basally 5-7-ribbed ..... 5
5. Stamens 17-20; involucellar bracts ovate-triangular, acute **Julostylis polyandra**
5. Stamens 10; involucellar bracts elliptic, obtuse ..... **Julostylis ampumalaensis**

**Julostylis ampumalaensis** Pradeep & Sivar., Bot. Bull. Acad. Sin. 34: 282. 1993; Sivar. & Pradeep, *Malvaceae South. Penin. India* 150. 1996.

Trees, to 15 m tall; branches slender, terete; young branches stellately rusty tomentose. Leaves simple, alternate, stipulate; stipules 5 mm long, free, lateral, linear, minutely stellate-hairy, caducous; petiole 2-3 mm long, slender, stellate-tomentose; lamina 6-16 × 4-11 cm, broadly ovate, shallowly 3-lobed towards apices; base round or truncate; lobes ovate-triangular, sinuses round; margin entire, serrulate or wavy; 5-ribbed from the base, with a single ovate-elliptic nectary at the base of the midrib beneath, lateral nerves 2-3 pairs, pinnate, prominent; intercostae scalariform. Flowers bisexual, yellow, in axillary and terminal lax panicles; peduncle and pedicel stellately rusty tomentose; pedicel 10 mm long, slender; involucellar bracts 5, 10-13 × 5-6 mm, elliptic-obtuse, connate at base, minutely stellate hairy, nerves raised outside, accrescent; calyx 5-parted, 5 mm long, divided to above the middle, lobes 6.5 × 2.5 mm, ovate-acute, much smaller than involucellar bracts, accrescent; corolla 10 mm across, yellow with a purple centre; petals 5, 8 × 4 mm, narrowly obovate, connate at base, minutely hairy on margins and base; staminal column 4 mm long, yellow, glabrous, 5-toothed at apex, staminiferous towards middle; anthers 10, reniform; filaments 2 mm long, minutely pubescent; ovary superior, 2-3 locular, ovules one in each locule; style 8 mm long, slender, dilated and hirsute towards apex, 2-3 branched; stigma peltate, rugose. Fruit a capsule, 5 mm across, subglobose with an obscure beak at apex, densely stellate tomentose, indehiscent, completely enclosed within accrescent calyx; seeds 3 × 2 mm, reniform, concentrically striated, black

*Flowering & Fruiting:* November-January

*Habitat:* Moist deciduous and semi-evergreen forests

*Distribution*

*Kerala:* Kozhikkode, Malappuram

*Endemic to:* Southern Western Ghats

**Julostylis angustifolia** (Arn.) Thw., Enum. Pl. Zeyl. 30. 1858; Hook. f., Fl. Brit. India 1: 333. 1874; Pradeep, Bot. Bull. Acad. Sin. 34: 281. 1993; Paul in Sharma & Sanjappa, Fl. Ind. 3: 342. 1993; Sivar. & Pradeep, *Malvaceae South. Penin. India* 150. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 60. 1996.

*Kydia angustifolia* Arn., Nov. Acta Phys. Med. Acad. Caes. Leop. Carol. Nat. Cur. 18: 322. 1836.

Trees, to 20 m, bark yellowish-brown, smooth; branches drooping, slender, terete; young branches, peduncle and pedicel stellately rusty tomentose. Leaves simple, alternate, distichous, stipulate; stipules 4 mm long, linear, free, lateral, minutely pubescent, cauducous; petiole 5-12 mm long, slender, stellately tomentose; lamina

5-19 x 1-7 cm, lanceolate or oblong-acuminate, base obtuse, round or truncate, apex acute or acuminate, margin entire, sparsely stellate-tomentose above and densely stellate-tomentose beneath, coriaceous; 3-nerved at base, palmate, prominent; with a linear gland at the base of the midrib beneath, lateral nerves 4-5 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers bisexual, yellow, in lax axillary and terminal pendulous panicles; pedicel 3-7 mm long, slender, stellate-tomentose; involucellar bracts 4, 8.5 × 6 mm, connate at base, broadly ovate, acute or subobtuse at apex, densely stellate-tomentose outside and sericeous inside; calyx 5-lobed, lobes 6 x 3 mm, much smaller than the involucellar bracts, accrescent, densely pubescent with minute stellate hairs; corolla yellowish with reddish centre; petals 5, oblong or obovate, connate at base, minutely stellate-hairy externally; staminal tube 3.5 mm long, 5-toothed at apex, glabrous, stamiferous towards middle; anthers 10, reniform; filaments slender, 2.5 mm long, sparsely pubescent; ovary superior, ovoid, stellate-hairy, 2-3 locular, ovules 1-2 per locule; style 7 mm long, 2(-3) branched towards apices; stigma, peltate, minutely rugose. Fruit a capsule, 8 mm across, indehiscent, compressed-subglobose with a short beak at apex, completely enclosed within accrescent calyx, densely pubescent with minute stellate and simple hairs; seeds reniform, concentrically striated, brownish-black.

*Flowering & Fruiting:* October-January

*Habitat:* Moist deciduous and semi-evergreen forests

*Distribution*

*Kerala:* Malappuram, Kozhikkode, Idukki, Thrissur

*Geographical:* South India and Sri Lanka

***Julostylis polyandra*** Ravi & Anil Kumar, J. Bomb. Nat. Hist. Soc. 87: 260. 1990; Paul in Sharma & Sanjappa, Fl. Ind. 3: 342. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 79. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 80. 1994; Sivar. & Pradeep, *Malvaceae South. Penin. India* 152. 1996; Mohanan & Sivad., Fl. Agasthyamala 98. 2002.

*Local name:* Vazhukkal

Trees, to 15 m; branches stout, terete; young branches stellately rusty tomentose. Leaves simple, simply lobed, alternate, stipulate; stipules 3 mm long, free, lateral, linear, stellate pubescent, caducous; petiole 10-80 mm long, slender, minutely stellate tomentose; lamina 4-21 x 2-18 cm, broadly ovate to rhomboid, weakly 3-angular or occasionally 3-lobed towards apices, base truncate or cuneate, apex acute, margin entire, coriaceous; 5-nerved from base, palmate, prominent, with a nectary at the base of the midrib beneath and sometimes also on the basal nerves, lateral nerves 3-4 pairs, pinnate, regular, prominent, intercostae scalariform, prominent. Flowers bisexual, yellow, in terminal compact racemes or panicles; pedicels upto 1.5 cm long, minutely stellate pubescent; involucellar bracts 5, 9 x 8 mm, ovate-triangular, connate at base, glabrescent, occasionally with few scattered minute stellate hairs, accrescent; calyx divided to the middle, lobes 5, 6 x 4 mm, ovate-triangular as long as involucellar bracts, minutely stellate tomentose externally and simple hairy internally; corolla yellow with purple centre, 2 cm across; petals 5, 2 x 1 cm narrowly obovate, connate at base, minutely stellate pubescent externally; staminal column 6 mm long, antheriferous towards the



middle, 5-toothed at apex, minutely glandular hairy; anthers reniform, 17-20; filaments slender, 6 mm long, sparsely pubescent; ovary superior, ovoid, 2-locular, 2 ovules per locule; style 1.5 cm long, slender, 2-branched towards apex, densely hairy; stigma peltate. Fruit a capsule, indehiscent, compressed globose, shortly beaked, densely stellate hairy with intermingled simple hairs, completely enclosed within calyx; seeds reniform, concentrically striated, brownish-black.

*Flowering & Fruiting:* November-March

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Pathanamthitta, Trivandrum, Kollam

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)

***Kydia calycina*** Roxb., Pl. Corom. 3: 11. t. 215. 1811; Hook. f., Fl. Brit. India 1: 348.

1874; Gamble, Fl. Pres. Madras 93(67). 1915; Ramach. & Nair, Fl. Cannanore Dist. 62. 1988; Manilal, Fl. Silent Valley 27. 1988; Vajr., Fl. Palghat Dist. 81. 1990; Paul in Sharma & Sanjappa, Fl. Ind. 3: 344. 1993; Sivar. & Pradeep, *Malvaceae South. Penin. India* 159. 1996; Sivar. & Mathew, Fl. Nilambur 86. 1997.

*Kydia fraterna* Roxb., Pl. Corom. 3: 12. t. 216. 1811.

*Kydia roxburghiana* Wight, Ic. t. 881. 1844-45.

*Local names:* Vellachadachi, Vellukku venta

Trees, to 15 m high, bark 5-6 mm thick, greyish-brown, irregularly flaking off in thin small scales; branchlets terete, stellate pubescent. Leaves simple, alternate, stipulate; stipules free, lateral, to 1 cm, subulate; petiole 2.5-10 cm long, slender, stellate-tomentose; lamina 5-15 x 4-13 cm, broadly ovate to suborbicular, 3-5 lobed, base obtuse, cordate, round or truncate, apex obtuse or acute, margin crenate-dentate or subentire, coriaceous, stellate-tomentose above, velvety beneath; 5-7 nerved from base, palmate, prominent, with a single raised elliptic nectary at the base of the midrib beneath or 3-nectaries on the principle nerves beneath, lateral nerves 3-4 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers polygamo-dioecious, white, in axillary and terminal panicles; peduncle stellate-tomentose; pedicel upto 5 mm long, stellate-tomentose; involuellar bracts 4-5, connate at base, obovate-spathulate, stellate-tomentose, accrescent; calyx 6 mm long, 5-lobed, divided to the middle, lobes ovate-acute, stellate-tomentose outside, silky glaucous within, accrescent; corolla 1.8 cm across in male flowers, to 1 cm across in female flowers, white; petals 4-5, adnate to the staminal column, spathulate, ciliate along the margins, clawed at base; staminal column 4 mm long, glandular throughout, hairy at base, 5-branched at apex with 4-6 sessile reniform anthers at its top; pistillode with a short style; ovary superior, 3-locular, ovules 2 in each locule; stylar branches 3, glabrous; stigmas large, peltate, minutely hairy; staminode with 3-5 clefted staminal column, each with 2-3 connate, rudimentary anthers at its apex. Fruit a capsule, 3-6 mm across, subglobose, stellate-tomentose, completely enclosed within the calyx; seeds one in each locule, reniform, concentrically striated, glabrous, brownish.

*Flowering & Fruiting:* October-December

*Habitat:* Semi-evergreen and moist deciduous forests

*Distribution*

*Kerala:* Malappuram, Palakkad, Kannur, Wayanad

*Geographical:* India, Myanmar, Nepal, Pakistan, Bhutan and China

**Talipariti tiliaceum** (L.) Fryxell, Contr. Univ. Michigan Herb. 23: 258. 2001.

*Hibiscus tiliaceus* L., Sp. Pl. 694. 1753; Hook. f., Fl. Brit. India 1: 343. 1874; Gamble, Fl. Pres. Madras 98(70). 1915; Manilal & Sivar., Fl. Calicut 48. 1982; Mohanan, Fl. Quilon Dist. 88. 1984; Ansari, Fl. Kasaragod Dist. 75. 1985; Paul in Sharma & Sanjappa, Fl. Ind. 3: 322. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 78. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 79. 1994; Sivar. & Pradeep, *Malvaceae South. Penin. India* 91. 1996; Sasidh., Fl. Periyar Tiger Reserve 31. 1998; Sunil, Fl. Pl. Alappuzha Dist. 96. 2000.

*Paritium tiliaceum* (L.) A. Juss. in St. Hil., Fl. Bras. Merid. 1: 156. 1827.

*Local names:* Aattuparuthi, Neerparuthi, Velipparuthi

Trees, to 20 m high, bark greyish-brown, smooth; young parts softly stellate-tomentose with prominent annular stipular scars. Leaves simple, alternate, stipulate; stipules 15-40 x 8-14 mm, oblong-lanceolate, lateral, enclosing the apical bud, many veined, stellate-puberulent externally, glabrous internally, deciduous; petiole 4-18 cm long (commonly subequal to the blade), slender, minutely stellate pubescent; lamina 6-20 x 9-20 cm, broadly orbicular, base cordate or truncate, apex shortly acuminate, margin entire or crenate; coriaceous, minutely stellate hairy above, densely stellate, tomentose beneath; 7-9 nerves from the base, palmate, prominent, with a linear nectary at the base of main 1-5 nerves beneath, lateral nerves 5-7 pairs pinnate, prominent, intercostae scalariform, prominent. Flowers bisexual, yellow, axillary, solitary or in terminal racemes; pedicels 5-30 mm long, club-shaped, stout, minutely stellate-pubescent; involucellar bracts 12 mm long, cupular, segments 7-12, triangular to lanceolate, divided to the middle, densely stellate pubescent outside, sericeous within; calyx 15-20 mm long, campanulate, 5-lobed or parted below the middle, the lobes lanceolate-acute, densely stellate-pubescent, with nectary medially positioned on midrib of each lobe (nectaries sometimes absent); corolla yellow with or without a red centre changing to pink, softly stellate-tomentose, 6-8 cm across; petals 5, obovate; staminal column 25-30 mm long, glabrous, surrounded by 5 triangular teeth, antheriferous throughout; filaments 1-3 mm long; anthers reniform; ovary superior, ovoid, obscurely 5-angled; styles emergent from staminal column, glandular hairy; stigmas 5, capitate, purplish. Fruit a capsule, 1.5-2 x 1.5-2 cm, subglobose or slightly obovoid, subequal to calyx, densely pubescent with yellowish or brownish, pericarp thin, mesocarp fibrous, 5-locular; seeds many, reniform, blackish-brown, papillose.

*Flowering & Fruiting:* December-January

*Habitat:* Along streamside and banks of tidal streams, also grown as live fence

*Distribution*

*Kerala:* All districts

*Geographical:* Pantropics

**Thespesia populnea** (L.) Soland. ex Correa, Ann. Mus. Natl. Hist. Nat. Paris 9:290.1807; Hook. f., Fl. Brit. India 1:345.1874; Gamble, Fl. Pres. Madras 101(72). 1915; Manilal & Sivar., Fl. Calicut 49. 1982; Mohanan, Fl. Quilon Dist. 91. 1984; Ansari, Fl. Kasaragod Dist. 78. 1985; Ramach. & Nair, Fl. Cannanore Dist. 65. 1988; Antony, Fl. Kottayam Dist. 78. 1989; Vajr., Fl. Palghat Dist. 84. 1990; Paul in Sharma & Sanjappa, Fl. Ind. 3: 352. 1993; Mohanan & Henry, Fl.

Thiruvananthapuram Dist. 83. 1994; Sivar. & Pradeep, *Malvaceae South. Penin. India* 37. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 40. 1997; Sivar. & Mathew, Fl. Nilambur 95. 1997; Sunil, Fl. Pl. Alappuzha Dist. 109. 2000.

*Hibiscus populneus* L., Sp. Pl. 694. 1753.

*Local names:* Cheelanthi, Pooparutthi, Poovarasu

Trees, to 15 m high, bark dark brown; blaze yellowish-pink; branchlets densely covered with minute scales, glabrescent. Leaves simple, alternate, stipulate; stipules 4-10 mm long, free, lateral, linear to lanceolate, cauducous; petiole 5-10 cm, slender, swollen tipped, scaly; lamina 5-12.7 x 5.5-15 cm, orbicular or ovate, base cordate or truncate, apex acute or acuminate, margin entire or dentate, coriaceous, with peltate scales above, glabrescent or stellate-tomentose beneath; 5-7 nerved from the base, palmate, prominent, lateral nerves 4-5 pairs, pinnate, prominent, intercostae subscalariform, prominent, often a glandular pore in one or more of the intercostal spaces beneath. Flowers bisexual, yellow, showy, solitary or in cymes, axillary or terminal; pedicels 20-50 mm long, jointed near the base, glabrescent; involucellar bracts 3-5 or 0, 5-15 x 2-3 mm, oblong-lanceolate, acute, subcoriaceous, densely scaly, cauducous; calyx cupular, minutely 5 toothed or 5-parted, accrescent and flattened in fruit, scaly outside, densely serious inside; corolla light yellow with dark purple centre, fading to purplish-pink, broadly campanulate; petals 5, 5-7.5 x 4-6 cm, obliquely obovate, narrowed and fleshy at base, rounded at apex, densely scaly outside, glabrous inside, ciliate at base, twisted; staminal tube 15-25 mm long, 5-toothed at apex; filaments ascending; anthers reniform; ovary superior, globose to ovoid, 5-celled, ovules 2-3 in each cell; style *ca.* 3 cm long; stigma club shaped, 5-furrowed. Fruit a capsule, globose, indehiscent, depressed, scaly, ultimately glabrescent; seeds many, ovoid, channelled along the back, pubescent.

*Flowering & Fruiting:* March-June

*Habitat:* Grown as fence-posts and avenue tree

*Distribution*

*Kerala:* All districts

*Geographical:* Pantropical

## BOMBACACEAE

- |    |   |                            |
|----|---|----------------------------|
| 1. | Leaves digitate, fruit smooth .....                                   | 2                          |
| 1. | Leaves simple, fruit echinate .....                                   | <b>Cullenia exarillata</b> |
| 2. | Stamens 10; branchlets without prickles, green.....                   | <b>Ceiba pentandra</b>     |
| 2. | Stamens 80 or more; branchlets prickly .....                          | 3                          |
| 3. | Stamens about 80, in five phalanges.....                              | <b>Bombax ceiba</b>        |
| 3. | Stamens about 500, in several phalanges .....                         | 4                          |
| 4. | Fruit velvety tomentose, leaflets lanceolate, petiolule to 3 mm ..... |                            |
|    | .....   | <b>Bombax scopulorum</b>   |
| 4. | Fruit glabrous, leaflets obovate, sessile .....                       | <b>Bombax insigne</b>      |

**Bombax ceiba** L., Sp. Pl. 511. 1753; Nicols., Taxon 28: 370. 1979; Manilal & Sivar., Fl. Calicut 50. 1982; Mohanan, Fl. Quilon Dist. 92. 1984; Ansari, Fl. Kasaragod Dist. 79.1985; Manilal, Fl. Silent Valley 30. 1988; Ramach. & Nair, Fl. Cannanore Dist. 66. 1988; Antony, Fl. Kottayam Dist. 80. 1989; Vajr., Fl. Palghat Dist. 86. 1990; Nayar & Biswas in Sharma & Sanjappa, Fl. Ind. 3: 398.1993; Anil Kumar, Fl. Pathanamthitta Dist. 91.1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 83. 1994; Subram., Fl. Thenmala Division 37. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 64. 1996; Sivar. & Mathew, Fl. Nilambur 96.1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 40.1997; Sasidh., Fl. Periyar Tiger Reserve 34. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 40. 1999; Sunil, Fl. Pl. Alappuzha Dist. 113. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 31. 2002; Mohanan & Sivad., Fl. Agasthyamala 104. 2002.

*Bombax malabaricum* DC., Prodr. 1: 479. 1824; Hook. f., Fl. Brit. India 1: 349. 1874; Gamble, Fl. Pres. Madras 99(71). 1915.

*Salmalia malabarica* (DC.) Schott & Endl., Melet. Bot. 35. 1832.

*Local names:* Elavu, Ilavu, Mullilavu, Poola

Deciduous trees; to 45 m high; bole straight, buttress 1-2 m high, armed with conical prickles; bark 20-30 mm thick, grey mottled with white, longitudinal fissures shallow; blaze pink, marked with triangular rays; branches horizontal and more or less whorled; branchlets prickly. Leaves digitately-compound, alternate, stipulate; stipules small, lateral; rachis 12-25 cm, stout, swollen at base, glabrous; leaflets 5-7, whorled; petiolule 14-25 mm long, stout, glabrous; lamina 10-20 x 2-6 cm, elliptic, elliptic-ovate or elliptic-obovate; base attenuate or cuneate; apex caudate-acuminate; margin entire, glabrous, chartaceous; lateral nerves 8-14 pairs, parallel, slightly ascending, prominent, secondary laterals also seen; intercostae reticulate. Flowers bisexual, dark crimson, 6-7 cm across, solitary or 2-5 together; pedicels 1-2 cm long, thick; calyx campanulate, irregularly lobed, lobes 3-4 x 3 cm, coriaceous, glabrous to sparsely puberulous outside, silky inside, falling off with corolla and stamens; petals 5, 8.5-18 x 3.5-5 cm, obovate to elliptic-obovate, recurved, fleshy, tomentellous outside, imbricate; stamens 65-80, 3-7.5 cm long in 5 bundles; staminal tube short; filaments flat, angular, connate only at the base of the bundles; anthers reniform; ovary conical, tomentose, 5-celled; ovules many; style exceeding the stamens; stigma 5-fid, lobes spreading. Fruit a capsule, 8-10 x 3 cm, downy tomentose, cylindrical, cuneate on both ends, blackish and glabrous at maturity, the columella brownish; seeds numerous, pyriform, smooth, dark brown, embedded in white cotton.

*Flowering & Fruiting:* January-April

*Habitat:* Moist deciduous and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Tropical Asia and New Guinea

**Bombax insigne** Wall., Pl. Asiat. Rar. 1: 71. 1830; Hook. f., Fl. Brit. India 1: 349. 1784; Gamble, Fl. Pres. Madras 100(71). 1915; Vajr., Fl. Palghat Dist. 87. 1990; Nayar & Biswas in Sharma & Sanjappa, Fl. Ind. 3: 398. 1993; Subram., Fl. Thenmala Division 38. 1995; Mohanan & Sivad., Fl. Agasthyamala 104. 2002; Sasidh. & Sivar., Fl. Pl. Thrissur For. 64. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 40. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 31. 2002.

*Salmalia insignis* (Wall.) Schott & Endl., Melet. Bot. 35. 1832.

*Local names:* Poola, Kallilavu, Ilavu, Parei ilavu

Deciduous trees; to 25 m high; bole buttressed, straight armed with conical prickles; bark 20-25 mm, grey to greyish-brown, smooth, fibrous; blaze pink, striated with radial triangular rays; branches whorled, branchlets prickly. Leaves digitately compound, alternate, crowded at the tip of branchlets, stipulate; stipules small, lateral; rachis 15-30 cm long, stout, pubescent, swollen at base, grooved above; leaflets 6-8, whorled; petiolule 3-8 mm long, stout, pubescent; lamina 7-23 x 2-7 cm, obovate, obovate-oblong, or elliptic-obovate; base attenuate; apex acuminate or caudate-acuminate; margin entire, glabrous, chartaceous; lateral veins 15-22 pairs, pubescent, parallel almost perpendicular to the midrib, prominent, secondary laterals prominent; intercostae reticulate. Flowers bisexual, pale pink or creamy yellow, solitary, axillary; calyx irregularly lobed, 3-5 cm long, campanulate, densely silky within; petals 5, 8-12 x 2.5 cm, linear-oblong, narrowed at base, curved at apex, tomentose out side; stamens about 500 in 5 bundles; anthers dorsifixed, reniform; ovary ovoid, tomentose, superior, syncarpous; ovules numerous on axile placenta; style long ending in 5-fid stigma. Fruit a capsule, 5-angled, 8-10 x 4-4.5 cm, 5 valved, glabrous; seeds many, 4-5 mm across, subobovoid, brownish-black, embedded in dense creamy silky fibres.

*Flowering & Fruiting:* November-March

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Palakkad, Trivandrum, Kollam, Thrissur

*Geographical:* India and Myanmar

**Bombax scopulorum** Dunn in Gamble, Fl. Pres. Madras 100(72). 1915; Nayar & Biswas in Sharma & Sanjappa, Fl. Ind. 3: 399. 1993; Sasidh., Fl. Periyar Tiger Reserve 35. 1998.

*Bombax insigne* sensu Bourd., For. Trees Travancore 45. 1908, non Wall. 1830.

*Local names:* Kal-ilavu, Parei-ilavu

Trees, to 15 m high; bole straight, with long sharp prickles in clusters of 2-12; bark grey; blaze pink, stratified; branches whorled; branchlets prickly. Leaves digitately compound, alternate, stipulate; stipules small, lateral; rachis 15-30 cm, stout, grooved above, swollen at base, glabrous; leaflets 6-8, sessile; lamina 7.5-23 x 2.5-5

cm, lanceolate, obovate or oblanceolate; base acute or cuneate; apex acuminate; margin entire, glabrous, chartaceous; lateral nerves 9-18 pairs, almost perpendicular to the midrib, parallel, prominent, secondary laterals prominent; intercostae reticulate. Flowers bisexual, yellowish-pink, up to 17 x 10 cm, solitary or 2-3 together; calyx tube campanulate, irregularly lobed, coriaceous, densely villous inside; petals 5, 15 x 4.5 cm, yellowish-pink, oblong, obtuse, densely stellate-hairy; stamens about 500 in 5 bundles; anthers dorsifixed, reniform filaments to 7.5 cm long; ovary 5-celled, superior, syncarpous; ovules numerous in each cell; style simple, exerted; stigma 5 lobed. Fruit a capsule, 12-25 x 3 cm, oblong, 5-angled, velvety; seeds smooth, 6 mm across, black, embedded in white silky fibres.

*Flowering & Fruiting:* November-January

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta

*Geographical:* South India and Andaman & Nicobar Islands

**Ceiba pentandra** (L.) Gaertn., Fruct. 2: 244,t.133. 1791; Manilal & Sivar., Fl. Calicut 50. 1982; Mohanan, Fl. Quilon Dist. 93. 1984; Ramach. & Nair, Fl. Cannanore Dist. 67. 1988; Antony, Fl. Kottayam Dist. 80. 1989; Vajr., Fl. Palghat Dist. 87. 1990; Nayar & Biswas in Sharma & Sanjappa, Fl. Ind. 3: 400. 1993; Subram., Fl. Thenmala Division 38. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 65. 1996; Sivar. & Mathew, Fl. Nilambur 97. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 41. 1997; Sunil, Fl. Pl. Alappuzha Dist. 114. 2000.

*Bombax pentandrum* L., Sp. Pl. 511. 1753.

*Eriodendron anfractuosum* DC., Prodr. 1:479.1824; Hook. f., Fl. Brit. India 1:350. 1874.

*Eriodendron pentandrum* (L.) Kurz, J. Asiat. Soc. Bengal, Pt. 2. Nat. Hist. 43: 113. 1874; Gamble, Fl. Pres. Madras 100(72). 1915.

*Ceiba pentandra* (L.) Gaertn. var. *indica* (DC.) Bakh. f., Bull. Jard. Bot. Buitenz. ser.3, 6: 195. 1924.

*Local names:* Kapok, Panjimaram, Panji elavu

Trees, to 20 m high, buttressed at base; bark green or greenish-grey, peeling off in round bosses; exudation red, watery, sticky; branches horizontal in whorls. Leaves digitately compound, alternate, gathered towards the apex of branchlets; rachis 5-20 cm, slender, glabrous, swollen tip and base; leaflets 5-9; petiolule 3-8 mm, stout, glabrous; lamina 4.5-14.5 x 1.5-4 cm, obovate-oblong or ovate-oblong, base acute or cuneate, apex acute or acuminate, margin entire, glabrous, chartaceous; lateral nerves 5-14 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, creamy white, usually in clusters of 3-10, axillary or grouped towards the ends of leafless branchlets, rarely solitary, axillary; pedicels 2-4 cm long, stout, glabrous; calyx green, campanulate, ca. 1 cm long, irregularly 4-5 lobed, coriaceous, glabrous outside, silky pubescent inside, persistent; petals 5, 2.5-4 x 1-1.5 cm, creamy white, obovate-spathulate, adnate to the base of staminal tube, tomentose out side except at the base pubescent near the apex inside, imbricate; staminal tube divided into 5 phalanges, each dividing again into 2 filiform branches bearing 2-3 anafactose, 1-locular twisted anthers; ovary superior, globular or

ovoid, yellow, sessile, tomentose at apex; 5-locular, ovules many in each locule, on axil placenta; style white, filiform at base, suddenly obliquely enlarged above the stamens; stigma capitate. Fruit a capsule 7.5-25 x 3-4 cm, ellipsoid to fusiform, green when young, become brown, narrowed at both ends, indehiscent or tardily dehiscent into 5 valves, septa membranous; seeds numerous, subpyriform, black with copious white silky fibres, testa brown to blackish.

*Flowering & Fruiting:* February-June

*Habitat:* Grown in homesteads

*Distribution*

*Kerala:* All districts

*Geographical:* Throughout the tropics

**Cullenia exarillata** Robyns, Bull. Jard. Bot. Nat. Belg. 40: 249. 1970; Mohanan, Fl. Quilon Dist. 92. 1984; Manilal, Fl. Silent Valley 30. 1988; Ramach. & Nair, Fl. Cannanore Dist. 66. 1988; Vajr., Fl. Palghat Dist. 87. 1990; Nayar & Biswas in Sharma & Sanjappa, Fl. Ind. 3: 402. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 92. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 84. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 64. 1996; Sivar. & Mathew, Fl. Nilambur 98. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 41. 1997; Sasidh., Fl. Periyar Tiger Reserve 35. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 40. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 31. 2002; Mohanan & Sivad., Fl. Agasthyamala 105. 2002.

*Cullenia excelsa* Wight, Ic. t. 1701, 1762.1851,p.p.; Hook. f., Fl. Brit. India 1:350.1874; Gamble, Fl. Pres. Madras 101(73).1915.

*Cullenia rosayroana* Kosterm., Comm. For. Res. Inst. Indones. Bogor 51: 4, f.2e & 3. 1956 & in Reinwardtia 4: 72. 1956,p.p.

*Local names:* Kurunguplavu, Mullenchankka, Mullenpali, VEDIPLAVU, Karayni

Evergreen trees, to 40 m high; bole straight, buttressed; bark 10-15 mm thick, grey mottled with white, smooth; outer bark 1-2 mm thick, dead; blaze pink; branches horizontal; older branches furnished with large tubercles; young branchlets and underside of leaves densely covered with peltate scales. Leaves simple, alternate, distichous, estipulate; petiole 13-25 mm, stout, lepidote, grooved above; lamina 7.5-16 x 2.5-6 cm, elliptic, oblong, oblong-lanceolate or elliptic-lanceolate; base rounded or obtuse; apex acute or acuminate; margin entire, coriaceous, dark green and shiny above, covered with orange peltate scales beneath; lateral nerves many, parallel, slender, obscure, lepidote beneath, midrib raised beneath; secondary lateral present; intercostae reticulate, faint. Flowers bisexual, 3-3.5 cm long, brownish-yellow, densely clustered on tubercles on old branches; pedicel 2-3 cm long; epicalyx tubular, 1-1.5 cm long, campanulate, 4-5 lobed at apex, densely lepidote outside, whitish puberulus inside; calyx tube 3-3.5 cm long, 5 lobed at apex, densely lepidote outside; corolla absent; staminal tube 3-5 cm long, 5 lobed at apex with many stamens along the margin; anthers globose, circum sessile; ovary pentangular, superior, syncarpous, densely lepidote, 5 locular; ovules 2 in each locule; style woody, with prominent scales at base; stigma capitate, densely papillose. Fruit a capsule, 12-20 cm across, almost globose with acute tip, spiny, 5 valved; seeds 2 in each locule, 4-4.5 x 2-2.5 cm dark brown, shining.

*Flowering & Fruiting:* January-November

*Habitat:* Evergreen forests

*Distribution*

Kerala: Kollam, Thrissur, Pathanamthitta, Malappuram, Idukki, Palakkad, Kannur, Trivandrum, Wayanad

*Endemic to:* Southern Western Ghats

### STERCULIACEAE

1. Petals present, flowers bisexual.....2
1. Petals absent, flowers unisexual ..... 5
2. Calyx to 10 cm long .....3
2. Calyx less than 5 cm long .....4
3. Leafbase peltate or subpeltate; apex usually 3-lobed; petiole more than 3 cm long; bracteoles palmately lobed..... **Pterospermum acerifolium**
3. Leafbase cordate, subcordate or truncate; apex entire; petiole less than 3 cm long; bracteoles entire ..... **Pterospermum diversifolium**
- 4 Leaf base unequal sided, less than 2.5 cm broad...**Pterospermum rubiginosum**
- 4 Leaf base equal or subequal, over 3.5 cm broad.....**Pterospermum reticulatum**
- 5 Follicles linear, winged or with wing like process..... 6
- 5 Follicles woody, globose or ovoid, not winged ..... 9
- 6 Peduncle and calyx tube covered with orange-red tomentum; leaves 3-5 lobed ..... **Firmiana colorata**
- 6 Peduncles and calyx without orange-red tomentum; leaves entire .....7
- 7 Under surface of the leaves with shining scales; fruit indehiscent..... 8
- 7 Under surface of leaves without shining scales; fruit dehiscent..... **Pterocymbium campanulatum**
- 8 Leaves oblong, under surface silvery white; fruits keeled .....**Heritiera littoralis**
- 8 Leaves lanceolate, under surface yellowish-white; fruits samaroid **Heritiera papilio**
- 9 Seeds winged .....**Pterygota alata**
- 9 Seeds not winged ..... 10
10. Leves digitately pinnate..... **Sterculia foetida**
10. Leaves digitately lobed or entire ..... 11
11. Leaves entire ..... 12
11. Leaves lobed..... 13
12. Leaf nerves and petiole stellately tomentose, calyx lobes broadly ovate..... **Sterculia guttata**
12. Leaf nerves and petiole glabrescent, calyx lobes linear .....**Sterculia balanghas**
13. Calyx lobes narrowly ovate, 3 mm long; bark surface smooth, yellowish-white.....**Sterculia urens**
13. Calyx lobes oblong, 6 mm long; bark surface brown ..... **Sterculia villosa**

**Firmiana colorata** (Roxb.) R. Br. in Bennett & Brown, Pl. Jav. Rar. 235. 1844; Gamble, Fl. Pres. Madras 107(76). 1915; Ansari, Fl. Kasaragod Dist. 80. 1985; Manilal, Fl. Silent Valley 31. 1988; Vajr., Fl. Palghat Dist. 88. 1990; Malick in Sharma & Sanjappa, Fl. Ind. 3: 420. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 65. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 41. 1997; Sasidh., Fl. Periyar Tiger Reserve 36. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 32. 2002; Mohanan & Sivad., Fl. Agasthyamala 106. 2002.



*Sterculia colorata* Roxb., Pl. Corom. t. 25. 1795; Hook. f., Fl. Brit. India 1: 359. 1874.

*Sterculia rubicunda* Wall. ex Mast., Hook. f., Fl. Brit. India 1: 360. 1874.

*Local name:* Malamparathi

Deciduous trees, to 25 m high, bole buttressed, bark 20-30 mm thick, grey-black, rough, longitudinally fissured; outer bark dead, corky, inner bark fibrous, creamy white, with radial narrow triangular rays; blaze creamy-yellow, fibrous. Leaves simple, palmately 3-5 lobed, alternate, clustered at the tips of branchlets; stipules free, deciduous; petiole 10-30 cm long, slender, pubescent, swollen at base; lamina 10-36 x 8-29 cm, base cordate or subcordate, lobes oblong, lobe apex acuminate, caudate-acuminate, margin entire, glabrous, coriaceous; 3-8-ribbed from base, palmate, lateral nerves pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, scarlet, in terminal paniced racemes, clothed with orange-red tomentum; calyx 2 cm long, tubular, covered with stellate tomentum, lobes 5, short; petals absent, gynandrophore slender, bearing about 30 sessile anthers at the rim; carpels 5, superior, free, flask shaped, glabrous, 2 ovules in each carpel; styles short, recurved; stigma acute. Fruit aggregate of 5 follicles, each 6-7.5 cm long, membranous, greenish-pink; seeds 2, ovoid, yellow.

*Flowering & Fruiting:* January-June

*Habitat:* Semi-evergreen and moist deciduous forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Palakkad, Trivandrum, Kollam, Thrissur, Kozhikkode

*Geographical:* Indo-Malesia and China

***Heritiera littoralis*** Dryand. in Ait., Hort. Kew. (ed. 1) 3: 546. 1789; Hook. f., Fl. Brit. India 1: 363. 1874; Gamble, Fl. Pres. Madras 104(74). 1915; Mohanan, Fl. Quilon Dist. 94. 1984; Malick in Sharma & Sanjappa, Fl. Ind. 3: 429. 1993.

*Heritiera minor* auct. non Lam. 1797; Roxb., Fl. Ind. 3: 142. 1832, p.p.

Trees, to 25 m high, bark vertically fissured; branchlets lepidote. Leaves simple, alternate; stipules free, lateral, cauducous; petiole 20-25 mm, stout; lamina 12.5-20 x 5-10 cm, elliptic-oblong to ovate-elliptic, base rounded, subcordate or oblique, apex mucronate to obtusely acuminate, margin entire, glabrous above, adpressed hairy beneath; coriaceous. Flowers unisexual, greenish-pink, in axillary drooping, tomentose panicles; peduncle lepidote; pedicel 1 mm; articulate; calyx 5-6 mm, campanulate, 5-6 toothed, stellate pubescent; petals absent; in male flowers: androgynophore slender, bearing in a ring of 5-10 adnate anthers beneath the apex; in female flowers : carpels 4-5, subdistinct, superior, sessile, glabrous, alternating at the base with a pair of staminodes. Fruit of 1-3 samara, 3-8 x 2-5 cm, pale brown, with a broad keel on one side, smooth, shining; seed one.

*Flowering & Fruiting:* July-March

*Habitat:* Coastal areas

*Distribution*

*Kerala:* Kollam

*Geographical:* Pantropical

***Heritiera papilio*** Bedd., Fl. Sylv. t. 218. 1872; Hook. f., Fl. Brit. India 1: 363. 1874; Gamble, Fl. Pres. Madras 104(74). 1915; Manilal, Fl. Silent Valley 32. 1988; Malick in Sharma & Sanjappa, Fl. Ind. 3: 430. 1993; Mohanan & Henry, Fl.

Thiruvananthapuram Dist. 85. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 66. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 42. 1997; Sasidh., Fl. Periyar Tiger Reserve 36. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 33. 2002.

*Local names:* Cholachadachi, Choklamaram

Evergreen trees, to 25 m high, bark greyish-brown with scurfy small warts; blaze pink with white streaks; young parts clothed with golden brown soft tomentum. Leaves simple, alternate; stipules free, lateral, deciduous; petiole 10-37 mm, stout, peltate scaly, swollen tipped; lamina 4-20 x 1.5-10 cm, ovate or ovate-lanceolate, base obtuse or round, apex acute, margin entire, glabrous above, densely silvery lepidote scaly beneath, coriaceous; 3-ribbed from base, lateral nerves 2-7 pairs, pinnate, prominent, intercostae reticulate, obscure. Flowers small, bi or unisexual in axillary panicle, cream coloured; calyx campanulate, 5-toothed or 5-fid; petals absent; in male flowers: adnate anthers in a regular ring on an androgynophore topped by sterile ovary; in female flowers carpels 5, subdistinct, superior, alternating at the base with pair of staminodes, ovules 1-2 in each carpel; styles short; stigmas 5, thick. Fruit of 1-6 samaroid carpels, 5-6 cm long, red, wing membranous; seed one.

*Flowering & Fruiting:* January-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kollam, Thrissur, Trivandrum

*Geographical:* India and Bangladesh

***Pterocymbium tinctorium*** (Blanco) Merr., Govt. Lab. Publ. Philipp. 27: 24. 1901.

*Heritiera tinctoria* Blanco, Fl. Philipp. 653. 1837.

*Pterocymbium tinctorium* (Blanco) Merr. var. *javanicum* (R. Br.) Kosterm., Reinwardtia 7: 440. 1969; Sivar. *et al.*, Higher Pl. Indian Subcont. 2: 5. 1991; Sasidh. & Sivar., Fl. Pl. Thrissur For. 70. 1996.

*Pterocymbium javanicum* R. Br. in Bennett & Br., Pl. Jav. Rar. 219. 1844.

Trees, to 20 m high, bark grey-brown. Leaves simple, alternate; stipules *ca.* 6 mm long, subulate, cauducous; petiole 3-10 cm long, slender; lamina 10-15 x 7-12 cm, ovate or ovate-oblong, base cordate, apex acute or acuminate, margin entire, glabrous above, pubescent beneath, coriaceous; 5-7-ribbed from the base, palmate, prominent, intercostae scalariform. Flowers polygamous, in terminal umbellate panicles; calyx 1.5 x 4 cm, campanulate, glabrous, lobes 5, lanceolate; stamens 10 or 8, united to form a staminal column, pubescent below; ovary superior, 5, free, sessile, gibbous at base; styles short. Fruit a follicle, 5-9 x 1.8-2.5 cm, boat shaped with a pouch-like bulging at base, glabrous, membranous, 2-lobed, lower broad, round, upper linear, obtuse, glabrous, dehiscing before maturity; seed 1, 1 cm long, basal, ellipsoid to ovoid.

*Flowering & Fruiting:* January-March

*Habitat:* Raised in plantations

*Distribution*

*Kerala:* Thrissur, Kozhikkode, Palakkad, Kollam

*Geographical:* Andamans to Malesia

**Pterospermum acerifolium** (L.) Willd., Sp. Pl. 3: 729. 1800; Hook. f., Fl. Brit. India 1: 368. 1874; Vajr., Fl. Palghat Dist. 90. 1990; Chandra in Sharma & Sanjappa, Fl. Ind. 3: 448. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 86. 1994.

*Pentapetes acerifolia* L., Sp. Pl. 698. 1753.

Trees to 15 m high; bark greyish brown, smooth; blaze dull red; branchlets rusty pubescent. Leaves simple, alternate, stipule multifid; petiole 4-10 (-20) cm long, striated; lamina 12-30 x 6-20 cm, broadly ovate, elliptic-oblong, cordate and subpeltate or peltate at base, apex acute, entire or 3-lobed and toothed towards apex. Flowers solitary or paired, 10-15 cm across; pedicels 1-3 cm long; bracts semi-lunar; bractelos palmately divided; sepals 5, linear, connate at base, stellately tomentose outside and silky within, 8-10 x 0.5-0.9 cm; petals 5, white, linear, 7-9 cm; ovary 1-3 cm long on 1-1.3 cm long gynophore, oblong, white pubescent, 5-locular; ovules many in 2 rows; styles 5-6 cm long; stigmas club shaped. Capsules 10-15 x 3-6 cm, woody, oblong, 5-angled; covered with brown tubercles; seeds 1-2 x 1-1.5 cm, obliquely-ovoid, compressed, many in 2 rows, winged, wings 4-7 x 1-1.4 cm; testa brown, smooth.

*Flowering & Fruiting:* March-December

*Habitat:* Planted as ornamental/avenue tree

*Distribution*

*Kerala:* Thrissur, Palakkad, Trivandrum

*Geographical:* Continental Asia, introduced elsewhere

**Pterospermum diversifolium** Blume, Bijdr. 88. 1825; Hook. f., Fl. Brit. India 1: 367. 1874; Gamble, Fl. Pres. Madras 108(78). 1915; Mohanan, Fl. Quilon Dist. 94. 1984; Ramach. & Nair, Fl. Cannanore Dist. 68. 1988; Antony, Fl. Kottayam Dist. 81. 1989; Vajr., Fl. Palghat Dist. 90. 1990; Chandra in Sharma & Sanjappa, Fl. Ind. 3: 449. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 94. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 87. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 67. 1996; Sivar. & Mathew, Fl. Nilambur 101. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 43. 1997; Sasidh., Fl. Periyar Tiger Reserve 37. 1998.

*Pterospermum glabrescens* Wight & Arn., Prodr. 69. 1834.

*Local name:* Pambaram

Trees, to 18 m high, bark 4-5 mm thick, surface brown mottled with green and white, fibrous; blaze deep red, radially streaked; branches horizontal. Leaves simple, alternate, distichous; stipules lateral, 7 x 4 mm, cauducous; petiole 10-17 mm long, stout, furfuraceous; lamina 15-30 x 12.5-25 cm, rectangular-oblong or oblong or rarely panduriform, base cordate or truncate, very variable in young plants and coppice shoots, apex acuminate, margin entire, glabrous above, silvery pubescent beneath, coriaceous; nerves 5-7 from base, palmate, prominent, lateral nerves 5-9 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers bisexual, white, axillary, solitary or geminate; calyx tubular, rusty tomentose out side, grey-pubescent within 5-fid; lobes 10-13 x 0.5-1 cm, linear-lanceolate, furfuraceous; petals 5, oblong, white, deciduous; staminal column adnate to the gynophore, bearing 5 groups of 3 stamens each between staminodes; ovary superior, within the apex of column, 5-celled, ovules many; style entire. Fruit a capsule, 10-12.5 x 2-2.5 cm, oblong, 5-angled, smooth; seeds 8-11 in each cell, winged at one end.

*Flowering & Fruiting:* December-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Kottayam, Pathanamthitta, Malappuram, Thrissur, Palakkad, Kannur, Trivandrum, Idukki

*Geographical:* Indo-Malesia

**Pterospermum reticulatum** Wight & Arn., Prodr. 69. 1834; Hook. f., Fl. Brit. India 1: 368. 1874; Gamble, Fl. Pres. Madras 108(77). 1915; Nair & Mohanan, J. Econ. Tax. Bot. 2: 234. 1981; Mohanan, Fl. Quilon Dist. 94. 1984; Chandra in Sharma & Sanjappa, Fl. Ind. 3: 451. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 67. 1996; Sivar. & Mathew, Fl. Nilambur 102. 1997; Sasidh., Fl. Periyar Tiger Reserve 37. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 34. 2002; Mohanan & Sivad., Fl. Agasthyamala 109. 2002.

*Local names:* Malayuram, Malavuram

Trees, to 18 m high, bark 10-15 mm thick, brown mottled with green, smooth, exfoliations thin, fibrous; blaze pink-red. Leaves simple, alternate, bifarious; stipules free, lateral, cauducous; petiole 7-10 mm long, stout, tomentose; lamina 8-15 x 4-10 cm, oblong, obovate or panduriform, base obtuse, cordate, or oblique, apex acuminate, margin entire except for the dentate tip, glabrous above, cream coloured mealy tomentose with darker minute stellate hairs beneath, coriaceous; 3-5-ribbed from base, palmate, prominent, lateral nerves 5-6 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers bisexual, white, in terminal or axillary fascicles; bracteoles laciniate; calyx tubular, 5-partite; lobes lanceolate, recurved on opening, white silky within; petals 5, 2.5 cm long, obovate-oblong, spreading, smaller than calyx, deciduous; staminal column adnate to the gynophore, bearing 5 groups of 3 stamens each between staminodes; staminodes filiform; ovary superior, hairy, placed at the tip of gynophore, 5-celled, ovules 6 in each cell; stigma simple. Fruit a capsule 5-7.5 x 3-3.7 cm, obtusely angled, hard, 5 valved, brown stellate pubescent outside; seeds 4 in each cell, prominently veined, dark brown; wing papery, oblique, falcate.

*Flowering & Fruiting:* January-November

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Thrissur, Trivandrum, Malappuram

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Pterospermum rubiginosum** Heyne ex Wight & Arn., Prodr. 68. 1834; Hook. f., Fl. Brit. India 1: 368. 1874; Gamble, Fl. Pres. Madras 109(78). 1915; Mohanan, Fl. Quilon Dist. 94. 1984; Vajr., Fl. Palghat Dist. 90. 1990; Chandra in Sharma & Sanjappa, Fl. Ind. 3: 451. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 69. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 43. 1997; Sasidh., Fl. Periyar Tiger Reserve 37. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 34. 2002; Mohanan & Sivad., Fl. Agasthyamala 110. 2002.

*Local names:* Chittilaplavu, Ellooti, Malamthodali

Evergreen trees, to 20 m high, bark 5-6 mm thick, brown, flaking off in thin rectangular strips, blaze red; branchlets tawny pubescent; branches drooping. Leaves simple, alternate; stipules lateral, filiform, oblique, densely pubescent, cauducous; petiole 4-6 mm long, stout, pubescent; lamina 4-8.5 x 2-3 cm, ovate or

ovate-lanceolate or elliptic-ovate, base oblique, apex acuminate, margin entire, glabrous above and densely white tomentose beneath, coriaceous; 3-5-ribbed from base, palmate, lateral nerves 4-6 pairs, pinnate, prominent, intercostae scalariform, slender, prominent. Flowers bisexual, white, solitary, axillary; calyx tubular, cylindrical, brown-hoary outside, splitting into 5 linear lobes, white silky within; petals 5, white, linear-oblong, slightly smaller than sepals; staminal column adnate to the gynophore, bearing 5 groups of 3 stamens each between the staminodes, minutely tubercled towards tip; ovary superior, cylindrical, ridged, tomentose, within the apex of the column, 5-celled, ovules many in each cell; style hairy at base; stigma simple. Fruit a capsule, 40-50 x 6-9 mm, subclavate, acutely 5-angled, brown; seeds winged at one end.

*Flowering & Fruiting:* November-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Thrissur, Trivandrum

*Endemic to:* Southern Western Ghats

***Pterygota alata*** (Roxb.) R. Br. in Bennett & Br., Pl. Jav. Rar. 234. 1844; Gamble, Fl. Pres. Madras 104(75). 1915; Mohanan, Fl. Quilon Dist. 95. 1984; Vajr., Fl. Palghat Dist. 91. 1990; Malick in Sharma & Sanjappa, Fl. Ind. 3: 455. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 94. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 69. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 43. 1997; Sivar. & Mathew, Fl. Nilambur 102. 1997; Sasidh., Fl. Periyar Tiger Reserve 37. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 34. 2002.

*Sterculia alata* Roxb., Pl. Corom. t. 287. 1820; Hook. f., Fl. Brit. India 1: 360. 1874.

*Sterculia heynei* Bedd., Fl. Sylv. t. 230. 1874.

*Local names:* Anathondi, Kavalam, Kodathanni, Pothondi

Deciduous trees, to 35 m high, bole straight, buttressed; bark, greyish with light and dark patches, smooth; blaze creamy yellow; young parts covered with dense golden brown stellate-pubescence. Leaves simple, alternate clustered towards the end of branches; stipule free, lateral, cauducous; petiole 3.5-10 cm long, slender, glabrous; lamina 10-30 x 7.5-20 cm, ovate or orbicular, base cordate, subcordate or truncate, apex caudate-acuminate or acuminate, margin entire, glabrous, coriaceous, 5-7 nerved from base, palmate, lateral nerves 3-6 pairs, pinnate, prominent, intercostae reticulate, slender, prominent. Flowers unisexual or polygamous, to 2 cm long, brownish, in rusty brown tomentose panicles from leafless nodes; calyx 5-partite, lobes 1 cm long, curved out, tomentose outside; male flowers: staminal column cylindrical bearing 4-5 phalanges of about 5 anthers each; female flowers: staminodes round the base of the ovary; carpels 5, free, superior, ovules many in each; style short, recurved; stigma 2-lobed. Fruit of 3-5 follicles, 10-12.5 cm long, obovoid oblique; seeds 25-30, 5-7.5 cm long, oblong, brown winged.

*Flowering & Fruiting:* April-May

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Malappuram, Palakkad, Kollam, Thrissur

*Geographical:* South Asia and Myanmar

**Sterculia balanghas** L., Sp. Pl. 1007. 1753; Hook. f., Fl. Brit. India 1: 358. 1874; Gamble, Fl. Pres. Madras 106(76). 1915; Mohanan, Fl. Quilon Dist. 95. 1984; Antony, Fl. Kottayam Dist. 82. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 95. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 87, Sunil, Fl. Pl. Alappuzha Dist. 119. 2000.

*Local names:* Narthondi, Pavizhathondi

Deciduous trees, to 18 m high, bole buttressed; bark grey, smooth, exfoliating in thin round flakes; branchlets tomentose. Leaves simple, alternate; stipules free, lateral, caudaceous; petiole 10-45 mm, pubescent, swollen at base, swollen tipped; lamina 8-17.5 x 5-11 cm, elliptic-ovate or oblong-ovate, base subcordate or round, apex acuminate, margin entire, chartaceous, glabrescent above, stellate hairy to velvety beneath. Flowers unisexual or polygamous, yellow or greenish-purple, in terminal or axillary panicles, 15 cm long, rusty tomentose; pedicels long; calyx 2 mm long, campanulate, tube 4 mm long, stellate hairs outside, densely along margins, hispid inside, 5-fid, teeth narrow, in curved, connivent; male flowers: staminal column with a group of anthers at the tip; female flowers: carpels 5, free, superior; stigma recurved; as long as styles. Fruit of 4-5, woody follicles, horizontally spreading, to 8 cm long, orange-red, oblong, rusty tomentose; seeds oblong, black, shiny.

*Flowering & Fruiting:* June-August

*Habitat:* Moist deciduous forests, also in sacred groves in the plains

*Distribution*

*Kerala:* Kollam, Kottayam, Trivandrum, Alappuzha, Pathanamthitta

*Geographical:* Indo-Malesia

**Sterculia foetida** L., Sp. Pl. 1008. 1753; Hook. f., Fl. Brit. India 1: 354. 1874; Gamble, Fl. Pres. Madras 105(75). 1915; Malick in Sharma & Sanjappa, Fl. Ind. 3: 459. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 87. 1994; Sasidh., Fl. Chinnar Wildlife Sanctuary 42. 1999; Sunil, Fl. Pl. Alappuzha Dist. 120. 2000.

*Local names:* Poothimanathi, Pottakavalam, Kavalam

Deciduous trees, to 25 m high, bole buttressed; bark grey, smooth, irregularly flaking off in thin scales; blaze reddish-yellow; branches horizontal, whorled. Leaves palmately compound, alternate, clustered at the end of branchlets; stipules free, lateral, deciduous; rachis 8-24 cm long, slender, glabrous, swollen at base; leaflets 3-9; petiolule to 3 mm; lamina 5.5-14 x 2-5 cm, elliptic, elliptic-lanceolate or elliptic oblanceolate, base cuneate, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves 10-24, parallel, close, slender, prominent, intercostae reticulate, slender, prominent. Flowers unisexual or polygamous, dull-orange red, in axillary or terminal racemes, foetid smell; calyx dull orange red, deeply 5-partite, glabrous out side, woolly inside; petals absent; male flowers: staminal column curved, hairy at base, bearing 10-15 anthers at its tip; female flowers: ovary 5, free, superior, downy, each with 20 ovules, gynophore stout; styles deflexed, hairy; staminodes subsessile in a ring beneath the carpels. Fruit an aggregate of follicle of 1-5, scarlet, boat shaped, 5-lobed, woody, glabrous; seeds black, numerous, ellipsoid, smooth, with a small yellow aril.

*Flowering & Fruiting:* February-August

*Habitat:* Moist deciduous forests and in the plains along coastal areas

*Distribution*

*Kerala:* Trivandrum, Alappuzha, Ernakulam, Idukki  
*Geographical:* Pantropical

***Sterculia guttata*** Roxb. ex DC., Prodr. 1: 482.1824; Hook. f., Fl. Brit. India 1:355.1874; Gamble, Fl. Pres. Madras 106(76). 1915; Manilal & Sivar., Fl. Calicut 51. 1982; Mohanan, Fl. Quilon Dist. 95. 1984; Manilal, Fl. Silent Valley 33. 1988; Ramach. & Nair, Fl. Cannanore Dist. 69. 1988; Antony, Fl. Kottayam Dist. 82. 1989; Vajr., Fl. Palghat Dist. 91. 1990; Malick in Sharma & Sanjappa, Fl. Ind. 3: 462. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 95. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 88. 1994; Subram., Fl. Thenmala Division 41. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 70. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 43. 1997; Sivar. & Mathew, Fl. Nilambur 103. 1997; Sasidh., Fl. Periyar Tiger Reserve 37. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 42. 1999; Sunil, Fl. Pl. Alappuzha Dist. 120. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 34. 2002; Mohanan & Sivad., Fl. Agasthyamala 111. 2002.

*Local names:* Kavalam, Kithondi, Peenari, Potta-kavalam, Thondi

Deciduous trees, to 20 m high; bole straight; bark 15-25 mm thick, greyish-brownish, smooth, exfoliating in thin scales; blaze pink, radially streaked; branchlets stellate-tomentose. Leaves simple, alternate; stipules lateral, ensiform, cauducous; petiole 25-50 mm long stout, swollen at both ends, stellate-tomentose; lamina 12-25 x 6-15 cm, broadly ovate-oblong, ovate or broadly obovate-oblong, base obtuse, subcordate or truncate, apex acuminate or caudate-acuminate, margin entire, glabrous above, stellate-tomentose beneath, coriaceous; 3-5-ribbed from base, prominent, lateral nerves 5-7 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers polygamous, white, dotted with pink, arranged in simple cymes of 3, also on peduncle of short rusty-pubescent axillary racemes; bracts lanceolate; calyx greenish out side, reddish inside, campanulate, clothed with stellate hairs, united to middle; lobes 5, acute, ultimately reflexed; petals absent; male flowers: staminal column recurved, anthers 10-12 arranged at tip, column hairy at apex; bisexual flowers: ovary 5, free, superior, globose, strigose with stellate hairs; gynophore stout, round; style stout, deflexed. Fruit an aggregate of 1-5 radiating follicles, obovoid, red tomentose, smooth and pink within; seeds ovoid, black, smooth, shining.

*Flowering & Fruiting:* September-March

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

***Sterculia urens*** Roxb., Pl. Corom. t. 24. 1795; Hook. f., Fl. Brit. India 1: 355. 1874; Gamble, Fl. Pres. Madras 106(75). 1915; Manilal & Sivar., Fl. Calicut 51. 1982; Vajr., Fl. Palghat Dist. 91. 1990; Malick in Sharma & Sanjappa, Fl. Ind. 3: 471. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 88. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 70. 1996; Sivar. & Mathew, Fl. Nilambur 103. 1997; Sasidh., Fl. Periyar Tiger Reserve 38. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 43. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 35. 2002.

*Local names:* Annanvazhukki, Paravakka, Theethondi

Deciduous trees, to 15 m high, bark 10-12 mm, white or greenish-grey, smooth, exfoliating in large, thin, papery flakes; blaze red; exudation yellowish-white, sticky; branches horizontal; branchlets pubescent. Leaves simple, palmately 3-5 lobed, alternate, clustered at the tips of branchlets; stipules free, lateral, cauducous; petiole 8-18 cm long, stout, pubescent; lamina 15-30 x 18-30 cm, orbicular, base cordate or sagittate, lobe apex acuminate or caudate-acuminate, margin entire, glabrous above, velvety pubescent beneath, coriaceous; 3-5-ribbed from base, palmate, prominent, lateral nerves 5-7 pairs, pinnate, prominent, intercostae subscalariform, faint. Flowers polygamous, greenish-yellow, in axillary panicles, covered with sticky tomentose of glandular, stellate hairs; calyx yellow, campanulate, hairy on both surfaces, lobes 5, a small hairy gland at the base of each lobe; petals absent; male flowers: staminal column short with 10 anthers at its tip; bisexual flowers: carpels usually 5, free, superior, on a short stout gynophore; style short, thick, hairy; stigmas 5; stamens in a ring round the carpel. Fruit an aggregate of 4-6 follicles, red, densely pubescent, mixed with stinging hairs; seeds 3-6, brown or black, oblong.

*Flowering & Fruiting:* October-April

*Habitat:* Moist and dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad, Trivandrum, Malappuram, Kozhikkode, Thrissur

*Geographical:* Indo-Malesia

***Sterculia villosa*** Roxb. ex Smith in Rees, Cyclop. 36: n.16. 1816; Hook. f., Fl. Brit. India 1: 355. 1874; Gamble, Fl. Pres. Madras 106(76). 1915; Malick in Sharma & Sanjappa, Fl. Ind. 3: 472. 1993; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 88. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 70. 1996; Sasidh., Fl. Periyar Tiger Reserve 38. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 35. 2002; Mohanan & Sivad., Fl. Agasthyamala 112. 2002.

*Local name:* Vakka

Deciduous trees, to 10 m high, bark pale-brown, smooth with small corky warts; blaze red; branches horizontal and whorled. Leaves simple, palmately 5-7 lobed, alternate, crowded at the end of branchlets; stipules free, lateral, cauducous; petioles 7-25 cm long, stout, swollen at base, pubescent; lamina 6.5-45 x 9-45 cm, lobes oblong-ovate or ovate, base cordate, apex acuminate or caudate-acuminate, margin entire, glabrous above and downy beneath, coriaceous; 5-7-ribbed from the base, palmate, prominent, lateral nerves 4-8, parallel, prominent, intercostae subscalariform-reticulate, prominent. Flowers polygamous, cream-coloured, 10-12 mm across, in long drooping panicles; calyx campanulate, pink, downy outside, glabrous within, divided to the middle, lobes 5, oblong-lanceolate, acute; petals absent; male flowers: staminal column recurved; anthers 10, along the rim of staminal column, column hairy at apex; female flowers; carpels 5, free, strigose with stellate hairs; gynophore stout, cylindrical; style stout, hairy, deflexed; staminodes on a ring beneath the ovary. Fruit an aggregate of 2-7 follicles, each 3.5-7.5 cm long, brown, tomentose, seeds many, black, smooth.

*Flowering & Fruiting:* February-April

*Habitat:* Moist deciduous forests

*Distribution*



*Kerala:* Idukki, Thrissur, Wayanad, Palakkad, Trivandrum  
*Geographical:* South Asia and Myanmar

### TILIACEAE

1. Leaves obliquely cordate, 5-nerved at base; petals yellow; drupe red.....  
..... **Grewia tiliifolia**
1. Leaf base equal, 3-nerved at base; petals greenish-white; drupe black.....  
..... **Grewia serrulata**

**Grewia serrulata** DC., Prodr. 1: 510. 1824; Ansari, Fl. Kasaragod Dist. 83. 1985; Daniel & Chandra. in Sharma & Sanjappa, Fl. Ind. 3: 509. 1993.

*Grewia glabra* Blume, Bijdr. 115. 1825; Mohanan, Fl. Quilon Dist. 97. 1984; Manilal, Fl. Silent Valley 33. 1988; Ramach. & Nair, Fl. Cannanore Dist. 70. 1988; Vajr., Fl. Palghat Dist. 94. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 72. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 44. 1997; Sivar. & Mathew, Fl. Nilambur 107. 1997; Sasidh., Fl. Periyar Tiger Reserve 39. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 36. 2002.

*Grewia disperma* sensu Dunn in Gamble, Fl. Pres. Madras 118(84). 1915 non Rottl. ex Spreng. 1825; Anil Kumar, Fl. Pathanamthitta Dist. 99. 1994.

*Grewia laevigata* sensu Mast. in Hook.f., Fl. Brit. India 1: 389. 1874, non Vahl 1790.

*Local names:* Aanakottimaram, Kallai

Small trees, bark greyish-white, smooth, thin with vertical striations, branchlets slender, glabrous. Leaves simple, alternate, distichous; stipules lateral; petiole 5-10 mm, slender, stellate-pubescent, swollen tipped; lamina 5-13 x 2-5 cm, elliptic, elliptic-lanceolate, oblong-lanceolate or ovate-lanceolate, base acute or round, apex acuminate or caudate-acuminate, margin serrate, sparsely stellate-pubescent on both sides when young, glabrous when matured; 3-ribbed from base, lateral nerves 4-5 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers bisexual, yellowish-white, axillary in umbellate cymes; peduncles 3 times longer than petiole; sepals 5, free, 3-nerved, stellate pubescent outside; petals 5, white, ovate, shorter than sepals, often notched; stamens many, inserted on a short glandular torus; style longer than stamens; stigma fimbriate. Fruit a drupe, 1-4 lobed, globose, glabrous, greenish-black when ripe.

*Flowering & Fruiting:* August-November

*Habitat:* Moist deciduous and semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Kollam, Idukki, Malappuram, Palakkad, Kannur, Thrissur, Pathanamthitta

*Geographical:* Indo-Malesia and Tropical Africa

**Grewia tiliifolia** Vahl, Symb. Bot. 1: 35. 1790; Hook. f., Fl. Brit. India 1: 386. 1874, "tiliaefolia"; Gamble, Fl. Pres. Madras 118(84). 1915; Mohanan, Fl. Quilon Dist. 97. 1984; Ansari, Fl. Kasaragod Dist. 84. 1985; Manilal, Fl. Silent Valley 34. 1988; Ramach. & Nair, Fl. Cannanore Dist. 71. 1988; Vajr., Fl. Palghat Dist. 94. 1990; Daniel & Chandra. in Sharma & Sanjappa, Fl. Ind. 3: 511. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 100. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist.

90. 1994; Subram., Fl. Thenmala Division 44. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 72. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 45. 1997; Sivar. & Mathew, Fl. Nilambur 108. 1997; Sasidh., Fl. Periyar Tiger Reserve 40. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 47. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 37. 2002; Mohanan & Sivad., Fl. Agasthyamala 115. 2002.

*Grewia leptopetala* Brandis, Indian Trees 100. 1906.

*Grewia tiliifolia* Vahl var. *leptopetala* (Brandis) Cooke, Fl. Pres. Bombay 142. 1901.

*Grewia tiliifolia* Vahl var. *argentea* Burret, Notizbl. Bot. Gart. Berlin-Dahlem. 9: 659. 1926.

*Local names:* Chadachi, Dhanauna-vriksham, Unnam

Large trees, bark dark brown or greyish-brown, rough, vertically striated; blaze brownish-red, fibrous, streaked; branchlets stellate-tomentose. Leaves simple, alternate; stipules 7-10 mm, lateral, auricled; petiole 8-35 mm, stout, swollen tipped, pubescent; lamina 6-36 x 3-24 cm, broadly ovate or obliquely ovate to round, base obliquely cordate or subcordate, apex acute, margin double serrate or crenate-serrate, glabrescent above and hoary pubescent beneath, coriaceous, 5-7-ribbed from base, prominent, lateral nerves 3-6 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers bisexual, yellow, in axillary umbels; peduncle 1.5-2 cm long; sepals 5, pubescent; petals 5, yellow, half the length of sepals, entire or notched, densely tomentose outside; stamens many, free, inserted on a glandular torus; gland densely villous on the margin; ovary superior, globose, hirsute, 2-4-celled, ovules 2-many; style subulate; stigma obscurely lobed, recurved. Fruit a drupe, globose to subglobose, reddish-purple, 2-lobed, sparsely hairy.

*Flowering & Fruiting:* February-June

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* All districts

*Geographical:* Tropical Africa, India to Indo-China

#### ELAEOCARPACEAE

- |    |  |                                 |
|----|--|---------------------------------|
| 1. | Fruit a fleshy red berry .....                                       | <b>Muntingia calabura</b>       |
| 1. | Fruit a green or purple drupe.....                                   | 2                               |
| 2. | Pyrenes laterally compressed .....                                   | 3                               |
| 2. | Pyrenes oblong, ovoid or subglobose .....                            | 4                               |
| 3  | Leaves below and petiole tomentose, nerve axils without domatia..... | <b>Elaeocarpus tuberculatus</b> |
| 3. | Leaves glabrous, nerve axils with domatia .....                      | <b>Elaeocarpus venustus</b>     |
| 4. | Leaves densely tomentose below, margins recurved .....               | <b>Elaeocarpus recurvatus</b>   |
| 4. | Leaves glabrous or glabrescent, margins straight.....                | 5                               |
| 5. | Sepals glabrous.....   | 6                               |
| 5. | Sepals pubescent .....   | <b>Elaeocarpus serratus</b>     |
| 6. | Leaf base obtuse or rounded; anthers ciliate; drupe 1.2 cm long..... | <b>Elaeocarpus munronii</b>     |
| 6. | Leaf base acute; anthers not bearded; drupe 3.5-4 cm long .....      | <b>Elaeocarpus glandulosus</b>  |

**Elaeocarpus glandulosus** Wall. ex Merr., J. Arnold Arbor. 32: 194. 1951; Manilal, Fl. Silent Valley 36. 1988; Ramach. & Nair, Fl. Cannanore Dist. 73. 1988; Murti in Sharma & Sanjappa, Fl. Ind. 3: 539. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 74. 1996; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 92. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 46. 1997; Sasidh., Fl. Periyar Tiger Reserve 41. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 48. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 39. 2002; Mohanan & Sivad., Fl. Agasthyamala 119. 2002.

*Elaeocarpus tectorius* sensu Ramam. in Sald. & Nicols., Fl. Hassan Dist. 131. 1974, non (Lour.) Poir. 1812.

*Local names:* Kara, Kattukara

Trees, bole buttressed; bark greyish-brown; blaze red; branchlets, young leaves and buds densely pubescent. Leaves simple, alternate; stipules lateral, caudous; petiole 15-35 mm, slender, pubescent when young, swollen at base and tip, 2 minute glands at tip; lamina 5-12 x 2.3-6.5 cm elliptic-ovate, elliptic-obovate, elliptic-oblong or ovate, base cuneate or acute, apex abruptly acuminate with emarginate tip, margin distantly crenate or serrate, glabrous on both sides, coriaceous, punctate, domatia glandular, lateral nerves 4-8 pairs, pinnate, slender, prominent, intercostae reticulate, slender, faint. Flowers bisexual, white, in axillary and terminal racemes; peduncle puberulus when young; pedicel 3 mm long; sepals 5, 4-5 mm, ovate-lanceolate, puberulous outside, glandular inside; petals 5, white, 6-8 mm, lacinate, glandular, inserted round the base of glandular disc; stamens many, inserted between the glands on the disk; anthers tipped with hairs; ovary superior, subglobose, placed on a raised torus, densely hairy outside, 3-celled, ovules 2 in each cell; style subulate, entire. Fruit a drupe, 2.5 x 2.5 cm, oblong, stone one.

*Flowering & Fruiting:* December-May

*Habitat:* Semi-evergreen, evergreen and shola forests, also in the plains

*Distribution*

*Kerala:* Idukki, Kannur, Palakkad, Kollam, Thrissur, Trivandrum

*Geographical:* Indo-Malesia

**Elaeocarpus munronii** (Wight) Mast. in Hook.f., Fl. Brit. India 1: 407. 1874; Gamble, Fl. Pres. Madras 124(88).1915; Mohanan, Fl. Quilon Dist. 98.1984; Ramach. & Nair, Fl. Cannanore Dist. 73.1988; Manilal, Fl. Silent Valley 35. 1988; Vajr., Fl. Palghat Dist. 96. 1990; Murti in Sharma & Sanjappa, Fl. Ind. 3: 546. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 104. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 93. 1994; Sasidh., Fl. Periyar Tiger Reserve 41. 1998; Mohanan & Sivad., Fl. Agasthyamala 120. 2002.

*Monocera munroii* Wight, Illustr. 1:83.1840 & Ic. t.952. 1845.

*Local names:* Kalrudraksham, Pungari

Trees, to 20 m high, bark dark grey, smooth; branchlets sympodial, slender. Leaves simple, alternate, clustered to the tip of branchlets; stipules free, lateral, caudous; petiole 25-50 mm, very slender, glabrous, slightly swollen at tip and base; lamina 4-10 x 1.7-5 cm, ovate or ovate-lanceolate, base round or obtuse, apex acuminate or caudate-acuminate, margin crenate or serrate, revolute, glabrous, chartaceous, nerve axils glandular beneath; lateral nerves 3-6 pairs, pinnate, prominent, intercostae reticulate, slender, prominent. Flowers bisexual, white, in short drooping axillary racemes; sepals 5, 8 mm long, lanceolate, thinly tomentose; petals 5, white with reddish lines at base, ovate-lanceolate, lacinate, densely silky

on both sides, inserted round the base of glandular disc; stamens numerous, inserted between the glands on the disc; anthers awned with long bristle; ovary densely superior, silky hairy, placed on the torus, 2-celled, ovules 2 in each cell; style subulate, entire. Fruit a drupe, blue, oblong, terete, glabrous, glaucous; stone 1-2 seeded.

*Flowering & Fruiting:* September-April

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Palakkad, Kannur, Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Lower risk: near threatened (IUCN, 2000)

***Elaeocarpus recurvatus*** Corner, Gard. Bull. Straits Settlm. 10: 319,325. 1939; Manilal, Fl. Silent Valley 36. 1988; Murti in Sharma & Sanjappa, Fl. Ind. 3: 549. 1993; Sasidh., Fl. Chinnar Wildlife Sanctuary 48. 1999.

*Elaeocarpus ferrugineus* (Wight) Bedd., Fl. Sylv. t. 112. 1871, *nom. illeg.*; Hook. f., Fl. Brit. India 1: 406. 1874; Gamble, Fl. Pres. Madras 124(88). 1915.

*Monocera ferruginea* Wight, Ic. t. 205. 1839, non jack. 1830.

*Local name:* Cholarudralksham

Trees, to 13 m high; bole buttressed; young branches and leaves covered with rusty tomentum. Leaves simple, alternate, clustered at the tip of branchlets, stipules free, lateral, caudicous; petiole 15-50 mm, stout, tomentose; lamina 7.5-15 x 4-8 cm, ovate or ovate-oblong, folded back, boat shaped, base acute or cuneate, apex acute or caudate, margin crenate or serrulate, glabrous above except downy midrib, softly pubescent beneath, coriaceous, lateral nerves 6-10 pairs, pinnate, prominent, veins dividing dichotomously towards the margin, intercostae reticulate, obscure. Flowers bisexual, white, in short axillary racemes to 7 cm; sepals 5, lanceolate, pubescent; petals 5, 1.2 cm long, broadly ovate, sparsely within, inserted round the base of glandular disc; stamens numerous, inserted between the glands on the disc; anthers ending in straight bristle; ovary superior, subglobose, densely silky outside, 3-celled, ovules 2 in each cell; style subulate, entire. Fruit a drupe, ovoid; stone single, compressed, coarsely tubercled; seed one.

*Flowering & Fruiting:* February-May

*Habitat:* Shola forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

***Elaeocarpus serratus*** L., Sp. Pl. 515. 1753; Hook. f., Fl. Brit. India 1:401.1874; Gamble, Fl. Pres. Madras 124(88). 1915; Mohanan, Fl. Quilon Dist. 99. 1984; Ansari, Fl. Kasaragod Dist. 86. 1985; Ramach. & Nair, Fl. Cannanore Dist. 74. 1988; Antony, Fl. Kottayam Dist. 87. 1989; Vajr., Fl. Palghat Dist. 96. 1990; Murti in Sharma & Sanjappa, Fl. Ind. 3: 553. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 104. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 93. 1994; Subram., Fl. Thenmala Division 46. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 74. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 46. 1997; Sivar. & Mathew, Fl.

Nilambur 112. 1997; Sasidh., Fl. Periyar Tiger Reserve 41. 1998; Sunil, Fl. Pl. Alappuzha Dist. 127. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 39. 2002; Mohanan & Sivad., Fl. Agasthyamala 121. 2002.

*Elaeocarpus oblongus* Gaertn., Fruct. 1: 202. t. 43. 1788.

*Local names:* Bhadraksham, Kara, Karamavu

Trees, to 20 m high, aerial roots on large buttresses; bark 8-10 mm thick brown, mottled with grey; blaze red. Branchlets, petioles, peduncles and young leaves densely pubescent. Leaves simple, alternate; petiole 15-40 mm, slender, pubescent, swollen tipped, with 2 minute glands at tip; lamina 5-14 x 2-6.2 cm, elliptic-obovate or elliptic ovate, base acute or cuneate, apex acute, caudate-acuminate or obtusely acuminate, margin crenate-serrate, glabrous, coriaceous; lateral nerves 3-8 pairs, pinnate, prominent, intercostae reticulate, slender, prominent, domatia glandular. Flowers bisexual, white, in axillary racemes to 8 cm long; sepals 5, ovate, pubescent on outside, densely glandulose, valvate; petals 5, lacinate, inserted round the base of glandular disc; stamens many, inserted between the glands on the disc; anthers not awned, tipped with hairs; ovary superior, densely tomentose, raised on torus, 3-celled, ovules 2 in each cell; style subulate, entire. Fruit a drupe, subglobose, green, style persistent; stone tubercled; seed one.

*Flowering & Fruiting:* April-September

*Habitat:* Semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

***Elaeocarpus tuberculatus*** Roxb., Fl. Ind. 2: 594.1832; Hook. f., Fl. Brit. India 1:404. 1874; Gamble, Fl. Pres. Madras 124(88). 1915; Mohanan, Fl. Quilon Dist. 99. 1984; Manilal, Fl. Silent Valley 37.1988; Ramach. & Nair, Fl. Cannanore Dist. 74.1988; Vajr., Fl. Palghat Dist. 97.1990; Murti in Sharma & Sanjappa, Fl. Ind. 3: 559. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 105.1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 93. 1994; Subram., Fl. Thenmala Division 47. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 74. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 47. 1997; Sivar. & Mathew, Fl. Nilambur 112. 1997; Sasidh., Fl. Periyar Tiger Reserve 42. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 48. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 39. 2002; Mohanan & Sivad., Fl. Agasthyamala 121. 2002.

*Monocera tuberculata* (Roxb.) Wight & Arn., Prodr. 83. 1834.

*Local names:* Kara, Kodavasi, Mukkanni, Thodayam, Vellathaanni

Trees, to 24 m high, bole buttressed; bark 10-12 mm thick, grey mottled with white, smooth; blaze greyish-brown; young stem, buds, petioles and peduncles densely brown villous; branches monopodial. Leaves simple, alternate, clustered at the tip of branchlets; stipules free, lateral, brown-villous; petiole 15-30 mm, stout, pubescent, swollen tipped; lamina 8-24 x 4-15 cm, obovate, base cuneate or round, apex acute, obtuse or retuse, margin distantly serrate or crenate or subentire, glabrous above, ferruginous pubescent beneath, lateral nerves 8-12 pairs, parallel, the margin prominent, intercostae scalariform, slender, prominent, domatia present. Flowers bisexual, white, in axillary racemes to 12 cm long; pedicel 2 cm long, deflexed; sepals 5, lanceolate, tomentose outside, valvate; petals 5, white,

fimbriate, fulvous tomentose inserted round the base of glandular disc; stamens numerous, inserted between the glands on the disc; anthers thinly tomentose, terminating in long bristle; ovary superior, subglobose, densely tomentose, placed on raised torus, 2-celled, ovules 2 in each cell; style subulate, tomentose, entire. Fruit a drupe, 3-3.5 × 2.5 cm, oblong or ellipsoid, green, ferruginous tomentose, stones single, compressed, coarsely tuberculate, 1-2-celled.

*Flowering & Fruiting:* December-August

*Habitat:* Along banks of streams in evergreen and shola forests

*Distribution*

*Kerala:* Kollam, Palakkad, Pathanamthitta, Malappuram, Idukki, Kannur, Trivandrum, Thrissur, Wayanad

*Geographical:* Indo-Malesia

**Elaeocarpus venustus** Bedd., Fl. Sylv. t. 174. 1872; Gamble, Fl. Pres. Madras 124(89). 1915; Murti in Sharma & Sanjappa, Fl. Ind. 3: 562. 1993; Sasidh., Fl. Shenduruny Wildlife Sanctuary 47. 1997; Gopalan & Henry, End. Pl. India SW Ghats 150.

*Elaeocarpus monocera* sensu Mast. in Hook.f., Fl. Brit. India 405.1874, non Cav.1800.

Trees, to 15 m high; branches glabrous. Leaves simple, alternate; stipules lateral, cauducous; petiole 10-20 mm, stout, glabrous; lamina 6-12 x 3-5 cm, elliptic-obovate or obovate, base attenuate, apex acute or obtusely acute, margin serrate, glabrous, coriaceous, lateral nerves 6-8 pairs, pinnate, prominent, intercostae reticulate, prominent; glands in the axils of nerves beneath. Flowers bisexual, white, in axillary racemes; sepals 5, ovate-lanceolate, pubescent, valvate; petals 5, lacinate, tomentose, inserted round the base of glandular disc; stamens numerous, inserted between the glands the glands on the disc; anthers awned; ovary superior, glabrous, 2-celled, ovules 2 in each cell; style subulate, entire. Fruit a drupe 5 x 2.5 cm, ovoid.

*Flowering & Fruiting:* July-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam

*Endemic to:* Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Muntingia calabura** L., Sp. Pl. 509. 1753; Manilal & Sivar., Fl. Calicut 54. 1982; Murti in Sharma & Sanja ppa, Fl. Ind. 3: 570. 1993; Sunil, Fl. Pl. Alappuzha Dist. 128. 2000.

*Local name:* Pancharappazham, Bird's cherry

Trees, to 7 m high; branches spreading; branchlets densely villous, glandular-pubescent. Leaves simple, alternate; stipules 1 or [2 with 1 reduced], 5 mm long, lateral, filiform, hairy; petiole 5 mm long; lamina 6-11 x 2-4 cm, lanceolate or oblong-lanceolate, base obliquely subcordate, apex acuminate, margin serrate, chartaceous, glandular hairy above, woolly beneath; lateral nerves 3-5 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, 1.5-3 cm across, white rarely pink; pedicels 2-2.5 cm long; sepals 5, 1.5 cm long, lanceolate, valvate, shortly connate at base, densely pubescent; petals 5, thin, ovate, obovate or

suborbicular, shortly clawed, entire, imbricate, crumpled in bud; intrastaminal disc annular, bearing a ring of hairs on the exterior margin; stamens many, ca. 1 cm long; filaments filiform; ovary superior, 5-6 mm long, ellipsoid, 5-celled, ovules many; styles short; stigmas capitate, 5-grooved. Fruit a berry, 1-1.5 cm across, red or yellow, subglobular; seeds many, obovoid-ellipsoid, many.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Grown as ornamental plant

*Distribution*

*Kerala:* All districts

*Geographical:* Cultivated in India, Native of Tropical America and West Indies

### ERYTHROXYLACEAE

1. Leaves obovate, obtuse, glaucous below.....**Erythroxyllum monogynum**
1. Leaves elliptic, acute, chartaceous ..... **Erythroxyllum lanceolatum**

**Erythroxyllum lanceolatum** (Wight) Walp., Rep. 1: 407. 1842; Hook. f., Fl. Brit. India 1: 415. 1874; Gamble, Fl. Pres. Madras 127(91). 1915; Chatterjee & Sharma in Sharma & Sanjappa, Fl. Ind. 3: 590. 1993; Sasidh., Fl. Shenduruny Wildlife Sanctuary 47. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 40. 2002; Mohanan & Sivad., Fl. Agasthyamala 122. 2002.

*Sethia lanceolata* Wight, Illustr. 1: 136. 1840.

*Sethia erythroxyloides* Wight, Illustr. 1: 136. 1840.

Trees, to 15 m high; bark reddish-brown, smooth; blaze red with pink streaks. Leaves simple, alternate, distichous; stipules intrapetiolar, on the arrested shoots imbricating; petiole 3-7 mm, slender, grooved above, glabrous; lamina 3-11.5 x 1.5-3 cm, elliptic, elliptic-lanceolate or elliptic-obovate, base narrowly attenuate or acute, apex acute or caudate-acuminate, margin entire, glabrous, chartaceous; lateral nerves 4-12 pairs, pinnate, slender, faint, intercostae reticulate, obscure. Flowers bisexual, white, axillary, solitary or paired; calyx campanulate; lobes 5-6, ovate, connate at base, valvate; petals 5-6, white, with an erect double ligule on the inner side, ovate-lanceolate; stamens 10-12, monodelphous; ovary superior, oblong, 3-4-celled, ovules 1-2 in each cell; style 3-4, united into a style with capitate stigma. Fruit a drupe, oblong, 1.3-1.5 x 0.2-0.3 cm; seeds 1, oblong.

*Flowering & Fruiting:* November-March

*Habitat:* Evergreen forests and grasslands

*Distribution*

*Kerala:* Trivandrum, Kollam, Palakkad

*Geographical:* Peninsular India and Sri Lanka

**Erythroxyllum monogynum** Roxb., Pl. Corom. t.88. 1798; Hook. f., Fl. Brit. India 1: 414. 1874; Gamble, Fl. Pres. Madras 127(90). 1915; Mohanan, Fl. Quilon Dist. 100. 1984; Chatterjee & Sharma in Sharma & Sanjappa, Fl. Ind. 3: 590. 1993; Anil Kumar, Fl. Pathanamthitta Dist. 106. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 94. 1994; Sasidh., Fl. Periyar Tiger Reserve 42. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 49. 1999.

*Sethia indica* DC., Prodr. 1: 576. 1824.

*Erythroxylum indicum* (DC.) Bedd., Fl. Sylv. t. 81. 1871.

*Local names:* Palayachandanam, Vella devadaram

Small glabrous trees, to 7 m high; bark dark-brown, very rough, lenticellate; branchlets compressed. Leaves simple, alternate, rarely distichous; stipules intrapetiolar, on the arrested shoots imbricating; petioles 3-8 mm, slender, grooved above, glabrous, chartaceous; lamina 2-6.5 x 1-3 cm, obovate or oblanceolate, base attenuate or cuneate, apex obtuse, margin entire, lateral nerves 6-14 pairs, pinnate, slender, faint, intercostae reticulate, faint. Flowers bisexual, white, axillary, solitary or 1-4 in axillary fascicles; sepals 5-6, ovate, acute, glabrous; petals 5-6, white, oblong, with an erect double ligule on inner side, imbricate, stamens 10-12, monadelphous; ovary 3-4-celled, styles 3-4, united into a style with capitate stigmas; ovary superior, 3-4-celled, ovules 1-2 in each cell. Fruit a drupe, somewhat 3-angled, ellipsoid, apiculate, glabrous, reddish; seed one.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Trivandrum

*Geographical:* India and Sri Lanka

#### **AVERRHOACEAE**

1. Leaflets more than 21; fruit green, oblong with rounded edges **Averrhoa bilimbi**

1. Leaflets less than 15; fruit bright yellow, oblong with angular edges .....

.....**Averrhoa carambola**

**Averrhoa bilimbi** L., Sp. Pl. 428. 1753; Hook. f., Fl. Brit. India 1: 439. 1874; Manilal & Sivar., Fl. Calicut 56. 1982; Antony, Fl. Kottayam Dist. 89. 1989; Vajr., Fl. Palghat Dist. 99. 1990; Manna in Hajra *et al.*, Fl. Ind. 4: 256. 1997; Sunil, Fl. Pl. Alappuzha Dist. 133. 2000.

*Local names:* Chemmeenpuli, Irumbanpuli, Keerichakka, Bilimbi

Trees, to 5 m high; branchlets hispid. Leaves imparipinnate, alternate, estipulate; rachis 17-57 cm long, stout, tomentose, swollen at the base; leaflets 11-35, subopposite; petiolule 1-5 mm, stout, tomentose; lamina 4-7 x 1.5-2 cm, oblong, ovate, ovate-lanceolate or lanceolate, base subtruncate or subcordate, apex acuminate, margin entire, glabrescent above, pubescent beneath, membranous, lateral nerves 5-10 pairs, pinnate. Flowers bisexual, reddish-brown, in densely clustered cauliflorous panicles; pedicel to 8 mm, articulated; sepals 5, free, oblong, subequal; petals 5; stamens 10, in 2 unequal rows; filaments shortly connate at base; ovary superior, to 8 mm, 5-celled, ovules many; style to 1.5 mm. Fruit a berry, 3-5 x 0.3 cm, oblong, greenish, with obtuse ridges; seeds up to 14, exarillate.

*Flowering & Fruiting:* March-May

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Malaysia, cultivated in other Tropical countries

**Averrhoa carambola** L., Sp. Pl. 428.1753; Hook. f., Fl. Brit. India 1: 439. 1874; Manilal & Sivar., Fl. Calicut 56. 1982; Ansari, Fl. Kasaragod Dist. 87. 1985; Manna in Hajra *et al.*, Fl. Ind. 4: 257. 1997; Sunil, Fl. Pl. Alappuzha Dist. 133. 2000.



*Local names:* Thamaratha, Aanappulinchakka, Chathurapuli, Earnpuli, Karambola, Vyirapuli

Trees, to 6 m high; branches often drooping; branchlets downy pubescent. Leaves imparipinnate, alternate, estipulate; rachis 8-20 cm long, slender, pubescent, swollen at the base; leaflets 7-11, subopposite; petiolule 2-5 mm, slender, pubescent; lamina 1-7.5 x 0.7-4 cm, ovate, elliptic-ovate or lanceolate, base oblique, subacute or cuneate, apex acuminate, margin entire, glabrous above, glaucous and pubescent beneath, chartaceous; lateral nerves 4-6, pinnate, slender, prominent, intercostae reticulate. Flowers bisexual, dark purple, in axillary ascending panicles to 12 cm long; sepals 5, to 5 mm, oblong or ovate, red; petals 5, to 8 mm, purple; stamens 10, often 5 antheriferous, alternating with 5 staminodes; ovary superior, to 5.5 mm, oblong, ovules 3-5 per locule; style to 1.5 mm. Fruit a berry, to 5 x 2 cm, oblong, with acute ridges; seeds upto 10, arillate.

*Flowering & Fruiting:* May-August

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Indonesia, cultivated in other Tropical countries

## RUTACEAE

- |     |   |                       |
|-----|---|-----------------------|
| 1.  | Leaves simple.....  | 2                     |
| 1.  | Leaves 3 or more foliate.....   | 4                     |
| 2.  | Flowers in long peduncled corymbs ..... <b>Acronychia pedunculata</b>                       |                       |
| 2.  | Flowers in axillary racemes, less than 5 cm long.....                                       | 3                     |
| 3.  | Stamens 6-8, fruits below 4 cm across..... <b>Pamburus missionis</b>                        |                       |
| 3.  | Stamens more than 20, fruits over 10 cm across ..... <b>Citrus maxima</b>                   |                       |
| 4.  | Fruit dehiscent (capsule).....  | 5                     |
| 4.  | Fruit indehiscent (berry).....  | 7                     |
| 5.  | Leaves 3-foliolate. .... <b>Melicope lunu-ankenda</b>                                       |                       |
| 5.  | Leaves pinnate, leaflets more than 7 .....  | 6                     |
| 6.  | Branchlets prickly, fruit of 1-seeded cocci..... <b>Zanthoxylum rhetsa</b>                  |                       |
| 6.  | Branchlets without prickles or thorns, capsule several seeded.....                          |                       |
|     | ..... <b>Chloroxylon sweitenia</b>  |                       |
| 7.  | Fruit 1 or 2 seeded.....  | 8                     |
| 7.  | Fruit many seeded .....   | 10                    |
| 8.  | Leaflets with intra-marginal nerve, rachis not winged, twigs without spines or thorns ..... |                       |
|     | ..... <b>Vepris bilocularis</b>   |                       |
| 8.  | Leaflets without intra-marginal nerve, rachis winged, twigs with spines .....               | 9                     |
| 9.  | Leaflets 5-7, sessile, margins crenate..... <b>Naringi crenulata</b>                        |                       |
| 9.  | Leaflets entire, margin entire..... <b>Pleiospermium alatum</b>                             |                       |
| 10. | Stamens more than 20; ovary 8 or more celled .....  | <b>Aegle marmelos</b> |
| 10. | Stamens 10-12; ovary 5-6-celled..... <b>Limonia acidissima</b>                              |                       |

**Acronychia pedunculata** (L.) Miq., Fl. Ind. Bat. Suppl. 532. 1861; Mohanan, Fl. Quilon Dist. 103. 1984; Manilal, Fl. Silent Valley 42. 1988; Ramach. & Nair, Fl. Cannanore Dist. 81. 1988; Antony, Fl. Kottayam Dist. 93. 1989; Vajr., Fl. Palghat Dist. 102. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 116. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 80. 1996; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 101. 1994; Subram., Fl. Thenmala Division 54. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 51. 1997; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 392.1997; Sivar. & Mathew, Fl. Nilambur 120. 1997; Sasidh., Fl. Periyar Tiger Reserve 51. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 54. 1999; Sunil, Fl. Pl. Alappuzha Dist. 143. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 47. 2002; Mohanan & Sivad., Fl. Agasthyamala 137. 2002.

*Jambolifera pedunculata* L., Sp. Pl. 349. 1753.

*Acronychia laurifolia* Blume, Cat. Gew. Buitenz. 63. 1823; Hook. f., Fl. Brit. India 1: 498. 1875; Gamble, Fl. Pres. Madras 152(108). 1915.

*Acronychia barberi* Gamble, Bull. Misc. Inform. Kew 1915: 345. 1915 & Fl. Pres. Madras 152(108). 1915.

*Local names:* Vidukanali, Orilatheppettimaram, Verukutheeni, Vettukanala, Muttanari

Evergreen trees, bark greyish-yellow; blaze dull red with white narrow streaks; branchlets stout, terete, glabrous. Leaves unifoliate, opposite, decussate, estipulate; rachis 10-30 mm long, slender, glabrous, grooved above; petiolule upto 2 mm, lamina 4.3-15 x 1.8-7.5 cm, obovate, obovate-oblong or oblanceolate, base acute or cuneate, apex obtusely acuminate, margin entire, glabrous, chartaceous;

lateral nerves 9-15 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers bisexual, yellowish-white; in trichotomous, corymbose, axillary cymes; peduncle slender 6-12 cm long; sepals 4, lobes ovate, connate, margin ciliate; petals 4, free, oblong, densely hairy within; stamens 8, 2-seriate; filaments unequal, densely reflexed hairy; disc 8-angled, minutely pubescent; ovary superior, conical, partly immersed in the disc, 4-angled densely silky outside, 4-celled, ovules 2 in each cell; style stout; stigma 4-grooved. Fruit a berry, subglobose, pale-brown, obscurely lobed; seeds black.

*Flowering & Fruiting:* March-November

*Habitat:* Semi-evergreen forests, also in secondary forests

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Aegle marmelos** (L.) Correa, Trans. Linn. Soc. London 5: 223. 1800; Hook. f., Fl. Brit. India 1: 516. 1875; Gamble, Fl. Pres. Madras 161(115). 1915; Manilal & Sivar., Fl. Calicut 58. 1982; Mohanan, Fl. Quilon Dist. 103. 1984; Antony, Fl. Kottayam Dist. 94. 1989; Vajr., Fl. Palghat Dist. 102. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 121. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 101. 1994; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 264. 1997; Sunil, Fl. Pl. Alappuzha Dist. 143. 2000.

*Crataeva marmelos* L., Sp. Pl. 444. 1753.

*Aegle marmelos* (L.) Correa var. *mahurensis* Zate, Indian J. For. 5: 35. 1982.

*Local names:* Koolakam, Koovalam, Vilvam

Deciduous trees, to 10 m high, spines sharp, straight, single or paired; bark yellowish-grey, corky; blaze creamy yellow; new branchlets green, slightly zigzag and compressed. Leaves trifoliolate, alternate, estipulate; rachis 20-60 mm long, slender, slightly winged, swollen at base; petiolule 1-10 mm long; lateral leaflets 1.7-6.5 cm, terminal leaflets 2.3-10 cm, elliptic, ovate, elliptic-lanceolate or elliptic-ob lanceolate, base oblique, obtuse, acute or attenuate, apex obtusely acuminate or obtuse and retuse at tip, margin serrate, serrulate or crenate, glabrous, membranous, densely minutely glandular-punctate; lateral nerves 4-8 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, greenish-white, fragrant, in axillary panicles; calyx small, obscurely 4-5 toothed, pubescent, deciduous; petals 4-5, free, oblong, imbricate, gland-dotted; stamens numerous, inserted around an inconspicuous disc; filaments subulate; anthers elongate, erect; ovary superior, ovoid, light green, glabrous, 8-20-celled, ovules many, 2-seriate in each cell; style short, stout, deciduous; stigma oblong-cylindric. Fruit a berry, 8-15-celled, the rind smooth, woody; seeds many, embedded in thick, orange coloured aromatic pulp, oblong, compressed, testa white.

*Flowering & Fruiting:* March-May

*Habitat:* Grown in temple premises and homesteads

*Distribution*

*Kerala:* All districts

*Geographical:* India and Sri Lanka; widely cultivated in South East Asia, Malesia, Tropical Africa and the United States

**Chloroxylon swietenia** DC., Prodr. 1: 625. 1824; Hook. f., Fl. Brit. India 1: 569. 1875; Gamble, Fl. Pres. Madras 152(109). 1915; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 355. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 55. 1999.

*Swietenia chloroxylon* Roxb., Pl. Corom. 1: 46, t. 64. 1796.

*Local names:* Purushu, Varimaram

Deciduous trees, to 15 m high; bark dark-brown, fissured, rough, blaze yellow with pungent smell; branchlets and rachis pubescent. Leaves pinnate, alternate; rachis to 10 cm, slender, pubescent when young; leaflets 12-40, subsessile, alternate; lamina 1-2 x 0.4-0.7 cm, oblong, base oblique, apex obtuse; margin entire, chartaceous, glands dotted, glabrous, dull bluish-green; midrib of leaflet near the lower margin, nerves obscure. Flowers bisexual, pubescent, white, in axillary and terminal panicles; calyx short; lobes 5, 1-1.5 mm; petals 5, 4 x 2 mm, clawed, gland dotted on the outer surface; disc 10 lobed; stamens 10, free, inserted, between lobes; ovary immersed in disc, 3 lobed, 3-celled, ovules 4-8 in each cell. Fruit a capsule, 2.5 x 1 cm, loculicidal; seeds many, 15-18 mm long, flat, winged apically.

*Flowering & Fruiting:* March-October

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Geographical:* India, Sri Lanka and Malagasy

*Status:* Vulnerable (IUCN, 2000)

**Citrus maxima** (Burm.f.) Merr., Interpr. Rumph. Herb. Amboin. 46. 1917.

*Aurantium maximum* Burm.f., Rumph. Herb. Amboin. 16. 1755.

*Citrus grandis* Osbeck, Dagb. Ostind Resa 98. 1757.

*Local name:* Bamblimoos, Babloos, Pomelo

Trees to 10 m high, young parts grey-pubescent; bark greyish-brown, lenticellate; branchlets angular. Leaves unifoliolate, alternate, estipulate; petiole 20-30 mm long, winged, wings obcordate; lamina 6.5-10 x 3-7 cm, ovate or elliptic, base cuneate, subcordate or round, apex obtuse or acute, margin subentire or crenate, glabrous above, softly pubescent beneath, coriaceous, glandular-punctate; lateral nerves 7-10 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, creamy, solitary or in axillary clusters; calyx *ca.* 1 x 1.5 mm, pubescent, irregularly lobed; petals 5, *ca.* 25 x 13 mm, oblong-obovate, glandular; stamens up to 30; filaments irregularly polyadelphous at base, anthers oblong, apiculate; disc annular, greenish-white; ovary superior, glabrous, 10-14-celled; style cylindrical; stigma capitate, glandular-sticky. Fruit a hesperidium, 15-20 cm across, oblate to pyriform, greenish or yellow, glandular; pulp vesicles pale green to pinkish, acidic or sweet; seeds large, wrinkled.

*Flowering & Fruiting:* May-August

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of south east Asia

**Limonia acidissima** L., Sp. Pl. (ed. 2) 554. 1762; Antony, Fl. Kottayam Dist. 95. 1989; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 294. 1997.

*Feronia elephantum* Correa, Trans. Linn. Soc. London 5: 224. 1800; Hook. f., Fl. Brit. India 1: 516. 1875; Gamble, Fl. Pres. Madras 160(114). 1915.

*Local names:* Vilankai, Vilarmaram

Deciduous trees, to 20 m high, bark dark-grey or black, deeply cracked longitudinally; thorns straight, to 2.5 cm, axillary. Leaves imparipinnate or paripinnate, alternate, 1-3 in a cluster, estipulate; rachis 60-80 mm long, stout, glabrous, often narrowly winged; leaflets 4-7, opposite, sessile, estipellate; lamina 1.3-3.8 × 1.3 cm, obovate, base cuneate or acute, apex obtuse, margin entire, glabrous, pellucid-punctate, coriaceous; lateral nerves pinnate, obscure, intercostae obscure. Flowers polygamous, dull red, 1.3 cm across, in axillary cymes; calyx small, flat, 5-toothed, pubescent with out, deciduous; petals 5, free, spreading; stamens 10-12, inserted round the disc; filaments dilated below, villous on face and margins; anthers linear-oblong; disc thick, annular, pubescent; pistillode short; ovary superior, oblong, 5-6-celled, at length 1-celled, ovules many; stigma oblong, fusiform. Fruit a berry, 5-7.6 cm across, globose, whitish-brown, rind hard and woody; seeds many.

*Flowering & Fruiting:* March-November

*Habitat:* Grown in homesteads

*Distribution*

*Kerala:* Trivandrum, Ernakulam, Kottayam, Thrissur, Palakkad

*Geographical:* Indo-Malesia

**Melicope lunu-ankenda** (Gaertn.) Hartley, Sandakania 4: 61. 1994; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 369.1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 50. 2002.

*Fagara lunu-ankenda* Gaertn., Fruct. Sem. Pl. 334, t. 68. f. 9. 1778.

*Euodia lunu-ankenda* (Gaertn.) Merr., Philipp. J. Sci. 7:378.1912; Gamble, Fl. Pres. Madras 148(105). 1915; Mohanan, Fl. Quilon Dist. 104. 1984; Ansari, Fl. Kasaragod Dist. 90. 1985; Manilal, Fl. Silent Valley 44. 1988; Ramach. & Nair, Fl. Cannanore Dist. 83. 1988; Antony, Fl. Kottayam Dist. 94. 1989; Vajr., Fl. Palghat Dist. 104. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 118. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 103. 1994; Subram., Fl. Thenmala Division 54. 1995; Mohanan & Sivad., Fl. Agasthyamala 141. 2002; Sasidh. & Sivar., Fl. Pl. Thrissur For. 82. 1996; Sivar. & Mathew, Fl. Nilambur 122. 1997; Sasidh., Fl. Periyar Tiger Reserve 53. 1998.

*Zanthoxylum roxburghianum* Cham., Linnaea 5: 58. 1830.

*Euodia roxburghiana* (Cham.) Benth., Fl. Hongk. 59. 1861; Hook. f., Fl. Brit. India 1: 487. 1875.

*Euodia lunu-ankenda* (Gaertn.) Merr. var. *tirunelvelica* Henry & Chandrab., Bull. Bot. Surv. India 15: 144. 1973; Mohanan & Sivad., Fl. Agasthyamala 141. 2002.

*Local names:* Kambili, Kanala, Kattuchembakam, Nasakam

Deciduous trees, to 18 m high, bark 6-8 mm thick, yellowish-grey, scurfy-muricate, slightly and reticulately fissured, lenticellate; blaze yellowish-brown; branchlets opposite, minutely pubescent. Leaves trifoliate, opposite, estipulate; rachis 40-80 mm long, stout, pubescent, slightly grooved above; petiolules 5-12 mm long; leaflets 3-19.5 × 3-8 cm, elliptic, elliptic-oblong or lanceolate grading to obovate, base acute or cuneate, apex acute or acuminate, margin entire, glabrous, membranous; lateral nerves 8-20 pairs pinnate, slender, prominent, intercostae reticulate, faint.

Flowers unisexual, white or greenish-yellow, in axillary paniculate cymes, 2-3 mm across; male flowers: *ca.* 3 mm long; sepals 4, connate at base; ovate-orbicular; petals 4, 2-3 mm long, white, glabrous; stamens 4, inserted at the base of the disc, slightly longer than petals; filaments subulate; anthers oblong; disc annular, thick, 4 or more lobed, densely pubescent; pistillode of 4 rudimentary carpels; female flowers: sepals and petals as in male flowers; staminodes 4, inserted at the base of the disc; ovary superior, subglobose, pubescent abaxially, 4-lobed, 4-celled, ovules 2 in each cell; style short; stigma capitate, 4-grooved. Fruit a capsule, of 4 cocci, each 5-6 mm long, ovoid, brown; seeds oblong, black.

*Flowering & Fruiting:* May-July

*Habitat:* Evergreen, semi-evergreen and moist deciduous forests

*Distribution*

*Kerala:* Kasaragode, Kottayam, Kollam, Trivandrum, Idukki, Thrissur, Kannur, Palakkad, Pathanamthitta, Malappuram, Wayanad

*Geographical:* Indo-Malesia

**Naringi crenulata** (Roxb.) Nicols. in Sald. & Nicols., Fl Hassan Dist. 387. 1976; Manilal & Sivar., Fl. Calicut 58. 1982; Ansari, Fl. Kasaragod Dist. 92. 1985; Ramach. & Nair, Fl. Cannanore Dist. 84. 1988; Vajr., Fl. Palghat Dist. 106. 1990; Antony, Fl. Kottayam Dist. 95.1989; Sasidh. & Sivar., Fl. Pl. Thrissur For. 84.1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 54.1997; Sivar. & Mathew, Fl. Nilambur 125. 1997; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 302. 1997; Sasidh., Fl. Periyar Tiger Reserve 55. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 50. 2002.

*Limonia crenulata* Roxb., Pl. Corom. t.86.1798; Gamble, Fl. Pres. Madras 157(112).1915.

*Hesperethusa crenulata* (Roxb.) Roem., Syn. Monogr. 1: 38. 1846.

*Limonia acidissima* sensu Hook.f., Fl. Brit. India 1: 507. 1875, non L. 1762.

*Local names:* Kattunarakam, Malanarakam, Narinarakam

Trees, to 10 m, armed with sharp solitary or paired axillary spines; bark yellowish-grey, smooth, corky; blaze yellow; branchlets angled, glabrous. Leaves imparipinnate, alternate, estipulate; rachis 2.5-10 cm long, winged, wings obovate-oblong, glabrous, punctate; leaflets 3-7, opposite, sessile, estipellate; lamina 1-6 x 0.7-2.4 cm, elliptic or elliptic-obovate, base acute or obliquely acute, apex obtuse to emarginate, margin crenate, glabrous, profusely pellucid-gland dotted; glands dimorphic; coriaceous; lateral nerves 4-10 pairs, pinnate, slender, faint, intercostae reticulate, faint. Flowers bisexual, white, in few flowered axillary racemes; pedicel 8-10 mm long; sepals 4, free or united at base, ovate-orbicular, glandular; petals 4, free, elliptic or oblong, white, glandular, glabrous; stamens 8, subequal, free, inserted round the disc; filaments subulate; anthers yellow, apiculate, disc thin, glandular; ovary superior, globose, 4-celled, glabrous, glandular, ovule 1 in each cell.; style stout; stigma capitate; Fruit a berry, 6-8 mm across, subglobose, bluish-black, glandular; seeds 1-4, dull yellow, smooth.

*Flowering & Fruiting:* June-December

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Idukki, Palakkad, Malappuram, Kannur, Kollam, Thrissur, Malappuram, Kozhikkode

*Geographical:* Indo-Malesia

**Pamburus missionis** (Wall. ex Wight) Swingle, J. Wash. Acad. Sci. 6: 338. 1916 & Citrus Ind. 1: 263. 1967; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 304. 1997.

*Limonia missionis* Wall. ex Wight, Ic. t. 175. 1839.

*Atalantia missionis* (Wall. ex Wight) Oliv., J. Linn. Soc. Bot. 5. Suppl. 2: 25. 1861; Hook. f., Fl. Brit. India 1: 513. 1875; Gamble, Fl. Pres. Madras 160(114). 1915.

Evergreen trees, to 12 m high; spines straight, solitary or in pairs; bark grey, longitudinally fissured, lenticellate; inner bark straw to pinkish; blaze yellowish; branchlets at first green, angular, compressed, the innovation dull or fuscous; later cylindrical. Leaves simple, alternate, estipulate; petiole 8-15 mm long, stout, glabrous; lamina 4.5-12.5 x 2-5.5 cm, elliptic or elliptic-oblong, base oblique, acute or cuneate, apex round or emarginate, margin entire or crenulate, undulate, glabrous, coriaceous; lateral nerves 6-8 pairs, slender, pinnate, intercostae reticulate, prominent. Flowers bisexual, small, white, fragrant, in axillary racemes; pedicels slender, glabrous; sepals 4 or 5, deltoid, glandular, glabrous; petals 4 or 5, free, oblong-lanceolate, acute or obtuse, recurved, prominently nerved, glandular, glabrous, pure white; stamens 8 or 10, subequal, filaments free, subulate; anthers linear-oblong, cordate; disc obscure; ovary on a short gynophore, superior, 4-5-celled, ovules 2 in each cell; style stout; stigma capitate or truncate, glandular. Fruit a berry, globose, orange-coloured when ripe, glandular; seeds 4-10, embedded in mucilage.

*Flowering & Fruiting:* March-September

*Habitat:* Occasionally grown in church premises

*Distribution*

*Kerala:* Kollam, Trivandrum

*Geographical:* Sri Lanka and India

**Pleiospermium alatum** (Wall. ex Wight & Arn.) Swingle, J. Wash. Acad. Sci. 6: 427. 1916; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 315. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 57. 1999.

*Limonia alata* Wall. ex Wight & Arn., Prodr. 92. 1834; Hook. f., Fl. Brit. India 1: 508. 1875; Gamble, Fl. Pres. Madras 157(112). 1915.

*Hesperethusa alata* (Wall. ex Wight & Arn.) Alston in Trimen, Handb. Fl. Ceylon (Suppl.) 6: 38. 1931.

*Naringi alata* (Wall. ex Wight & Arn.) Ellis, Bull. Bot. Surv. India 22: 193. 1980.

*Local name:* Kurtham

Glabrous trees, armed with single axillary spines; bark grey, lenticellate. Leaves trifoliate, alternate, estipulate; rachis 10-39 mm, glabrous, winged, articulated; petiolule upto 2 mm; leaflets 2.5-6.5 x 1-3 cm, obovate or oblanceolate, base attenuate, apex broadly round and emarginate, margin entire, glabrous, punctate, coriaceous; lateral nerves 3-8 pairs, pinnate, archingly joined towards the margin, slender, slightly raised beneath, intercostae reticulate. Flowers small, bisexual, white, in axillary panicles; peduncles and pedicels pubescent; sepals 4 or 5, free, ovate, finely pubescent; petals 4 or 5, ovate-oblong, glandular-punctate, glabrous or shortly pubescent, white, imbricate; stamens 8 or 10, unequal, filaments linear, subulate, glabrous, anthers linear-oblong, sometimes apiculate; disc annular; ovary obovoid, smoothly glandular, glabrous, 4 or 5 locular; ovules 2 in each locule; stigma capitate. Fruit a berry, subglobose, like a small orange, pericarp rough,

glandular pulp mucilaginous, aromatic; 1-2 seeded, seeds ovoid, flattened with a hard and smooth testa.

*Flowering & Fruiting:* February-May

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Geographical:* Indo-Malesia, China and Australia

**Vepris bilocularis** (Wight & Arn.) Engl. in Engl. & Prantl, Nat. Pflanzenf. 3(4): 178. 1896; Gamble, Fl. Pres. Madras 151(108). 1915; Mohanan, Fl. Quilon Dist. 105. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 121. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 105. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 85. 1996; Sivar. & Mathew, Fl. Nilambur 127. 1997; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 405. 1997; Sasidh., Fl. Periyar Tiger Reserve 55. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 51. 2002.

*Toddalia bilocularis* Wight & Arn., Prodr. 149.1834; Hook. f., Fl. Brit. India 1:497.1875.

*Dipetalum bioculare* (Wight & Arn.) Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 2:138.1850.

*Local name:* Moothassari

Evergreen dioecious trees, to 25 m high, bark 4-6 mm thick, surface yellowish-grey, brittle; blaze dull yellow. Leaves trifoliate, alternate, estipulate; rachis 2-10 cm long, slender, swollen at base, grooved above, glabrous, lamina 7-25 x 3-10 cm, elliptic-oblongate, elliptic-oblong or elliptic-obovate, base acute, cuneate or rarely oblique, apex acuminate, margin entire, revolute, glabrous, pellucid-gland dotted, coriaceous; lateral nerves parallel, close, intramarginal nerve present, slender, prominent, intercostae reticulate, prominent. Flowers unisexual, 5-6 mm across, yellow, in axillary and terminal panicles; male flowers: calyx small, saucer-shaped, 2-3 lobed; petals 2-4, free, orbicular, glandular, glabrous, imbricate; stamens 6, inserted under the disc, exerted, equal; filaments broad at base; anthers ovate; pistillodes cylindric, 2-cleft above, glabrous; female flowers: sepals and petals as in male flowers; staminodes rudimentary; ovary superior, globose, 2-4-celled, ovules 2 in each cell; stigma capitate. Fruit a berry, globose, 2-celled, fleshy, glandular; seeds 2, planoconvex, brownish.

*Flowering & Fruiting:* February-May

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Thrissur, Pathanamthitta, Malappuram, Trivandrum, Kozhikkode, Palakkad, Idukki, Wayanad

*Endemic to:* Southern Western Ghats

*Status:* Rare (Ahmedullah & Nayar, 1987)

**Zanthoxylum rhetsa** (Roxb.) DC., Prodr. 1: 728. 1824; Hook. f., Fl. Brit. India 1: 495. 1875; Gamble, Fl. Pres. Madras 150(107).1925; Manilal & Sivar., Fl. Calicut 59.1982; Mohanan, Fl. Quilon Dist. 106. 1984; Ansari, Fl. Kasaragod Dist. 93.1985; Subram., Fl. Thenmala Division 53. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 85. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 54. 1997; Sivar. & Mathew, Fl. Nilambur 127. 1997; Nair & Nayar in Hajra *et al.*, Fl. Ind. 4: 387.1997; Sasidh., Fl. Periyar Tiger Reserve 56. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 52. 2002.

*Fagara rhetsa* Roxb., Fl. Ind. 1: 438. 1820.



*Zanthoxylum limonella* (Dennst.) Alston in Trimen, Handb. Fl. Ceyl. 6: 37. 1931.

*Fagara budrunga* Roxb., Fl. Ind. 1:437.1820.

*Zanthoxylum budrunga* (Roxb.) DC., Prodr. 1:728.1824; Hook. f., Fl. Brit. India 495.1875; Gamble, Fl. Pres. Madras 150(107). 1915.

*Local names:* Kothumurikku, Mullilam

Deciduous trees, to 20 m high, bark 15-20 mm thick, brown, mottled with white, armed with conical prickles; outer bark dead, corky, pale yellow, inner bark sulphur yellow; branchlets woody, terete, sparsely prickly. Leaves imparipinnate, alternate, clustered at the tips of branchlets, estipulate; rachis 30-45 cm long slightly grooved above when young, becoming cylindrical on maturity, usually prickly, glabrous; leaflets 13-23, opposite or subopposite, estipulate; petiolule 1-5 mm long; lamina 6-19 x 3-6.5 cm, elliptic-oblong, oblong-ovate, base oblique, apex acuminate or caudate-acuminate, margin entire or crenate, glabrous, punctate, coriaceous; lateral nerves 6-12 pairs, slender, pinnate, prominent; intercostae reticulate, faint. Flowers polygamous, greenish-yellow, 2-3 mm across, in terminal cymose panicles, peduncle and axis sometimes prickly; male flowers: sepals 4, ovate-triangular, fimbriate along margin, green; petals 4, free, elliptic-oblong, white or creamy yellow, valvate; stamens 4, anthers oblong, yellow; disc lobulate; pistillodes solitary; female flowers: sepals & petals as in male flowers; staminodes absent; disc pulvinate; ovary superior, 4-celled, ovules 2 in each cell; style eccentric; stigma truncate. Fruit a capsule, of 1-4 cocci, purplish, tubercled, aromatic; seeds globose, smooth, blue-black.

*Flowering & Fruiting:* March-November

*Habitat:* Moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Idukki, Malappuram, Kozhikkode, Thrissur, Palakkad, Kollam

*Geographical:* Indo-Malesia

#### SIMAROUBACEAE

1. Leaves simple, fruit orbicular, not winged..... **Quassia indica**
1. Leaves pinnate, fruit linear, winged..... 2
2. Leaves coarsely toothed, tomentose; staminal filaments shorter than the anthers  
..... **Ailanthus excelsa**
2. Leaflets entire, glabrous, staminal filaments longer than the anthers .....  
..... **Ailanthus triphysa**

**Ailanthus excelsa** Roxb., Pl. Corom. 1: 24, t. 23. 1795; Hook. f., Fl. Brit. India 1: 518. 1875; Gamble, Fl. Pres. Madras 163(116). 1915; Anil Kumar, Fl. Pathanamthitta Dist. 122. 1994; Basak in Hajra *et al.*, Fl. Ind. 4: 410. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 58. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 52. 2002.

*Local names:* Mattipongilyam, Peemaram, Peruppi

Trees, to 25 m high, bark light greyish-brown, fibrous or glandular, rough. Leaves pari or imparipinnate, alternate, estipulate; rachis 20-80 cm long, stout, swollen at base, pubescent; leaflets 13-29, subopposite; petiolule 20-50 mm long, slender, pubescent; lamina 9-15 x 4-6 cm, very variable in shape, mostly ovate-lanceolate, base unequal or truncate, apex acute or acuminate, margin irregularly and coarsely dentate, membranous, pubescent; lateral nerves 12-20 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers polygamous, 8 mm across, yellowish, in

subterminal panicles, emits foetid smell; male flowers: pedicels long, slender; sepals 5, ovate, pubescent; petals 5, ovate-lanceolate, reflexed; disc 10 lobed; stamens 10, inserted at the base disc; filaments shorter than anthers; anthers oblong; pistillode rudimentary; bisexual flowers: sepals, petals and disc as in male flowers; stamens 2 or 3; ovary 2-5, partite, superior, sparsely hairy, ovule 1 in each cell; style free or connate; stigmas curling. Fruit a samara, 5 x 1.3 cm, prominently veined, oblong, copper red, twisted at base.

*Flowering & Fruiting:* December-July

*Habitat:* Planted in the plains

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad

*Geographical:* Indo-Malesia

**Ailanthus triphysa** (Dennst.) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.) 41:1931; Manilal & Sivar., Fl. Calicut 61. 1982; Mohanan, Fl. Quilon Dist. 106. 1984; Ramach. & Nair, Fl. Cannanore Dist. 86. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 105. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 86. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 55. 1997; Sivar. & Mathew, Fl. Nilambur 128. 1997; Basak in Hajra *et al.*, Fl. Ind. 4: 413. 1997; Sunil, Fl. Pl. Alappuzha Dist. 150. 2000.

*Adenantha triphysa* Dennst., Schluss. Hort. Malab. 15, 18, 32. 1818.

*Ailanthus malabarica* DC., Prodr. 2: 89. 1825; Hook. f., Fl. Brit. India 1: 158. 1875; Gamble, Fl. Pres. Madras 163(116). 1915.

*Local names:* Matti, Perumaram, Pongilium

Lofty deciduous trees, to 30 m high, bark grey, smooth, lenticellate; blaze pale yellow with reddish-brown sclerotic granules. Leaves imparipinnate or paripinnate, alternate, crowded towards the apex of branches, estipulate; rachis 26.5-52.5 cm long, stout, slightly ridged above, glabrous, swollen at base; leaflets 11-23, opposite or subopposite; petiolule 5-10 mm, slender, glabrous, ridged above; lamina 8.5-17 x 2-6.5 cm, oblong-ovate, oblong-lanceolate or elliptic to lanceolate, base oblique, apex acute or acuminate, margin entire, revolute, glabrous, coriaceous; lateral nerves 8-16 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers polygamous, greenish-yellow, in axillary panicles; male flowers: sepal 5, ovate, acute, pubescent, imbricate; petals 5, erect, glabrous, valvate; disc 10-lobed; stamens 10; anthers ovate; pistillode rudimentary, cordate; bisexual flowers: sepals and petals as in male flowers; stamens 2 or 3; disc 10-lobed; ovary 5 partite, superior, ovule 1 in each cell; style connate; stigmas plumose. Fruit a samara, 1-5, oblong, 5-6 x 1.5-2.5 cm, prominently veined, not twisted, reddish-brown with rounded ends.

*Flowering & Fruiting:* January-May

*Habitat:* Semi-evergreen forests, also planted in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and Australia

**Quassia indica** (Gaertn.) Nootb. in Steenis, Fl. Males. ser.1. 6: 199. 1962; Manilal & Sivar., Fl. Calicut 61. 1982.

*Samadera indica* Gaertn., Fruct. 2: 352, t.156. f.3. 1791; Hook. f., Fl. Brit. India 1: 519. 1875; Gamble, Fl. Pres. Madras 163(117). 1915; Mohanan, Fl. Quilon Dist. 107. 1984; Ramach. & Nair, Fl. Cannanore Dist. 86. 1988; Antony, Fl. Kottayam Dist. 97. 1989; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 106. 1994; Basak in Hajra *et al.*, Fl. Ind. 4:420.1997; Sunil, Fl. Pl. Alappuzha Dist. 151. 2000.

*Samadera lucida* (Wall.) Planch. in Hook.'s J. Bot. Kew Gard. Misc. 5: 562. 1846.

*Local names:* Njotta, Karinjotta

Glabrous trees, to 10 m high, bole fluted; bark grey to black, transversely cracked, bitter, smooth; branches horizontal. Leaves simple, alternate, estipulate; petiole 10-20 mm long, stout, glabrous; lamina 9-30 x 3.5-11 cm, elliptic-oblong or elliptic-lanceolate, base obtuse, subacute or round, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 12-20 pairs, pinnate, slender, faint, intercostae reticulate. Flowers bisexual, yellow, in few or many flowered, pendulous axillary umbels; peduncles 7-30 cm long, flattened, thickened at apex; pedicles 10-15 mm long, longer in fruits, articulate in the lower half; calyx small, lobes 4, thick, ciliate, persistent; petals 4, free, 15-20 x 4 mm, oblong-oblancheolate, obtuse, dorsally pubescent, white or pale yellow or purplish, imbricate; disc large, obconic; stamens 8, 8-12 mm long, pubescent, anthers lanceolate-oblong; ovary of 4 distinct, free carpels, superior, ovule one in each cell, pendulous; styles free at base, more or less united above; stigma acute. Fruit a drupe, 3.8 x 2.5 cm, oval, smooth, red, compressed, with narrow wing.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Along backwaters and moist deciduous forests

*Distribution*

*Kerala:* Kollam, Kannur, Thrissur, Kottayam, Malappuram, Trivandrum, Kozhikkode, Alappuzha

*Geographical:* India, Myanmar and Sri Lanka

#### BURSERACEAE

- |    |  |  |
|----|--|--|
| 1. | Flowers 3-merous .....   | <b>Cnarium strictum</b>                      |
| 1. | Flowers 4 or 5-merous .....  | 2  |
| 2. | Flowers 4-merous .....   | 3  |
| 2. | Flowers 5-merous .....   | 5  |
| 3. | Flowers in axillary clusters, leaflets serrate .....                                   | <b>Commiphora berryi</b>                     |
| 3. | Flowers in dichasial cymes, leaflets entire .....                                      | 4  |
| 4. | Leaflets pubescent, subsessile, obtusely acuminate .....                               | <b>Commiphora pubescens</b>                  |
| 4. | Leaflets glabrous, petiolulate, caudate acuminate .....                                | <b>Commiphora caudata</b>                    |
| 5. | Stigma 3-lobed, style grooved .....  | <b>Boswellia serrata</b>                     |
| 5. | Stigma 5-lobed, style entire .....   | 6  |
| 6. | Leaflets tomentose at least when young, ovary tomentose, fruit 1.5 – 2 cm across ..... | <b>Garuga pinnata</b>                        |
| 6. | Leaflets and ovary glabrous, fruit less than 1 cm across .....                         | <b>Garuga floribunda</b> var. <b>gamblei</b> |

**Boswellia serrata** Roxb. ex Coleb., Asiat. Res. 9: 379. t. 5. 1807; Hook. f., Fl. Brit. India 1: 528. 1875; Gamble, Fl. Pres. Madras 168(120). 1915; Chithra & Henry in Hajra *et al.*, Fl. Ind. 4: 432. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 59. 1999.

*Boswellia serrata* Roxb. ex Coleb. var. *glabra* (Roxb.) Bennett in Hook.f., Fl. Brit. India 1: 528. 1875.

*Boswellia glabra* Roxb., Pl. Corom. t. 207. 1811; Gamble, Fl. Pres. Madras 168(120). 1915.

*Local names:* Kunkuliyam, Kunthurukkam, Sambrani

Deciduous trees, to 20 m high, bark yellowish-white with dark blotches, exfoliations thin, papery, smooth flakes; blaze red; exudation white gum-resin; branchlets pubescent. Leaves imparipinnate, alternate, apically clustered, estipulate; rachis 11-44 cm, slender, pubescent, swollen at base; leaflets 15-31, sessile or subsessile, opposite or subopposite; lamina 0.8-9.5 x 0.5-3.5 cm, elliptic-oblong, oblong-lanceolate, oblong-ovate, base oblique, acute, apex obtuse, margin entire or crenate, chartaceous, glabrous; lateral nerves 8-14 pairs, pinnate, faint, intercostae reticulate, faint. Flowers bisexual, small, white, in axillary or subterminal fascicled racemes; calyx pubescent, tube broadly campanulate, short; lobes 5-7, persistent; petals 5-7, 7 x 2.5-4 mm, white, ovate-oblong, shortly clawed, inflexed at apex pubescent out side except margin; disc annular, crenate, free from calyx; stamens 10, free, filaments alternately longer and shorter connective produced beyond the anther lobe; ovary sessile, superior, ovoid, 3-celled, ovules 2 in each cell; style to 3 mm, grooved; stigma 3-lobed. Fruit a drupe, ovoid, trigonous; pyrenes 3; seeds 3.

*Flowering & Fruiting:* January-August

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Geographical:* India

**Canarium strictum** Roxb., Fl. Ind. 3: 138. 1832; Hook. f., Fl. Brit. India 1: 534. 1875; Gamble, Fl. Pres. Madras 172(123). 1915; Mohanan, Fl. Quilon Dist. 108. 1984; Manilal, Fl. Silent Valley 47. 1988; Vajr., Fl. Palghat Dist. 107. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 123. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 108. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 86. 1996; Sivar. & Mathew, Fl. Nilambur 129. 1997; Chithra & Henry in Hajra *et al.*, Fl. Ind. 4: 440. 1997; Sasidh., Fl. Periyar Tiger Reserve 56. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 59. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 52. 2002; Mohanan & Sivad., Fl. Agasthyamala 147. 2002.

*Local names:* Pantham, Pantappayan, Thelli, Viraka, Thellipayin

Trees, to 30 m high, bole straight, buttressed; bark 4-7 mm thick, surface grey-brown or yellow, smooth, exfoliation small, irregular; blaze yellowish, aromatic; exudation brownish-black, resinous; branchlets velvety-tomentose. Leaves imparipinnate, alternate; stipules obscure; rachis 22-36 cm long, stout, tomentose, swollen at base; leaflets 7-11, opposite; petiole 3-10 mm long, stout, tomentose; lamina 7-16 x 3.5-7 cm, ovate, ovate-lanceolate, oblong-ovate or elliptic-ovate, base acute or oblique, apex acuminate, margin serrulate or crenulate, glabrous above, rusty tomentose beneath, coriaceous; lateral nerves 10-20 pairs, parallel, prominent; intercostae scalariform, prominent. Flowers polygamous, 5-6 mm across, bright yellow; in large axillary panicles; bracts cauducous; male flowers; pedicels short; calyx tube campanulate, pubescent without, 5 mm; lobes 3, 1 mm; petals 3, oblong, concave, apiculate; disc annular, to 6 lobed, apically pilose; staminal tube to 3 mm; stamens 6, free from the disc; filaments 1 to 2 mm; anthers oblong, subequal;

pistillode short; bisexual flowers: pedicles elongate; calyx urceolate, 4 mm, pubescent; lobes 3, valvate; petals 3, white, 1 cm long, oblong, pubescent without; disc obscurely lobed, pilose above; staminal tube to 3 mm; filaments 0.5 mm; anthers subequal; ovary superior, to 3.5 mm, 3-celled, ovules 1 in each cell; style 1, stout; stigma capitate, 2-3 lobed. Fruit a drupe, 3.5 x 1.5 cm, ellipsoid, dark blue, 1-3-celled; seeds 1-3.

*Flowering & Fruiting:* January-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Palakkad, Malappuram, Thrissur, Trivandrum, Pathanamthitta, Idukki, Kozhikkode, Wayanad

*Geographical:* India and Upper Myanmar

**Commiphora berryi** (Arn.) Engl. in A. & C. DC., Monogr. Phan. 4: 17. 1883; Gamble, Fl. Pres. Madras 170(122). 1915; Chithra & Henry in Hajra *et al.*, Fl. Ind. 4: 443. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 59. 1999.

*Balsamodendron berryi* Arn., Ann. Nat. Hist. 3: 86. 1839; Hook. f., Fl. Brit. India 1: 529. 1875.

*Local name:* Usuva

Trees, to 10 m high, bark reddish-brown or grey; blaze pink-red; branchlets spine-tipped. Leaves 3-foliate, alternate, clustered; estipulate; rachis 6-14 mm, slender, grooved above, flattened at base, pubescent; leaflets opposite, sessile, laterals smaller, terminal larger; lamina 0.6-2 x 1.2-2 cm, ovate-obovate, obovate, ovate or suborbicular, base cuneate or attenuate, apex obtuse, margin crenate or entire, glabrous, chartaceous; lateral nerves 3-5 pairs, pinnate, slender, faint, intercostae reticulate, faint. Flowers small, polygamous, deep red, pink or cream coloured, solitary or fascicled, axillary; calyx narrowly campanulate; lobes 4, shorter than the tube, glabrous; petals 4, oblanceolate, apiculate; stamens 8, free, alternately long and short, inserted on the margin of the disc; filaments subulate; disc small, 6-8 lobed; ovary superior, ovoid, sessile, 2-celled, ovules 2 in each cell; style short; stigma 3-4 lobed; ovules 2 in each cell. Fruit a drupe, 0.8-1.2 x 0.6-0.9 cm, oblong or ovoid-subglobose, beaked; seeds 2.

*Flowering & Fruiting:* January-April

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* South India

**Commiphora caudata** (Wight & Arn.) Engl. in A. & C. DC., Monogr. Phan. 4:27.1883; Gamble, Fl. Pres. Madras 171(122).1915; Manilal & Sivar., Fl. Calicut 62. 1982; Chithra & Henry in Hajra *et al.*, Fl. Ind. 4:443.1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 60. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 53. 2002.

*Protium caudatum* Wight & Arn., Prodr. 176. 1834; Hook. f., Fl. Brit. India 1: 530. 1875.

*Protium caudatum* Wight & Arn. var. *roxburghiana* (Wight & Arn.) Bennett in Hook.f., Fl. Brit. India 1: 530. 1875.

*Local names:* Idinjil, Kilimaram, Kizhuvam

Unarmed (except on old wood) trees, to 15 m high, bark green with reddish-brown stripes, peeling off in thin scales. Leaves imparipinnate, alternate, estipulate; rachis 5-14 cm long, slender, glabrous; leaflets 3-7, opposite, terminal large; petiolule 5-10 mm, slender, glabrous; lamina 2.7-10.5 x 1-5 cm, ovate or ovate-lanceolate, base cuneate, attenuate or acute, apex caudate-acuminate, margin entire, glabrous, chartaceous; lateral nerves 6-10 pairs, parallel, slender, prominent, intercostae reticulate, prominent. Flowers polygamous, small, greenish-yellow, in lax dichotomous axillary panicles; bracts 2, opposite, glandular-hairy; calyx tube narrowly campanulate, fused with disc, glandular-hairy; lobes 4, as long as tube, deltoid; petals 4, broadly linear, reflexed at apex; disc cupular; stamens 8, free, inserted on the margins of disc, alternately long and short; anthers oblong; ovary superior, oblong or ovoid, attenuate into style, 2-celled, ovules 2 in each cell; stigma 2-lobed. Fruit a drupe, globose or ellipsoid, red when ripe with two white longitudinal lines, mesocarp yellow, rarely orange, pyrenes ovoid; seeds solitary.

*Flowering & Fruiting:* March-October

*Habitat:* Dry deciduous forests, also grown in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* India and Sri Lanka

**Commiphora pubescens** (Wight & Arn.) Engl. in A. & C. DC., Monogr. Phan. 4:21.1883; Gamble, Fl. Pres. Madras 171(122). 1915; Chithra & Henry in Hajra *et al.*, Fl. Ind. 4: 444. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 60. 1999.

*Protium pubescens* Wight & Arn., Prodr. 176.1834; Hook. f., Fl. Brit. India 1:530.1875.

*Local name:* Pachakizhuvam

Trees, to 6 m high, bark green, peeling off; branchlets pubescent. Leaves imparipinnate, alternate; estipulate; rachis 5-15 cm long, slender, pubescent; petiolule 1-2 mm, opposite, slender, pubescent; leaflets 3-9, 1.8-13.5 x 1-6 cm, ovate or ovate-obovate, base acute, obtuse or oblique, apex acuminate, margin entire or crenate, chartaceous, puberulent above, pubescent beneath; lateral nerves 5-12 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers polygamous, yellowish-red; in dichotomously branched, axillary cymose panicles; bracteate; calyx campanulate, lobes 4, ovate, pubescent with out, persistent; petals 4, oblong to oblanceolate, apiculate, reflexed at tip; stamens 8, free, inserted on or along the margins of disc, alternately long and short; disc enclosed in calyx, cupular; ovary superior, ovoid, sessile, 2-4-celled, ovules 2 in each cell; style short; stigma lobed. Fruit a drupe, 0.9-1.2 x 0.7-1.2 cm, ovoid to obovoid; pyrenes 1 or 2; seed solitary.

*Flowering & Fruiting:* April-December

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Peninsular India

**Garuga floribunda** Decne., Nouv. Ann. Mus. Hist. Nat. Paris 3: 477. 1834, var. **gamblei** (King ex W. Smith) Kalkman, Blumea 7: 466. 1953; Ansari, Fl. Kasaragod Dist. 94. 1985; Chithra & Henry in Hajra *et al.*, Fl. Ind. 4: 448. 1997; Sasidh., Fl.

Chinnar Wildlife Sanctuary 60. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 53. 2002.

*Garuga gamblei* King ex W. Smith, Rec. Bot. Surv. Ind. 4: 262. 1911; Gamble, Fl. Pres. Madras 169(121). 1915.

Trees, to 15 m high, bole buttressed; bark surface grey, smooth, fibrous; blaze pink. Leaves imparipinnate, alternate, apically clustered; stipules oblong, cauducous; rachis 16-60 cm, slender, terete, glabrous; leaflets opposite or subopposite; petiolule 2-3 mm, slender, glabrous; leaflets 11-21, lower pair curved down, stipule like; lamina 3.6-15 x 1.4-5 cm, ovate-lanceolate or ovate-oblong, base oblique and cuneate, margin crenate or serrate, glabrous, chartaceous; lateral nerves 12-20 pairs, parallel, prominent, intercostae reticulate, prominent. Flowers polygamous, white or yellow, fragrant, in axillary panicles to 20 cm; bracts linear, to 2 mm; calyx tube narrowly campanulate, pubescent; lobes 5, ovate; petals 5, oblong, pubescent, acuminate; disc 10 lobed, crenate; stamens 10, filaments 1.5 and 2 mm, puberulous; anthers versatile; ovary stipitate, superior, glabrous, 5-celled, ovules 2 in each cell; style 2-2.5 mm; pubescent, stigma 5-lobed. Fruit a drupe, globose, 4-lobed; pyrenes 4; seed one.

*Flowering & Fruiting:* February-June

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Kannur, Idukki, Palakkad

*Geographical:* India, Bangladesh, West China, Hainan

**Garuga pinnata** Roxb., Pl. Corom. t. 208. 1811; Hook. f., Fl. Brit. India 1: 528. 1875; Gamble, Fl. Pres. Madras 172(121). 1915; Manilal & Sivar., Fl. Calicut 63. 1982; Ansari, Fl. Kasaragod Dist. 94. 1985; Ramach. & Nair, Fl. Cannanore Dist. 86. 1988; Antony, Fl. Kottayam Dist. 99. 1989; Vajr., Fl. Palghat Dist. 107. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 87. 1996; Chithra & Henry in Hajra *et al.*, Fl. Ind. 4: 448. 1997; Mohanan & Sivad., Fl. Agasthyamala 148. 2002.

*Local names:* Annakkara, Kaaruvembu, Kattukalasam, Kattunelli

Deciduous trees, to 25 m high, bark grey or brown, shallowly longitudinally furrowed, exfoliating in large irregular flakes; blaze orange-red. Leaves imparipinnate, alternate, crowded at the tips of branchlets; stipules 5 mm, falcate; rachis 15-30 cm long, pubescent; leaflets 11-21, opposite, petiolule 1-2 mm, slender, pubescent; lamina 2.8-14.8 x 1.5-6 cm, oblong-lanceolate or ovate-lanceolate, base oblique, cuneate or subacute, margin crenate or serrate, pubescent, chartaceous; lateral nerves 12-18 pairs, parallel, prominent, intercostae reticulate, prominent. Leaf galls copious. Flowers polygamous, yellow, 4 mm across, in axillary panicles to 15 cm; bracts linear to 2 mm; calyx campanulate, tomentose, deciduous; lobes 5, ovate; petals 5, oblong-lanceolate, tomentose, thickened and inflexed at apex; disc crenate, yellow; stamens 10, inserted on calyx tube; filaments 1.5 and 2.5 mm, pubescent; ovary superior, globose, pilose, 5-celled, ovules 2 in each cell; style pubescent; stigma 5-lobed. Fruit a drupe, greenish-yellow, oblong or irregularly globose, horned; pyrenes 2 or 3; seed one, with a membranous wing.

*Flowering & Fruiting:* January-August

*Habitat:* Moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Kottayam, Palakkad, Kannur, Kollam, Trivandrum,  
 Kozhikkode, Thrissur, Wayanad  
*Geographical:* Indo-Malesia

### MELIACEAE

- |     |   |  |
|-----|---|--|
| 1.  | Cells of ovary 8 or more ovuled, seeds winged.....  | 2                                      |
| 1.  | Cells of ovary 2 or 1 ovuled, seeds not winged.....   | 4                                      |
| 2.  | Filaments united to form staminal tube .....  | 3                                      |
| 2.  | Staminal filaments free .....   | <b>Toona ciliata</b>                   |
| 3.  | Fruit globose, smooth, less than 5 cm across, seeds less than 4 cm long.....                    | <b>Swietenia macrophylla</b>           |
| 3.  | Fruit oblong, scurfy, over 7 cm long, seeds more than 5 cm long.....                            | <b>Chukrasia tabularis</b>             |
| 4.  | Leaflets toothed.....   | 5                                      |
| 4.  | Leaflets entire.....  | 7                                      |
| 5.  | Leaves 2 or 3 pinnate, drupe ovoid, 2-3 cm long .....   | 6                                      |
| 5.  | Leaves simple pinnate, drupe oblong, about 1 cm long .....                                      | <b>Azadirachta indica</b>              |
| 6.  | Staminal tube blue; fruit 1.5-2 cm long .....   | <b>Melia azedarach</b>                 |
| 6.  | Staminal tube greenish-yellow; fruit 2.5-3.5 cm long .....                                      | <b>Melia dubia</b>                     |
| 7.  | Filaments united throughout to form a distinct tube.....  | 8                                      |
| 7.  | Filaments united towards the basal half only or free .....                                      | 14                                     |
| 8.  | Petals 3 .....  | <b>Aphanamixis polystachya</b>         |
| 8.  | Petals 4 or 5 .....   | 9                                      |
| 9.  | Staminal tube oblong, elongated .....   | 10                                     |
| 9.  | Staminal tube globose.....  | 23                                     |
| 10. | Petals 5; disc longer than the ovary.....   | <b>Dysoxylum swaminathanianum</b>      |
| 10. | Petals 4; disc as long as the ovary .....   | 11                                     |
| 11. | Capsule smooth .....  | 12                                     |
| 11. | Capsule ribbed, rugose .....  | 13                                     |
| 12. | Capsule purple, calyx 4-lobed .....   | <b>Dysoxylum ficiforme</b>             |
| 12. | Capsule red, calyx subentire .....  | <b>Dysoxylum binectariferum</b>        |
| 13. | Flowers in elongated panicles as long as or half the length of leaves .....                     | <b>Dysoxylum malabaricum</b>           |
| 13. | Flowers in short axillary raceme which is less than 1/3 the length of leaves.....               | <b>Dysoxylum beddomei</b>              |
| 14. | Anthers 10 in 2 rows.....   | <b>Reinwardtiodendron anamalaiense</b> |
| 14. | Anthers 5-8 in single row .....   | 15                                     |
| 15. | Stamens 7 or 8 .....  | <b>Aglaia lawii</b>                    |
| 15. | Stamens up to 5.....  | 16                                     |
| 16. | Leaflets 5-7 .....  | 17                                     |
| 16. | Leaflets (7) 9-13 .....   | 19                                     |
| 17. | Leaflets narrowly lanceolate, less than 2.5 cm broad, berry depressed globose, brown .....      | <b>Aglaia barberi</b>                  |
| 17. | Leaflets broadly oblong or elliptic-oblong, more than 2.5 cm broad, berry ovoid or globose..... | 18                                     |
| 18. | Berry obovoid, ridged, densely scaly.....   | <b>Aglaia apiocarpa</b>                |
| 18. | Berry globose, smooth.....  | <b>Aglaia elaeagnoidea</b>             |



19. Leaflets alternate; berry obovoid or subglobose with irregular longitudinal ridges, 3.5-4.5 cm long.....**Aglaia malabarica**
19. Leaflets opposite or subopposite; berry less than 2.5 cm long, smooth.....20
20. Leaflets and rachis densely tomentose below; petals about 1 mm long .....  
.....**Aglaia tomentosa**
20. Leaflets covered with lepidote scales having fimbriate margins .....21
21. Leaflets obovate or elliptic obovate, margins recurved .....**Aglaia bourdillonii**
21. Leaflets otherwise, margins not recurved .....22
22. Berry asymmetrically ellipsoid with one side flat or slightly concave  
.....**Aglaia perviridis**
22. Berry globose .....**Aglaia edulis**
23. Leaves 3-foliolate .....**Walsura trifolia**
23. Leaves pinnate, leaflets 7-13 .....**Trichilia connaroides**

**Aglaia apiocarpa** (Thw.) Hiern in Hook.f., Fl. Brit. India 1: 555. 1875; Pannell, Kew Bull. Addl. ser. 16, 173. 1992; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 457. 1997; Sasidh., Fl. Periyar Tiger Reserve 57. 1998.

*Milnea apiocarpa* Thw., Enum. Pl. Zeyl. 60. 1858.

*Aglaia congylos* Kosterm., Acta Bot. Neerl. 31: 130. 1982.

Trees, to 20 m high; young parts and leaves densely covered with dark brown fimbriate scales. Leaves imparipinnate, alternate, estipulate; rachis 3-20 cm long, stout, swollen at base, covered with peltate scales, grooved above; leaflets 5-7, opposite or subopposite, estipellate; petiolule 4-12 mm long, stout, grooved above, covered with peltate scales; lamina 5-10 x 2-3.5 cm, obovate, elliptic-obovate or elliptic-oblong, base obliquely acute, apex acute, margin entire, coriaceous, covered with peltate scales when young, almost glabrous and foveolate, except along midrib beneath; lateral nerves 6-10 pairs, pinnate, slender, faint, intercostae obscure. Flowers polygamo-dioecous, yellow, in lax axillary racemosely branched, densely rusty-lepidote, panicles; peduncles 20 cm long; pedicel 1-2 mm long, stout, lepidote; calyx ca. 1.5 mm long, thick, lobes 5, densely lepidote; petals 5, oblong, to 2.5 mm long, lepidote; stamens 5, connate to form a staminal tube; anthers 5, slightly exerted; ovary superior, globose, lepidote, 1-2-celled, ovules one in each cell. Fruit a berry, 1.5 x 1.3 cm, obovoid, ridged, densely scaly.

*Flowering & Fruiting:* March-November

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki

*Geographical:* South India and Sri Lanka

*Status:* Vulnerable (IUCN, 2000)

**Aglaia barberi** Gamble, Bull. Misc. Inform. Kew 1915: 346. 1915 & Fl. Pres. Madras 180(129). 1915; Sasidh. & Sivar., Fl. Pl. Thrissur For. 88. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 56. 1997; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 457.1997; Sasidh., Fl. Periyar Tiger Reserve 57. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 54. 2002.

*Local name:* Karakil

Trees, to 15 m, bark reddish-brown, smooth; blaze pink; young parts covered with reddish-brown, lepidote scales. Leaves imparipinnate, alternate, estipulate; rachis 100-120 mm, slender, slightly swollen at base, covered with reddish-brown lepidote scales; leaflets 5-7, opposite or subopposite, estipellate; petiolule 3-8 mm long, slender, grooved above; lamina 4.5-12 x 1.5-4 cm, elliptic-oblong, elliptic-lanceolate or lanceolate, base acute or obliquely acute, apex acuminate, margin entire, coriaceous, glabrous above, reddish-brown scales present beneath; lateral nerves 12-15 pairs, parallel, slender, obscure, intercostae obscure. Flowers polygamodioecious, yellow, in axillary panicles; peduncle densely scaly; bracts minute, cauducous; calyx saucer shaped; lobes 5, acute, margin ciliate; petals 5, orbicular, glabrous; staminal tube 1 mm long, globose, not contracted at base, undulate along margins, anthers 5, included; ovary superior, hairy, 1-2-celled, ovules 1-2 in each cell; style short; stigma capitate. Fruit a berry, depressed globose, brown puberulus, 2-3 cm across.

*Flowering & Fruiting:* December-June

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Idukki, Kollam, Thrissur, Palakkad

*Endemic to:* Western Ghats

*Status:* Rare (Nayar, 1997)

***Aglaia bourdillonii*** Gamble, Bull. Misc. Inform. Kew 1915:346.1915 & Fl. Pres. Madras 180(129).1915; Pannell, Kew Bull. Addl. ser. 16, 120.1992; Sasidh., Fl. Shenduruny Wildlife Sanctuary 56. 1997.

*Aglaia elaeagnoidea* (A. Juss.) Benth. var. *bourdillonii* (Gamble) Nair, J. Bomb. Nat. Hist. Soc. 78: 426. 1981; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 109. 1994; Mohanan & Sivad., Fl. Agasthyamala 149. 2002; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 462.1997; Gopalan & Henry, End. Pl. India SW Ghats 48.

*Aglaia roxburghiana* sensu Bedd., Fl. Sylv. t. 130B. 1871, non (Wight & Arn.) Miq. 1868.

Trees, to 20 m high, bark reddish-brown, smooth; blaze dull red; branchlets covered with orange-brown scales with fimbriate margins. Leaves imparipinnate, alternate, estipulate; rachis 10-25 cm long, stout, grooved above, swollen at base, covered with lepidote scales; leaflets 7-9, opposite, estipellate; petiolule 6-11 mm, stout, covered with lepidote scales, grooved above; leaflets 5-11 x 3-4 cm, elliptic-obovate or obovate, base acute or cuneate, apex acute or obtusely acute, margin entire, recurved, coriaceous, foveolate above and scurfy beneath; lateral nerves 9-12 pairs, parallel, prominent, intercostae obscure. Flowers polygamodioecious, yellow, small, in axillary branching panicles; calyx 5 lobed, pubescent, ciliate along margin, imbricate; petals 5, free, ovate, imbricate; stamens 5, included; staminal tube urceolate, margin undulate; anthers 5, obtuse; ovary superior, 1-2-celled, stellate-tomentose, ovules 1-2 in each cell; style very short; stigma simple. Fruit a berry, 2 cm long, subglobose, obovate, densely minutely scaly; seeds 1-2.

*Flowering & Fruiting:* December-July

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Trivandrum, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Aglaia edulis** (Roxb.) Wall., Calc. Gard. Rep. 26. 1840; Hook. f., Fl. Brit. India 1: 556. 1875; Pannell, Kew Bull. Addl. ser. 16, 229.1992; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 461.1997.

*Milnea edulis* Roxb., Fl. Ind. 2: 430. 1824.

*Nyalelia racemosa* Dennst., Schluss. Hort. Malab. 14,23,30. 1818; Hook. f., Fl. Brit. India 1: 554. 1875.

*Beddomea indica* Hook.f. in Benth. & Hook.f., Gen. Pl. 1: 336. 1862; Hook. f., Fl. Brit. India 1: 566. 1875; Gamble, Fl. Pres. Madras 184(132). 1915.

*Aglaia khasiana* Hiern in Hook.f., Fl. Brit. India 1: 554. 1875.

*Aglaia indica* (Hook.f.) Harms in Engl. & Prantl, Nat. Pflanzenf. (ed.2.) 9bI:146. 1940; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 468.1997; Ramach. & Nair, Fl. Cannanore Dist. 87. 1988; Sivar. & Mathew, Fl. Nilambur 130. 1997.

Trees, to 15 m high, bole buttressed; outer bark reddish-brown, yellowish-brown or greyish-green; inner bark pink or brown; exudation white; young parts covered with reddish-brown stellate hairs and scales. Leaves imparipinnate, alternate, estipulate, rachis 10-12.5 cm long, slender, swollen at base, covered with hairs or reddish-brown lepidote scales; leaflets 5-13, opposite or subopposite, estipellate; petiolule 5-18 mm long, grooved above; lamina 4.5-23 x 2-8 cm, elliptic, elliptic-oblongate, elliptic obovate or ovate, base oblique, cuneate, acute or attenuate, apex acuminate or obtusely acuminate, margin entire, membranous to coriaceous, glabrous, papillate above; lateral nerves 7-16 pairs, slender, pinnate, prominent, intercostae scalariform, prominent. Flowers polygamodioecious, yellow or orange, in axillary inflorescence; male flowers; inflorescence upto 38 cm long; covered with brown stellate hairs; calyx cup shaped; lobes 4-6, covered with scales; petals 4-6; staminal tube cup shaped, thick, crenulate at mouth, anthers 5-6; female inflorescence 5 cm long, peduncle 2.5 cm, calyx lobes 5, ovate, covered with hairs; petals 5; ovary superior, upto 1 mm long, covered with scales, 3-celled, 1-2 ovules in each locule. Fruit a capsule, 3.2 x 3.8 cm, subglobose.

*Flowering & Fruiting:* May-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Malappuram, Kannur

*Geographical:* Indo-Malesia

*Status:* Lower risk: near threatened (IUCN, 2000)

**Aglaia elaeagnoidea** (A. Juss.) Benth., Fl. Austral. 1: 383. 1863; Manilal & Sivar., Fl. Calicut 63. 1982; Mohanan, Fl. Quilon Dist. 109. 1984; Ansari, Fl. Kasaragod Dist. 95. 1985; Antony, Fl. Kottayam Dist. 100. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 124. 1994; Subram., Fl. Thenmala Division 61. 1995; Pannell, Kew Bull. Addl. ser. 16, 143.1992; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 461.1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 61. 1999; Sunil, Fl. Pl. Alappuzha Dist. 154. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 54. 2002; Mohanan & Sivad., Fl. Agasthyamala 149. 2002.

*Nemeda elaeagnoidea* A. Juss., Mem. Mus. Hist. Nat. Paris 19: 259, t. 14. 1830.

*Aglaia roxburghiana* (Wight & Arn.) Miq., Ann. Mus. Ludg.-Bat. 4: 41. 1868; Gamble, Fl. Pres. Madras 180(128). 1915.

- Aglaia wallichii* Hiern in Hook.f., Fl. Brit. India 1: 555. 1875.
- Aglaia roxburghiana* (Wight & Arn.) Miq. var. *obtusata* DC. in A. & C. DC., Monogr. Phan. 1: 605. 1878.
- Aglaia roxburghiana* (Wight & Arn.) Miq. var. *beddomei* Gamble, Fl. Pres. Madras 180(129). 1915.
- Aglaia roxburghiana* (Wight & Arn.) Miq. var. *courtallensis* Gamble, Fl. Pres. Madras 180(129). 1915.
- Aglaia elaeagnoidea* (A. Juss.) Benth. var. *beddomei* (Gamble) Nair, J. Bomb. Nat. Hist. Soc. 78: 426. 1981; Vajr., Fl. Palghat Dist. 109. 1990; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 462.1997.
- Aglaia elaeagnoidea* (A. Juss.) Benth. var. *courtallensis* (Gamble) Nair, J. Bomb. Nat. Hist. Soc. 76: 476. 1981; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 109. 1994; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 465.1997; Mohanan & Sivad., Fl. Agasthyamala 149. 2002.
- Local name:* Punyava
- Trees, to 15 m high, bark reddish-brown, smooth; blaze pink; branchlets 3-4 mm thick, covered with brownish scales. Leaves imparipinnate, alternate, estipulate; rachis 60-80 mm long, stout, grooved above, swollen at base, lepidote; leaflets 5-7, opposite, estipellate; petiolule 10-18 mm long, lepidote scales present; leaflets 6-10 x 3-4.5 cm, elliptic, elliptic-obovate, lanceolate or oblanceolate, base oblique, acute or attenuate, apex acute, acuminate or caudate-acuminate, margin entire, chartaceous, foveolate above, lepidote above and beneath; lateral nerves 5-10 pairs, parallel, prominent, secondary laterals present, intercostae obscure. Flowers polygamodioecious, yellow in axillary branching panicles; calyx 5 lobed campanulate, scaly, margins ciliate; petals 5, free, imbricate; staminal tube entire at apex; anthers 5, included; ovary small, superior, slightly depressed, 1-2-celled, ovules 1-2 in each cell. Fruit a berry, globose, 1-15. cm across, buff coloured; seeds 1-2.
- Flowering & Fruiting:* November-August
- Habitat:* Evergreen forests, also in sacred groves in the plains
- Distribution*
- Kerala:* All districts
- Geographical:* Indo-Malesia to Pacific Islands.
- Aglaia lawii** (Wight) Sald. in Sald. & Nicols., Fl. Hassan Dist. 392. 1976; Vajr., Fl. Palghat Dist. 109. 1990; Pannell, Kew Bull. Add. ser. 16, 97.1992; Sasidh. & Sivar., Fl. Pl. Thrissur For. 88. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 57. 1997; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 471.1997; Sasidh., Fl. Periyar Tiger Reserve 57. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 54. 2002.
- Nimmonia lawii* Wight, Calcutta J. Nat. Hist. 7: 13. 1847.
- Amoora lawii* (Wight) Bedd., Fl. Sylv. t. 133. 1871; Hook. f., Fl. Brit. India 1: 561. 1875; Gamble, Fl. Pres. Madras 181(130). 1915.
- Aglaia andamanica* Hiern in Hook.f., Fl. Brit. India 1: 555. 1875.
- Amoora canarana* (Turcz.) Hiern in Hook.f., Fl. Brit. India 1: 560.1875; Gamble, Fl. Pres. Madras 182(130). 1915; Ramach. & Nair, Fl. Cannanore Dist. 88. 1988; Manilal, Fl. Silent Valley 48. 1988.
- Aglaia jainii* Viswan. & Ramach., Bull. Bot. Surv. India 24: 212. 1982(1983); Sivar. & Mathew, Fl. Nilambur 131. 1997; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4:469.1997.

*Aglaia tamilnadensis* Nair & Rajan in Nair & Henry, Fl. Tamil Nadu ser. 1, 1: 66. 1983.

*Local names:* Karakil, Vellacheeralam

Trees, to 15 m; bark 3-4 mm thick, surface brownish-grey, mottled with green, smooth, exfoliations thin, semi fibrous; blaze creamy yellow, exudation white; young parts, inflorescence, calyx and fruits covered by yellowish-brown lepidote scales. Leaves imparipinnate, alternate, estipulate; rachis 3.2-20 cm long, slender or stout, swollen at base covered with yellowish-brown lepidote scales; leaflets 3-5, opposite or subopposite, estipellate; petiolule 3-10 mm, stout or slender, covered with peltate scales, grooved above; lamina 6-20 x 1.5-7 cm, asymmetrically broad ovate, elliptic-lanceolate or elliptic-obovate, base obliquely acute or obtuse, apex acuminate, obtuse or obtusely acuminate, margin entire, glabrous, densely scaly, coriaceous; lateral nerves 7-18 pairs, pinnate, prominent, inter costae obscure; hairy gland like galls some times present in the axils of lateral veins. Flowers polygamo-dioecious, white; females and bisexuals in spikes; males in panicles or racemes, axillary; pedicels tetragonous, short; calyx truncate, short, 4 lobed; lobes obscure; petals 4, orbicular, long, subentire at apex, glabrous; stamens 8-10; staminal tube slightly crenate at mouth; anthers 8-10, attached near the base of staminal tube; ovary superior, lepidote, 3-locular, one ovule in each locule; stigma 3-lobed. Fruit a capsule, 1.5-2 cm long, obovoid, obtuse, yellow; seeds surrounded by a fleshy aril

*Flowering & Fruiting:* December-February

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Malappuram, Kannur, Palakkad, Idukki, Kollam, Thrissur, Wayanad

*Geographical:* Indo-Malesia to Pacific Islands

*Status:* Rare (Nayar, 1997)

***Aglaia malabarica*** Sasidh., Kew Bull. Addl. ser. 16, 369. 1992; Sasidh. & Sivar., Fl. Pl. Thrissur For. 91. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 57. 1997.

*Local names:* Chuvannacheeralam, Chuvannakil

Trees, to 25 m high, bark 4-5 mm thick, smooth, brown; blaze reddish-brown; young shoots golden brown, densely peltate scaly. Leaves imparipinnate, alternately, estipulate; rachis 25-35 cm long, stout, covered with peltate scales, swollen at base, grooved above; leaflets 7-11, alternate, estipellate; petiolule 7-20 mm long, slender, grooved above, covered with peltate scales, lamina 6-21 x 2.5-8 cm, oblong-lanceolate or elliptic-lanceolate, base obliquely round or acute, apex acuminate, margin entire, upper surface minutely pitted with peltate scales, lower surface with numerous peltate scales on the midrib and lateral nerves, coriaceous; lateral nerves 10-19 pairs, parallel, prominent, intercostae reticulate, obscure. Flowers polygamo dioecious, yellow; male flowers: inflorescence to 20 cm long, densely covered with peltate scales; flowers 2.5-3 mm long; pedicels 1-1.5 mm long; calyx 0.5 mm long, lobes 5, round, densely scaly; petals 5, yellow; stamens 5; staminal tube 2 mm long, aperture 0.4-0.5 mm wide, entire, anthers 5, included; female flowers: inflorescence to 5.5 cm long, covered with reddish-brown peltate scales; pedicels 3-4.5 mm long; flowers 4.5 mm long; calyx 3.5 mm long, thick and fleshy at base; lobes 5, rounded, densely scaly; corolla 2 mm long, petals 5; staminodes 5, included; ovary superior, depressed globose, with reddish-brown scales, 3-celled,

ovules one in each cell; stigma subglobose with an apical depression. Fruit a capsule, 3.5-4.5 x 2.7-4 cm, obovoid or subglobose with an apical depression, pericarp with numerous irregular longitudinal ridges and dense peltate scales, 0.5 cm thick and granular; seeds 1-3, 1.7-2.5 x 1-1.5 cm, completely surround by a thin pale pink translucent aril.

*Flowering & Fruiting:* December-May

*Distribution*

*Kerala:* Kollam, Thrissur, Wayanad

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Critically endangered (IUCN, 2000)

**Aglaia perviridis** Hiern in Hook.f., Fl. Brit. India 1: 556. 1875; Pannell, Kew Bull. Addl. ser. 16, 198.1992; Anil Kumar, Fl. Pathanamthitta Dist. 125. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 91. 1996; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 473.1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 58. 1997; Sasidh., Fl. Periyar Tiger Reserve 58. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 55. 2002.

*Aglaia maiiae* Bourd., J. Bomb. Nat. Hist. Soc. 12: 350. t.11. 1899; Gamble, Fl. Pres. Madras 180(129). 1915; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 473.1997.

*Aglaia canarensis* Gamble, Fl. Pres. Madras 180(129).1915; Mohanan, Fl. Quilon Dist. 109. 1984.

*Local names:* Cheru chokla, Karakil

Trees, to 25 m high; bark 5-6 mm thick, surface reddish-brown mottled with white, rough; branchlets covered with reddish-brown peltate scales. Leaves imparipinnate, alternate, estipulate; rachis 13-60 cm long, stout, slightly grooved above, swollen at base, covered with reddish-brown peltate scales; leaflets 7-13, opposite or subopposite; petiolule 6-12 mm long, stout, slightly grooved above, covered with peltate scales; lamina 10-23 x 2-6.2 cm, oblong-lanceolate or oblong-ovate or ovate-lanceolate, base oblique, apex acute or acuminate, margin entire, glabrous, scales on midrib only; lateral nerves 12-19 pairs, pinnate, slender, faint, intercostae reticulate, faint. Flowers polygamodioecious, yellowish, in lax axillary panicles; peduncle covered with scales; pedicel articulated with 3 small ovate, bracteoles; calyx cup-shaped; lobes 5, ovate, having fimbriate margin; petals 5, yellow, elliptical; staminal tube 1-2 mm long, narrower at the base below the insertion of the anthers, margin shallowly lobed; anthers 5, inserted near the base or about half way up the tube, included or just protruding through the aperture; ovary superior, 0.2-0.4 x 0.3-0.4 mm, depressed globose, 1-celled, ovule one; stigma ovoid. Fruit a berry, 2-3 x 1.5-1.7 cm, asymmetrically ellipsoid with one side flat or slightly concave, yellow or brown; pericarp thin, brittle, densely covered with scales; seed one, 2.7 x 1.5 cm, completely surrounded by aril.

*Flowering & Fruiting:* April-September

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Thrissur, Palakkad

*Geographical:* Indo-Malesia and China

*Status:* Vulnerable (IUCN, 2000)

**Aglaia tomentosa** Teijsm. & Binn., Nat. Tijdsch. Ned. Ind. 27: 43. 1864; Pannell, Kew Bull. Addl. ser. 16, 331.1992; Sasidh. & Sivar., Fl. Pl. Thrissur For. 91. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 58. 1997; Sasidh., Fl. Periyar Tiger Reserve 58. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 55. 2002.

*Aglaia minutiflora* Bedd., Ic. t. 193. 1868-1874; Gamble, Fl. Pres. Madras 181(129). 1915; Vajr., Fl. Palghat Dist. 109. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 109. 1994.

*Aglaia minutiflora* Bedd. var. *travancorica* Hiern in Hook.f., Fl. Brit. India 1: 557. 1875.

*Aglaia travancorica* sensu Bourd., For. Trees Travancore 85. 1908, non Hiern 1875.

*Aglaia cordata* Hiern in Hook.f., Fl. Brit. India 1: 557. 1875.

*Aglaia exstipulata* sensu Balak. in J. Bomb. Nat. Hist. Soc. 67:57.1970, non (Griff.) Theobald 1883; Subram., Fl. Thenmala Division 61. 1995; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 465.1997.

*Local name:* Neermulli

Trees, to 20 m high, bark pale reddish-brown or grey with green patch, with longitudinal cracks and lenticels in longitudinal rows, inner bark yellow, fibrous or granular; exudation white; branches ascending; branchlets covered with dense brown stellate hairs. Leaves imparipinnate, alternate, estipulate, rachis 13-34 mm long, stout, swollen at base, stellate-tomentose, leaflets 9-13, opposite or subopposite, estipellate; petiolule 3-10 mm, stout, tomentose, slightly grooved above, lamina 7.5-20 x 2.5-6 cm, oblong-lanceolate, elliptic or elliptic to oblanceolate, base oblique, cuneate or acute, apex acuminate or caudate-acuminate, margin entire, recurved when dry, coriaceous, glabrous above and tomentose beneath, lateral nerves 10-25 pairs, parallel, prominent, intercostae obscure. Flowers polygamodioecious, yellow, in axillary panicles; female inflorescence is smaller than male; peduncle tomentose like rachis; calyx densely covered with stellate hairs; lobes 5 acute or obtuse, margin ciliate; petals 5, yellow, subrotund or obovate, glabrous; staminal tube 1 mm long, slightly incurved and shallowly 5-lobed at the margin, anthers 5, broadly ovoid, inserted near the base or just below the margin of the tube, usually protruding; ovary superior, depressed globose, densely covered with stellate hairs, 1-celled, ovule one in each cell; stigma subglobose, longitudinally ridged, shiny. Fruit a capsule, 1.6-2.5 x 1.2-1.7 cm, yellow, subglobose, pyriform, tomentose, 1-2 loculed, seed 1, aril orange, red or brown, translucent and acidic.

*Flowering & Fruiting:* August-September

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Palakkad, Trivandrum, Kollam, Idukki, Thrissur

*Geographical:* Indo-Malesia to Australia

**Aphanamixis polystachya** (Wall.) Parker, Indian For. 57: 486.1931; Manilal & Sivar., Fl. Calicut 63. 1982; Mohanan, Fl. Quilon Dist. 109. 1984; Ansari, Fl. Kasaragod Dist. 95. 1985; Subram., Fl. Thenmala Division 59. 1995; Antony, Fl. Kottayam Dist. 100. 1989; Manilal, Fl. Silent Valley 48. 1988; Vajr., Fl. Palghat Dist. 110. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 125. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 109. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 94.

1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 59. 1997; Sivar. & Mathew, Fl. Nilambur 131. 1997; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 477. 1997; Sasidh., Fl. Periyar Tiger Reserve 58. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 61. 1999; Sunil, Fl. Pl. Alappuzha Dist. 157. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 56. 2002; Mohanan & Sivad., Fl. Agasthyamala 150. 2002.

*Aglaia polystachya* Wall. in Roxb., Fl. Ind. 2: 429. 1824.

*Andersonia rohituka* Roxb., Fl. Ind. 2: 213. 1832.

*Amoora rohituka* (Roxb.) Wight & Arn. in Wight, Cat 24. 1833 & Prodr. 119. 1834; Hook. f., Fl. Brit. India 1: 559. 1875; Gamble, Fl. Pres. Madras 181(130). 1915.

*Amoora beddomei* Kosterm., Acta Bot. Neerland. 31: 133. 1982; Kamble & Sharma, J. Econ. Tax. Bot. 5: 493. 1984.

*Local name:* Chemmaram

Evergreen trees, to 20 m high, bark reddish-brown mottled with green; blaze red; branchlets sericeous. Leaves imparipinnate, alternate, crowded at the end of branchlets, estipulate; rachis 12-44.6 cm long, stout, pubescent, swollen at base, grooved above till the lowest leaf pairs, leaflets 7-15, opposite, estipellate; petiolule 5-13 mm, odd one upto 20 mm, slender; lamina 4.5-25 x 2.5-6.5 cm, lowest pair smaller, ovate-oblong or oblanceolate, base oblique, acute, apex acute or acuminate, margin entire, undulate, coriaceous, glabrous above and glabrescent beneath; lateral nerves 7-13 pairs, pinnate, prominent; intercostae reticulate, prominent. Flowers polygamodioecious, white; panicles to 70 cm long, axillary, drooping; pedicel 2-6 mm long; sepals 5, orbicular, thick; petals 3, white, orbicular; staminal tube 4 mm long, globose; anthers 6, oblong, included; ovary superior, ovoid, pubescent, 3-celled, ovules 2 in each cell; stigma 3-lobed, subsessile. Fruit a capsule 2.5-3.5 x 3 cm, 3-lobed, glabrous yellow or purplish; seeds 2 or 3, oblong, with a scarlet aril.

*Flowering & Fruiting:* January-December

*Habitat:* Evergreen, semi-evergreen and shola forests, also in sacred groves

*Distribution*

*Kerala:* All districts

*Geographical:* India, Pakistan, Nepal, Bhutan, Bangladesh, Myanmar and Sri Lanka

**Azadirachta indica** A.Juss., Mem. Mus. Hist. Nat. Paris 19: 221. 1830; Gamble, Fl. Pres. Madras 177(127). 1915; Manilal & Sivar., Fl. Calicut 64. 1982; Mohanan, Fl. Quilon Dist. 111. 1984; Vajr., Fl. Palghat Dist. 113. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 110. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 61. 1997; Sasidh. & Sivar., Fl. Pl. Thrissur For. 100. 1996; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 478. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 62. 1999; Sunil, Fl. Pl. Alappuzha Dist. 158. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 56. 2002.

*Melia azadirachta* L., Sp. Pl. 385. 1753; Hook. f., Fl. Brit. India 1: 544. 1875.

*Local names:* Aariyaveppu, Kaippanveppu, Veppu

Evergreen trees, to 20 m; bark greyish-brown, vertically striated; exudation red, sticky. Leaves imparipinnate, alternate, estipulate; rachis 14-30 cm long, slender, swollen at base, glabrous, leaflets 7-15, opposite or subopposite, estipellate; petiolule 3-5 mm long, slender, glabrous; lamina 4.5-7.5 x 1.5-2.5 cm, falcate, base oblique, apex acuminate, margin serrate, glabrous, coriaceous; lateral nerves 10-18 pairs, pinnate, slender, prominent, intercostae reticulate, faint. Flowers bisexual, 8



mm across, white, in axillary panicles; bracteoles scaly; pedicel 5 mm; sepals 5, connate at base, ovate, margin ciliate; petals 5, free, white, oblong-obovate, pubescent, spreading, imbricate; staminal tube 4 mm long, glabrous, apically 10 lobed; lobes truncate; anthers 10, slightly exserted, apiculate, opposite to lobes, sessile; ovary superior, globose, 3-celled; ovules 2 per cell; style slender, elongate; stigma terete, 3-lobed. Fruit a drupe, 1.5 x 0.5 cm, oblong-ovoid, greenish-yellow; seed one, surrounded by a sweet pulp.

*Flowering & Fruiting:* February-September

*Habitat:* Dry deciduous forests, also widely planted in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Chukrasia tabularis** A. Juss., Mem. Mus. Hist. Nat. Paris 19: 251. t.22. 1830; Hook. f., Fl. Brit. India 1: 568. 1875; Gamble, Fl. Pres. Madras 186(133). 1915; Ansari, Fl. Kasaragod Dist. 96. 1985; Ramach. & Nair, Fl. Cannanore Dist. 88. 1988; Vajr., Fl. Palghat Dist. 110. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 94. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 59. 1997; Sivar. & Mathew, Fl. Nilambur 132. 1997; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 481. 1997; Sasidh., Fl. Periyar Tiger Reserve 59. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 62. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 56. 2002.

*Local names:* Chuvannakil, Karadi

Trees, to 35 m high, bark thick, dark brown, deeply cracked, flaking off in thin irregular flakes; blaze pink red. Leaves paripinnate, alternate, estipulate; rachis 12-30 cm long, slender, slightly swollen at base, pubescent; leaflets 10-20, subopposite, estipellate; petiole 2-10 mm long, slender, pubescent; lamina 3.5-15 x 2.5-8 cm, obliquely ovate, ovate-lanceolate or elliptic-lanceolate, base oblique, apex acuminate, margin entire, coriaceous, glabrous above, tomentose beneath; lateral nerves 6-8 pairs, pinnate, regular, arched towards the margin forming intramarginal nerve, prominent, intercostae reticulate. Flowers bisexual, yellowish-white, in terminal panicles; calyx small, campanulate, lobes 5, ovate, pubescent; petals 5, oblong, obovate or spatulate, pubescent, contorted; disc obscure; staminal tube terete, glabrous, dark purple, with 10 short crenate lobes; anthers 10, linear, exserted; ovary superior, stipitate, ovoid, pubescent, apically attenuate, 4-celled, ovules many in each cell; style stout; stigma capitate. Fruit a capsule, 3.7-5 x 4 cm, 4-5 valved, ovoid, dark brown; seeds many, 2 x 0.5 cm, thin, broadly winged at base.

*Flowering & Fruiting:* May-March

*Habitat:* Semi-evergreen, moist deciduous, evergreen and shola forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Palakkad, Malappuram, Kannur, Kollam, Thrissur, Wayanad

*Geographical:* Indo-Myanmar

**Dysoxylum beddomei** Hiern in Hook.f., Fl. Brit. India 1: 548. 1875; Gamble, Fl. Pres. Madras 178(127). 1915; Sasidh. & Sivar., Fl. Pl. Thrissur For. 95. 1996; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 485. 1997; Sasidh., Fl. Periyar Tiger Reserve 59. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 57. 2002.

*Local name:* Akil

Trees, to 25 m high; bark pale grey, flaking off in thin scales, warty lenticellate; blaze dull yellow; young parts pubescent. Leaves imparipinnate, alternate, estipulate; rachis 6.5-23 cm long, stout, angular, swollen at base, pubescent; leaflet 5-9, alternate, estipellate; petiolule to 10 mm, slender, grooved above, pubescent; lamina 6-15 x 3-5 cm, ovate, elliptic-ovate, elliptic-oblong or lanceolate, base oblique or cuneate, apex acuminate, margin entire, coriaceous, glabrous; lateral nerves 12-20 pairs, parallel, prominent, intercostae reticulate, obscure. Flowers bisexual, greenish-yellow, subsessile, in axillary few flowered panicles; calyx cupular, shortly 4-lobed, puberulus, subentire; petals 4, 5 x 2.5 mm, oblong, spreading, imbricate; disc tubular, toothed, glabrous, exceeding the ovary; staminal tube shortly toothed, hispid along 4 vertical lines outside; ovary superior, hirsute, 2-celled, ovules 1-2 in each cell; attenuated into a long style; stigma broadly capitate. Fruit a capsule 8 x 6 cm, obovoid, purple or yellow, acute at apex, vertically ribbed, coarsely rugose.

*Flowering & Fruiting:* September-February

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Thrissur, Palakkad

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)

**Dysoxylum binectariferum** (Roxb.) Hook. f. ex Bedd., Trans. Linn. Soc. London 25: 212. 1866; Hook. f., Fl. Brit. India 1: 546. 1875; Gamble, Fl. Pres. Madras 178(127). 1915; Jain & Bennet in Hajra et al., Fl. Ind. 4: 486. 1997; Sasidh., Fl. Periyar Tiger Reserve 59. 1998. *Guarea binectarifera* Roxb., Fl. Ind. 2:240.1832. *Dysoxylum macrocarpum* Bedd., Fl. Sylv. t. 150.1871.

*Local names:* Akil, Karakil

Trees, to 25 m high, bark yellowish-grey; blaze creamy-yellow; young parts and inflorescence minutely pubescent. Leaves imparipinnate, alternate, estipulate; rachis 12.5-19 cm long, stout, angular, swollen at base, pubescent; leaflets 5-9, alternate, estipellate; petiolule 4-10 mm long, stout, pubescent; lamina 6-17 x 2.5-8 cm, ovate-lanceolate, elliptic-oblong or elliptic, base oblique, acute or cuneate, apex acute or acuminate, margin entire, coriaceous, glabrous, dark green above, pale beneath; lateral nerves 6-14 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, 7-9 x 10 mm, white, in axillary panicles; pedicels short, articulated; calyx cupular, 3 x 5 mm, subentire, nearly half of the length of petals, coriaceous, pubescent; petals 4, 10 x 3 mm, oblong, minutely puberulus, velvety; staminal tube 1 cm long, cylindrical, mealy, 4-angled, terminating in 8 obscurely 2-fid teeth, glabrous; anthers 8, included; disc surrounding and twice as long as the ovary, glabrous inside, puberulous outside, 8 toothed; ovary superior, ribbed, villous, 4-celled; ovules 2 in each cell; attenuated into the style; stigma hemispheric, truncate. Fruit a capsule 5-8 x 6 cm, red, obovoid, depressed at apex, smooth; seeds 4, 5 x 2.5 cm, dark purple with yellow hilum and white aril, shiny.

*Flowering & Fruiting:* March-January

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki

*Geographical:* South India and Sri Lanka

**Dysoxylum ficiforme** (Wight) Gamble, Fl. Pres. Madras 178(127). 1915; Mohanan, Fl. Quilon Dist. 110. 1984; Nair & Bhargavan, J. Econ. Tax. Bot. 6: 709. 1985; Jain & Bennet in Hajra et al., Fl. Ind. 4: 487. 1997; Sasidh., Fl. Periyar Tiger Reserve 60. 1998. *Amoora ficiforme* Wight, Illustr. 1: 47. 1840. *Dysoxylum purpureum* Bourd., J. Bomb. Nat. Hist. Soc. 12: 349, t. 2. 1899.

*Local names:* Akil, Karakil, Puvil agil

Evergreen trees, to 30 m high, bark surface pale, smooth; branchlets densely yellowish-white puberulus. Leaves imparipinnate, alternate, estipulate; rachis 9.5-24 cm long, stout, angular, swollen at base, pubescent; leaflets 7-11, opposite, subopposite or alternate, estipellate; petiolule 5-10 mm long, stout, pubescent; lamina 7.5-20 x 3-7.5 cm, elliptic-oblong, elliptic-lanceolate or ovate-oblong, base oblique, apex acuminate, margin entire, coriaceous, glabrous; lateral nerves 8-18 pairs, pinnate, slender, prominent, intercostae reticulate, prominent or not. Flowers bisexual, greenish-yellow; in axillary dense puberulus panicles; calyx 6 mm long, shortly 4-lobed, fleshy, puberulus outside; petals 4, 8 mm long, minutely pubescent; disc tubular, margin slightly toothed; staminal tube 8 mm long, mouth crenulate; anthers 8, included; ovary superior, densely hairy, 4-celled, ovules 1-2 in each cell; style stout, almost as long as staminal tube; stigma capitate with a ring at base, slightly exserted. Fruit a capsule, yellowish-purple, smooth; seeds 3-4.

*Flowering & Fruiting:* February-October

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki

*Geographical:* South India and Sri Lanka

**Dysoxylum malabaricum** Bedd. ex Hiern in Hook.f., Fl. Brit. India 1: 548. 1875; Gamble, Fl. Pres. Madras 178(128). 1915; Mohanan, Fl. Quilon Dist. 110. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 128. 1994; Subram., Fl. Thenmala Division 60. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 95. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 60. 1997; Sivar. & Mathew, Fl. Nilambur 133. 1997; Jain & Bennet in Hajra et al., Fl. Ind. 4: 489. 1997; Sasidh., Fl. Periyar Tiger Reserve 60. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 57. 2002.

*Local names:* Akil, Purippa, Vellakil

Trees, to 35 m high, bark 5-8 mm thick, greyish-yellow, rough, verrucose; lenticels warty, fissured; aromatic, outer bark dead, corky, inner bark creamy yellow. Leaves imparipinnate, alternate, estipulate; rachis 17-28 cm long, stout, angular, swollen at base, pubescent; leaflets 7-11, opposite, subopposite or alternate, estipellate; petiolule 5-9 mm, stout, pubescent; lamina 9-23 x 3-5 cm, elliptic-oblong, ovate-oblong or lanceolate, base oblique or acute, apex acuminate, margin entire, puberulous when young, glabrous at maturity, coriaceous; lateral nerves 6-20 pairs, parallel, ascending, prominent, intercostae reticulate, obscure, secondary laterals prominent. Flowers bisexual, greenish-yellow, fragrant, 5-6 mm long; calyx deeply 4 lobed, lobes more or less obtuse; petals 4, linear-oblong, subacute, pubescent outside, imbricate; staminal tube urceolate, more or less 4-angled, with 8 deep emarginate crenatures; anthers 8, included; disc cup shape, entire, only just enclosing the ovary; ovary superior, densely pubescent, 4-celled, ovules 2 in each

cell; tapering into style; stigma capitate, 4-lobed. Fruit a capsule, 5-7.5 cm long, pyriform, verrucose, bright yellow, with 4 longitudinal furrows; seeds 3-4, reddish-brown, bluntly trigonus.

*Flowering & Fruiting:* February-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Malappuram, Thrissur, Palakkad

*Endemic to:* Southern Western Ghats

**Dysoxylum swaminathanianum** Anil Kumar & Sivad., *Rheedea* 11: 116. 2001.

Trees, to 10 m high; branchlets obtusely angled, thinly pubescent. Leaves pari or imparipinnate, alternate, estipulate; rachis *ca.* 30 cm long, sharply angled, pubescent, swollen at base; leaflets 6-9, alternate, estipellate; petiolule upto 5 mm long, slender; lamina 10-18 x 4.5-7 cm, elliptic-oblong or elliptic-ovate, base oblique, apex acuminate or obtuse, margin entire, glabrescent, chartaceous; lateral nerves *ca.* 7 pairs, pinnate, prominent, intercostae reticulate, faint. Flowers bisexual, creamy, in axillary panicles; peduncle pubescent; pedicel erect, jointed at middle; calyx cupular, 4-5 mm long, slightly inflated at base, pubescent, lobes 4 or 5, in conspicuous and irregular; petals 5, 13 mm long, cream coloured, oblong, recurved, apex thick, 3-angled, sparsely hairy inside; disc cupular, exceeding the ovary, coarsely 8 lobed; staminal tube cylindrical, 8 lobed; anthers 8, included, linear; ovary superior, ovoid, hairy, 2 mm long, 4-celled, ovules 2 in each cell; style slender, terete, 8 mm long, sublateral, hairy near the base; stigma capitate.

*Flowering & Fruiting:* April-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Pathanamthitta

*Endemic to:* Southern Western Ghats (Kerala)

**Melia azedarach** L., *Sp. Pl.* 384. 1753; Hook. f., *Fl. Brit. India* 1: 544. 1875; Gamble, *Fl. Pres. Madras* 176(126). 1915; Antony, *Fl. Kottayam Dist.* 101. 1989; Anil Kumar, *Fl. Pathanamthitta Dist.* 129.1994; Sivar. & Mathew, *Fl. Nilambur* 134.1997; Jain & Bennet in Hajra *et al.*, *Fl. Ind.* 4:494.1997; Sunil, *Fl. Pl. Alappuzha Dist.* 160.2000.

*Local name:* Persian lilac

Trees, to 20 m high; bark grey. Leaves bipinnate, alternate, estipulate; rachis 24-34 cm long, slender, scurfy tomentose, swollen at the base; pinnae 3-5, 4.5-7 cm, opposite, slender, scurfy tomentose; leaflets 3-11, opposite or subopposite; petiolule 1-4 mm long, slender, scurfy tomentose; lamina 3-6.7 x 1-3 cm, ovate-obovate, ovate, obovate or oblong, base oblique, truncate or attenuate, apex acuminate, margin irregularly serrate, chartaceous, scurfy puberulent; lateral nerves 6-12 pairs, parallel, slender, faint, intercostae reticulate, faint. Flowers bisexual, lilac, *ca.* 1 cm across, in axillary panicles to 15 cm long; pedicels to 2 mm; calyx lobes 5, 1.5 mm, ovate, pubescent without; petals 5, 8 x 3 mm, lanceolate, glabrescent; disc annular; staminal tube 7 mm, dark purple, striate, puberulous, 10-toothed; stamens 10; ovary superior, 1 mm, 5-celled; ovules 2 in each cell; style attenuate, to 3 mm; stigma capitate. Fruit a drupe, 2 x 1 cm, globose, glabrous; seed one.

*Flowering & Fruiting:* May-December

*Habitat:* Grown as avenue/ornamental trees

*Distribution*

*Kerala:* All districts

*Geographical:* Tropical Asia, Australia and Africa

**Melia dubia** Cav., Diss. 7: 364. 1789; Hook. f., Fl. Brit. India 1: 545. 1875; Ansari, Fl. Kasaragod Dist. 96. 1985; Ramach. & Nair, Fl. Cannanore Dist. 89. 1988; Vajr., Fl. Palghat Dist. 111. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 97. 1996; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 495. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 57. 2002; Sasidh., Fl. Chinnar Wildlife Sanctuary 63. 1999; Mohanan & Sivad., Fl. Agasthyamala 151. 2002.

*Melia composita* Willd., Sp. Pl. 2: 509. 1799; Gamble, Fl. Pres. Madras 176(126). 1915.

*Melia superba* Roxb., Fl. Ind. 2: 396. 1832.

*Melia robusta* Roxb., Fl. Ind. 2: 397. 1832.

*Local names:* Malaveppu, Valiyaveppu

Deciduous trees, to 20 m high, bark 6-8 mm thick, dark brown, rough, lenticellate, exfoliations rectangular, long and broad, attached by the distal end, exfoliated surface brown; outer part pink, inner fibrous; young shoots and inflorescence scurfy tomentose. Leaves 2-3 pinnate, (rarely 1-pinnate), imparipinnate, attenuate, estipulate, rachis 10-30 cm long, terete, slender, swollen at base, scurfy tomentose when young; pinnae 3-7 pairs, 10-20 cm long; leaflets 2-11 on each pinnae, opposite, estipellate; petiolule 3-10 mm long, slender; lamina 4.5-9 x 2-4 cm, ovate-lanceolate, base oblique, acute, obtuse, round or attenuate, apex acuminate, margin crenate, glabrous at maturity, coriaceous; lateral nerves 6-10 pairs, pinnate, slender, prominent; intercostae reticulate, prominent. Flowers bisexual, 5-6 mm long, greenish-white, in axillary panicles; calyx lobes 5, 2 mm long, ovate, pubescent; petals 5, 7-10 x 1-3 mm, obovate, thick, simple, pubescent within; staminal tube 7 mm, white, scabrid, ribbed, apically dilated, 10-dentate, tooth 2-fid, mouth woolly; disc annular; anthers exerted; ovary superior, oblong 1 mm, 5-celled; ovules 2 per cell; style to 4.5 mm, terete; stigma capitate. Fruit a drupe, 2 x 1 cm, dorsally compressed with longitudinal ridges, yellow, fleshy; seeds 3 or 4, 1 cm.

*Flowering & Fruiting:* March-February

*Habitat:* Moist deciduous and semi-evergreen forests

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia to Australia

**Reinwardtiendron anamalaiense** (Bedd.) Mabb., Malaysian For. 45: 452. 1982; Mohanan, Fl. Quilon Dist. 110. 1984; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 498. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 58. 2002.

*Lansium anamalaiense* Bedd., Madras J. Lit. Sci. ser.3, 1: 40. 1864.

*Lansium anamallayanum* Bedd., Fl. Sylv. t. 131. 1871 & Ic. t. 104. 1868-1874; Hook. f., Fl. Brit. India 1: 558. 1875; Gamble, Fl. Pres. Madras 182(130). 1915.

*Aglaia anamallayana* (Bedd.) Kosterm., Reinwardtia 7: 257, t.10. 1966; Vajr., Fl. Palghat Dist. 109. 1990.

*Reinwardtiendron anamallayanum* (Bedd.) Sald. in Sald. & Nicols., Fl. Hassan Dist. 392. 1976; Manilal, Fl. Silent Valley 50. 1988; Ramach. & Nair, Fl. Cannanore Dist. 90. 1988; Sasidh. & Sivar., Fl. Pl. Thrissur For. 98. 1996; Sivar. & Mathew, Fl. Nilambur 135. 1997.

*Local name:* Cheeralam, Karakil

Trees, to 20 m high, bark 2-3 mm thick, smooth, greyish-brown mottled with grey, lenticellate; blaze dull yellow; branchlets minutely grey tomentose. Leaves imparipinnate, attenuate; rachis 4.2-11.5 cm long, slender, swollen at base, glabrous; leaflets 5-9, alternate, estipellate; petiolule 5-8 mm long, slender, glabrous; lamina 5-15 x 1.5-5.5 cm, elliptic, lanceolate, elliptic-lanceolate or elliptic-obovate, base oblique, attenuate or cuneate, acute, apex acuminate obtusely acuminate or caudate-acuminate, margin entire, coriaceous, glabrous; lateral nerves 8-10 pairs, pinnate, slender, prominent, intercostae reticulate, prominent; domatia present. Flowers polygamo dioecious, 3-4 mm across, yellowish-white; males in axillary panicles; females in axillary spikes or racemes; sepals 5, ovate-orbicular, ciliate, fused in lower half; petals 5, concave, imbricate; staminal tube globose, crenulate; stamens 9-10 in 2 rows, the lower include, the upper partly exerted, sometimes apiculate, the attached filaments prominent; ovary superior, globose, 5-celled, ovules 2 in each cell; style short, thick, stigma 3-5 lobed, truncate. Fruit a berry, ovoid, white, scaly; seeds 1-2, embedded in a pulpy aril.

*Flowering & Fruiting:* March-November

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Palakkad, Malappuram, Kannur, Thrissur

*Endemic to:* Southern Western Ghats

**Swietenia macrophylla** King in Hook., Ic. t. 1550.1886; Subram., Fl. Thenmala Division 59. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 61. 1997; Sasidh. & Sivar., Fl. Pl. Thrissur For. 100.1996; Sivar. & Mathew, Fl. Nilambur 136.1997; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4:526.1997; Sunil, Fl. Pl. Alappuzha Dist. 161.2000.

*Local names:* Mahogani, Manthagani

Deciduous trees, to 25 m high; bark brown. Leaves paripinnate, alternate, estipulate; rachis 5-13 cm long, slender, glabrous; leaflets 4-10, opposite or subopposite; petiolule 3-4 mm long, slender, grooved above, glabrous; lamina 5.5-12 x 2.5-4.5 cm, obliquely ovate-lanceolate, oblong-acuminate, oblong-lanceolate or falcate; base oblique, apex acuminate or caudate-acuminate, margin entire, glabrous, shining above, dull beneath, coriaceous; lateral nerves 7-12 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, pale yellow, to 8 mm across, in axillary panicles to 10 cm; pedicel 2-4 mm; calyx lobes 5, lobes 0.5 mm, suborbicular; petals 5, to 4 mm, oblong; disc annular; staminal tube 3.5-4 mm, apically 10-lobed; stamens 10; ovary superior, 5-celled, ovules many; style to 1.5 mm long, attenuate; stigma somewhat lobed. Fruit a capsule, 8.5 x 6.5 cm, oblong-globose, 5-valved, woody, rusty out side; seeds many, to 6 cm, winged.

*Flowering & Fruiting:* April-March

*Habitat:* Grown as avenue trees, also raised in plantations

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Central America

**Toona ciliata** Roem., Syn. Fam. Nat. Monogr. 139. 1846; Manilal, Fl. Silent Valley 50. 1988; Ramach. & Nair, Fl. Cannanore Dist. 90. 1988; Vajr., Fl. Palghat Dist. 112. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 131. 1994; Mohanan & Henry, Fl.

Thiruvananthapuram Dist. 111. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 98. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 60. 1997; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 504. 1997; Sasidh., Fl. Periyar Tiger Reserve 61. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 58. 2002.

*Cedrela toona* Roxb. ex Rottl. & Willd., Ges. Naturf. Freunde Berlin Neue Schriften 2:198. 1803; Hook. f., Fl. Brit. India 1: 568. 1875; Gamble, Fl. Pres. Madras 186(133). 1915.

*Local names:* Ekana, Vembu, Chandanavembu, Mathagirivembu

Semi-deciduous trees, to 30 m high, bark 10-15 mm thick, reddish-brown, rough, exfoliating in large flakes; fibrous; blaze pink red with white streaks and strong smell. Leaves paripinnate, alternate, clustered at the tips of branchlets, estipulate; rachis 13-90 cm long, slender, grooved above, glabrous, swollen at base; leaflets 12-30, opposite or subopposite, estipellate; petiolule 7-20 mm long, slender, grooved above, glabrous; lamina 7-16 x 2-7 cm, ovate, ovate-lanceolate or oblong-lanceolate, base oblique, apex acuminate, margin entire or serrate, chartaceous, glossy above, pale beneath; lateral nerves 10-15 pairs, pinnate, slender, prominent, intercostae reticulate, faint. Flowers bisexual, 8 mm across, white, in terminal or axillary drooping panicles; peduncle to 2 cm; pedicel to 2 mm long; calyx cupular; lobes 5, ovate, tomentose, margin ciliate; petals 5, white, 5 x 3 mm, oblong, spreading, ciliate, imbricate; stamens 5, free, inserted on the top of disc; filaments subulate; anthers oblong, versatile; disc thick, 5-lobed, pubescent; ovary superior, ovoid, 2 mm long, pubescent, 5-celled, ovules 8-12 per cell, pendulous; style short, stigma discoid. Fruit a capsule, 1.8-3 x 1.5 cm, 5-valved; seeds many, oblong, thin, winged at both ends.

*Flowering & Fruiting:* February-May

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Pathanamthitta, Kannur, Trivandrum, Kollam, Thrissur, Wayanad

*Geographical:* Indo-Myanmar; cultivated in Sri Lanka, Afghanistan, Africa and the Hawaiian Islands

***Trichilia connaroides*** (Wight & Arn.) Benth., Acta Bot. Neerl. 11: 13. 1962; Manilal, Fl. Silent Valley 51. 1988; Ramach. & Nair, Fl. Cannanore Dist. 91. 1988; Vajr., Fl. Palghat Dist. 112. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 132. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 111. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 99. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 60. 1997; Sivar. & Mathew, Fl. Nilambur 137. 1997; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 515. 1997; Sasidh., Fl. Periyar Tiger Reserve 61. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 63. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 58. 2002; Mohanan & Sivad., Fl. Agasthyamala 152. 2002.

*Zanthoxylum connaroides* Wight & Arn., Prodr. 148. 1834, "Zanthoxylon".

*Heynea trijuga* Roxb. ex Sims, Bot. Mag. 41 t. 1738. 1815, non *Trichilia trijuga* Vell. 1825; Hook. f., Fl. Brit. India 1:565.1872; Gamble, Fl. Pres. Madras 183(131). 1915.

*Local names:* Thirivembu, Karuvilangam, Korakkadi

Trees, to 15 m high; bark 12 mm thick, reddish-brown or ash coloured, rough, warty; outer bark reddish, inner yellow; branchlets reddish, lenticellate. Leaves imparipinnate, alternate, swollen at base, glabrous; leaflets 5-11, opposite, estipellate; petiolule 7-17 mm, slender, grooved above, glabrous; lamina 5-15 x 2.5-

7 cm, ovate, ovate-oblong or ovate-lanceolate, base oblique, apex acuminate or shortly caudate-acuminate, margin entire, coriaceous, glabrous, glaucous beneath; lateral nerves 7-10 pairs, pinnate, prominent; intercostae reticulate, prominent. Flowers bisexual, 6-8 mm across, white, in axillary corymbose panicles; pedicel articulated; calyx lobes 5, ovate, pubescent, imbricate; petals 5, 3-4 x 1 mm, oblong, margin ciliolate; staminal tube deeply 10-lobed, pubescent; lobes 2-fid; stamens 10, anthers attached between the 2-fid lobes; disc annular, fleshy; ovary superior, globose, glabrous, 2-celled, ovules 2 per cell; style slightly obconic; stigma capitate, 2-dentate. Fruit a capsule, globose, bright red, pointed, 2 valved; seed one, yellowish-brown, surrounded by a white fleshy aril.

*Flowering & Fruiting:* March-September

*Habitat:* Evergreen, semi-evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Palakkad, Pathanamthitta, Malappuram, Kannur, Trivandrum, Kollam, Thrissur, Kozhikkode, Wayanad

*Geographical:* Indo-Malesia

**Walsura trifolia** (A. Juss.) Harms in Engl. & Prantl, Nat. Pflanzenf. (ed.2) 19b1: 119. 1940; Mohanan, Fl. Quilon Dist. 111. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 111. 1994; Subram., Fl. Thenmala Division 61. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 99. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 61. 1997; Jain & Bennet in Hajra *et al.*, Fl. Ind. 4: 522. 1997; Sasidh., Fl. Periyar Tiger Reserve 61. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 64. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 59. 2002.

*Heynea trifolia* A. Juss., Mem. Mus. Hist. Nat. Paris 19: 235. 1830.

*Walsura piscidia* Roxb., Fl. Ind. 2: 387. 1832; Hook. f., Fl. Brit. India 1: 564. 1875; Gamble, Fl. Pres. Madras 183(131). 1915.

*Local name:* Perilla pacha

Lofty trees, to 25 m high, bark pale brown, rough, tessellated in somewhat rectangular squares; blaze pink. Leaves trifoliate, alternate, estipulate; rachis 3-15 cm long, slender, swollen at base; petiolule 5-30 mm long, glabrous, odd one longer than the laterals; lamina 2.5-8 x 1.2-5 cm, obovate, ovate-lanceolate, oblong or elliptic-oblong, base acute, or cuneate, apex obtuse, acute, or shortly acuminate, margin entire, coriaceous, glabrous, glossy above, glaucous; lateral nerves 7-10 pairs, pinnate, slender, faint, intercostae reticulate, obscure. Flowers bisexual, 3-8 mm across, greenish-yellow, in axillary and terminal corymbose panicles; calyx gamosepalous; lobes 5, tomentose; petals 5, 2.5 x 1 mm, oblong hairy; disc annular, fleshy; staminal tube cupular, 1.5 mm long, pubescent, deeply 10-lobed; stamens 10; lobes 2-fid; anthers between teeth, ovate-cuspidate, exerted; ovary globose, 2 mm, pubescent, sunk in the disc, 3-celled, ovules 2 in each cell; style to 1 mm; clavate; stigma turbinate-capitate, 2-dentate. Fruit a berry, globose, 1-2 x 1 cm, velvety-tomentose; seeds 1-2, pale brown, enclosed in a white, fleshy aril.

*Flowering & Fruiting:* November-June

*Habitat:* Dry deciduous, semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Trivandrum, Thrissur, Palakkad

*Geographical:* India and Sri Lanka



## OLACACEAE

1. Ovary adnate to the calyx; fruit without tubular calyx limb **Strombosia ceylanica**
1. Ovary free from the calyx; fruit with tubular calyx limb ..... **Anacolosia densiflora**

**Anacolosia densiflora** Bedd., Madras J. Lit. Sci. ser. 3, 1: 38. 1864; Hook. f., Fl. Brit. India 1: 580. 1875; Gamble, Fl. Pres. Madras 192(137). 1915; Mohanan, Fl. Quilon Dist. 111. 1984; Sasidh., Fl. Periyar Tiger Reserve 62. 1998; Uniyal in Singh *et al.*, Fl. Ind. 5: 2. 2000.

*Local name:* Kaiadi

Lofty trees, to 25 m high, bole straight; bark 12-14 mm thick, mottled with yellow brown and white, smooth; blaze pink. Leaves simple, alternate, estipulate; petiole 6-12 mm, stout, grooved above, glabrous; lamina 6-15 x 3.7-5 cm, elliptic, elliptic-oblong, elliptic-acuminate or oblong-lanceolate, base attenuate, cuneate, acute or obtuse, apex acuminate, margin entire, coriaceous glabrous; lateral nerves 4-5 pairs, pinnate, prominent, intercostae reticulate, faint. Flowers bisexual, 10-12 x 10-12 mm, white, fragrant, in axillary cymes; pedicel 5 mm long; calyx cupular, 5-6 toothed, not accrescent; petals 5-6, 6 x 1, puberulus outside, densely tomentose within; stamens 5-6, opposite to the petals at their base; filaments slender; anthers very small, globose, basifixed, the 2 cells dehiscing longitudinally; disc cup shaped, surrounding the base of the ovary; ovary superior, 1-celled, ovules 2-3, pendulous; style conical, stigma shortly lobed. Fruit a drupe, 10 x 15-18 mm, globose, surrounded by accrescent disc; stone crustaceous; seed pendulous.

*Flowering & Fruiting:* August-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Strombosia ceylanica** Gard., Calcutta J. Nat. Hist. 6: 350. 1846; Hook. f., Fl. Brit. India 1: 579. 1875; Gamble, Fl. Pres. Madras 191(137). 1915; Anil Kumar, Fl. Pathanamthitta Dist. 133. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 101. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 63. 1997; Sasidh., Fl. Periyar Tiger Reserve 63. 1998; Uniyal in Singh *et al.*, Fl. Ind. 5: 14. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 60. 2002.

*Local names:* Kalkadambu, Kalmanikkam

Trees, to 25 m high, bark 3-4 mm thick, smooth, greenish-grey mottled with green, with shallow annular depression; blaze deep pink-red, lamellate with concentric lighter striations; branches drooping; branchlets glabrous. Leaves simple, alternate, estipulate; petiole 10-15 mm, stout, grooved above, glabrous; lamina 8-18 x 3.5-6 cm, oblong-lanceolate, ovate-lanceolate, elliptic-oblong or lanceolate, base obtuse, acute or round, apex acute or acuminate, margin entire, coriaceous, glabrous, lower surface papillate, nerves 3 from the base, lateral nerves 4-6 pairs, pinnate, prominent, intercostae subscalariform, obscure. Flowers bisexual, 1.5-2 mm across, greenish-white, in axillary cymes; pedicels 1.5 mm long; calyx 1 mm long, cupular, accrescent, 5-lobed; petals 5, 2.5 x 1 mm, free, oblong, ovate, tomentose inside; stamens 5, opposite the petals and adnate to them, anthers introrse; ovary

imperfectly 4-5-celled, surrounded by a lobed disc, ovules 4-5, pendulous; style short. Fruit a drupe 2.5 cm long, pyriform, deep purple rugose, surrounded by the remains of calyx lobes and style; stone crustaceous, seed one.

*Flowering & Fruiting:* January-April

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Kollam, Thrissur, Palakkad

*Geographical:* Indo-Malesia

## ICACINACEAE

1. Flowers in terminal and axillary many flowered corymbose cymes ..... 2
1. Flowers in axillary few flowered cymes ..... **Gomphandra coriacea**
2. Petals villous inside, leaves pubescent below ..... **Nothapodytes nimmoniana**
2. Petals and leaves glabrous ..... **Apodytes dimidiata**

**Apodytes dimidiata** Meyer ex Arn. in Hook.'s J. Bot. 3: 155. 1840; Manilal, Fl. Silent Valley 52. 1988; Vajr., Fl. Palghat Dist. 113. 1990; Sasidh., Fl. Periyar Tiger Reserve 64. 1998; Mathur in Singh *et al.*, Fl. Ind. 5: 18. 2000.

*Apodytes benthamiana* Wight, Ic. t. 1153. 1846; Hook. f., Fl. Brit. India 1: 588. 1875; Gamble, Fl. Pres. Madras 195(140). 1915.

*Apodytes beddomei* Mast. in Hook.f., Fl. Brit. India 1: 588. 1875; Gamble, Fl. Pres. Madras 195(140). 1915.

*Local name:* Slatematthi, Karineeli

Trees, to 20 m high, bark 1.3 thick, greyish-black, rough, scaly, with short gaping fissures in corky larger, reddish-white beneath; blaze red. Leaves simple, alternate, estipulate; petiole 8-26 mm long, slender, glabrous, grooved above; lamina 3.8-12.6 x 1.5-6 cm, ovate, elliptic-ovate, obovate, obovate-oblong or oblong, base acute, obtuse or oblique, apex acuminate, margin entire or revolute, glabrous, membranous or coriaceous; lateral nerves 4-9 pairs, slender, pinnate, prominent, intercostae reticulate, faint. Flowers bisexual, 5-8 mm long, white, in terminal or axillary corymbose cymes; pedicel short; calyx small, 5 toothed, pubescent, persistent; petals 5, free, oblong, acute, valvate, disc absent; stamens 5, filaments dilated; anthers oblong, bipartite at base, medifixed, longer than filaments; ovary superior, oblique, gibbous at base, 1-celled, ovules 2, pendulous, superposed; style slender, eccentric, stigma oblique. Fruit a drupe 15-18 x 10-12 mm, obliquely appendaged; stone crustaceous; seed one, pendulous.

*Flowering & Fruiting:* April-October

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Wayanad

*Geographical:* Paleotropics

**Gomphandra coriacea** Wight, Illustr. 1: 103. 1840; Gamble, Fl. Pres. Madras 195(140). 1915; Mohanan, Fl. Quilon Dist. 112. 1984; Manilal, Fl. Silent Valley 52. 1988; Antony, Fl. Kottayam Dist. 102. 1989; Vajr., Fl. Palghat Dist. 114. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 135. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 112. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 102. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 63. 1997; Sivar. & Mathew, Fl. Nilambur 139. 1997; Sasidh., Fl. Periyar Tiger Reserve 64. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 65. 1999; Mathur in Singh *et al.*, Fl. Ind. 5: 22. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 61. 2002; Mohanan & Sivad., Fl. Agasthyamala 154. 2002.

*Gomphandra polymorpha* Wight, Illustr. 1: 103. 1840 p.p. & Ic. tt. 953,954. 1843; Hook. f., Fl. Brit. India 1: 586. 1875; Gamble, Fl. Pres. Madras 195(139). 1915.

*Local names:* Chottamaram, Kambilichedi

Trees, to 7 m high, bark dark grey, smooth; blaze yellow; branchlets green. Leaves simple, alternate, estipulate; petiole 5-15 mm long, slender, grooved above,

glabrous; lamina 3-12 x 1.8-5 cm, elliptic, obovate or elliptic-obovate, base acute, apex obtuse, obtusely acute, acute or acuminate, margin entire, coriaceous; lateral nerves 3-7 pairs, pinnate, slender, faint, intercostae obscure. Flowers polygamodioecious, greenish-white, in leaf opposed cymes or rarely in axillary cymes; calyx minute, cup-shaped; lobes 4-5; corolla 4 mm long; lobes 4-5, acute, connate into a tube, lobes inflexed at apex; male flowers : stamens 4-5, exserted, free; filaments thick, fleshy often connate, usually with a tuft of club-shaped hairs on the back at the apex; anthers pendulous from the interior apex of the filaments, dehiscing longitudinally; disc thick, annular or 0; pistillode pubescent; female flowers : ovary superior, oblong, 1-celled, ovules 2; style conic; stigma small or discoid. Fruit a drupe, 15 x 8 mm, pale yellow, oblong-terete, crowned with the remains of persistent stigmas; endocarp wrinkled; seed pendulous, longitudinally surrounded by raphe.

*Flowering & Fruiting:* December-March

*Habitat:* Evergreen forests and shola forests

*Distribution*

*Kerala:* Thrissur, Kottayam, Malappuram, Palakkad, Pathanamthitta, Trivandrum, Idukki, Kollam, Kozhikkode, Wayanad

*Geographical:* South India and Sri Lanka

**Nothapodytes nimmoniana** (Graham) Mabb. in Manilal, Bot. Hist. Hort. Malab. 88. 1980; Manilal & Sivar., Fl. Calicut 65. 1982; Mohanan, Fl. Quilon Dist. 114. 1984; Ansari, Fl. Kasaragod Dist. 99. 1985; Manilal, Fl. Silent Valley 53. 1988; Ramach. & Nair, Fl. Cannanore Dist. 94. 1988; Vajr., Fl. Palghat Dist. 115. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 137. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 113. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 104. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 64. 1997; Sivar. & Mathew, Fl. Nilambur 141. 1997; Sasidh., Fl. Periyar Tiger Reserve 65. 1998; Mathur in Singh *et al.*, Fl. Ind. 5: 31. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 61. 2002; Mohanan & Sivad., Fl. Agasthyamala 156. 2002.

*Premna nimmoniana* Graham, Cat. Pl. Bombay 155. 1839.

*Stemonurus foetidus* Wight, Ic. t. 955. 1845.

*Mappia foetida* (Wight) Miers, Ann. Mag. Nat. Hist. ser. 2, 9: 395. 1852; 1: 589. 1875; Gamble, Fl. Pres. Madras 196(141). 1915.

*Nothapodytes foetida* (Wight) Sleumer, Notizbl. Bot. Gart. Berlin-Dahlem. 15: 247. 1940 & Blumea 17: 232. 1969.

*Mappia wightiana* Miers, Ann. Mag. Nat. Hist. ser. 2, 9: 397. 1852; Gamble, Fl. Pres. Madras 197(141). 1915.

*Mappia tomentosa* Miers, Ann. Mag. Nat. Hist. ser. 2, 9: 397. 1852; Hook. f., Fl. Brit. India 1: 589. 1875; Gamble, Fl. Pres. Madras 196(141). 1915.

*Mappia ovata* Miers, Ann. Mag. Nat. Hist. ser. 2, 9: 396. 1852; Hook. f., Fl. Brit. India 1: 589. 1852; Gamble, Fl. Pres. Madras 197(141). 1915.

*Local name:* Peenari

Trees, to 10 m high, bark yellowish, wrinkled; branchlets angled, appressed-hairy, corky, with prominent leaf scars. Leaves simple, alternate, estipulate; petiole 30-60 mm, stout, pubescent, grooved above; lamina 7-18 x 4-8 cm, broadly ovate, ovate-oblong or elliptic-oblong, base oblique, round or acute, apex acuminate, margin

entire, glabrous above, pubescent beneath, coriaceous; lateral nerves 6-10 pairs, pinnate, prominent, intercostae scalariform; domatia present. Flowers bisexual, creamy yellow, 5 mm across, in terminal pubescent corymbose cymes or panicles; calyx cupular, 1 mm long, 5-toothed; petals 5, 3 mm long, villous within, apically inflexed; stamens 5, free; disc cupular; ovary ovoid, hairy, 1-celled, ovules 2; style angled; stigma stout. Fruit a drupe, 2 x 1 cm, ellipsoid, blackish-purple; seed glabrous.

*Flowering & Fruiting:* June-September

*Habitat:* Moist deciduous, evergreen and shola forests

*Distribution*

*Kerala:* Kozhikkode, Kasaragode, Kollam, Palakkad, Pathanamthitta, Trivandrum, Thrissur, Idukki, Kozhikkode, Kannur, Wayanad

*Geographical:* Indo-Malesia and China

### AQUIFOLIACEAE

- |    |   |                         |
|----|---|-------------------------|
| 1. | Flowers 4-merous, leaf margins serrate or dentate.....  | <b>Ilex denticulata</b> |
| 1. | Flowers 5 or 6 merous, leaf margin entire .....   | 2                       |
| 2. | Flowers 6-merous .....  | <b>Ilex malabarica</b>  |
| 2. | Flowers 5-merous .....  | 3                       |
| 3. | Leaves elliptic, narrowed at base, stamens shorter than the petals, umbellules subsessile ..... | <b>Ilex wightiana</b>   |
| 3. | Leaves ovate lanceolate, stamens as long as the petals, peduncles 1-1.2 cm long.....            | <b>Ilex gardneriana</b> |

**Ilex denticulata** Wall. ex Wight, Illustr. 2: t. 142. 1850; Hook. f., Fl. Brit. India 1: 600. 1875; Gamble, Fl. Pres. Madras 200(144). 1915; Sasidh., Fl. Periyar Tiger Reserve 65. 1998; Basu in Singh *et al.*, Fl. Ind. 5: 53. 2000.

Trees, to 15 m high; bark 1.3 cm thick, grey, smooth; branchlets glabrous. Leaves simple, alternate, estipulate; petiole 10-13 mm, slender, glabrous, grooved above; lamina 5-16 x 2-3 cm, elliptic-oblong, obovate or elliptic, base cuneate or subacute, apex acuminate, margin dentate or serrate, coriaceous, glabrous; lateral nerves 6-9 pairs, pinnate, slender, prominent, ascending, intercostae reticulate. Flowers unisexual, white, 4-merous, 6 mm, across; male: in branched short axillary cymes; calyx tube cupular, 0.5 mm, lobes 4, persistent broad, subacute; petals 4, 4 x 2 mm, white, oblong, connate at the very base; stamens 4, adhering to the base of the corolla; filaments subulate; anthers oblong, dorsifixed; disc absent; pistillode globose; female; in fascicles; calyx as in male flowers, petals free; staminodes hypogynous; ovary ovoid, syncarpous, style very short. Fruit a drupe, globose, 6-7 mm across, brown, smooth, with persistent calyx and 4-lobed, stigma; pyrenes 4, oblong-elliptic, 4-5 x 3 mm, striate or rugose; pedicel stout.

*Flowering & Fruiting:* January-February

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki

*Geographical:* Peninsular India, Sri Lanka and China

**Ilex gardneriana** Wight, Ic. t. 1217. 1848; Hook. f., Fl. Brit. India 1: 603. 1875; Gamble, Fl. Pres. Madras 200(144). 1915; Sasidh., Fl. Periyar Tiger Reserve 65.

1998; Biju in Manoharan et al., Silent Valley- Whispers of Reason 153. 1999; Basu in Singh et al., Fl. Ind. 5: 57. 2000.

Trees, branchlets glabrous, terete. Leaves simple, alternate; petiole 10-20 mm long, slender, glabrous, grooved above; lamina 5-7.5 x 2-2.5 cm, elliptic-oblong, ovate or ovate-lanceolate, base obtuse or round, apex acuminate, margin entire, revolute, coriaceous, glabrous; lateral nerves 7-8 pairs, pinnate, obscure, intercostae reticulate. Flowers unisexual, 5-merous; male flowers: solitary or in fascicles; peduncle ca. 1.2 cm long; pedicel 0.6 cm long, slender; calyx lobes 5, 1.5 x 1 mm, triangular, ciliolate; petals 5, oblong, obtuse, connate at base; stamens as long as petals. Fruit a berry 4.5 x 3 mm, yellowish, glabrous.

*Flowering & Fruiting:* March-April

*Habitat:* Shola forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* Southern Western Ghats

***Ilex malabarica*** Bedd., Fl. Sylv. t. 143. 1871; Hook. f., Fl. Brit. India 1: 600. 1875; Gamble, Fl. Pres. Madras 200(143). 1915; Sasidh., Fl. Periyar Tiger Reserve 66. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 65. 1999; Basu in Singh *et al.*, Fl. Ind. 5: 63. 2000.

Trees, to 25 m high; bark greyish, branches glabrous. Leaves simple, alternate, estipulate; petiole 6-15 mm, slender, glabrous, grooved above; lamina 4.5-11.5 x 1.5-3.5 cm, elliptic or elliptic-oblong; base acute, or cuneate, apex acute or acuminate, often mucronate, margin entire, glabrous, shiny above, coriaceous, glabrous, dark green and shining above, very pale beneath; lateral nerves 4-11 pairs, slender, faint, intercostae reticulate, obscure. Flowers unisexual, white, 6-merous; male: in short axillary paniced umbellules; pedicels 6-8 mm long, slender; calyx 6-lobed, ovate, puberulous outside, ciliate, persistent; petals 4-6, white, orbicular, connate at base; disc 0; stamens 4-6, filaments short, inserted at the base of the corolla, anthers broadly oblong; pistillode with 4 minute stigmas; female: solitary or in fascicles, very rarely pedunculate; pedicels 6-8 mm long, slender; calyx as in males; petals 4-6, orbicular, ciliate, connation lesser than that in male; staminodes hypogynous; ovary globose; style short, thick; stigma large, absolutely 6-lobed. Fruit a drupe, depressed globose, small, puberulous, red, 6-celled, crowned by the thick style and supported by the persistent calyx.

*Flowering & Fruiting:* June-September

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Western Ghats

***Ilex wightiana*** Wall. ex Wight, Ic. t. 1216. 1848; Hook. f., Fl. Brit. India 1: 603. 1875; Gamble, Fl. Pres. Madras 200(143). 1915; Basu in Singh *et al.*, Fl. Ind. 5: 73. 2000.

*Local name:* Vellodi

Trees, 15-20 m high, bark 1.3 cm thick, smooth, greyish-white; branchlets glabrous. Leaves simple, alternate, estipulate; petiole 7-20 mm, slender, glabrous, grooved above; lamina 3-10 x 1.5-4 cm, elliptic or elliptic-oblong, base cuneate, subacute or narrowed; apex acuminate, mucronate, margin entire, glabrous,

coriaceous; lateral nerves 6-10 pairs, pinnate, slender, prominent, obscure, regular; intercostae reticulate, faint. Flowers unisexual, white, 5-merous in peduncled simple paniced puberulous umbellules; calyx lobes orbicular; petals 5, oblong, connate below; stamens shorter than the petals adhering to the base of corolla, staminodes hypogynous, united to corolla; ovary globose, to 2 mm, *ca.* 6-celled; ovules 1-2 in each cell, pendulous; style 0.5 mm; stigma capitate, pistillode rudimentary; disc absent. Fruit a drupe, globose, 7 mm across, red, smooth, apiculate; pyrenes 5-6, trigonus style very short, stigma subsessile.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* Peninsular India and Sri Lanka

### CELASTRACEAE

- |    |  |                                |
|----|--|--------------------------------|
| 1. | Leaves alternate .....   | 2                              |
| 1. | Leaves opposite .....  | 8                              |
| 2. | Fruit indehiscent, drupe .....   | 3                              |
| 2. | Fruit a dehiscent capsule.....   | 5                              |
| 3. | Leaves ovate or elliptic, margin dentate or serrate; drupe 0.8-1.2 cm long ..... | <b>Cassine albens</b>          |
| 3. | Leaves elliptic-oblong, oblanceolate or lanceolate; drupe over 1.5 cm long ..... | 4                              |
| 4. | Branches of cymes stout; drupe 3.5-4.5 cm long .....                             | <b>Cassine kedernathii</b>     |
| 4. | Branches of cymes slender; drupe 2-2.5 cm long .....                             | <b>Cassine paniculata</b>      |
| 5. | Capsule deeply 2-lobed; flowers in terminal panicles .....                       | <b>Bhesa indica</b>            |
| 5. | Capsule not lobed, entire; flowers in axillary fascicles .....                   | 6                              |
| 6. | Leaves acute at apex .....   | 7                              |
| 6. | Leaves broadly elliptic or obovate, obtuse or emarginated at apex.....           | <b>Microtropis ramiflora</b>   |
| 7. | Leaves elliptic or oblanceolate, acute at apex; less than 5 cm wide .....        | <b>Microtropis wallichiana</b> |
| 7. | Leaves oblanceolate, cuneate at base, margins reflexed .....                     | <b>Microtropis stocksii</b>    |
| 8. | Seeds winged, without aril .....   | <b>Lophopetalum wightianum</b> |
| 8. | Seeds not winged, arillate .....   | 9                              |
| 9. | Leaves obovate-orbicular; cymes paniculate.....                                  | <b>Euonymus crenulatus</b>     |
| 9. | Leaves elliptic-lanceolate; flowers in 1-3, axillary .....                       | <b>Euonymus indicus</b>        |

**Bhesa indica** (Bedd.) Ding Hou, *Blumea Suppl.* 4: 152. 1958; Mohanan, *Fl. Quilon Dist.* 115. 1984; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 105. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 65. 1997; Sasidh., *Fl. Periyar Tiger Reserve* 66. 1998; Ramamurthy in Singh *et al.*, *Fl. Ind.* 5: 77. 2000.

*Trochisandra indica* Bedd., *Fl. Sylv.* t. 120. 1872.

*Kurrimia bipartita* Lawson in Hook.f., *Fl. Brit. India* 1: 622. 1875.

*Kurrimia indica* (Bedd.) Gamble, *Fl. Pres. Madras* 209(149). 1918.

*Kurrimia paniculata* sensu Lawson in Hook.f., *Fl. Brit. India* 1: 622. 1875 p.p. non Wall. *ex Arn.* 1836.

*Local name:* Penali

Evergreen trees, to 30 m high; bark 5-6 mm thick, grey mottled with greenish-white; brittle; blaze creamy brown, surface slimy. Leaves simple, alternate, stipule large,

deciduous; petiole 16-60 mm, stout, swollen at base and tip, glabrous; lamina 7-22 x 1.6-12 cm, broadly elliptic-ovate, oblong, ovate to lanceolate, base obtuse or subtruncate, apex acute, mucronate, margin entire glabrous, coriaceous, lateral nerves 15-20 pairs, parallel, ascending, prominent, regular, arched towards the margin; intercostae scalariform. Flowers bisexual, in terminal panicles, 6-8 mm across, pale yellow; calyx deeply 5-fid, lobes imbricate; petals 5, deflexed; disc fleshy, 5-lobed; stamens 5, inserted below the margin of disc, filaments subulate; ovary ovoid, seated on the disc, 2-celled, ovules 2 in each cell; styles two, free, stigma small, capitate. Fruit a capsule, 3-3.7 cm long, two lobed, two valved, lobes flat, divergent, reddish-brown; seeds 1-3, fleshy with aril.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Kollam, Thrissur

*Geographical:* Indo-Malesia

**Cassine albens** (Retz.) Kosterm., Gard. Bull. Singapore 39: 178. 1986; Ramamurthy in Singh *et al.*, Fl. Ind. 5: 80. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 64. 2002.

*Schrebera albens* Retz., Obs. Bot. 6: 25. t. 3. 1791.

*Elaeodendron glaucum* sensu Lawson in Hook.f., Fl. Brit. India 1:623.1875,p.p., non Pers. 1805; Gamble, Fl. Pres. Madras 211(152). 1918.

*Cassine glauca* (Rottb.) O. Ktze., Rev. Gen. Pl. 1: 114. 1891; Sasidh., Fl. Chinnar Wildlife Sanctuary 66. 1999.

*Local names:* Karuneerakam, Thannimaram

Trees, to 20 m high, bark grey to greyish-brown; blaze dull red; exudation watery; branchlets glabrous. Leaves simple, opposite; petiole 15-20 mm long, slender, glabrous; lamina 5-10×2-6 cm, elliptic, ovate, elliptic-ovate or ovate-oblong, base acute, attenuate, obtuse or round, apex acute or acuminate, margin entire or shallowly crenate or serrate, glabrous, coriaceous; lateral nerves 4-7 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers bisexual, to 8 mm across, greenish, in axillary or extra axillary dichotomously branched cymes to 5 cm long; bracts ovate; pedicel 3 mm long, slender, glabrous; calyx 5-lobed; lobes unequal; petals 5, 3-4 mm long, oblong, spreading, reflexed; stamens 5, inserted on the disc; filaments 1.5 mm long; anthers subglobose; disc cushion-like, sinuate; ovary embedded in the disc, 2-3-celled, ovules 2 in each cell; style thick; stigma not lobed. Fruit a drupe, *ca.* 1 x 0.8 cm, oblong, yellowish-green, smooth, apiculate; seed one.

*Flowering & Fruiting:* February-May

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India and Sri Lanka

**Cassine kedarnathii** Sasidh. & Swarup., Reinwardtia 11: 29. 1992; Sasidh. & Anto in Manoharan *et al.*, Silent Valley-Whispers of Reason 138. 1999.

Trees, to 40 m high, bark greyish-brown, smooth; blaze reddish; exudation watery. Leaves simple, opposite; petiole 20-25 mm long, slender, glabrous; lamina 5-8×2-



3.5 cm, elliptic-oblong, base acute, apex obtusely acuminate orcaudate-acuminate, margin crenate, glabrous, coriaceous; lateral nerves 5-9 pairs, pinnate, prominent, intercostae reticulate, prominent, secondary laterals prominent. Flowers bisexual, 12 mm across, greenish-yellow, in axillary and terminal dichasial glabrous cymes; pedicels 4-5 mm long; sepals 5, 1.5 × 3 mm, imbricate, broadly ovate, obtuse, glabrous; petals 5, 5 × 2-2.5 mm, imbricate, oblong, obtuse, margin slightly revolute; stamens 5, inserted along the margin of the disc; filaments 2 mm long; disc annular, wavy; ovary immersed in the disc, 2-celled, ovules 2 in each cell, basal; style short; stigma entire. Fruit a drupe, 25-30 × 18-22 mm, ellipsoid, green, apiculate; putamen slightly compressed, vertically grooved on both sides; seed one, ca. 20 × 17 mm, elliptic, brown.

*Flowering & Fruiting:* February-June

*Habitat:* Evergreen forests

*Distributions*

*Kerala:* Palakkad

*Endemic to:* Southern Western Ghats

**Cassine paniculata** (Wight & Arn.) Lobl.-Callen, *Adansonia* ser. 2. 15: 220. 1976; Sasidh., *Fl. Periyar Tiger Reserve* 66. 1998; Sasidh., *Fl. Chinnar Wildlife Sanctuary* 66. 1999; Ramamurthy in Singh *et al.*, *Fl. Ind.* 5: 83. 2000; Sasidh., *Fl. Parambikulam Wildlife Sanctuary* 64. 2002.

*Elaeodendron paniculatum* Wight & Arn., *Prodr.* 157. 1834; Gamble, *Fl. Pres. Madras* 212(152). 1918.

*Elaeodendron glaucum* sensu Lawson in Hook.f., *Fl. Brit. India* 1: 623. 1875, p.p. non Pers. 1805.

*Local name:* Thannimaram

Trees, to 20 m high; bark grey, smooth; blaze red; exudation watery; branchlets slender, terete. Leaves simple, opposite, decussate; stipules minute, caudicous; petiole 8-15 mm, slender, grooved above, glabrous; lamina 7-9 × 2.5-4 cm, elliptic-oblong, obovate, oblanceolate, lanceolate or ovate lanceolate, base acute or cuneate, apex acute or obtusely-acuminate, margin crenate, glabrous, coriaceous; lateral nerves 6-8 pairs, pinnate, prominent, intercostae reticulate, slender, faint. Flowers bisexual, greenish-yellow, 1 cm across, in axillary stout dichasial corymbose cymes; calyx 5-lobed, lobes unequal, imbricate; petals 5, obovate, spreading; stamens 5, inserted into the margin of the disc; filaments slender at length recurved; anthers subglobose; disc thick, fleshy, margin sinuate; ovary immersed in the disc, conical, 2-5-celled, ovules 2 in each cell; style short; stigma small. Fruit a drupe, 2.5 × 1.5 cm, globose to ellipsoid, apiculate; seed one, erect.

*Flowering & Fruiting:* March-June

*Habitat:* Shola and evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Wayanad

*Geographical:* Indo-Malesia

**Euonymus crenulatus** Wall. *ex* Wight & Arn., *Prodr.* 161. 1834; Hook. f., *Fl. Brit. India* 1:608.1875; Gamble, *Fl. Pres. Madras* 230(146).1918; Anil Kumar, *Fl. Pathanamthitta Dist.* 139. 1994; Sasidh., *Fl. Periyar Tiger Reserve* 67. 1998; Ramamurthy in Singh *et al.*, *Fl. Ind.* 5: 97. 2000; Mohanan & Sivad., *Fl. Agasthyamala* 159. 2002.

*Local names:* Dhanthapatri, Malamkuratha

Evergreen trees, to 6 m high, bark grey, smooth, young branches slightly compressed. Leaves simple, opposite, decussate; stipules deciduous; petiole 2-6 mm long, slender, glabrous; lamina 3-10 x 1.5-4 cm, elliptic, ovate, elliptic-obovate or oblong-lanceolate base acute or attenuate, apex obtuse or emarginate, margin crenate-serrate towards apex, glabrous, bullate above, coriaceous; lateral nerves 4-5 pair, slender, pinnate, faint, intercostae reticulate, obscure. Flowers bisexual, reddish, 0.8-1 cm across, 3-7 (rarely 9) flowered axillary dichasial cyme; peduncles and pedicels moderately stout; calyx deeply 5 lobed, 3 x 3 mm, ovate; petals 5, 5 x 5 mm, free, orbicular, not fimbriate but some times crispate; stamens 5, attached on the disc, filaments short; anthers broad; disc fleshy, 5-lobed; ovary 5-celled, sunk in the disc, ovules 2 in each cell; style very short; stigma blunt. Fruit a capsule, 1-1.5 x 0.8-1 cm, turbinate, drooping, scarlet, 5-valved, valves obcordate; seeds solitary in each cell; aril small, orange-red.

*Flowering & Fruiting:* September-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Idukki, Trivandrum

*Endemic to:* Southern Western Ghats

***Euonymus indicus*** Heyne ex Roxb., Fl. Ind. 2: 409. 1824; Hook. f., Fl. Brit. India 1: 608. 1875; Gamble, Fl. Pres. Madras 202(146). 1918; Ramach. & Nair, Fl. Cannanore Dist. 95. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 115. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 106. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 66. 1997; Sivar. & Mathew, Fl. Nilambur 143. 1997; Sasidh., Fl. Periyar Tiger Reserve 67. 1998; Ramamurthy in Singh *et al.*, Fl. Ind. 5: 102. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 65. 2002; Mohanan & Sivad., Fl. Agasthyamala 160. 2002.

*Euonymus goughii* Wight, Ic. t. 215. 1839.

Trees, to 8 m high, bark greyish-brown to dark brown, rough; blaze pink-red; branchlets terete, yellow, twigs quadrangular. Leaves simple, opposite, decussate; stipules linear-subulate, cauducous; petiole 5-10 mm, slender, glabrous; lamina 7-11 x 2-4 cm, elliptic, lanceolate, elliptic-lanceolate, oblong-lanceolate, base cuneate or acute, apex acuminate, margin entire, glabrous, shining above, coriaceous; lateral nerves 4-5 pairs, pinnate, slender, faint, intercostae reticulate, obscure. Flowers bisexual, yellowish-red, 1 cm across, in 1-3 flowered axillary cymes; peduncles to 3 cm, stout; pedicels to 6 mm, stout; calyx deeply divided; lobes 5, to 1.5 mm long, fleshy, glabrous; petals 5, 4 mm long, orbicular-oblong, fimbriate; stamens 5, inserted on the disc near its margin; filaments short; anthers broad; disc thick, cupular, 5-lobed, fleshy; ovary angular, sunk in the disc, 5-celled, ovules 2 per cell; style short, thick; stigma minutely lobed. Fruit a capsule, obovoid, 5-angled, orange-yellow, loculicidal, valves deeply obcordate; seeds reddish, oblong with red aril; albumen copious.

*Flowering & Fruiting:* September-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Malappuram, Kannur, Palakkad, Trivandrum, Kollam, Thrissur, Kozhikkode

*Endemic to:* Western Ghats

**Lophopetalum wightianum** Arn., Ann. Nat. Hist. 3: 151. 1839; Hook. f., Fl. Brit. India 1: 615. 1875; Gamble, Fl. Pres. Madras 205(147). 1918; Mohanan, Fl. Quilon Dist. 115. 1984; Ansari, Fl. Kasaragod Dist. 100. 1985; Manilal, Fl. Silent Valley 55. 1988; Ramach. & Nair, Fl. Cannanore Dist. 96. 1988; Antony, Fl. Kottayam Dist. 104. 1989; Vajr., Fl. Palghat Dist. 119. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 139. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 116. 1994; Subram., Fl. Thenmala Division 68. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 106. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 66. 1997; Sasidh., Fl. Periyar Tiger Reserve 68. 1998; Sunil, Fl. Pl. Alappuzha Dist. 164. 2000; Ramamurthy in Singh *et al.*, Fl. Ind. 5: 116. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 65. 2002; Mohanan & Sivad., Fl. Agasthyamala 161. 2002.

*Local names:* Vembala, Venkadavam, Venkkotta

Evergreen trees, to 30 m high, bole buttressed; bark yellowish-brown, mottled with white, smooth, brittle; blaze flesh-coloured; branchlets terete, brown. Leaves simple, opposite or subopposite, estipulate; petiole 10-25 mm long, stout, grooved above, glabrous; lamina 7.5-25 x 3.7-10 cm, elliptic, elliptic-oblong, oblong, ovate or ovate-oblong, base obtuse or round, apex obtuse or acute, margin entire, coriaceous, glabrous; lateral nerves 6-12 pairs, pinnate, arched towards the margin, prominent, intercostae reticulate, slender, prominent. Flowers bisexual, 15-18 mm across, pinkish to dull red, in lax axillary or terminal dichasial cyme; calyx broadly flattened at base, 0.5-0.6 cm across; lobes 5, broad, obtuse, very short; petals 5, 0.5-0.6 cm long, continuous with the disc, orbicular, uneven, clawed, crispate above, persistent, spreading; disc large, flat, 5 lobed; stamens 5, inserted on the disc; filaments subulate; anthers oblong; ovary small, immersed in the disc and continuous with it, triquetrous, 3-celled, ovules 4 or more in each cell; style short, stigma capitate. Fruit a capsule 8-10 x 2.5-3.5 cm, 3-angled, trigonous, 3 valved, brown, smooth, pointed at both ends, loculicidal; seeds thin, surrounded by long linear wing, 5 x 1.2 cm, brown, compressed, arillate.

*Flowering & Fruiting:* December-July

*Habitat:* Evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Microtropis ramiflora** Wight, Ic. t. 977. 1845; Hook. f., Fl. Brit. India 1: 613. 1875; Gamble, Fl. Pres. Madras 207(149). 1918; Manilal, Fl. Silent Valley 56. 1988; Sivar. & Mathew, Fl. Nilambur 144. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 67. 1999; Ramamurthy in Singh *et al.*, Fl. Ind. 5: 131. 2000; Mohanan & Sivad., Fl. Agasthyamala 161. 2002.

Evergreen trees, to 25 m high; bark greenish-yellow, smooth with bluish-green blotches, blaze yellow turning yellowish-brown; branchlets black purple, rough. Leaves simple, opposite, decussate, estipulate; petiole 3-10 mm long, stout, glabrous; lamina 5-13 x 2.5-6.5 cm, elliptic, elliptic-ovate or obovate, base round or subcordate, apex rounded or slightly emarginate, margin revolute, cucullate,

coriaceous, glabrous, slightly rugose above; lateral nerves 5-7 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, yellowish, sessile, 6-10 in axillary condensed clusters; sepals 5, ovate to suborbicular, unequal, margin lacinate, imbricate; petals 5, fleshy, joined at the base with disc; disc annular; stamens 5, inserted on the disc; filaments subulate, basally connate; ovary conical, seated on the disc, 2-3-celled, ovules 2 in each cell; style short, stigma 2-3 lobed. Fruit a capsule, 2 x 0.8 cm, ellipsoid, woody, apiculate, grey to rusty, 2-valved, surrounded at the base by persistent calyx; seed one, 4 x 6 mm, oblong, stipitate, erect.

*Flowering & Fruiting:* March-June

*Habitat:* Shola forests

*Distribution*

*Kerala:* Idukki, Malappuram, Palakkad, Trivandrum, Kozhikkode, Wayanad

*Geographical:* Peninsular India and Sri Lanka

**Microtropis wallichiana** Wight ex Thw., Enum. Pl. Zeyl. 71. 1858; Hook. f., Fl. Brit. India 1: 613. 1875; Gamble, Fl. Pres. Madras 206(148). 1918; Mohanan, Fl. Quilon Dist. 115. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 116. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 107. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 66. 1997; Sasidh., Fl. Periyar Tiger Reserve 68. 1998; Ramamurthy in Singh *et al.*, Fl. Ind. 5:131.2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 66.2002.

Trees, to 15 m high; branchlets yellowish, youngest darker. Leaves simple, opposite, decussate, estipulate; petiole 7-10 mm, slender, grooved above, glabrous; lamina 5-10.5 x 1.5-5 cm, ovate, elliptic, oblanceolate or elliptic-oblanceolate, glabrous, coriaceous; lateral nerves 5 or 6 pairs, pinnate, slender, prominent, intercostae reticulate, slender, prominent. Flowers bisexual, 2 mm across, pale yellow, sessile, in axillary fascicles; sepals 5, subreniform, margin fringed, imbricate; petals 5, obovate-oblong, obtuse, connate at base; stamens 5, inserted on the upper edge of the disc; disc annular, slightly lobed; ovary ovoid, seated on the disc, 2-celled, ovules 2 in each cell; style short; stigma minutely lobed. Fruit a capsule, 2-valved, 1-seeded, surrounded at the base by the persistent calyx, tapering at the base, round at apex with persistent style; seed erect, oblong.

*Flowering & Fruiting:* December-January

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Thrissur, Palakkad, Trivandrum

*Geographical:* Indo-Malesia

#### RHAMNACEAE

1. Leaves penni-nerved; branchlets without stipular spines..... **Maesopsis eminii**
1. Leaves 3-5 nerved from base; branchlets with or without stipular spines .....2
2. Branchlets without spines; leaves glabrous.....**Zizyphus glabrata**
2. Branchlets spiny; leaves tomentose below.....3
3. Styles 3, fruit 2.5-3 cm long.....**Zizyphus xylocarpa**
3. Styles 2, fruit less than 1.5 cm long.....**Zizyphus mauritiana**

**Maesopsis eminii** Engl., Pflanzenw. Ost-Afrikas, C. 255. 1895; Anil Kumar, Fl. Pathanamthitta Dist. 145.1994; Sasidh., Fl. Parambikulam Wildlife Sanctuary 67.2002.

Trees to 30 m high, bark pale brown, furrowed; blaze red, branchlets pubescent. Leaves opposite or subopposite, deccussate; stipules subulate, cauducous; petiole 10-20 mm long, slender, glabrous; lamina 8.5-12 x 2.5-4, ovate-lanceolate, oblong-ovate or lanceolate, base obliquely obtuse, apex acuminate, margin serrate, glabrous, chartaceous; lateral nerves 7-10 pairs, parallel, slender, prominent, intercostae reticulate. Flowers bisexual, greenish-yellow, 6 mm across; pedicel 0.5 cm; calyx tube obconic; lobes 5, deltoid; petals 5, green, orbicular, concave; disc 10-lobed; stamens 5, enclosed by the petals; ovary superior, ovoid, 1-celled, ovule-1, erect; style stout; stigma 5-furrowed. Fruit a drupe, to 3 x 1.5 cm, oblong-obovoid, orange, muricate; seed one.

*Flowering & Fruiting:* September-April

*Habitat:* Grown as shade tree in coffee plantation

*Distribution*

*Kerala:* Pathanamthitta, Idukki, Wayanad, Kannur, Palakkad

*Geographical:* Native of Africa

**Zizyphus glabrata** Heyne ex Roth, Nov. Pl. Sp. 159. 1821; Hook. f., Fl. Brit. India 1: 633. 1875; Bhandari & Bhansali in Singh *et al.*, Fl. Ind. 5: 229. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 68. 2002.

*Zizyphus trinervia* Roxb., Fl. Ind. 1: 606. 1832; Gamble, Fl. Pres. Madras 220(158). 1918.

Trees, to 10 m high; bark dark brown, blaze orange-red; branchlets tomentose. Leaves simple, alternate; stipule filiform, cauducous; petiole 3-5 mm, stout, pubescent; lamina 1.5-10.3 x 1.5-5 cm, elliptic, elliptic-oblong, elliptic-orbicular, or ovate, base obtuse, round or asymmetrical, apex obtuse and retuse, margin crenulate, the crenations tipped with callous points, glabrous, shining above, tomentose on nerves beneath, coriaceous; 3-ribbed from the base, prominent, intercostae reticulate, prominent. Flowers bisexual, greenish-yellow, 7 mm across, in axillary, peduncled cymes; bracteoles subulate; pedicel to 2 m; calyx tube 1.5-2 mm; lobes 5, pubescent outside, triangular, keeled within, deflexed, valvate; petals 5, 1.5 mm, obovate; disc 10 lobed, entire; stamens 5, opposite to and enclosed in the petals and usually longer than them; filaments flattened; ovary embedded in the disc, 2-celled, ovule solitary; styles 2, connate upto the middle; stigma 2. Fruit a drupe, globose obovoid, to 6 mm across, 1-2-celled, yellow when ripe, rugose; seeds 1 or 2.

*Flowering & Fruiting:* September-January

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India, Bangladesh and Bhutan

**Zizyphus mauritiana** Lam., Encycl. 3:319.1789; Manilal & Sivar., Fl. Calicut 67.1982; Ansari, Fl. Kasaragod Dist. 102. 1985; Antony, Fl. Kottayam Dist. 105. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 146. 1994; Sasidh., Fl. Chinnar Wildlife Sanctuary 69. 1999; Sunil, Fl. Pl. Alappuzha Dist. 168. 2000; Bhandari & Bhansali in Singh *et al.*, Fl. Ind. 5: 234. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 68. 2002.

*Zizyphus jujuba* Lam., Encycl. 3: 318. 1789; Hook. f., Fl. Brit. India 1: 632. 1875; Gamble, Fl. Pres. Madras 219(157). 1918, non Mill. 1768.

*Local names:* Elentha, Jujuba, Lanthapazham

Trees, to 10 m high; bark dark grey or nearly black, with deep vertical cracks, reddish and fibrous inside; branchlets, petiole and underside of leaves white buff, tomentose. Leaves simple, alternate, distichous; stipular spines solitary or in pairs, straight or one of them recurved; nodes slightly enlarged around the leaf scars; petiole 4-8 mm, stout; lamina 1.5-4 x 1.5-3 cm, ovate, elliptic-ovate, elliptic-orbicular or suborbicular, base oblique, subcordate or round, apex round and retuse, margin glandular-denticulate or serrate, glabrous above, coriaceous, strongly 3-ribbed from base, convergent; lateral nerves 2-3 pairs, pinnate, prominent, slender, intercostae obscure. Flowers bisexual, 5 mm across, greenish-yellow, in 15-20 flowered dense cymose axillary fascicles; peduncle much reduced; calyx tube 0.5 mm, woolly outside, glabrous within; lobes 5, triangular, prominently keeled on inner face; petals 5, cucullate, round at apex, deflexed with the stamens; disc 10-lobed, grooved; stamens 5, enclosed in the petals, not exerted beyond them; filaments slightly dilated at base; ovary embedded in disc, 2-celled; ovule 1, ascending; styles 2, connate to the middle; stigma 2-fid. Fruit a drupe 1 x 0.5 cm, oblong-globose, yellow or orange when ripe; 1-2-celled; seeds 1 or 2, compressed.

*Flowering & Fruiting:* February-April

*Habitat:* Dry deciduous forests, also planted in the plains

*Distribution*

*Kerala:* Malappuram, Kottayam, Kasaragode, Idukki, Pathanamthitta, Kozhikkode, Alappuzha, Palakkad

*Geographical:* Paleotropics

***Zizyphus xylopyrus*** (Retz.) Willd., Sp. Pl. 1: 1104. 1798; Hook. f., Fl. Brit. India 1: 636. 1875; Gamble, Fl. Pres. Madras 221(158). 1918; Ramach. & Nair, Fl. Cannanore Dist. 101. 1988; Vajr., Fl. Palghat Dist. 121. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 111. 1996; Sivar. & Mathew, Fl. Nilambur 148. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 70. 1999; Bhandari & Bhansali in Singh *et al.*, Fl. Ind. 5: 243. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 69. 2002.

*Rhamnus xylopyrus* Retz., Obs. Bot. 2: 11. 1781.

*Local name:* Kotta

Trees, to 12 m high, bark thin, brownish-grey, exfoliating in small scales; branchlets tomentose, sparsely armed. Leaves simple, alternate, stipulate; petiole 5-12 mm, tomentose, slender; lamina 5-8 x 3-5 cm, ovate-oblong or suborbicular, base rounded; apex obtuse, apiculate, margin serrulate, glabrous above, tomentose beneath, coriaceous; 3-5-ribbed from base; lateral nerves many, puberulent beneath; intercostae reticulate, faint. Flowers bisexual, in axillary cymes, greenish-yellow, pubescent; peduncle 1.5 cm long; calyx 5 lobed, 1.5 mm radiating; petals 5, 2 mm, spatulate; disc 5 lobed; stamens 5, filaments subulate; ovary 3-celled, ovules solitary; styles 3; stigma trifid. Fruit a drupe, 1.5-2.5 cm across, globose; seeds 3.

*Flowering & Fruiting:* May-June

*Habitat:* Dry and moist deciduous forests

*Distribution*

*Kerala:* Idukki, Malappuram, Palakkad, Kannur, Thrissur  
*Geographical:* India, Nepal and Sri Lanka

### SAPINDACEAE

1. Leaf rachis prominently winged, petiolule indistinct..... **Filicium decipiens**
1. Leaf rachis not winged, petiolule distinct ..... 2
2. Leaflets dimorphic, lower pair stipule like and reniform .....  
 ..... **Otonephelium stipulaceum**
2. Leaflets similar ..... 3
3. Fruits inflated, orange-red ..... **Harpullia arborea**
3. Fruits not inflated nor orange-red ..... 4
4. Fruits tubercled ..... **Dimocarpus longan**
4. Fruit not tubercled ..... 5
5. Petals absent; fruits sparsely echinate ..... **Schleichera oleosa**
5. Petals present; fruits smooth ..... 6
6. Petals not clawed without scales ..... **Lepisanthes tetraphylla**
6. Petals clawed with 1 or 2 scales ..... 7
7. Leaflets rounded or emarginated at apex ..... **Sapindus emarginatus**
7. Leaflets acute or acuminate at apex ..... **Sapindus trifoliatus**

**Dimocarpus longan** Lour., Fl. Cochinch. 233. 1790; Mohanan, Fl. Quilon Dist. 124. 1984; Manilal, Fl. Silent Valley 63. 1988; Ramach. & Nair, Fl. Cannanore Dist. 111. 1988; Vajr., Fl. Palghat Dist. 131. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 161. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 124. 1994; Subram., Fl. Thenmala Division 77. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 117. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 75. 1997; Sivar. & Mathew, Fl. Nilambur 162. 1997; Sasidh., Fl. Periyar Tiger Reserve 78. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 75. 1999; Pant in Singh *et al.*, Fl. Ind. 5: 358. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 74. 2002; Mohanan & Sivad., Fl. Agasthyamala 174. 2002.

*Euphoria longan* (Lour.) Steud., Nomencl. Bot. 1: 328. 1821.

*Euphoria longana* Lam., Encycl. 3: 574. 1792.

*Nephelema longana* (Lam.) Camp., Mem. Mus. Hist. Nat. Paris 18: 30. 1829; Hook. f., Fl. Brit. India 1: 688. 1875; Gamble, Fl. Pres. Madras 252(180). 1918.

*Scytalia longan* (Lour.) Raeusch., Nomencl. Bot. (ed.3) 113. 1797.

*Local names:* Chempooavam, Chempunna, Poripunna

Evergreen trees, to 18 m, high, bark greyish or reddish-brown, smooth, flaking off in thin scales; blaze reddish; branchlets prominently white lenticellate, reddish-brown tomentose. Leaves paripinnate, alternate, estipulate; rachis 12-18 cm, stout, grooved above, swollen at base, glabrous; leaflets 8-20, subopposite or alternate; petiolule 5-13 mm, stout, grooved above, glabrous; lamina 5-20 x 2.5-6 cm, oblong, elliptic-oblong or oblong-lanceolate, base oblique or acute, apex acute or acuminate, margin entire, slightly undulate, glabrous above, glaucous beneath, coriaceous; lateral nerves 14-17 pairs, parallel, prominent, intercostae reticulate, faint. Flowers polygamous, 5-6 mm across, yellowish-white, in terminal and axillary brown tomentose panicles or racemes; calyx cupular, tomentose; lobes 5 or 6, ovate, saccate at base; petals 5 or 6, oblong, pilose at base, deflexed; disc annular, fleshy, lining the calyx tube; stamens 8 or 10, inserted within the disc; filaments slender,

hairy; ovary superior, ovoid, 2 lobed, pubescent, 2-celled, ovule 1 in each cell; style simple; stigma bifid. Fruit a schizocarp of 1-2 cocci, 1-1.5 x 1 cm, globose, reddish-brown, with round tubercles or sometimes nearly smooth; seed one, black, covered by fleshy aril.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Pathanamthitta, Malappuram, Kannur, Kollam, Trivandrum, Thrissur

*Geographical:* Indo-Malesia

**Filicium decipiens** (Wight & Arn.) Thw., Enum. Pl. Zeyl. 408. 1864; Hook. f., Fl. Brit. India 1: 539. 1875; Gamble, Fl. Pres. Madras 249(178). 1918; Ramach. & Nair, Fl. Cannanore Dist. 112.1988; Sasidh., Fl. Periyar Tiger Reserve 78. 1998; Pant in Singh *et al.*, Fl. Ind. 5: 363. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 74. 2002.

*Rhus decipiens* Wight & Arn., Prodr. 172. 1834.

*Local names:* Valmuriccha, Sanimaram

Evergreen trees, to 25 m high, bark blackish or reddish-grey, rough; branchlets angular. Leaves imparipinnate, alternate, estipulate; rachis 10-23 cm long, articulate, broadly winged, glabrous, swollen at base; leaflets 10-21, opposite or subopposite, sessile; lamina 6-10.5 x 1-3 cm, narrowly elliptic or elliptic-oblong, base acute or oblique, apex acute or acuminate, margin entire, wavy, subcoriaceous, glabrous, gland-dotted; lateral nerves many, parallel, close, slender, faint; intercostae reticulate, obscure. Flowers polygamous, 5-6 mm across, pinkish-white, in axillary panicles; calyx 5 lobed; lobes imbricate, deciduous; petals 5, orbicular, small; disc 5 lobed, tomentose; stamens 5, free, inserted within the disc; filaments subulate; anthers ovate; ovary superior, globose, sessile, ovules solitary, pendulous; style hooked; stigma simple, bilobed. Fruit a drupe, 10-12 mm across, ovoid, purple, shining, apiculate; seed one, oblong.

*Flowering & Fruiting:* October-December

*Habitat:* Evergreen and semi-evergreen forests, also grown as shade tree

*Distribution*

*Kerala:* Idukki, Kannur, Kollam, Palakkad

*Geographical:* India and Sri Lanka

**Harpullia arborea** (Blanco) Radlk., Sitzungsber. Math.-Phys. Cl. Koenigl. Bayer. Akad. Wiss. Muenchen 16: 404. 1890; Mohanan, Fl. Quilon Dist. 124. 1984; Ramach. & Nair, Fl. Cannanore Dist. 112. 1988; Vajr., Fl. Palghat Dist. 131. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 161. 1994; Subram., Fl. Thenmala Division 77. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 117. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 75. 1997; Sivar. & Mathew, Fl. Nilambur 163. 1997; Sasidh., Fl. Periyar Tiger Reserve 78. 1998; Pant in Singh *et al.*, Fl. Ind. 5: 365. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 74. 2002.

*Ptelea arborea* Blanco, Fl. Filip. (ed. 1) 63. 1837.

*Harpullia imbricata* (Blume) Thw., Enum. Pl. Zeyl. 56. 1858; Gamble, Fl. Pres. Madras 253(180). 1918.

*Octonychium imbricatum* Blume, Rumphia 3: 180. 1849.



*Harpullia cupanoides* sensu Hiern in Hook.f., Fl. Brit. India 1: 692. 1875p.p., non Roxb. 1832.

*Local names:* Chittilamadakku, Puzhukkolli

Trees, to 15 m high, bole fluted; bark 3-5 mm thick, pale grey, smooth, lenticels horizontal, semi fibrous; blaze creamy yellow; branchlets fulvus tomentose. Leaves pari pinnate, alternate, estipulate; rachis 9-31 cm, slender, pubescent, swollen at base; leaflets 8-12, subopposite or alternate; petiolule 3-5 mm long, slender, pubescent; lamina 5-20 x 2.5-10 cm, lanceolate, elliptic-oblong or elliptic-lanceolate, base oblique, apex acuminate, margin entire, glabrous, membranous; lateral nerves 7-12 pairs, pinnate, slender, prominent; intercostae reticulate, prominent. Flowers polygamodioecious, 10-12 mm long, yellowish-green, in axillary, or subterminal drooping panicles; sepals 5, free, imbricate; petals 5, long clawed, oblong; disc small, 5 lobed; stamens 5-8, inserted within the disc; filaments slender; anthers oblong; ovary superior, ovoid, 2-celled, ovules 2 in each cell, super posed; style elongate; stigma linear, usually more or less twisted. Fruit a capsule, 20-25 x 30-35 mm, scarlet, 2 lobed, 2-celled, inflated, loculicidally 2 valved, coriaceous; seeds 2, ellipsoid, black, shining; aril orange.

*Flowering & Fruiting:* January-April

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Palakkad, Kollam, Pathanamthitta, Malappuram, Kannur, Thrissur, Idukki

*Geographical:* Indo-Malesia and Australia

**Lepisanthes tetraphylla** (Vahl) Radlk., Sitzungsber. Math.-Phys. Cl. Koenigl. Bayer. Akad. Wiss. Muenchen 8: 276. 1878; Gamble, Fl. Pres. Madras 247(176). 1918; Mohanan, Fl. Quilon Dist. 125. 1984; Manilal, Fl. Silent Valley 64. 1988; Ramach. & Nair, Fl. Cannanore Dist. 113. 1988; Vajr., Fl. Palghat Dist. 132. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 162. 1994; Subram., Fl. Thenmala Division 77. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 118. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 76. 1997; Sivar. & Mathew, Fl. Nilambur 164. 1997; Sasidh., Fl. Periyar Tiger Reserve 79. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 76. 1999; Sunil, Fl. Pl. Alappuzha Dist. 183. 2000; Pant in Singh *et al.*, Fl. Ind. 5: 372. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 75. 2002; Mohanan & Sivad., Fl. Agasthyamala 174. 2002.

*Sapindus tetraphylla* Vahl, Symb. Bot. 3: 1794.

*Hemigyrosa canescens* (Roxb.) Blume, Rumphia 3: 166. 1849; Hook. f., Fl. Brit. India 1: 671. 1875.

*Molinaea canescens* Roxb., Pl. Corom. t. 60. 1796.

*Lepisanthes deficiens* (Wight & Arn.) Radlk., Sitzungsber. Math.-Phys. Cl. Koenigl. Bayer. Akad. Wiss. Muenchen 8: 276. 1878; Gamble, Fl. Pres. Madras 247(176). 1918.

*Sapindus deficiens* Wight & Arn., Prodr. 111. 1834.

*Local names:* Kalpoovathi, Kulapunna, Naikolli

Evergreen trees, to 15 m high; trunk and branchlets crooked; bark reddish-brown, peels off in irregular thin scale, rough; blaze pink-red. Leaves paripinnate, alternate, estipulate; rachis 1.5-20 cm, terete, stout, glabrous, swollen at base; leaflets 4-8, opposite or subopposite; petiolule 3-8 mm, stout, glabrous; lamina 6-22 x 2-6 cm, elliptic-oblong, elliptic-lanceolate, obovate-oblong or oblong lanceolate, base acute,

obtuse or unequal; apex obtuse, emarginate, acute or acuminate, margin entire, undulate, glabrous, coriaceous; lateral nerves 6-13 pairs, pinnate, prominent, secondary laterals also prominent; intercostae reticulate, prominent. Flowers polygamodioecious, creamy yellow, crowded in axillary or terminal panicles; branches fulvous-tomentose; sepals 5, hairy outside, glabrous within; outer 2 smaller than inner 3, in 2 rows; petals 4-5, obovate, subequal, obtuse, 2-fid, fimbriate, inner surface callose at base and with 2-3 scales, often scales attached to the claw; disc thick, 4-5 lobed; stamens 8; filaments free, pilose; anthers ovoid; ovary superior, globose, eccentric, trigonus, 3-celled, ovules 1 each cell; style simple; stigma oblique. Fruit a drupe, 2 x 1.5 cm, subglobose or trigonus, orange-yellow, tomentose, apiculate; seed one, oblong, exarillate.

*Flowering & Fruiting:* February-July

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and Africa

**Otonephelium stipulaceum** (Bedd.) Radlk., Sapindac. Holl. Ind. 71. 1879; Gamble, Fl. Pres. Madras 252(180). 1918; Ramach. & Nair, Fl. Cannanore Dist. 113. 1988; Anil Kumar, Fl. Pathanamthitta Dist. 162. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 118. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 76. 1997; Sivar. & Mathew, Fl. Nilambur 164. 1997; Sasidh., Fl. Periyar Tiger Reserve 79. 1998; Pant in Singh *et al.*, Fl. Ind. 5: 378. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 75. 2002; Mohanan & Sivad., Fl. Agasthyamala 175. 2002.

*Nephegium stipulaceum* Bedd., Trans. Linn. Soc. London 25: 212. 1865 & Ic. t. 103. 1868-1874; Hook. f., Fl. Brit. India 1: 690. 1875; Gamble, Fl. Pres. Madras 252(180). 1918.

*Local names:* Poripoovam, Paviri mulei

Trees, to 18 m high, bark 5-6 mm thick, pale brown, smooth, peels off in irregular thick scales; blaze brown-red. Leaves paripinnate, alternate, exstipulate; rachis 3-20 cm, stout, glabrous; leaflets 4-8, opposite, subopposite or alternate; petiolule 4-8 mm; lower pair of leaflets stipule like, sessile, lamina 1-2.5 x 1-2 cm, reniform, other leaflets 5.5-21 x 3-10 cm, obovate or elliptic, or elliptic-obovate, base oblique, acute or cuneate, apex acuminate, margin entire, glabrous above, glaucous beneath, coriaceous; lateral nerves 9-10 pairs, parallel, prominent, regular, intercostae scalariform, prominent, domatia present. Flowers polygamous, cream coloured, 5-6 mm across, in axillary and terminal panicles; calyx cupular; lobes 6, villous within; petals 0; disc annular, fleshy, lobed; stamens 8, filaments unequal, slender, inserted within the disc; ovary superior, 2-4 lobed, 2-4-celled, pubescent, ovules 1 in each cell; style terminal 3-fid. Fruit a drupe of 1-3 cocci, 16-18 mm long, oblong or ovoid, covered with soft prickles; seeds 1-2, brown, smooth.

*Flowering & Fruiting:* February-July

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Thrissur, Idukki, Pathanamthitta, Malappuram, Kannur, Trivandrum, Kollam, Palakkad

*Endemic to:* Southern Western Ghats

**Sapindus emarginatus** Vahl, Symb. Bot. 3: 54. 1794; Gamble, Fl. Pres. Madras 250(178). 1918; Sasidh., Fl. Periyar Tiger Reserve 80. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 78. 1999; Pant in Singh *et al.*, Fl. Ind. 5: 381. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 75. 2002.

*Sapindus trifoliatus* sensu Hiern in Hook.f., Fl. Brit. India 1: 682. 1875,p.p., non L. 1753.

*Local names:* Chuvappukaimaram, Pachakotta, Soapumka, Uravanchi, Urungi

Trees, to 10 m high, bark dark-brown, rough; branchlets tomentose. Leaves paripinnate, alternate, exstipulate; rachis 25-100 mm, stout, tomentose, swollen at base; leaflets 4 or 6, opposite or subopposite; petiolule 2-3 mm, stout, tomentose; lamina 3-15 x 1.5-5.5 cm, oblong-obovate, oblanceolate or oblong, base cuneate or obtuse, apex obtuse, round and emarginate, margin entire, glabrescent above, softly tomentose beneath and midrib above, coriaceous; lateral nerves 4-12 pairs, pinnate, prominent, ascending, secondary laterals prominent, intercostae reticulate, prominent. Flowers polygamous, greenish-white, in terminal and axillary panicles; branches pubescent; sepals 5, 2-seriate, 3-4 mm, ovate-orbicular, unequal, ciliate, imbricate; petals 5, obovate, 2.5 mm, equal, clawed, glabrous on the inner surface except for 1-2 tufts of white hairs above the claw; disc annular, 5-lobed, strigose; stamens 8, inserted within the disc; filaments unequal, pilose, free; anthers oblong; ovary superior, trigonus, 3-celled, ovule 1 in each cell; style terminal; stigma 3-lobed. Fruit a drupe of 3 indehiscent cocci, combined about half way up and then separating with saponaceous fibrous pericarp; smooth and slightly pubescent when young, later glabrous and wrinkled; seeds black, globose, smooth.

*Flowering & Fruiting:* November-March

*Habitat:* Dry deciduous forests and margins of grasslands

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* South Asia

**Sapindus trifoliatus** L., Sp. Pl. 367. 1753; Hook. f., Fl. Brit. India 1: 682. 1875; Ansari, Fl. Kasaragod Dist. 108. 1985; Sasidh. & Sivar., Fl. Pl. Thrissur For. 119. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 77. 1997; Sivar. & Mathew, Fl. Nilambur 165. 1997; Sasidh., Fl. Periyar Tiger Reserve 80. 1998; Sunil, Fl. Pl. Alappuzha Dist. 184. 2000; Pant in Singh *et al.*, Fl. Ind. 5: 382. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 75. 2002.

*Sapindus laurifolius* Vahl, Symb. Bot. 3: 54. 1794; Gamble, Fl. Pres. Madras 250(178). 1918; Manilal & Sivar., Fl. Calicut 71. 1982; Mohanan, Fl. Quilon Dist. 125. 1984; Ramach. & Nair, Fl. Cannanore Dist. 114. 1988; Antony, Fl. Kottayam Dist. 111. 1989; Vajr., Fl. Palghat Dist. 132. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 163. 1994; Subram., Fl. Thenmala Division 78. 1995; Mohanan & Sivad., Fl. Agasthyamala 176. 2002.

*Local names:* Chavakai, Pasakotta, Urunjikai, Uruvangi, Soapinkaimaram

Trees, to 18 m high, bark 4-6 mm thick, greyish-brown; brittle or semi fibrous; blaze creamy yellow; branchlets lenticellate. Leaves paripinnate, alternate, estipulate; rachis 4.5-10 cm, stout, glabrous, swollen at base; leaflets 4-6, opposite or subopposite; petiolule 2-5 mm, stout, glabrous; lamina 6.5-25 x 2.5-11.5 cm, elliptic-oblong, elliptic-lanceolate, elliptic or lanceolate, base oblique, round or acute, apex acuminate, margin entire, glabrous, chartaceous; lateral nerves 6-17

pairs, pinnate, ascending, prominent, secondary laterals prominent; intercostae reticulate, prominent. Flowers polygamous, greenish-white, 5-6 mm across, in axillary or terminal panicles; panicles densely pubescent; sepals 5, pubescent outside, glabrous within, ovate, unequal, in 2 series, much imbricate; petals 5, linear-lanceolate, softly woolly on the inner surface except the claw, scales minute or absent; disc concave, margin fleshy, hirsute; stamens 8, inserted within the disc; filaments free, pilose; anthers oblong; ovary superior, tomentose, not lobed, 2-3-celled, ovule 1 in each cell; style terminal, stigma 2-3 lobed. Fruit a drupe, 16-18 mm across, globose, greenish-yellow, fulvous hairy when young, wrinkled when ripe; seeds 2-3, globose, black.

*Flowering & Fruiting:* December-April

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* South Asia

**Schleichera oleosa** (Lour.) Oken, Allg. Naturgesch. 3:1341. 1841; Manilal & Sivar., Fl. Calicut 71. 1982; Mohanan, Fl. Quilon Dist. 125. 1984; Ansari, Fl. Kasaragod Dist. 108. 1985; Manilal, Fl. Silent Valley 64. 1988; Ramach. & Nair, Fl. Cannanore Dist. 114. 1988; Antony, Fl. Kottayam Dist. 111. 1989; Vajr., Fl. Palghat Dist. 133. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 163. 1994; Subram., Fl. Thenmala Division 78. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 119. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 77. 1997; Sivar. & Mathew, Fl. Nilambur 166. 1997; Sasidh., Fl. Periyar Tiger Reserve 80. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 78. 1999; Sunil, Fl. Pl. Alappuzha Dist. 184. 2000; Pant in Singh *et al.*, Fl. Ind. 5: 384. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 76. 2002; Mohanan & Sivad., Fl. Agasthyamala 176. 2002.

*Pistacia oleosa* Lour., Fl. Cochinch. 615. 1790.

*Schleichera trijuga* Willd., Sp. Pl. 4: 1096. 1805; Hook. f., Fl. Brit. India 1: 681. 1875; Gamble, Fl. Pres. Madras 248(177). 1915.

*Local names:* Dhoothalam, Poovanam, Poovam

Deciduous trees, to 20 m high, bole fluted; bark 10-12 mm thick, surface grey, smooth, brittle; blaze reddish-brown. Leaves paripinnate, alternate, exstipulate; rachis 5.5-11.5 cm, stout, glabrous, swollen at base; leaflets 4-6, opposite or subopposite; petiolule upto 3 mm, slender, glabrous; lamina 5-15 x 1.8-4.5 cm, elliptic-oblong, ovate or obovate, base oblique or rarely obtuse, apex acute or obtuse, margin entire, coriaceous, glabrous; lateral nerves 10-23, parallel, prominent, intercostae reticulate, faint. Flowers polygamodioecious, 5-6 mm across, greenish-yellow, in axillary spicate panicles; male flowers: calyx lobes 5, valvate or obscurely imbricate; petals 0; disc complete, with the disc; stamens 7 or 8, free, inserted within the disc; filaments 1.5 mm, pilose; anthers oblong; pistillode small; bisexual flowers: ovary 2 mm, superior, 3-celled, ovule 1 in each cell; style rigid, terete; stigma 2 or 3 lobed. Fruit a drupe, 16-18 mm across, subcrustaceous, pointed, often echinate with stout rather blunt prickles; seed 1 or 2, enclosed in a pulpy aril which has a pleasant acid taste; testa smooth, brown.

*Flowering & Fruiting:* March-June

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**STAPHYLEACEAE**

1. Leaflets lanceolate; disc deeply lobed; fruit *ca.* 1 cm across.....  
.....**Turpinia cochinchinensis**
1. Leaflets elliptic or oblong; disc crenate; fruit 2-2.5 cm across .....  
.....**Turpinia malabarica**

**Turpinia cochinchinensis** (Lour.) Merr., J. Arnold Arbor. 19: 43. 1938; Manilal, Fl. Silent Valley 62. 1988; Pant in Singh *et al.*, Fl. Ind. 5: 415. 2000.

*Triceros cochinchinensis* Lour., Fl. Cochinch. 184. 1790.

*Turpinia nepalensis* Wall. *ex* Wight & Arn., Prodr. 156. 1834; Gamble, Fl. Pres. Madras 241(172). 1918; Mohanan, Fl. Quilon Dist. 123. 1984; Ramach. & Nair, Fl. Cannanore Dist. 108. 1988; Vajr., Fl. Palghat Dist. 128. 1990; Sasidh., Fl. Shenduruny Wildlife Sanctuary 73. 1997; Sasidh., Fl. Periyar Tiger Reserve 76. 1998.

*Turpinia pomifera* sensu Hiern in Hook.f., Fl. Brit. India 1: 698. 1875, non DC. 1824.

*Local name:* Pambaravetti

Evergreen trees, to 18 m high; bark thin, brown; blaze yellow. Leaves imparipinnate, opposite; stipules interpetiolar, triangular, cauducous; rachis 3-10.5 cm, stout, swollen at base, glabrous; leaflets 3-9, opposite; stipels lanceolate-subulate; cauducous; petiolule 5-28 mm long, slender, grooved above, opposite; lamina 4-15 x 2.5-6 cm, oblong, elliptic-oblong, ovate or elliptic-ovate, base acute or attenuate, apex acuminate, margin serrate or crenate-serrate, coriaceous, glabrous; lateral nerves 4-8 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, 3-4 mm across, cream coloured, in terminal or axillary panicles; pedicel short; sepals 5, 1.5 mm long, ovate, obtuse, ciliolulate; petals 5, 3 mm long, ovate, acute; stamens 5, inserted outside the disc; filaments glabrous; disc raised, 5-lobed; ovary sessile, 3-lobed, 3-celled, ovules 2 or more in each cell. Fruit a berry, 12-18 mm, globose, 1-3 lobed, purplish-brown, 3-celled; seeds angular, dark brown; hilum large.

*Flowering & Fruiting:* March-October

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Kollam, Palakkad, Kannur

*Geographical:* Indo-Malesia and China

**Turpinia malabarica** Gamble, Bull. Misc. Inform. Kew 1917: 135. 1916 & Fl. Pres. Madras 241(173). 1918; Mohanan, Fl. Quilon Dist. 122. 1984; Manilal, Fl. Silent Valley 62. 1988; Ramach. & Nair, Fl. Cannanore Dist. 108. 1988; Vajr., Fl. Palghat Dist. 128. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 157. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 115. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 73. 1997; Sivar. & Mathew, Fl. Nilambur 159. 1997; Sasidh., Fl. Periyar Tiger Reserve 76. 1998; Pant in Singh *et al.*, Fl. Ind. 5: 416. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 76. 2002.

*Local names:* Alunkumaram, Kanakkappalam, Marali

Trees, to 20 m high, bole buttressed, bark greyish-brown. Leaves imparipinnate, opposite, stipulate; rachis 19-25 cm long, stout, swollen at base, glabrous, leaflets 3-7, opposite, stipellate; petiolule 2-20 mm, slender, grooved above; lamina 5-12 x 1.5-5 cm, elliptic, elliptic-obovate, elliptic-ovate or elliptic-lanceolate, base acute or cuneate, apex acuminate or obtusely acuminate, margin serrate, glabrous, coriaceous, lateral nerves 4-7 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers bisexual, yellowish-white, 8-10 mm across, in axillary and terminal panicles with opposite branches; sepals 5, 3 mm long, ovate, slightly connate at base, obtuse, ciliate; petals 5; stamens 5; filaments shortly villous, inserted outside the disc; disc erect, crenate; ovary sessile, superior, 3 lobed, 3-celled. Fruit a berry, subglobose, 1-3 pointed, but not lobed, glabrous; seeds complanate.

*Flowering & Fruiting:* January-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Malappuram, Palakkad, Kannur, Thrissur

*Endemic to:* South India and Sri Lanka

#### SABIACEAE

1. Leaves imparipinnate; panicle terminal.....**Meliosma pinnata** ssp. **barbulata**
1. Leaves simple; panicle axillary and terminal ..... 2
2. Leaves and peduncle glabrous ..... **Meliosma simplicifolia** ssp. **simplicifolia**
2. Leaves and peduncle tomentose..... **Meliosma simplicifolia** ssp. **pungens**

**Meliosma pinnata** (Roxb.) Maxim. ssp. **barbulata** (Cufod.) Beus. in Dassan. & Fosb., Rev. Handb. Fl. Ceylon 3: 384. 1981; Manilal, Fl. Silent Valley 65. 1988; Vajr., Fl. Palghat Dist. 133. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 164. 1994; Mohanan, Fl. Quilon Dist. 126. 1984; Ramach. & Nair, Fl. Cannanore Dist. 115. 1988; Sasidh. & Sivar., Fl. Pl. Thrissur For. 120. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 78. 1997; Sasidh., Fl. Periyar Tiger Reserve 80. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 78. 1999; Majumdar in Singh *et al.*, Fl. Ind. 5: 423. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 76. 2002; Mohanan & Sivad., Fl. Agasthyamala 177. 2002.

*Meliosma rhoifolia* Maxim., ssp. *barbulata* Cufod., Oest. Bot. 88. 254. 1939.

*Millingtonia arnottiana* Wight, Illustr. 1: t.53. 1840.

*Meliosma arnottiana* (Wight) Walp., Rep. 1: 423. 1842; Hook. f., Fl. Brit. India 2: 6. 1876,p.p.; Gamble, Fl. Pres. Madras 256(183). 1918.

*Meliosma pinnata* (Roxb.) Maxim. ssp. *arnottiana* (Wight) Beus., Blumea 19: 499. 1971.

*Millingtonia pinnata* Roxb., Fl. Ind. 1: 103. 1820.

*Local name:* Kalavi

Trees, to 18 m high, bark 10-15 mm thick, surface greyish-brown, mottled with white; blaze creamy pink, turning to orange yellow, interspersed with lighter rays, inner bark succulent, innermost layers fibrous; branchlets brown villous, prominently lenticellate. Leaves imparipinnate, pinnate, alternate, estipulate; rachis 6.5-18 cm long, stout, rusty pubescent; leaflets 9-15, opposite or subopposite; petiolule 4-10 mm, slender, rusty tomentose; lamina 3.5-12.5 x 1.5-4 cm, oblong-

lanceolate, elliptic-oblong or elliptic-ovate; base obtuse, round or oblique, apex acuminate or acute, margin entire, glabrous above, rusty tomentose beneath, coriaceous; lateral nerves 3-15 pairs, pinnate, ascending, prominent, intercostae reticulate, domatia often present. Flowers bisexual, yellowish-white in large terminal and axillary tomentose panicles; bracteoles sepaloid; sepals 5, basally connate, triangular, ciliate; petals 3+2; inner ones 2-fid; outer 3 suborbicular, unequal; fertile stamens 2; filaments 1.5 mm; staminodes 3, scaly, to 1 mm; ovary superior, tomentose, 2-celled, ovule 2 in each cell; style terminal, stigma simple. Fruit a drupe, 5-6 mm across, globose.

*Flowering & Fruiting:* March-June

*Habitat:* Shola and evergreen forests

*Distribution*

*Kerala:* Pathanamthitta, Palakkad, Idukki, Trivandrum, Kollam, Thrissur, Kannur, Wayanad

*Geographical:* Indo-Malesia and China

**Meliosma simplicifolia** (Roxb.) Walp. Rep. 1: 423. 1842, ssp. **simplicifolia**: Hook.f., Fl. Brit. India 2: 5. 1876; Gamble, Fl. Pres. Madras 256(182). 1918; Mohanan, Fl. Quilon Dist. 126. 1984; Manilal, Fl. Silent Valley 65. 1988; Ramach. & Nair, Fl. Cannanore Dist. 115. 1988; Antony, Fl. Kottayam Dist. 112. 1989; Vajr., Fl. Palghat Dist. 134. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 165. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 125. 1994; Subram., Fl. Thenmala Division 79. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 120. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 78. 1997; Sivar. & Mathew, Fl. Nilambur 166. 1997; Sasidh., Fl. Periyar Tiger Reserve 81. 1998; Majumdar in Singh *et al.*, Fl. Ind. 5: 423. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 77. 2002.

*Millingtonia simplicifolia* Roxb., Pl. Corom. 3: 50. t.254. 1820, p.p.

*Local name:* Kallavi

Trees, to 15 m high; bark greyish-yellow, smooth; blaze pink-red; branchlets glabrescent. Leaves simple, alternate, estipulate; petiole 15-50 mm, stout, puberulent, grooved above; lamina 9-40 x 2.5-15 cm, obovate-oblong to obovate, lanceolate, oblanceolate or oblong-lanceolate, base cuneate or acute, apex acute, margin entire, sometimes more or less dentate, glabrous, very rarely sparsely puberulous or pubescent on the midrib above especially in young leaves, sometimes sparsely pubescent beneath, often with domatia, coriaceous, lateral nerves 8-23 pairs, pinnate, ascending, intercostae reticulate, prominent. Flowers bisexual, subsessile, yellowish-white, solitary or more less crowded in lax panicles of 10-45 cm, branches slender, angular, sparsely to densely pubescent but never tomentose, the lower primary ones nearly always subtended by small to normal leaves; sepals 4 or 5, ciliolate; petals 3+2, yellow; inner petals bifid, lobes more or less divergent, narrow, glabrous, sometimes slightly fimbriate or ciliolate at the very tips; disc small, annular and toothed; ovary superior, glabrous, 2-celled, 2-ovuled; style short. Fruit a drupe, globose, purple-black; endocarp subglobose, usually rather oblique, nearly triangular at ventral view, with more or less prominent rather coarse reticulum; median keel usually very prominent.

*Flowering & Fruiting:* March-June

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Kottayam, Pathanamthitta, Malappuram, Thrissur, Palakkad, Kannur, Trivandrum, Kollam

*Geographical:* Indo-Malesia and China

**Meliosma simplicifolia** (Roxb.) Walp. var. **pungens** (Wall. ex Wight & Arn.) Beus., Blumea 19: 466. 1971; Vajr., Fl. Palghat Dist. 134. 1990; Sasidh., Fl. Chinnar Wildlife Sanctuary 79. 1999; Majumder in Singh *et al.*, Fl. Ind. 5: 427. 2000.

*Millingtonia pungens* Wall. ex Wight & Arn., Edinb. New Phil. J. 15: 178. 1833.

*Meliosma pungens* (Wight & Arn.) Walp. Rep. 1: 423. 1842.

*Meliosma wightii* Planch. ex Brandis, For. Fl. 116. 1874; Hook. f., Fl. Brit. India 2: 4. 1876; Gamble, Fl. Pres. Madras 256(182). 1918.

Trees, to 20 m high, bark greyish-brown, smooth; blaze deep pink changes to orange-red; branchlets densely tomentose. Leaves simple, alternate, estipulate; petiole 1.5-5 cm, stout, puberulent, grooved above; lamina 5-30 x 2-10 cm, elliptic-oblong, elliptic-obovate or oblanceolate or sometimes lanceolate; base acute to round, apex acute or acuminate, margin entire or with some distant teeth, usually distinctly pubescent on midrib, sometimes on nerves above, sparsely to moderately pubescent especially on midrib and nerves beneath, usually with domatia, coriaceous; lateral nerves 7-18 pairs, pinnate, ascending, prominent, intercostae reticulate, prominent. Flowers small, bisexual, pale yellow, crowded in dense glomerule, sessile, in lax or dense panicles of 5-55 cm; branches rather coarse, terete to slightly angular, densely short tomentose, the lower primary ones almost always subtended by small leaves; sepals actually 5, and 3 or more sepal like empty bracts, ovate, ciliate; petals 3+ 2; inner ones *ca.* 1 mm bifid; lobes divergent, glabrous; outer ones orbicular, 2 mm; stamens 5; fertile stamens 3; filaments to 1 mm; staminodes to 1.5 mm; anthers globose; sterile ones bifid at apex; disc annular; ovary superior, glabrous, to 1 mm, 2-celled, ovules 2 per cell; style 1 mm. Fruit a drupe, 5-6 mm across, globose, purple-black, crustaceous, endocarp globose or subglobose, often rather irregular, with usually lax reticulum; median keel distinct but not very prominent.

*Flowering & Fruiting:* September-March

*Habitat:* Shola forests

*Distribution*

*Kerala:* Palakkad, Idukki

*Geographical:* Indo-Malesia and China

**ANACARDIACEAE**

- 1. Leaves pinnate ..... 2
- 1. Leaves simple..... 3
- 2. Lateral nerves numerous, close and parallel forming an intramarginal nerve; drupe 3-4 x 2-2.5 cm ..... **Spondias pinnata**
- 2. Lateral nerves 5-8 pairs without intramarginal nerve..... **Lanea coromandelica**
- 3. Styles 3, divergent..... 4
- 3. Style 1..... 11
- 4. Petiole with 2-4 spur like appendages; fruit partly or wholly enclosed by the hypocarp ..... 5
- 4. Petiole without appendages; fruit not enclosed by the hypocarp ..... 9



5. Leaves tomentose beneath, petiolar spurs 2 pairs, persistent..... 6
5. Leaves glabrous below or tomentose along the midrib only; petiolar spurs 1 pair, deciduous ..... 7
6. Petiolar spurs stout, brown tomentose, midrib glabrous or pubescent on upper surface..... **Holigarna grahamii**
6. Petiolar spur slender, grey tomentose, midrib on upper surface and margins ciliate ..... **Holigarna beddomei**
7. Inflorescence pale brown tomentose; leaves acute or acuminate at apex ..... **Holigarna arnottiana**
7. Inflorescence purple tomentose; leaves obtuse or emarginate at apex ..... 8
8. Leaves spatulate; lateral nerves 6-8 pairs ..... **Holigarna ferruginea**
8. Leaves obovate; lateral nerves 10-12 pairs ..... **Holigarna nigra**
9. Leaves tomentose below; ovary densely villous..... **Semecarpus anacardium**
9. Leaves glabrous; ovary glabrous or sparsely hairy..... 10
10. Petals 3 or 4; leaf base auricled..... **Semecarpus auriculata**
10. Petals 5; leaf base acute ..... **Semecarpus travancorica**
11. Stigma 3-lobed, flowers in axillary racemes or cymes, under 5 cm long ..... 12
11. Stigma entire, panicle terminal ..... 14
12. Drupe transversely oblong, depressed at apex ..... **Nothopegia racemosa**
12. Drupe ovoid, acute at apex..... 13
13. Leaves obovate or oblong, lateral nerves 12-15 pairs; inflorescence brown tomentose ..... **Nothopegia colebrookeana**
13. Leaves linear-lanceolate or elliptic, lateral nerves 15-22 pairs; inflorescence grey or greyish puberulus ..... **Nothopegia beddomei**
14. Fruit a reniform nut seated on a large fleshy pyriform hypocarp..... **Anacardium occidentale**
14. Fruit otherwise..... 15
15. Flowers hermaphrodite, carpels 5, calyx shortly lobed or toothed ..... 16
15. Flowers polygamous, carpel 1, calyx deeply partite ..... 18
16. Leaves glabrous below, acuminate at apex..... **Buchanania lanceolata**
16. Leaves tomentose below, acute or emarginate at apex..... 17
17. Leaves broadly oblong, obtuse or emarginate at apex ..... **Buchanania lanzan**
17. Leaves elliptic-oblong, acute at apex, rusty tomentose below. **Buchanania barberi**
18. Fruit fleshy, stone over 3 cm long, ovoid, compressed, 1 or 2 stamens fertile ..... **Mangifera indica**
18. Fruit dry, 1.5-2 cm subglobose, all 5 stamens fertile..... **Gluta travancorica**
- Anacardium occidentale** L., Sp. Pl. 583. 1753; Hook. f., Fl. Brit. India 2: 20. 1876; Gamble, Fl. Pres. Madras 260(185). 1918; Manilal & Sivar., Fl. Calicut 73. 1982; Mohanan, Fl. Quilon Dist. 127. 1984; Ansari, Fl. Kasaragod Dist. 109. 1985; Ramach. & Nair, Fl. Cannanore Dist. 120. 1988; Antony, Fl. Kottayam Dist. 115. 1989; Vajr., Fl. Palghat Dist. 135. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 172. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 82. 1997; Subram., Fl. Thenmala Division 82. 1995; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 126. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 125. 1996; Sivar. & Mathew, Fl. Nilambur 167. 1997; Sunil, Fl. Pl. Alappuzha Dist. 186. 2000; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 437. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 77. 2002.

*Local names:* Kasumavu, Parangimavu

Gregarious evergreen trees, to 15 m high, bark pale grey to brown, smooth with vertical striations; blaze dull pink; exudation sticky, red; branchlets glabrous. Leaves simple, alternate, somewhat crowded on twig apices, estipulate; petiole 7-15 mm, stout, swollen at base, glabrous; lamina 6-15.5 x 3-8 cm, obovate; base acute or cuneate, round, apex obtuse, round or retuse, margin entire, glabrous, shiny above, coriaceous; lateral nerves 10-15 pairs, parallel, prominent; intercostae reticulate, prominent; glands axillary on main nerves and its branches. Flowers polygamous, yellow, streaked with pink, in terminal prominently bracteate panicles; calyx 5-partite, lanceolate, imbricate, deciduous, with some pubescence on outside; petals 5, linear-lanceolate, ligulate, recurved, imbricate; disc filling the base of the calyx, erect; stamens 8-10, one usually longer than others; filaments connate at the base and adnate to the disc, glandular puberulus; ovary superior, obovoid or obcordate, 1-celled, ovule 1, ascending from a lateral funicle; style filiform, excentric; stigma minute. Fruit a reniform nut, 2-3 cm, grey, seated on a large pyriform fleshy body formed of enlarged disc and top of the pedicel; pericarp gives acrid caustic oil; seed reniform, ascending.

*Flowering & Fruiting:* November-April

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of South America; now widely cultivated in Asia and Africa

**Buchanania barberi** Gamble, Bull. Misc. Inform. Kew 1916: 135. 1916 & Fl. Pres. Madras 259(184). 1918; Mohanan, Fl. Quilon Dist. 128. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 127. 1994; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 442. 2000.

Medium sized trees, to 20 m high, bark dark brown with vertical deep fissures and horizontal cracks. Leaves simple, alternate, estipulate; petiole 8-10 mm, slender; lamina 8-13 x 3-5 cm, elliptic-oblong, base attenuate or cuneate, apex obtuse or acute, margin entire, rusty villous beneath when young, coriaceous; lateral nerves 16-20 pairs, parallel, prominent. Flowers bisexual, small, white in terminal and axillary rusty villous panicles of 10 cm long; bract and bracteoles ovate-acute; pedicel 2-3 mm long; calyx short; lobes acute, villous, persistence, imbricate; petals 4-5, 2.5 cm long, oblong, acute, glabrous; stamens 8-10, inserted at the base of the disc, 1 mm long; filaments slender; disc thick, crenulate; carpels 5-6, free, seated in the cavity of disc; only 1 fertile, 1 mm long, villous at base, ovule 1, pendulous. Fruit a drupe.

*Flowering:* November

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Trivandrum

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Critically endangered (IUCN, 2000)

**Buchanania lanceolata** Wight, Ic. t. 237. 1839; Hook. f., Fl. Brit. India 2: 24. 1876; Gamble, Fl. Pres. Madras 259(184). 1918; Mohanan, Fl. Quilon Dist. 128. 1984;

Anil Kumar, Fl. Pathanamthitta Dist. 166. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 127. 1994; Subram., Fl. Thenmala Division 82. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 79. 1997; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 442. 2000.

*Local names:* Kulamavu, Malamavu

Trees, to 20 m high, bark dark grey, smooth; blaze red; exudation resinous. Leaves simple, alternate, estipulate; petiole 20-25 mm, slender, grooved above; lamina 10-23.5 x 2.5-4.5 cm, elliptic-lanceolate, elliptic-oblong, elliptic-obovate or oblong-lanceolate, base acute or cuneate, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 13-20 pairs, pinnate, ascending, prominent, secondary laterals prominent, intercostae reticulate, prominent. Flowers bisexual, white, 2-3 mm across, in axillary and terminal rusty tomentose panicles; calyx short; lobes 3-5, ovate, pubescent, persistent, imbricate; petals 4-5, ovate-obtuse, reflexed, glabrous; stamens 8-10, 1.2 mm long, free, inserted at the base of disc; filaments subulvent; anthers sagittate; disc thick, 8-10 crenate; carpels 5-6, free, superior, seated in the cavity of the disc, only one fertile, hairy at base, ovule pendulous from a basal funicle; style short; stigma truncate. Fruit a drupe, 18 mm long, laterally compressed, 2 valved, red.

*Flowering & Fruiting:* November-March

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Trivandrum

*Geographical:* South India and Myanmar

*Status:* Vulnerable (IUCN, 2000)

**Buchanania lanzan** Spreng., J. Bot. (Schr.) 2: 234. 1800; Hook. f., Fl. Brit. India 2: 23. 1876; Gamble, Fl. Pres. Madras 258(184). 1918; Mohanan, Fl. Quilon Dist. 128. 1984; Vajr., Fl. Palghat Dist. 136. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 166. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 127. 1994; Subram., Fl. Thenmala Division 81. 1995; Sivar. & Mathew, Fl. Nilambur 168. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 79. 1997; Sasidh., Fl. Periyar Tiger Reserve 81. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 79. 1999; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 443. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 78. 2002; Mohanan & Sivad., Fl. Agasthyamala 178. 2002.

*Buchanania latifolia* Roxb., Fl. Ind. 2: 385. 1832.

*Local names:* Moongapezhu, Nuramaram, Priyalam

Subdeciduous trees, to 18 m high, bark 10-12 mm thick, surface black or dark brown, rough, tessellate the cracks being deep and narrow, some what resembling crocodile hide; blaze red. Leaves simple, alternate, estipulate; petiole 12-22 mm, stout, glabrous; lamina 10-23.5 x 5-12 cm, broadly oblong, base round or acute, apex obtuse or emarginate, margin entire, glabrous above and densely tomentose beneath, coriaceous; lateral nerves 10-20 pairs, pinnate, prominent, pubescent, secondary laterals prominent, intercostae reticulate, prominent. Flowers bisexual, greenish-white, sessile, in pubescent terminal and axillary panicles; calyx lobes 5, persistent; petals 5, oblong, reflexed, pilose; stamens 10, inserted at the base of fleshy disc; filaments free, glabrous; disc cupular, 5 lobed, pilose; carpels 5-6, free, superior, tomentose, 4 reduced to thread like processes, one fertile, ovule one,

pendulous; style lateral; stigma truncate. Fruit a drupe, 10-13 x 8 mm, oblong, laterally compressed, black; stone hard, 2 valved; seed one.

*Flowering & Fruiting:* January-April

*Habitat:* Moist deciduous, dry deciduous and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Palakkad, Pathanamthitta, Malappuram, Idukki, Trivandrum

*Geographical:* India and Myanmar

**Gluta travancorica** Bedd., Fl. Sylv. t. 60. 1870; Hook. f., Fl. Brit. India 2: 22. 1876; Gamble, Fl. Pres. Madras 261(186). 1918; Mohanan, Fl. Quilon Dist. 128. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 128. 1994; Subram., Fl. Thenmala Division 84. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 79. 1997; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 456. 2000; Mohanan & Sivad., Fl. Agasthyamala 179. 2002.

*Local names:* Chenkurinji, Thodappa

Evergreen trees, to 35 m high, bark 6-8 mm thick, greyish-brown, smooth; blaze pink; exudation black, acrid. Leaves simple, alternate, crowded at the tips of branchlets, estipulate; petiole 10-20 mm, stout, glabrous, winged; lamina 8-18 x 3.5-7 cm, elliptic-ovate, obovate-spathulate or spathulate, base cuneate or attenuate, apex obtuse, sometimes emarginate; margin entire, glabrous, coriaceous; lateral nerves 13-18 pairs, pinnate, prominent; secondary laterals prominent, intercostae reticulate, prominent. Flowers bisexual, cream coloured, 8 mm across, in axillary and terminal panicles; calyx spathaceous, splitting irregularly, deciduous; petals 4-6, inserted on the disc and adnate with it below, imbricate, spreading in flower; disc elongate, cylindrical; stamens 4-6, inserted on the disc; filaments filiform; anthers dorsifixed; ovary obliquely ovoid, superior, apocarpous, sessile or stipitate, pubescent, 1-celled, 1-ovuled, pendulous; style lateral, filiform; stigma simple. Fruit a drupe, 2.5-3.5 cm across, globose, brown; pericarp thick-scurfy; seed adherent to the pericarp.

*Flowering & Fruiting:* March-January

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Kollam, Planted in Siruvani, Palakkad

*Endemic to:* Southern Western Ghats

*Status:* Lower risk: near threatened (IUCN, 2000)

**Holigarna arnottiana** Hook.f., Fl. Brit. India 2: 36. 1876; Gamble, Fl. Pres. Madras 268(191). 1918; Manilal & Sivar., Fl. Calicut 73. 1982; Mohanan, Fl. Quilon Dist. 128. 1984; Ansari, Fl. Kasaragod Dist. 110. 1985; Ramach. & Nair, Fl. Cannanore Dist. 116. 1988; Antony, Fl. Kottayam Dist. 113. 1989; Vajr., Fl. Palghat Dist. 136. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 167. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 128. 1994; Subram., Fl. Thenmala Division 80. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 121. 1996; Sivar. & Mathew, Fl. Nilambur 169. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 80. 1997; Sasidh., Fl. Periyar Tiger Reserve 82. 1998; Sunil, Fl. Pl. Alappuzha Dist. 187. 2000; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 457. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 78. 2002; Mohanan & Sivad., Fl. Agasthyamala 179. 2002.

*Local name:* Cheru

Evergreen trees, to 20 m high; bole buttressed; bark 6-8 mm thick, pale brown, rough; blaze dull red; exudation milky, caustic, black on drying; young shoot brown tomentose. Leaves simple, alternate, crowded at the tips of branchlets, estipulate; petiole 7-15 mm, stout, tomentose; spur 1-2 pairs, deciduous, tomentose; lamina 8-25 x 2.5-7.5 cm, oblanceolate, base cuneate or attenuate, apex obtusely acute, margin entire, glabrous, coriaceous; lateral nerves 10-20 pairs, parallel, prominent, intercostae reticulate, prominent. Flowers polygamous, yellowish-brown, 2-3 mm across, in axillary panicles, tomentum of inflorescence pale golden brown; calyx cupular, 5-fid; petals 5, cohering at the base and with the edge of the disc, densely villous inside, valvate; disc lining the calyx tube, obscure in bisexual flowers; stamens 5, inserted outside the disc; filaments subulate; anthers red, versatile; ovary inferior, 1-celled, ovule pendulous; styles 3, divergent; stigmas capitate. Fruit a drupe, 2.5 cm long, obliquely-ovoid, glabrous, almost entirely included within hypocarp, resinous, acrid; seed parietal.

*Flowering & Fruiting:* January-July

*Habitat:* Semi-evergreen and evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Endemic to:* Southern Western Ghats

**Holigarna beddomei** Hook.f., Fl. Brit. India 2: 38. 1876; Gamble, Fl. Pres. Madras 269(192). 1918; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 459. 2000.

*Local names:* Aanacheru, Kattucheru, Malamcheru

Large trees, to 24 m high; bark 3-4 mm thick, smooth, grey; exudation black on dryness. Leaves simple, alternate, estipulate; petiole 10-25 mm, villous, stout; spur 2, slender, villous-pubescent, persistent; lamina 25-38 x 14-17 cm, oblanceolate, suddenly broadened above the middle, base cuneate, apex acuminate, margin entire, ciliate, pubescent beneath, coriaceous; lateral nerves 20-30 pairs, parallel, prominent, midrib on upper surface ciliate, intercostae reticulate, prominent. Flowers small, polygamous; calyx small, cupular, 5 fid, rusty tomentose; petals 5, oblong, cohering at the base, villous inside, valvate; disc lining the calyx tube, with tuft of hairs at the centre; stamens 5, inserted outside the disc; filaments subulate; anthers oblong-cordiform, versatile; ovary inferior, 1-celled, ovule pendulous from near the top of the cell; styles usually 3, divergent; stigmas capitate. Fruit a drupe, hypocarp enclosing about 2/3 or 3/4 of drupe, obliquely ovoid; seeds parietal.

*Flowering & Fruiting:* January-March

*Distribution*

*Kerala:* Palakkad

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (Nayar, 1997)

*Note:* There is no recent report of this species.

**Holigarna ferruginea** Marchand, Rev. Anacard. 171. 1868; Hook. f., Fl. Brit. India 2: 37. 1876; Gamble, Fl. Pres. Madras 268(191). 1918; Ramach. & Nair, Fl. Cannanore Dist. 117. 1988; Sasidh., Fl. Periyar Tiger Reserve 82. 1998; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 459. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 78. 2002.

Evergreen trees, to 25 m high, bark greyish-white, smooth; exudation acrid. Leaves simple, alternate, crowded at the tip of branchlets, estipulate; petiole 10-20 mm, stout, glabrous; spur 2, linear, deciduous; lamina 7-17.5 x 4-10 cm, obovate, not suddenly broadened above the middle, base attenuate, apex obtuse or emarginate, margin entire, glabrous, coriaceous; lateral nerves 7-12 pairs, parallel, somewhat ascending, prominent, midrib slightly pubescent when young; intercostae reticulate, prominent. Flowers small, polygamous, in axillary and terminal paniced racemes, tomentum of inflorescence dark purple; calyx cupular, shortly 5-toothed; petals 5, cohering at the base and with the edge of the disc, densely villous inside, valvate, ciliate along the margins; disc lining the calyx tube, obscure in bisexual flowers; stamens 5, inserted outside the disc; filaments subulate; anthers versatile; ovary inferior, 1-celled, ovule pendulous; style 3, divergent; stigmas capitate. Fruit a drupe, obovoid, included within hypocarp, rusty tomentose.

*Flowering & Fruiting:* April-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kannur, Palakkad, Idukki

*Endemic to:* Western Ghats

**Holigarna grahamii** (Wight) Kurz, J. Asiat. Soc. Bengal 42: 305. 1872; Hook. f., Fl. Brit. India 2: 37. 1876; Gamble, Fl. Pres. Madras 268(191). 1918; Vajr., Fl. Palghat Dist. 136. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 168. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 121. 1996; Sasidh., Fl. Periyar Tiger Reserve 82. 1998; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 460. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 78. 2002.

*Semecarpus grahamii* Wight, Ic. t. 235. 1839.

*Holigarna wightii* Balakr., J. Bomb. Nat. Hist. Soc. 63: 327. 1966.

*Local names:* Cheru, Nai-cheru

Large evergreen trees, to 30 m high, bark 20-25 mm thick, surface yellowish-grey, mottled with green and white, smooth, lenticellate; outer bark 1-2 mm thick, dead, corky, inner bark thick, brittle, inner layers fibrous; blaze red; exudation scanty, colourless, become black on drying; branchlets brown tomentose. Leaves simple, alternate, clustered at the tips of branchlets, estipulate; petiole 15-50 mm long, stout, broadened at base, brown tomentose; spur 2 pairs, stout, persistent, brown tomentose; lamina 15-70 x 7-25 cm, oblanceolate, suddenly broad above the middle, base cuneate or acute, apex acuminate, margin entire, glabrous above, densely golden brown tomentose below, coriaceous; lateral nerves many, parallel, prominent; intercostae reticulate, prominent. Flowers small, polygamous, dull white, in terminal rusty tomentose panicles; calyx cupular, shortly 5-toothed; petals 5, cohering at the base and with the edge of the disc, villous within; disc lining the calyx tube, obscure in bisexual flowers; stamens 5, inserted outside the disc; filaments subulate; anthers versatile; ovary inferior, 1-celled, ovule pendulous from near the top of the cell.; styles usually 3, divergent; stigmas capitate. Fruit a drupe, 2/3-3/4<sup>th</sup> included in hypocarp, vertically shallowly grooved, ovoid, reddish-purple.

*Flowering & Fruiting:* October-March

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad, Thrissur, Malappuram  
*Endemic to:* Western Ghats  
*Status:* Rare (Nayar, 1997)

**Holigarna nigra** Bourd., Indian J. For. 30: 95. 1904; Gamble, Fl. Pres. Madras 268(191). 1918; Manilal, Fl. Silent Valley 66. 1988; Vajr., Fl. Palghat Dist. 137. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 168. 1994; Sasidh., Fl. Periyar Tiger Reserve 82. 1998; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 462. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 79. 2002.

*Local name:* Chiri

Trees, to 30 m high, bark 5-6 mm thick, grey, smooth; exudation black. Leaves simple, alternate, estipulate; petiole 20-25 mm long, stout, glabrous; spur 2 or 4, cauducous; lamina 7.5-15 x 3.7-5 cm, spatulate, not suddenly broadened above the base, base cuneate, apex obtuse or emarginate, margin entire, dark green, glabrous, coriaceous; lateral nerves 6-9 pairs, parallel, prominent; intercostae reticulate, prominent. Flowers polygamous, purple-white, in terminal and axillary dark purple brown tomentose racemes and panicle of 30.5 cm long in males and 7.5 cm long in female flowers; pedicels stout; calyx villous, cupular, lobes 5; petals 5, white within, clothed with white hairs; stamens 5, filaments white, anthers black; disc 5 lobed; ovary inferior, obconic, tomentose, 1-celled; styles 3, recurved; stigma capitate. Fruit a drupe, 4 x 1.5 cm, obovoid, glabrous.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad, Thrissur, Kozhikkode, Wayanad  
*Endemic to:* Southern Western Ghats

**Lannea coromandelica** (Houtt.) Merr., J. Arnold Arbor. 19: 353. 1938; Manilal & Sivar., Fl. Calicut 72. 1982; Ansari, Fl. Kasaragod Dist. 110. 1985; Manilal, Fl. Silent Valley 66. 1988; Antony, Fl. Kottayam Dist. 114. 1989; Vajr., Fl. Palghat Dist. 137. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 168. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 128. 1994; Subram., Fl. Thenmala Division 86. 1995; Ramach. & Nair, Fl. Cannanore Dist. 117. 1988; Sasidh. & Sivar., Fl. Pl. Thrissur For. 122. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 80. 1997; Sasidh., Fl. Periyar Tiger Reserve 82. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 79. 1999; Sunil, Fl. Pl. Alappuzha Dist. 187. 2000; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 463. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 79. 2002; Mohanan & Sivad., Fl. Agasthyamala 180. 2002.

*Dialium coromandelicum* Houtt., Nat. Hist. ser. 2. 2: 39. t. 5. f. 2. 1774.

*Odina wodier* Roxb., Fl. Ind. 2: 293. 1832; Hook. f., Fl. Brit. India 2: 29. 1876; Gamble, Fl. Pres. Madras 263(187). 1918.

*Local names:* Karasu, Karayam, Odiyamaram, Uthi

Deciduous trees, to 25 m high, bark surface grey to dark brown, rough, exfoliating in small irregular flakes, fibrous; blaze crimson red or deep pink; exudation gummy, red; young parts stellate-rusty tomentose. Leaves imparipinnate, alternate, clustered at the end of branchlets, estipulate; rachis 21-27 cm, stout, swollen at

base, stellate-hairy pubescent when young; leaflets 7-11, opposite; petiolule 3-5 mm, slender, pubescent; lamina 5-12 x 3-8 cm, oblong, oblong-ovate, oblong-lanceolate or ovate, base oblique, acute or round, apex acuminate, margin entire, lower surface and part of the upper with scattered stellate pubescence, chartaceous; lateral nerves 10-16 pairs, parallel, prominent, puberulent beneath, intercostae reticulate, prominent. Flowers unisexual, yellowish-green; male flowers : in compound racemes, 8 mm across; calyx 4-lobed; lobes ovate, imbricate, persistent; petals 4, lanceolate, reflexed, imbricate; disc annular, 8-lobed; stamens 8, inserted below the disc, filaments unequal, subulate, ovary abortive; female flowers : in simple racemes; petals and sepals as in male flowers; stamens very short and small; anthers sterile; ovary superior, ovule pendulous from near the top of the cell.; styles 4; stigma peltate. Fruit a drupe, 12 mm long, ovoid, red; stone hard; seed compressed.

*Flowering & Fruiting:* January-May

*Habitat:* Deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and China

**Mangifera indica** L., Sp. Pl. 200. 1753; Hook. f., Fl. Brit. India 2: 13. 1876; Gamble, Fl. Pres. Madras 259(185). 1918; Manilal & Sivar., Fl. Calicut 73. 1982; Ansari, Fl. Kasaragod Dist. 111. 1985; Manilal, Fl. Silent Valley 67. 1988; Ramach. & Nair, Fl. Cannanore Dist. 117. 1988; Vajr., Fl. Palghat Dist. 138. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 169. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 122. 1996; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 129. 1994; Subram., Fl. Thenmala Division 84. 1995; Sivar. & Mathew, Fl. Nilambur 169. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 80. 1997; Sasidh., Fl. Periyar Tiger Reserve 83. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 80. 1999; Sunil, Fl. Pl. Alappuzha Dist. 188. 2000; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5:466.2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 79. 2002; Mohanan & Sivad., Fl. Agasthyamala 181. 2002.

*Local names:* Mavu, Moochi

Evergreen trees, to 30 m high, bark 2-2.5 cm, dark grey, rough with vertical fissures; blaze yellow; exudation yellowish, gummy. Leaves simple, alternate, clustered at the tips of branchlets, estipulate; petiole 10-75 mm long, stout, glabrous, pulvinate; lamina 9.2-40 x 2.5-8 cm, elliptic, elliptic-lanceolate, linear-oblong, base attenuate or acute, apex acuminate, acute or obtusely acute, margin entire, glabrous, shiny, coriaceous; lateral nerves 14-28 pairs, pinnate, prominent; intercostae reticulate, prominent. Flowers polygamous, yellowish-green, in terminal panicles; pedicels jointed; bract deciduous; calyx 4-5 partite, ovate, imbricate, hairy without, cauducous; petals 4-5, oblong-obovate, subequal, nerves at base gland crested, free or adnate to the disc; disc fleshy, cupular, 4-5 lobed; stamens 4-5, inserted inside or on the disc, fertile stamens 1 or 2; filaments free, glabrous; staminodes gland-tipped; ovary sessile, superior, oblique, 1-celled, ovule pendulous; style lateral; stigma simple. Fruit a drupe, 5-15 cm long, oblong-reniform, compressed, yellowish-red, mesocarp fleshy, endocarp fibrous; seed subreniform.

*Flowering & Fruiting:* January-May

*Habitat:* Evergreen and semi-evergreen forests, also widely cultivated



*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Nothopegia beddomei** Gamble, Bull. Misc. Inform. Kew 1918: 227. 1918 & Fl. Pres. Madras 265(189). 1918; Manilal, Fl. Silent Valley 67. 1988; Ramach. & Nair, Fl. Cannanore Dist. 118. 1988; Vajr., Fl. Palghat Dist. 138. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 170. 1994; Subram., Fl. Thenmala Division 83. 1995; Sivar. & Mathew, Fl. Nilambur 170. 1997; Sasidh., Fl. Periyar Tiger Reserve 83. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 80. 1999; Chandra & Mukherjee in Singh et al., Fl. Ind. 5: 473. 2000; Mohanan & Sivad., Fl. Agasthyamala 182. 2002.

*Local name:* Aera, Chera

Trees, to 15 m high, bark 5-6 mm thick, grey-brown, mottled with white and green, smooth, brittle; outer bark 1 mm thick, dark, dead; inner bark 4-5 mm thick; blaze pink; exudation if present scanty, white, acrid; branchlets slender. Leaves simple, alternate, estipulate; petiole 3-10 cm, slender, glabrous, grooved above; lamina 4-15 x 1.2-4.5 cm, elliptic or elliptic-oblong, acute at both ends, margin entire, glabrous, coriaceous; lateral nerves 10-25 pairs, parallel, prominent, intercostae subscalariform, prominent. Flowers small, polygamous, in axillary racemes, some times subterminal; calyx small, 4-lobed, margins ciliate with many dark longitudinal swellings on ventral surface, persistent, imbricate; petals 4, oblong, glabrous, spreading, imbricate; disc annular, 4-lobed; stamens 4, inserted under the margin of the disc; filaments subulate, anthers oblong, introrse; ovary ovoid, superior, 1-celled, style short; stigma capitate; ovule pendulous from near the top of the cell from a flattened funicle. Fruit a drupe, fleshy, ovoid, acute at apex, blue; pericarp thick filled with black resin cells; seed pendulous.

*Flowering & Fruiting:* April-June

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Trivandrum, Kollam, Idukki, Palakkad, Malappuram, Pathanamthitta, Kannur

*Geographical:* South India and Sri Lanka

**Nothopegia colebrookeana** (Wight) Blume, Mus. Bot. Lugd.-Bat 1: 203. 1850; Hook. f., Fl. Brit. India 2: 40. 1876; Gamble, Fl. Pres. Madras 265(189). 1918; Ramach. & Nair, Fl. Cannanore Dist. 118. 1988; Sasidh. & Sivar., Fl. Pl. Thrissur For. 124. 1996; Sasidh., Fl. Periyar Tiger Reserve 83. 1998; Chandra & Mukherjee in Singh et al., Fl. Ind. 5: 474. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 80. 2002.

*Pegia colebrookeana* Wight, Ic. t. 230. 1839.

*Local name:* Chorappala

Evergreen trees, to 12 m high, bark greyish-brown, smooth; blaze red; exudation white, acrid, branchlets dark, lenticellate, ultimate branchlets pubescent. Leaves simple, alternate, estipulate; petiole 10-17 mm, stout, glabrous, grooved above; lamina 5-15 x 2.5-5 cm, elliptic, elliptic-obovate, elliptic-oblong or obovate; base acute, narrowed or attenuate; apex acuminate; margin entire, glabrous, coriaceous; lateral nerves 15-21 pairs, parallel, prominent, intercostae scalariform, prominent. Flowers small, polygamous, greenish-white, 5-6 mm across, in axillary rufous racemes; calyx small, 4-lobed; lobes orbicular, tomentose, persistent, imbricate;

petals 4, oblong, puberulus inside, densely tomentose outside, suberect with recurving tips; disc annular, 4-lobed; stamens 4, inserted under the margin of the disc; filaments subulate, glabrous; anthers oblong, introrse; ovary sessile, superior, ovoid, 1-celled, ovule pendulous from near the top of the cell; style short; stigma capitate. Fruit a drupe, 1-2 cm across, fleshy, pinkish-red, globose, acute at apex, pericarp thick, filled with black resin-cells.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Kannur, Thrissur, Palakkad

*Geographical:* South India and Sri Lanka

**Nothopegia racemosa** (Dalz.) Ramam. in Sald. & Nicols., Fl. Hassan Dist. 377. 1976; Manilal, Fl. Silent Valley 67. 1988; Ramach. & Nair, Fl. Cannanore Dist. 119. 1988; Vajr., Fl. Palghat Dist. 138. 1990; Sasidh., Fl. Periyar Tiger Reserve 84. 1998; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 476. 2000.

*Glycycaarpus racemosus* Dalz., J. Asiat. Soc. Bombay 3: 69. 1849.

*Nothopegia dalzellii* Gamble, Fl. Pres. Madras 265(189). 1918.

*Nothopegia colebrookeana* sensu Hook.f., Fl. Brit. India 2:40.1876p.p., non (Wight) Blume 1850.

*Local name:* Naicheru

Trees, to 10 m high, bark greyish-brown, smooth; blaze red; branchlets glabrous. Leaves simple, alternate, estipulate; petiole 8-20 mm, stout, glabrous; lamina 12-20 x 3.5-6.5 cm, elliptic-oblong, oblong, oblanceolate or obovate, base acute, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves 13-many, parallel, prominent; intercostae scalariform, prominent. Flowers small, polygamous, white, bracteate, in axillary, rusty pubescent racemes; calyx small, 4-lobed, persistent, imbricate; lobes broadly ovate, pubescent above with many longitudinal swellings beneath; petals 4, oblong, glabrous except ciliate hairs on the mid nerve, in curved, imbricate; disc annular, 4-lobed; stamens 4, inserted under the margin of the disc; filaments glabrous or slightly pubescent; anthers shortly oblong, introrse; ovary sessile, superior, ovoid, 1-celled; ovule pendulous from near the top of the cell from a flattened funicle; style short; stigma capitate. Fruit a drupe, fleshy, globose, transversely oblong, striate, depressed at apex; pericarp thin; seed pendulous.

*Flowering & Fruiting:* May-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Kannur, Palakkad, Wayanad

*Endemic to:* Western Ghats

**Semecarpus anacardium** L. f., Suppl. Pl. 182. 1781; Hook. f., Fl. Brit. India 2: 30. 1876; Gamble, Fl. Pres. Madras 266(190). 1918; Mohanan, Fl. Quilon Dist. 130. 1984; Vajr., Fl. Palghat Dist. 139. 1990; Antony, Fl. Kottayam Dist. 114. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 171. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 129. 1994; Subram., Fl. Thenmala Division 81. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 124. 1996; Chandra & Mukherjee in Singh *et*

*al.*, Fl. Ind. 5: 500. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 80. 2002; Mohanan & Sivad., Fl. Agasthyamala 185. 2002.

*Local names:* Cherkuru, Temprakkai, Thenkotta

Trees, to 12 m high, bark 5-6 mm thick, grey to greyish-brown with tessellate scales, furrows longitudinal and horizontal; blaze dull red; exudation acrid. Leaves simple, alternate, crowded at end of branchlets, estipulate; petiole 20-45 mm long, stout, pubescent; lamina 15-50 x 10-15 cm, obovate-oblong, elliptic-oblong or obovate, base acute, obtuse, round or truncate, apex obtuse, round or emarginate, margin entire, glabrous above, puberulent and glaucous beneath, coriaceous; lateral nerves 10-20 pairs, parallel, prominent; intercostae reticulate, prominent. Flowers polygamous, greenish-yellow, 6-8 mm across, in terminal pubescent panicles; calyx lobes 5, ovate, margin ciliate, imbricate, deciduous; petals 5, imbricate; disc broad, annular, villous; stamens 5 inserted below the disc; filaments filiform, glabrous, in male flowers as long as or longer than petals, in female flowers shorter than petals; anthers oblong; ovary superior, densely villous, 1-celled, ovule pendulous from a basal funicle; styles 3, divergent. Fruit a drupe, 2-5 cm long, fleshy, purplish-black, seated on an orange hypocarp as long as the drupe, pericarp rich in corrosive resinous juice; seed pendulous.

*Flowering & Fruiting:* February-April

*Habitat:* Moist deciduous and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Kottayam, Palakkad, Trivandrum, Thrissur, Wayanad

*Geographical:* Africa, Indo-Malesia, China and Australia

**Semecarpus auriculata** Bedd., Ic. t. 187. 1868-1874; Hook. f., Fl. Brit. India 2: 32. 1876; Gamble, Fl. Pres. Madras 267(190). 1918; Mohanan, Fl. Quilon Dist. 130. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 171. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 81. 1997; Sasidh., Fl. Periyar Tiger Reserve 84. 1998; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 502. 2000; Mohanan & Sivad., Fl. Agasthyamala 185. 2002.

*Local names:* Vellacheru, Charu

Trees, to 25 m high, bark 5-6 mm thick, greyish-brown, smooth; blaze red; exudation watery, turns black on drying. Leaves simple, alternate, clustered at apex, estipulate; petiole 2-7 mm, stout, glabrous; lamina 10-28 x 1.7-6.7 cm, oblanceolate, base auriculate, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves 13-17 pairs, parallel, ascending, prominent, intercostae reticulate, prominent. Flowers small, polygamous; male flowers yellow and female flowers green, inconspicuous, in axillary glabrous panicles; calyx cupular; lobes 4-5, deciduous; petals 5, sometimes 4 in male flowers, 5 in bisexual flowers, ovate, glabrous; disc annular, broad; stamens 5, inserted outside the disc; filaments filiform, glabrous, in bisexual flowers shorter than petals, in male flowers, as long as or longer than petals; anthers oblong; ovary superior, glabrous, 1-celled, ovule pendulous from a basal funicle; styles 3, divergent. Fruit a drupe, 18 x 12 mm, fleshy, obliquely ovoid, seated on a fleshy cup like receptacle, black, pericarp thick, loaded with acrid resin; seed pendulous.

*Flowering & Fruiting:* November-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Trivandrum, Idukki

*Endemic to:* Southern Western Ghats

*Status:* Low risk: near threatened (IUCN, 2000)

**Semecarpus travancorica** Bedd., Fl. Sylv. t. 232.1872; Hook. f., Fl. Brit. India 2: 31. 1876; Gamble, Fl. Pres. Madras 267(190). 1918; Mohanan, Fl. Quilon Dist. 130. 1984; Antony, Fl. Kottayam Dist. 114. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 172. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 129. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 124. 1996; Sasidh., Fl. Periyar Tiger Reserve 84. 1998; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 504. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 80. 2002; Mohanan & Sivad., Fl. Agasthyamala 186. 2002.

*Local name:* Avukkaram

Trees, to 30 m high, bark surface greyish-brown blotched with black, smooth, glabrous; blaze dull red; exudation black on drying. Leaves simple, alternate, clustered at the tips of branchlets, estipulate; petiole 20-110 mm, stout, glabrous; lamina 20-60 x 10-15 cm, obovate or obovate-oblong, base acute, apex obtuse, round or emarginate, margin entire, revolute, glabrous, coriaceous; lateral nerves 12-21 pairs, parallel, ascending, prominent, intercostae reticulate, prominent. Flowers polygamous, greenish-yellow in axillary and terminal glabrous panicles; calyx lobes 5, imbricate, deciduous; petals 5, ovate, glabrous, imbricate; disc broad annular; stamens 5, inserted below the disc; filaments filiform, as long as or longer than the petals in male flowers, shorter than petals in bisexual flowers; anthers oblong; ovary superior, glabrous, 1-celled, ovules pendulous from a basal funicle; styles three, divergent. Fruit a drupe, 3-3.7 cm long, fleshy, obliquely oblong, black, striate, seated on a short broad furrowed hypo carp; pericarp thick; seed pendulous.

*Flowering & Fruiting:* November-March

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Kottayam, Pathanamthitta, Trivandrum, Thrissur, Palakkad, Idukki

*Endemic to:* Southern Western Ghats

*Status:* Rare (Nayar, 1997)

**Spondias pinnata** (L. f.) Kurz, Prelim. Rep. For. & Veg. Pegu Append. A.44. & B.42. 1875; Manilal & Sivar., Fl. Calicut 72. 1982; Mohanan, Fl. Quilon Dist. 131. 1984; Ansari, Fl. Kasaragod Dist. 111. 1985; Antony, Fl. Kottayam Dist. 115. 1989; Vajr., Fl. Palghat Dist. 139. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 172. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 130. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 125. 1996; Sivar. & Mathew, Fl. Nilambur 171. 1997; Sasidh., Fl. Shenduruny Wildlife Sanctuary 82. 1997; Sasidh., Fl. Periyar Tiger Reserve 85. 1998; Sunil, Fl. Pl. Alappuzha Dist. 189. 2000; Chandra & Mukherjee in Singh *et al.*, Fl. Ind. 5: 507. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 81. 2002; Mohanan & Sivad., Fl. Agasthyamala 186. 2002.

*Mangifera pinnata* L. f., Suppl. Pl. 156. 1781.

*Spondias mangifera* Willd., Sp. Pl. 2: 751. 1799; Hook. f., Fl. Brit. India 2: 42. 1876; Gamble, Fl. Pres. Madras 261(186). 1918.

*Local names:* Ambazham, Mampuli

Deciduous trees, to 25 m high, bark 15-25 mm thick, surface grey to pale brown, smooth, vertically striated; outer bark 1 mm thick, dead, corky; inner bark semi fibrous, pink, streaked with white; blaze pink; exudation colourless, gummy. Leaves imparipinnate, alternate, clustered at the end of branches, stipulate; rachis 25-45 cm, slender, glabrous, swollen at base; leaflets 5-21, opposite or subopposite; petiolule 2-8 mm long, slender, glabrous; lamina 4-23 x 2.5-10 cm, oblong, elliptic or elliptic-oblong, base obtuse, subacute, oblique or round, apex acuminate or obtusely acuminate, margin entire, glabrous, chartaceous or membranous; lateral nerves many, parallel, close, slender, prominent, connected by an intramarginal nerve, intercostae reticulate. Flowers polygamous, yellowish-white, subsessile, in terminal spreading panicles; calyx small; lobes 5, imbricate, deciduous; petals 5, oblong, glabrous, spreading, valvate; disc thick, annular, 10-crenate; stamens 10, inserted below the disc; filaments slender; anthers versatile; ovary ovoid or subglobose, superior, immersed in the disc, 5-celled, 1 ovule in each cell, pendulous; styles 5, connivent; stigma spreading. Fruit a fleshy drupe, 3.8-5 cm long, yellow, endocarp woody surrounded by longitudinal interwoven fibres; seeds 1-3, of which only one is perfect, pendulous, oblong.

*Flowering & Fruiting:* March-December

*Habitat:* Moist deciduous and semi-evergreen forests, also in the plains; often cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

### FABACEAE

1. Staminal filaments free ..... 2
1. Staminal filaments variously united ..... 3
2. Flowers orange-yellow, 3-4 cm long; fruit oblong, seed brown .....  
..... **Castanospermum australe**
2. Flowers creamy white, 1 cm long; fruit ellipsoid, seed scarlet .....  
..... **Ormosia travancorica**
3. Leaves 3- foliate ..... 4
3. Leaves pinnate, 5 or more foliate ..... 8
4. Branchlets prickly, standard petal smaller than the wing petals; seeds 3 or more ..... 5
4. Branchlets not prickly, keel petals longer than the standard petal; fruit 1-seeded .....  
..... **Butea monosperma**
5. Branchlets without prickles ..... **Erythrina subumbrans**
5. Branchlets prickly ..... 6
6. Calyx spathaceous, obliquely splitting to the base ..... **Erythrina suberosa**
6. Calyx campanulate, 2- lipped ..... 7
7. Fruit compressed, not constricted between seeds, petals orange red, prickles yellowish-brown .....  
..... **Erythrina stricta**
7. Fruit torulose, petals scarlet, prickles black ..... **Erythrina variegata**
8. Leaflets opposite, calyx truncate, lobes obscure ..... 9
8. Leaflets alternate, calyx distinctly lobed ..... 10
9. Stamens 9+1, ovules 10 or more, flowers in erect dense racemes **Gliricidia sepium**
9. Stamens 10, ovules 2, flowers in lax racemes ..... **Pongamia pinnata**
10. Pods orbicular, broadly winged, 3-4 cm across ..... **Pterocarpus marsupium**
10. Pods linear, not winged, less than 1.5 cm broad ..... 11
11. Stamens 9, panicles glabrous ..... 12
11. Stamens 10, in 2 bundles of 5 each, panicles tomentose ..... 13
12. Leaflets obtuse, inflorescence clustered on previous years shoots .....  
..... **Dalbergia latifolia**
12. Leaflets acute, inflorescence terminal on new shoots ..... **Dalbergia sissoides**
13. Standard petal narrow, 3-4 mm broad without callosity at the base of limb .....  
..... **Dalbergia lanceolaria** ssp. **paniculata**
13. Standard petal obovate, 5-6 mm broad with callosity at the base of limb .....  
..... **Dalbergia lanceolaria** ssp. **lanceolaria**

**Butea monosperma** (Lam.) Taub. in Engl. & Prantl, Nat. Pflanzenf. 3(3): 366. 1894; Manilal & Sivar., Fl. Calicut 90. 1982; Mohanan, Fl. Quilon Dist. 138. 1984; Ansari, Fl. Kasaragod Dist. 117. 1985; Manilal, Fl. Silent Valley 70. 1988; Ramach. & Nair, Fl. Cannanore Dist. 127. 1988; Vajr., Fl. Palghat Dist. 147. 1990; Sanjappa, Legumes Ind. 99. 1992; Sivar. & Mathew, Fl. Nilambur 205. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 85. 1999; Sunil, Fl. Pl. Alappuzha Dist. 204. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 84. 2002.

*Erythrina monosperma* Lam., Encycl. 1: 391. 1785.

*Butea frondosa* Koenig ex Roxb., Asiat. Res. 3: 369. 1792 & Pl. Corom. t. 21. 1795; Hook. f., Fl. Brit. India 2: 194. 1876; Gamble, Fl. Pres. Madras 357(252). 1918.

*Local names:* Chamatha, Plasu

Deciduous trees, to 10 m high, bole crooked, irregular; bark 5-6 mm thick, grey to greyish-brown; exudation red; branchlets densely tomentose. Leaves trifoliate, alternate; stipules small, lateral, cauducous; rachis 12-20 cm long, stout, pubescent, pulvinate; stipels subulate; petiolule 5-10 mm long, stout, pubescent; lateral leaflets 8.8-13.7 x 5.5-11 cm, broadly oblong-ovate or suborbicular, base oblique, apex obtuse, terminal leaflet 11-15 x 12.5-15 cm, widely rhomboid, base obtuse, apex emarginate, silky pubescent on both sides when young, glabrous above, silky pubescent beneath when mature, margin entire, coriaceous; lateral nerves 4-8 pairs, pinnate, prominent; intercostae scalariform, prominent. Flowers bisexual, 5 cm long, bright red, in terminal or axillary, densely fascicled, racemes; calyx broadly campanulate, teeth 5, deltoid, short, upper 2 connate, velvety; corolla much exerted; petals 5, standard petal 5 x 2.5 cm, lanceolate, clawed, wings falcate 4.5 x 1.5 cm adnate to keel, keel united 4.5 x 3 cm, curved; stamens 9 + 1; vexillary stamens free; anthers uniform; ovary 2.5 cm, inferior, 1-celled, ovules 2; style long, incurved, beardless; stigma small. Fruit a pod, 12.5-28 cm long, oblong, the base flat, wing-like and indehiscent, the tip splitting round the apical seed; seed obovate, compressed.

*Flowering & Fruiting:* March-April

*Habitat:* Dry and moist deciduous forests, also grown in the plains

*Distribution*

*Kerala:* Kasaragode, Kollam, Palakkad, Kannur, Kozhikkode, Alappuzha, Malappuram, Idukki

*Geographical:* Tropical Asia

***Castanospermum australe*** A. Cunn. & Fraser in Hook.'s Bot. Misc. 1:241. t.51.1830; Sanjappa, Legumes Ind. 110. 1992; Sasidh., Fl. Parambikulam Wildlife Sanctuary 85. 2002.

Trees, to 25 m high; bark greyish-brown, smooth, blaze dull yellow. Leaves imparipinnate, alternate, stipulate; rachis 35-55 cm long, stout, pulvinate, glabrous; leaflets 9-19, subopposite; petiolule 3-5 mm long, stout, grooved above, glabrous; lamina 12-15 x 3-5 cm, elliptic, elliptic-lanceolate or ovate-lanceolate, base obliquely acute, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves 7-10 pairs, pinnate, slender, prominent, intercostae reticulate, faint. Flowers bisexual, orange, in 12 cm long, racemes which may be axillary or from the old wood; peduncle to 2.5 cm long; calyx 2 cm, turbinate, broadly 5-lobed; petals 5; standard obovate-orbicular, clawed; wings and keels oblong, to 2 cm; stamens 5, free; ovary inferior, stalked, glabrous, ovules few. Fruit a pod, to 12 x 1 cm, turgid, woody, terete, 2-valved; seeds subglobose, 3 cm wide.

*Flowering & Fruiting:* January-October

*Habitat:* Grown as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Australia

**Dalbergia lanceolaria** L. f., Suppl. Pl. 316. 1781, ssp. **lanceolaria**; Hook. f., Fl. Brit. India 2: 235. 1876; Gamble, Fl. Pres. Madras 383(270). 1918; Ansari, Fl. Kasaragod Dist. 123.1985; Manilal, Fl. Silent Valley 74.1988; Vajr., Fl. Palghat Dist. 154.1990; Sanjappa, Legumes Ind. 136.1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 144. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 137. 1996; Sivar. & Mathew, Fl. Nilambur 185. 1997; Sasidh., Fl. Periyar Tiger Reserve 97. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 92. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 89. 2002; Mohanan & Sivad., Fl. Agasthyamala 199. 2002.

*Local names:* Kannanvaka, Velleeti

Deciduous trees, to 15 m high, bole fluted; bark 15-25 mm, thick, surface grey-brown, rough; flaking off in thin scales; fibrous; blaze yellow, turning brownish-yellow; branchlets glabrous. Leaves imparipinnate, alternate; stipules small, 12-18mm long, lateral; rachis 3.5-14 cm long, slender, pulvinate, glabrous; leaflets 9-23, alternate, exstipellate; petiolule 2-5 mm, slender, glabrous; lamina 1.3-4 x 0.7-2.5 cm, oblong, ovate-oblong or obovate, base obtuse, acute or round, apex obtuse and emarginate, margin entire, glabrate above, puberulent beneath, coriaceous; lateral nerves 5-12 pairs, pinnate, ascending, slender, prominent; intercostae reticulate, prominent. Flowers bisexual, 8-9 mm long purplish-white, in loose axillary tomentose panicles; bracteoles small; calyx campanulate, 3 mm long; lobes 5, ovate, acute, hirsute, lobes longer than tube; petals 5; standard petal broad-obovate, thickened above the very short claw, reflexed, wings curved, keel petals hastate; stamens 10, 5+5, iso-diadelphous; ovary stipitate, inferior, sparsely pubescent, style slender, 1-celled, ovule 1-many. Fruit a pod 55-62 x 10-12 mm, long stipitate, oblong, tapering to both ends; seeds 1-3, 7-8 mm long, compressed.

*Flowering & Fruiting:* January-December

*Habitat:* Moist and dry deciduous forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Malappuram, Trivandrum, Palakkad, Thrissur

*Geographical:* India, Myanmar, Nepal and Sri Lanka

**Dalbergia lanceolaria** L.f. ssp. **paniculata** (Roxb.) Thoth., Bull. Bot. Surv. India 25: 171. 1985; Sanjappa, Legumes Ind. 137. 1992; Sasidh., Fl. Parambikulam Wildlife Sanctuary 89. 2002.

*Dalbergia paniculata* Roxb., Corom. Pl. 2: 8, t. 114. 1799; Hook. f., Fl. Brit. India 2: 236. 1876; Gamble, Fl. Pres. Madras 383(270). 1918; Sivar. & Mathew, Fl. Nilambur 186. 1997.

*Amerimnon paniculatum* (Roxb.) O. Ktze., Rev. Gen. Pl. 1: 159. 1891.

*Local names:* Pachilamaram, Pinekanni, Vettutholi

Deciduous trees, to 18 m high, bole fluted; bark 2-3 mm thick, surface grey, smooth, flaking off in thin flakes; blaze yellow turning to pale-brown; branchlets densely pubescent. Leaves imparipinnate, rarely unifoliate, alternate; stipules lateral, lanceolate, cauducous; rachis 15-17.5 cm long, slender, pulvinate, pubescent; leaflets 7-13, alternate, exstipellate; petiolule 3-7 mm, slender, pubescent; lamina 1.5-2.5 x 1.2-1.6 cm, elliptic, oblong or obovate-oblong, base cuneate or round, apex obtuse or emarginate, margin entire, coriaceous, glabrous except midrib; lateral nerves 5-12 pairs, pinnate, slender, prominent, ascending, intercostae



reticulate, prominent. Flowers bisexual, bluish-white, 7-8 mm long, in dense axillary or terminal panicles on tender shoot; bracteoles small; calyx campanulate, rusty-tomentose; lobes 5, unequal, ciliate; petals 5, standard petal narrow, obovate-oblong, slightly auricled at base with a rather long claw and not thickened above it; keel petals hastate; stamens 10, 5+5, iso-diadelphous; ovary inferior, stipitate, glabrous, 1-celled, ovules 1-many; style slender; stigma capitate. Fruit a pod, 25-50 x 10-12 mm, shortly stipitate, narrowed at both ends; seeds 1-2.

*Flowering & Fruiting:* March-September

*Habitat:* Dry and moist deciduous forests

*Distribution*

*Kerala:* Malappuram, Idukki, Palakkad

*Geographical:* India and Myanmar

***Dalbergia latifolia*** Roxb., Corom. Pl. 2: 7, t. 113. 1799; Hook. f., Fl. Brit. India 2: 231. 1876; Gamble, Fl. Pres. Madras 383(270). 1918; Mohanan, Fl. Quilon Dist. 143. 1984; Ramach. & Nair, Fl. Cannanore Dist. 134. 1988; Antony, Fl. Kottayam Dist. 125. 1989; Vajr., Fl. Palghat Dist. 154. 1990; Sanjappa, Legumes Ind. 137. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 197. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 144. 1994; Mohanan & Sivad., Fl. Agasthyamala 200. 2002; Sasidh. & Sivar., Fl. Pl. Thrissur For. 137. 1996; Sivar. & Mathew, Fl. Nilambur 185. 1997; Sasidh., Fl. Periyar Tiger Reserve 97. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 92. 1999; Sunil, Fl. Pl. Alappuzha Dist. 222. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 89. 2002.

*Dalbergia emarginata* Roxb., Fl. Ind. 3: 224. 1832.

*Local names:* Eeti, Kariveeti, Veeti

Deciduous trees, to 25 m high, bark 10-15 mm thick, grey, smooth with short irregular cracks, exfoliating in thin fibrous longitudinal flakes; blaze yellow, turning to yellow-brown. Leaves imparipinnate, rarely 1-foliolate, alternate; stipules small, lateral, deciduous; rachis 7.5-20.5 cm, slender, pulvinate, glabrous; leaflets 3-9, alternate, exstipulate; petiolule upto 10 mm, stout, grooved above, glabrous; lamina 2.5-10 x 2.5-10 cm, orbicular, base acute or very rarely truncate, apex obtuse or emarginate, margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 5-10 pairs, pinnate, slender, ascending, prominent, intercostae reticulate, faint. Flowers bisexual, 5-6 mm long, white, in short corymbose panicles from the axils of fallen leaves of previous years shoot; bracteoles small, deciduous; calyx tube campanulate; lobes 5, subequal, upper 2 connate, lateral obtuse, lower acute; petals 5, standard petal obovate, cuneate at base, reflexed, wings 6 x 2.5 mm, clawed, base auricled, keel 6 mm long, hastate, united, clawed; stamens 9, monadelphous; staminal tube 4 mm, split open one side; ovary stipitate, inferior, 5-7 mm, glabrous, 1-celled, ovules 1-few; style slender, incurved, glabrous; stigma capitate. Fruit a pod, 5-7.5 x 1.5-1.8 cm, oblong-lanceolate, tip obtuse, distinctly marked in the place of seeds, but not wrinkled, indehiscent; seeds 1-4, reniform, brown.

*Flowering & Fruiting:* August-September

*Habitat:* Dry and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia  
*Status:* Vulnerable (IUCN, 2000)

**Dalbergia sissoides** Graham *ex* Wight & Arn., Prodr. 1: 265. 1834; Hook. f., Fl. Brit. India 2: 231. 1870; Gamble, Fl. Pres. Madras 383(270). 1918; Mohanan, Fl. Quilon Dist. 145. 1984; Ramach. & Nair, Fl. Cannanore Dist. 135. 1988; Vajr., Fl. Palghat Dist. 154. 1990; Sanjappa, Legumes Ind. 140. 1992; Subram., Fl. Thenmala Division 92. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 137. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 90. 1997; Sivar. & Mathew, Fl. Nilambur 186. 1997; Sasidh., Fl. Periyar Tiger Reserve 97. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 92. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 89. 2002.

*Dalbergia latifolia* Roxb. var. *sissoides* (Graham *ex* Wight & Arn.) Baker in Hook.f., Fl. Brit. India 2: 231. 1876.

*Local names:* Chelaveeti, Eetti, Veeti

Deciduous trees, to 30 m high, bark 15-20 mm thick, surface grey to pale brown, smooth, exfoliations small, irregular; fibrous; blaze concentrically striated, yellow, turning to yellowish-brown. Leaves imparipinnate, alternate; stipules small, lateral, cauducous; rachis 5-15 cm, slender, pulvinate, glabrous; leaflets 7-11, alternate, estipellate; petiolule 6-10 mm, slender; lamina 3-7.5 x 2-6 cm, elliptic-obovate, orbicular or obovate, base cuneate or acute, apex acute, obtuse or retuse, margin entire, membranous; lateral nerves 4-12 pairs, pinnate, ascending, slender, prominent; intercostae reticulate, prominent. Flowers bisexual, white, 7-8 mm long, in loose terminal panicles; calyx campanulate, glabrous; lobes 5, subequal; petals 5; standard petal cuneate at base, reflexed, keel petals hastate; stamens 9, monadelphous, filaments alternately longer and shorter; ovary stipitate, inferior, 1-celled, ovule 1-few; style slender; stigma capitate. Fruit a pod 5-7.5 x 1-1.2 cm, tapering to both ends, oblong, stipitate; seeds 2-4, reniform, pale brown.

*Flowering & Fruiting:* February-August

*Habitat:* Moist and dry deciduous forests

*Distribution*

*Kerala:* Kollam, Palakkad, Kannur, Thrissur, Idukki, Malappuram

*Geographical:* Peninsular India and Indonesia

**Erythrina stricta** Roxb., Fl. Ind. 3: 251. 1832; Hook. f., Fl. Brit. India 2: 189. 1876; Gamble, Fl. Pres. Madras 354(250). 1918; Manilal, Fl. Silent Valley 81. 1988; Antony, Fl. Kottayam Dist. 130. 1989; Sanjappa, Legumes Ind. 173. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 212. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 142. 1996; Sivar. & Mathew, Fl. Nilambur 211. 1997; Sasidh., Fl. Periyar Tiger Reserve 105. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 94. 2002; Mohanan & Sivad., Fl. Agasthyamala 210. 2002.

*Local names:* Mullumurukku, Murikku, Venmurukku

Trees, to 15 m high, bark 10-20 mm thick, surface yellowish, vertically fissured, armed with bossed prickles; outer bark corky, stratified, inner bark thin fibrous; branchlets apically stellate-pubescent, basally glabrescent, densely prickled. Leaves trifoliate, alternate; stipules small, lateral; rachis 10-13 cm long, slender, glabrous, pulvinate, prickled or not; stipels gland-like; petiolule 5-10 mm long, slender, glabrous; leaflets 5-12.5 x 3.7-10 cm, deltoid, truncate or obtuse, apex subacute or

acuminate, margin entire, glabrous, membranous; nerves 3-7 from base, palmate, lateral nerves 5-7, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, 5 x 1.8 cm, red, clustered on the brown-tomentose rachis, in terminal racemes; bracts ovate; bracteole 3 mm; pedicel 3 in a cluster, to 8 mm; calyx spathaceous, 1-1.5 cm, split half way down, glabrous, erect; corolla deep red; petals 5, standard 5 x 2.5 cm, oblong-lanceolate, wings 5.5 x 3 mm, obovate, keel 2 x 0.7 cm, ovate; stamens 10, monadelphous, vexillary filament free; staminal sheath 2.5 cm; filaments 1 and 1.5 cm long; anthers uniform; ovary inferior, stipitate, 2 cm, pubescent, 1-celled, ovules many; style 1.5 cm, suberect; stigma capitate. Fruit a pod, 5-10 cm long, lanceolate; seeds 3-6, black.

*Flowering & Fruiting:* January-May

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Idukki, Kottayam, Pathanamthitta, Malappuram, Trivandrum, Palakkad, Thrissur

*Geographical:* India, China, Nepal, Thailand and Vietnam

***Erythrina suberosa*** Roxb., Fl. Ind. 3: 253. 1832; Hook. f., Fl. Brit. India 2: 189. 1876; Gamble, Fl. Pres. Madras 354(250). 1918; Sanjappa, Legumes Ind. 173. 1992; Sasidh., Fl. Chinnar Wildlife Sanctuary 96. 1999.

*Erythrina sublobata* Roxb., Fl. Ind. 3: 254. 1832.

Deciduous trees, to 10 m high, bark grey, corky, deeply cracked; branchlets tomentose, armed. Leaves trifoliate, alternate; stipules about 5 mm long, lateral, lanceolate; rachis 7.5-12.5 cm long, stout, puberulent, pulvinate; petiolule upto 10 mm; stipels gland like, leaflets 15-10 x 5.5-12 cm, rhomboid-ovate, base deltoid or truncate, apex acute or obtuse, margin entire or sinuate, glabrous above and wooly pubescent beneath, coriaceous; 3-ribbed from the base, lateral nerves 4-5 pairs, pinnate, prominent, intercostae reticulate, faint. Flowers bisexual, about 4 cm long, bright scarlet, in axillary and terminal racemes; bracts lanceolate, cauducous; calyx tube about 5 mm long, campanulate, splitting to become bilabiate, glabrous; corolla exserted; petals 5, standard oblong, 3.8 x 2 cm, sessile, the wings minute, keels about 1.8 cm long, connate; stamens 10, monadelphous, the vexillary filament free in the upper two thirds; filaments 6 and 8 mm; anthers uniform; ovary inferior, oblong, downy-pubescent, stipitate, 1-celled, ovules many; style to 1 cm, curved, subulate at apex, not bearded, stigma capitate. Fruit a pod, to 15 cm long, linear-falcate, torulose, follicular, with spongy packing between seeds; seeds 2-5, dark reddish-brown, subreniform.

*Flowering & Fruiting:* February-April

*Habitat:* Deciduous forests, also in the plains

*Distribution*

*Kerala:* Idukki

*Geographical:* Indo-Malesia

***Erythrina subumbrans*** (Hassk.) Merr., Philipp. J. Sci. 5: 113. 1910; Ramach. & Nair, Fl. Cannanore Dist. 143. 1988; Sanjappa, Legumes Ind. 173. 1992; Subram., Fl. Thenmala Division 106. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 96.

1997; Sasidh. & Sivar., Fl. Pl. Thrissur For. 143. 1996; Sivar. & Mathew, Fl. Nilambur 212. 1997.

*Hypaphorus subumbrans* Hassk., Hort. Bogor. Desc. 198. 1858.

*Erythrina lithosperma* Blume ex Miq., Fl. Ind. Bat. 1: 209. 1859; Hook. f., Fl. Brit. India 2: 190. 1876.

*Erythrina mysorensis* Gamble, Bull. Misc. Inform. Kew 1919: 222. 1919 & Gamble, Fl. Pres. Madras 354(250). 1919; Subram., Indian For. 96:527-529.1970.

Trees, to 15 m high; branchlets terete, glabrous. Leaves trifoliate, alternate; stipules small, lateral, cup-shaped, deciduous; rachis 10.5-17.5 cm long, slender, glabrous, pulvinate; stipels gland-like; petiolule to 10 mm long, opposite, slender, glabrous; lamina 8-16 x 3.8-10.5, terminal leaflets broadly elliptic-obovate or rhomboid, lateral leaflets elliptic-ovate or ovate, base obtuse, apex acuminate, margin entire, glabrous, chartaceous; 3-ribbed from the base, lateral nerves 5-9 pairs, pinnate, prominent, intercostae scalariform. Flowers bisexual, 3 cm long, orange-red, in terminal pyramidal racemes to 10 cm long; bracts and bracteoles lanceolate; calyx erect, split halfway down; tube 4 mm, 2-lipped; lobes 4 mm; standard petals 2.5-3.5 cm long, oblanceolate; wings and keel about 1.5 cm long, keel petals free; stamens 9 +1, diadelphous, sheath 1.5 cm, alternately long and short; anthers uniform; ovary half inferior, stipitate, ovules many; style curved, subulate; stigma capitate. Fruit a pod, 8-12 x 1.5-2 cm, narrow-oblong, turgid, proximate half seedless, distal half with 1-5 seeds.

*Flowering & Fruiting:* January-May

*Habitat:* Grown as shade tree in coffee plantations, also getting established in degraded forest areas

*Distribution*

*Kerala:* Malappuram, Kannur, Kollam, Thrissur, Idukki, Wayanad

*Geographical:* Originally from Malesia; now common along Western Ghats

***Erythrina variegata*** L. in Stickman, Herb. Amboin. 10. 1754; Vajr., Fl. Palghat Dist. 161. 1990; Sanjappa, Legumes Ind. 173. 1992; Subram., Fl. Thenmala Division 105. 1995.

*Erythrina variegata* L. var. *orientalis* (L.) Merr., Interpr. Herb. Amboin. 276. 1917; Manilal & Sivar., Fl. Calicut 90. 1982; Mohanan, Fl. Quilon Dist. 150. 1984; Antony, Fl. Kottayam Dist. 131. 1989; Sanjappa, Legumes Ind. 173. 1992; Sasidh. & Sivar., Fl. Pl. Thrissur For. 143. 1996; Sasidh., Fl. Chinnar Wildlife Sanctuary 97. 1999; Sunil, Fl. Pl. Alappuzha Dist. 236. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 94. 2002.

*Erythrina indica* Lam., Encycl. 2: 391. 1786; Hook. f., Fl. Brit. India 2: 188. 1876; Gamble, Fl. Pres. Madras 353(249). 1918; Ramach. & Nair, Fl. Cannanore Dist. 142.

*Local names:* Kalyana, Mullumurukku, Murukku

Deciduous tree; bark yellowish or greenish-grey, smooth, peeling off in papery flakes; blaze yellow; prickles black on branches, falling after a few years. Leaves trifoliate, alternate; stipules small, lateral; rachis 17-21 cm, slender, pulvinate, glabrous; stipels gland-like; petiolule 7-10 mm, stout, glabrous; leaflet 10-13.5 x 8.5-12.5 cm, widely ovate, rhomboid or deltoid-ovate, base truncate or obtuse, apex acuminate, margin entire, glabrous, membranous; 3 ribbed from base; lateral nerves 4-7 pairs,

pinnate, prominent, ascending, intercostae reticulate, faint. Flowers bisexual, bright red, in dense racemes; calyx spathaceous, oblique, recurved, split to the base on one side, 5-toothed at the tip; petals 5, sessile, standard 6.5×2.5 cm, oblong-elliptic, apex obtuse, wings 1.5 x 1 cm, obovate, keel 1.5 x 1.7 cm, oblong-falcate, free; stamens 10, monadelphous, alternately longer and shorter, vexillary filament free; anthers uniform; ovary stipitate, inferior, pubescent, 1-celled, ovules many; style curved, subulate at the apex, not bearded; stigma capitate. Fruit a pod 15-30.5 cm long, torulose, constricted between seeds, dehiscent; seeds 6-8.

*Flowering & Fruiting:* March-April

*Habitat:* Dry deciduous forests, widely grown as pepper stand and for fencing

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia, China and Africa

**Gliricidia sepium** (Jacq.) Kunth ex Walp., Rep. 1: 679. 1842; Mohanan, Fl. Quilon Dist. 151. 1984; Ramach. & Nair, Fl. Cannanore Dist. 161. 1988; Antony, Fl. Kottayam Dist. 132. 1989; Vajr., Fl. Palghat Dist. 178. 1990; Sanjappa, Legumes Ind. 181. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 234. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 152. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 158. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 104. 1997; Sivar. & Mathew, Fl. Nilambur 220. 1997; Subram., Indian For. 96. 527. 1970; Manilal & Sivar., Fl. Calicut 89. 1982; Sunil, Fl. Pl. Alappuzha Dist. 240. 2000.

*Robinia sepium* Jacq., Enum. Syst. Pl. 28. 1760.

*Gliricidia maculata* (Steud.) Kunth, Nov. Gen. Sp. 6: 393. 1824; Manilal & Sivar., Fl. Calicut 89. 1982

*Local name:* Seema-konna

Trees to 8 m high; bark grey, lenticellate; branchlets glandular-pubescent. Leaves odd-pinnate, alternate, spiral; stipules lateral, cauducous; rachis 8-30 cm, slender, pulvinate, pubescent; leaflets 7-21, opposite, estipellate; petiolule 4-7 mm, slender, pubescent; lamina 2.5-8 x 1.5-5 cm, ovate, ovate-oblong, elliptic-ovate or elliptic-oblong, base obtuse or oblique, apex acuminate or obtuse, margin entire, glabrous above, glaucous and puberulent beneath, membranous; lateral nerves 5-10 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers bisexual, 2 cm across, rose-pink, to 20 cm long racemes; pedicels to 2 cm; calyx campanulate, to 5 mm; lobes obscure; petals exerted; standard 2 x 1.5 cm, orbicular, with 2 callosities above claw; wings to 2 x 0.6 cm, oblong, auricled; keels 2.2 x 0.8 cm, obovate, incurved; stamens 9+1; staminal tube 1.6 cm; vexillary stamen free; filaments unequal, 3-4 mm; anthers uniform; ovary half inferior, sessile, 1.5 cm; style incurved, 4 mm, glabrous; stigma capitate. Fruit a pod, to 15 cm long.

*Flowering & Fruiting:* December-June

*Habitat:* Cultivated in fields and along fences

*Distribution*

*Kerala:* All districts

*Geographical:* Native of South America; Introduced and now widely grown in India

**Ormosia travancorica** Bedd., Fl. Sylv. t. 45. 1870; Hook. f., Fl. Brit. India 2: 253. 1878; Gamble, Fl. Pres. Madras 390(275). 1918; Sanjappa, Legumes Ind. 223.

1992; Sasidh. & Sivar., Fl. Pl. Thrissur For. 148. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 98. 1997; Sasidh., Fl. Periyar Tiger Reserve 111. 1998.

*Local name:* Malamanchadi

Evergreen trees, to 25 m high, bark 10-12 mm thick, surface brown, mottled with grey, smooth; brittle; blaze yellowish-brown, streaked. Leaves imparipinnate, alternate, clustered at the tips of branchlets; stipules small, lateral, pubescent; rachis 4.5-20 cm long, slender, pulvinate, pubescent, leaflets 9-13, opposite, exstipellate; petiolule 6-10 mm, slender, pubescent; lamina 3-15 x 2-4.3 cm, elliptic-oblong, elliptic-oblong, or obovate, base acute, obtuse, truncate or oblique, apex acuminate, or caudate-acuminate, margin entire, glabrous above, downy beneath, coriaceous; lateral nerves 4-9 pairs, pinnate, slender, prominent, intercostae reticulate, obscure. Flowers bisexual, purple, striped with green, in axillary and terminal racemes; bracts small; bracteoles minute; calyx tube campanulate, deeply 5 cleft, the upper teeth the shortest; corolla little exerted; petals 5, claws short, the standard orbicular, wings oblong, often more or less sagittate at base, keel petals free, somewhat incurved; stamens 10, free, alternately long and short; anthers versatile; ovary subsessile, inferior, glabrous, 1-celled, ovule 2-many; style subulate, involute; stigma oblique. Fruit a pod 5-7.5 cm long, oblong, thick, flat, red, dehiscent; seed one, rarely 2, obovate or suborbicular, biconvex, bright red.

*Flowering & Fruiting:* February-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Kollam, Thrissur

*Endemic to:* Southern Western Ghats

**Pongamia pinnata** (L.) Pierre, Fl. Forest. Cochinch. sub. t. 385. 1899; Manilal & Sivar., Fl. Calicut 79. 1982; Ramach. & Nair, Fl. Cannanore Dist. 151. 1988; Vajr., Fl. Palghat Dist. 167. 1990; Sanjappa, Legumes Ind. 230. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 223. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 156. 1994; Subram., Fl. Thenmala Division 93. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 148. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 99. 1997; Sivar. & Mathew, Fl. Nilambur 224. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 101. 1999; Sunil, Fl. Pl. Alappuzha Dist. 249. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 98. 2002; Mohanan & Sivad., Fl. Agasthyamala 215. 2002.

*Cytisus pinnatus* L., Sp. Pl. 741. 1753.

*Pongamia glabra* Vent., Jard. Malm. 28. t.28.1803; Hook. f., Fl. Brit. India 2:240.1876; Gamble, Fl. Pres. Madras 385(272). 1918.

*Derris indica* (Lam.) Bennet, J. Bomb. Nat. Hist. Soc. 68. 303. 1971; Mohanan, Fl. Quilon Dist. 146. 1984; Ansari, Fl. Kasaragod Dist. 125. 1985; Antony, Fl. Kottayam Dist. 125. 1989.

*Galedupa indica* Lam., Encycl. 2:594.1788.

*Local names:* Ungu, Ponnam, Pungu

Evergreen trees, to 18 m high, bark 10-12 mm thick, surface grey, smooth, speckled with brown; blaze-yellow; branchlets lenticellate. Leaves imparipinnate, alternate; stipules lateral, small, oblong, cauducous; rachis 10-15 cm long, slender, pulvinate, pubescent; leaflets 5-7, opposite, estipellate; petiolule 6-10 mm; slender, pubescent;

leaflet 4.5-12 x 2-7 cm, elliptic-acuminate, elliptic-lanceolate, ovate or ovate-oblong, apex acuminate, margin entire, glabrous, chartaceous; lateral nerves 5-8 pairs, pinnate, ascending, slender, faint; intercostae reticulate, obscure. Flowers bisexual, purplish-white, 15-18 mm long, in lax axillary racemes, axis pubescent; bracts small, cauducous; calyx tube campanulate; minutely 5 toothed, apex truncate; corolla exerted; petals 5, clawed; standard suborbicular with curved folds above the claw; wings obliquely oblong, slightly adnate above the claws to the obtuse keel petals which are joined near the tip; stamens 10, monadelphous, the vexillary stamen free below and above; anthers uniform; ovary subsessile, inferior, 1-celled, ovules 2; style in curved, beardless; stigma capitate. Fruit a pod, 4-5 x 2-2.5 cm, obliquely oblong, flat, thick, pointed at both ends, indehiscent, slightly falcate; seed one, reniform.

*Flowering & Fruiting:* April-December

*Habitat:* Dry and moist deciduous forests, also planted as avenue tree

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Pterocarpus marsupium** Roxb., Pl. Corom. t. 116. 1799; Hook. f., Fl. Brit. India 2: 239. 1876; Gamble, Fl. Pres. Madras 385(271). 1918; Mohanan, Fl. Quilon Dist. 154. 1984; Ansari, Fl. Kasaragod Dist. 132. 1985; Ramach. & Nair, Fl. Cannanore Dist. 152. 1988; Antony, Fl. Kottayam Dist. 135. 1989; Vajr., Fl. Palghat Dist. 168. 1990; Sanjappa, Legumes Ind. 232. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 224. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 156. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 149. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 99. 1997; Sivar. & Mathew, Fl. Nilambur 187. 1997; Sasidh., Fl. Periyar Tiger Reserve 112. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 102. 1999; Sunil, Fl. Pl. Alappuzha Dist. 251. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 98. 2002; Mohanan & Sivad., Fl. Agasthyamala 217. 2002.

*Local name:* Venga

Deciduous trees, to 30 m high, bark 10-15 mm, surface grey or greyish-black, rough, deeply vertically cracked, exfoliations small, irregular, fibrous; blaze pink; exudation blood-red. Leaves imparipinnate, alternate; stipules small, lateral, cauducous; rachis 6.5-11.1 cm long, slender, pulvinate, glabrous; leaflets 5-7, alternate, estipulate; petiolule 6-10 mm, slender, glabrous; lamina 3.5-12.5 x 2-7 cm, elliptic-oblong, oblong-ovate or oblong, base obtuse or acute, apex obtuse and emarginate, margin entire, glabrous, coriaceous; lateral nerves 9-20 pairs, parallel, prominent, ascending, secondary laterals prominent; intercostae reticulate, prominent. Flowers bisexual, yellow, in terminal and axillary panicles; 10-12 mm long; bracts small, dioecious; bracteoles 2, cauducous; calyx tube campanulate, lobes short, the upper 2 often connate; corolla exerted; petals 5, all long-clawed, crisped along the margins; standard orbicular, wings oblique, obovate, auricled; keel petals oblique, small, slightly connate; stamens 10, monadelphous; filaments subequal; anthers uniform; ovary shortly stalked, inferior, tomentose, 1-celled, ovules 2; style filiform, in curved, beardless; stigma capitate. Fruit a pod, 2.5-5 cm across, orbicular-reniform, broadly winged; seed one, subreniform.

*Flowering & Fruiting:* September-December

*Habitat:* Moist and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* India and Sri Lanka

### CAESALPINIACEAE

1. Leaves bipinnate ..... 2
1. Leaves simple pinnate or bilobed ..... 6
2. Petals half the length of sepals ..... **Acrocarpus fraxinifolius**
2. Petals longer than the calyx ..... 3
3. Flowers scarlet red, fruit woody, flattened, to 5 cm broad and 20-40 cm long  
..... **Delonix regia**
3. Flowers yellow, fruit otherwise ..... 4
4. Petals wringled, fruit copper brown, margins winged **Peltophorum pterocarpum**
4. Petals entire, not wringled, fruit not winged ..... 5
5. Branches prickly, fruits flat, straight..... **Caesalpinia sappan**
5. Branches not prickly, fruits twisted ..... **Caesalpinia coriaria**
6. Leaves simple, bilobed for one third the length ..... 7
6. Leaflets 2 or more, pinnate..... 9
7. Flowers in racemes, calyx spathaceous ..... 8
7. Flowers in corymbs, calyx 5-lobed at apex ..... **Bauhinia malabarica**
8. Flowers pink-purple, 5 cm across ..... **Bauhinia purpurea**
8. Flowers creamy yellow, 2 cm across ..... **Bauhinia racemosa**
9. Petals absent..... 10
9. Petals present ..... 13
10. Leaflets 2 ..... **Hardwickia binata**
10. Leaflets 5 or more ..... 11
11. Leaflets opposite; flowers orange-red in corymbs; ovules 5 or more. **Saraca asoca**
11. Leaflets alternate; flowers small, greenish-white, in spikes or panicles, ovules 2 ... 12
12. Flowers in panicles; stamens 2 ..... **Dialium tavancoricum**
12. Flowers in spikes; stamens 10 ..... **Kingiodendron pinnatum**
13. Petals 3, stamens 3 ..... **Tamarindus indica**
13. Petals 5, stamens 5-10..... 14
14. Stipules persistent, large and foliaceous, often with basal appendages ..... 15
14. Stipules small, caduceus or absent..... 21
15. Stipules without basal appendages ..... 16
15. Stipules with basal appendages ..... 18
16. Leaflets one pair..... **Humboldtia unijuga** var. **unijuga**
16. Leaflets 2-4 pairs ..... 17
17. Rachis terete, fruits glabrous ..... **Humboldtia** sp.
17. Rachis shortly winged, fruit tomentose ..... **Humboldtia unijuga** var. **trijuga**
18. Fruits scarlet, stipular appendages falcate ..... **Humboldtia bourdillonii**
18. Fruits brown or yellow, stipular appendages reniform..... 19
19. Rachis wings broad, obcordately decurrent, lateral nerves looping below the margin, flowers in condensed racemes or in clusters ..... **Humboldtia decurrens**



19. Rachis wings narrow, lateral nerves not looping below the margin, flowers in elongated racemes ..... 20
20. Leaflets 2 pairs, stipules lanceolate ..... **Humboldtia brunonis**
20. Leaflets 3-4 pairs, stipules ovate ..... **Humboldtia vahliana**
21. Stamens diadelphous (9+1), racemes drooping, buds enclosed by 2 petaloid bracts..... **Amherstia nobilis**
21. Stamens free, buds not enclosed by petaloid bracts ..... 22
22. Ovules 2, staminal filaments equal ..... 23
22. Ovules more than 10, staminal filaments unequal..... 24
23. Leaflets 2, lanceolate, falcate..... **Cynometra travancorica**
23. Leaflets 4-8, obliquely obovate-oblong..... **Cynometra beddomei**
24. Leaf rachis with penicillate glands between leaflets, terminal leaflets to 10 cm long; fruit terete, smooth, 30-60 cm long ..... **Cassia fistula**
24. Leaf rachis without penicillate glands, terminal leaflets less than 7 cm long, fruit otherwise ..... 25
25. Flowers yellow, fruits flattened ..... **Cassia siamea**
25. Flowers pink or white, when yellow petals streaked with red ..... 26
26. Filaments of larger 3 stamens inflated in the middle, filaments yellow; sepals red; pedicels 4-5 cm long ..... **Cassia nodosa**
26. Filaments pink, not inflated in the middle; sepals pink to dark pink; pedicels 1-2 cm long ..... 27
27. Odd petal with yellow blotch at base; anthers pubescent; leaf base equal sided, not mucronate at apex; fruit transversely rugose ..... **Cassia grandis**
27. Odd petal without yellow blotch at base; anthers glabrous; leaf base unequal sided, mucronate at apex; fruit smooth..... **Cassia roxburghii**

**Acrocarpus fraxinifolius** Wight & Arn., Mag. Zool. Bot. 2: 547. 1838; Hook. f., Fl. Brit. India 2: 292. 1878; Gamble, Fl. Pres. Madras 397(281). 1919; Ramach. & Nair, Fl. Cannanore Dist. 161. 1988; Sanjappa, Legumes Ind. 1. 1992; Sivar. & Mathew, Fl. Nilambur 227. 1997; Sasidh. & Anto in Manoharan et al., Silent Valley-Whispers of Reason 138. 1999; Sasidh., Fl. Periyar Tiger Reserve 118. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 109. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 105. 2002; Mohanan & Sivad., Fl. Agasthyamala 227. 2002.

*Local names:* Kurangadi, Narivenga, Karangan

Deciduous trees, to 35 m high, bole buttressed, bark light-grey or yellowish-grey, thin; blaze dull red. Leaves bipinnate, alternate; stipules free, lateral, deciduous; rachis 13-15 cm long, stout, glabrous, pulvinate; pinnae 3-5 pairs, paripinnate, 20-30 cm long, slender glabrous; leaflets 10-16 per pinnae, opposite, estipellate; petiolule upto 4 mm long, slender, glabrous; lamina 7.5-12 x 2.5-4 cm, elliptic, elliptic-lanceolate or elliptic-oblong, base oblique, acute or obtuse, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves 7-15 pairs, pinnate, slender, prominent; intercostae reticulate, faint. Flowers bisexual, green, in dense, erect, axillary racemes, deflexed; pedicels short; bracts small, cauducous; calyx campanulate, disc-lined, lobes 5, lanceolate, equal; petals 5, narrow, subequal; stamens 5, exserted, crimson coloured; anthers versatile; ovary half inferior, stipitate, ovules many; style short, incurved; stigma minute. Fruit a pod 12 x 2 cm,

flat ligulate, dehiscent, the upper suture winged; seeds 5-10, obovate, oblique, compressed.

*Flowering & Fruiting:* December-January

*Habitat:* Evergreen and semi-evergreen forests, also planted

*Distribution*

*Kerala:* Idukki, Palakkad, Malappuram, Kannur, Trivandrum, Thrissur

*Geographical:* Indo-Malesia; introduced in Africa

**Amherstia nobilis** Wall. in Taylor & Phillips, Philos. Mag. J. 68: 323. 1826; Hook. f., Fl. Brit. India 2: 272. 1878; Sanjappa, Legumes Ind. 1. 1992.

*Local name:* Shimshipa vriksham

Trees, bark dark brown, lenticellate; young parts puberulent. Leaves paripinnate, alternate; stipules 2.5 cm long, intra petiolar, ovate-lanceolate; rachis 20-34 cm long, stout, pulvinate, glabrous; leaflets 8-14, opposite, estipellate; petiolule to 10 mm long, stout, glabrous; lamina 9.5-25 cm x 4.5-6 cm, ovate, ovate-lanceolate, oblong or elliptic-oblong, base obtuse, apex acuminate, margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 7-20 pairs, pinnate, prominent, secondary laterals prominent, intercostae reticulate, faint. Flowers 15 x 12 cm, bisexual, yellowish-red, in drooping terminal panicles to 62 cm long; pedicels to 7 cm long; bracts and sepals bright red; bracts to 6 cm long, ovate; calyx tube to 4 cm long, lobes rolled to back, petals 4.5-7.5 cm long, mixed reddish and yellow; stamens 9, tube to 4 cm long, filaments alternately long and short; anthers dimorphic, versatile; ovary half inferior, pubescent, stipe to 1 cm long; style curved; stigma capitate. Fruit a pod, 15-20 x 3.5-4 cm, oblong, brown, compressed; seeds 3-6.

*Flowering & Fruiting:* May-August

*Habitat:* Grown as garden plant

*Distribution*

*Kerala:* Thrissur, Trivandrum

*Geographical:* Native of Myanmar, grown as ornamental tree

**Bauhinia malabarica** Roxb., Fl. Ind. 2: 321. 1832; Hook. f., Fl. Brit. India 2: 227. 1878; Gamble, Fl. Pres. Madras 407(288). 1919; Ramach. & Nair, Fl. Cannanore Dist. 162. 1988; Vajr., Fl. Palghat Dist. 179. 1990; Sanjappa, Legumes Ind. 3. 1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 163. 1994; Subram., Fl. Thenmala Division 111. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 159. 1996; Sivar. & Mathew, Fl. Nilambur 228. 1997; Sasidh., Fl. Periyar Tiger Reserve 119. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 106. 2002; Mohanan & Sivad., Fl. Agasthyamala 227. 2002.

*Piliostigma malabaricum* (Roxb.) Benth. in Miq., Pl. Jungh. 261. 1852; Ansari, Fl. Kasaragod Dist. 146. 1985.

*Local name:* Arampuli

Deciduous trees, to 15 m high, bark 10-15 mm thick, brown, rough, shallow with vertical and horizontal furrows, fibrous, exfoliating in long strips; blaze red, concentrically striated. Leaves simple, bilobed, alternate; stipules small, free, lateral, cauducous; petiole 25-30 mm long, slender, glabrous, swollen at tip and base; lamina 5-10 x 7-12.5 cm, broader than long, suborbicular, base cordate, apex

obtuse, margin entire, glabrous above, slightly glaucous beneath, coriaceous; 9-11 nerves from the base, palmate, prominent, intercostae reticulate, prominent. Flowers bisexual, 6-8 mm across, cream coloured, in axillary corymbs; pedicels slender, upto 2.5 cm; calyx tube long, thin, pubescent with 5 short lobes; petals 5, oblong; stamens 10, all fertile, alternate ones short; anthers versatile; ovary half inferior, stipitate; ovules many; style filiform; stigma peltate. Fruit a pod, 25-30 x 1.8-2.5 cm, straight, flattened, beaked, longitudinally striate, glabrous; seeds 20-30, oblong.

*Flowering & Fruiting:* September-March

*Habitat:* Deciduous forests

*Distribution*

*Kerala:* Kasaragode, Kannur, Malappuram, Palakkad, Trivandrum, Kollam, Thrissur, Idukki

*Geographical:* Indo-Malesia

**Bauhinia purpurea** L., Sp. Pl. 375. 1753; Hook. f., Fl. Brit. India 2: 284. 1878; Gamble, Fl. Pres. Madras 407(288). 1919; Manilal & Sivar., Fl. Calicut 94. 1982; Ansari, Fl. Kasaragod Dist. 140. 1985; Vajr., Fl. Palghat Dist. 179. 1990; Sanjappa, Legumes Ind. 5. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 244. 1994; Sunil, Fl. Pl. Alappuzha Dist. 268. 2000.

*Phanera purpurea* (L.) Benth. in Miq., Pl. Jungh. 262. 1852.

Trees, to 15 m high, bark grey-brown; branchlets warty. Leaves simple, bilobed; stipules lateral, triangular; petiole 1.3-3.7 cm, slender, swollen at the base and tip, pubescent; lamina 4.5-11.5 x 4.2-12, oblong or orbicular, base subcordate, apex of each lobes obtuse; mucronate, margin entire, glabrous above, puberulent beneath, coriaceous; nerves 9-13 from the base, palmate, prominent, intercostae scalariform, prominent. Flowers bisexual, 6-8 cm across, rose to pink, in terminal or axillary racemes or panicles to 15 cm long; bracts to 4 cm; pedicel to 2.5 cm; calyx tube turbinate, spathaceous, 2 x 1.5 cm, apex 2-cleft; petals 5, 3.5 x 1.5 cm, obovate; stamens 5; filaments to 2.5 cm; ovary half inferior, stipitate, compressed; style elongate, to 1 cm; stigma capitate. Fruit a pod, 30-40 x 1.5-2 cm, oblong, compressed, apex horned; seeds 1.5 x 1 cm, ovoid, flat.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Common in plains, often cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of South East Asia

**Bauhinia racemosa** Lam., Encycl. 1: 390. 1785; Hook. f., Fl. Brit. India 2: 276. 1878; Gamble, Fl. Pres. Madras 406(288). 1919; Manilal, Fl. Silent Valley 90. 1988; Ramach. & Nair, Fl. Cannanore Dist. 162. 1988; Vajr., Fl. Palghat Dist. 179. 1990; Sanjappa, Legumes Ind. 5. 1992; Sasidh. & Sivar., Fl. Pl. Thrissur For. 160. 1996; Sivar. & Mathew, Fl. Nilambur 228. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 109. 1999.

*Piliostigma racemosa* (Lam.) Benth. in Miq., Pl. Jungh. 262. 1852.

*Local names:* Arampali, Malayathi, Kotapuli

Deciduous trees to 10 m high, bark grey to black, rough, thinly scaly, with numerous vertical cracks; blaze pinkish-red, turning brown on exposure. Leaves simple,

bilobed, alternate; stipules small, cauducous; petiole 10-33 mm long, slender, pubescent, swollen at base and at tip; leaves 2-5 x 3.5-11 cm, broader than long, ovate-orbicular, base cordate, apex obtuse, bilobed and mucronate at cleft, margin entire, glabrous above, pubescent beneath, coriaceous; 7-9 nerves from the base, palmate, prominent, intercostae reticulate, prominent. Flowers bisexual, 10-12 mm across, yellowish-white, in terminal and leaf opposed few flowered racemes; bracts and bracteoles 2-3 toothed, minute, pubescent; pedicel 1-2 mm, slender; calyx spathaceous, reflexed, 5-toothed at apex, puberulous; petals 5, 1.5 x 0.2 cm, linear-oblong; stamens 10, all perfect; filaments equal, filiform, pilose at base; anthers versatile; ovary half-inferior, stalked, pubescent, ovules many; style filiform; stigma peltate. Fruit a pod 15-22 x 1.5-2 cm, oblong, blackish-brown, turgid, apex horned indehiscent; seeds 10-20, ovoid.

*Flowering & Fruiting:* March-December

*Habitat:* Dry and moist deciduous forests

*Distribution*

*Kerala:* Idukki, Kannur, Palakkad, Thrissur, Malappuram

*Geographical:* India and Sri Lanka

**Caesalpinia coriaria** (Jacq.) Willd., Sp. Pl. 2: 532. 1799; Gamble, Fl. Pres. Madras 394(279).1919; Manilal & Sivar., Fl. Calicut 99.1982; Sanjappa, Legumes Ind. 10.1992; Sasidh. & Sivar., Fl. Pl. Thrissur For. 162.1996; Sunil, Fl. Pl. Alappuzha Dist. 271.2000.

*Poinciana coriaria* Jacq., Select. Am. 123. t. 175. f. 36. 1781.

Trees, to 15 m high; branchlets warty. Leaves bipinnate, alternate; stipules minute; rachis 5.5-9.5 cm, slender, pulvinate, pubescent; pinnae 8-16 pairs, subopposite, 3-6 cm long, slender, pubescent; leaflets 24-44, sessile, opposite or subopposite; lamina 0.8-1 x 0.2-0.4 cm, oblong, base oblique, cordate, apex obtuse or emarginate, margin entire, glabrous, punctate, membranous; lateral nerves obscure. Flowers bisexual, creamy, 8 mm across, in axillary and terminal panicles to 6 cm long; pedicel to 1.5 mm; calyx tube campanulate, short; petals 5, ovate-orbicular, clawed subequal; stamens 10, declinate; filaments subequal, 3.5-4 mm, basally villous; ovary half inferior, stipitate, 3 mm long, glabrous; style suberect, to 4 mm long; stigma capitate. Fruit a pod, 3 x 2 cm; twisted; seeds 6 x 4.5 mm, oblong, flattened.

*Flowering & Fruiting:* August-May

*Habitat:* Planted as avenue/ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of the West Indies and Central America; now widely introduced in the Asian countries

**Caesalpinia sappan** L., Sp. Pl. 381. 1753; Hook. f., Fl. Brit. India 2: 255. 1878; Gamble, Fl. Pres. Madras 394(279). 1919; Manilal & Sivar., Fl. Calicut 98. 1982; Sanjappa, Legumes Ind. 12. 1992; Subram., Fl. Thenmala Division 120. 1995.

*Local names:* Chappangam, Sappanwood

Trees, to 10 m high, sparsely armed with short straight or recurved prickles. Leaves bipinnate, alternate; stipules spiniform, to 3-5 mm long; rachis 20-40 cm long, slender, pubescent, pulvinate; pinnae 10-14 pairs, 2.5-10 cm long, slender; a spine

present at the junction between pinnae pairs on the upper side; leaflets 20-40, opposite, subsessile; lamina 1-2.5 x 0.5-1 cm, oblong, base oblique, obtuse, apex obtuse, emarginate, margin entire, glabrous, coriaceous; lateral nerves 5-15 pairs, pinnate, faint, intercostae obscure. Flowers bisexual, yellow, in supra-axillary and terminal racemes; pedicels 1-2 cm long; sepals 5, unequal; petals 5, orbicular, subequal, with red spot at the base; stamens 10, declinate, densely woolly at base; ovary half inferior, grey-velvety. Fruit a pod, 7-10 x 3-4 cm, obliquely oblong, black, glabrous; seeds black, oblong or ellipsoid.

*Flowering & Fruiting:* July-December

*Habitat:* Widely cultivated

*Distribution*

*Kerala:* Kollam, Kannur, Thrissur, Palakkad, Kozhikkode

*Geographical:* Indo-Malesia

**Cassia fistula** L., Sp. Pl. 377. 1753; Hook. f., Fl. Brit. India 2: 201. 1878; Gamble, Fl. Pres. Madras 400(283). 1919; Manilal & Sivar., Fl. Calicut 96. 1982; Mohanan, Fl. Quilon Dist. 162. 1984; Ansari, Fl. Kasaragod Dist. 143. 1985; Manilal, Fl. Silent Valley 91. 1988; Ramach. & Nair, Fl. Cannanore Dist. 164. 1988; Antony, Fl. Kottayam Dist. 144. 1989; Vajr., Fl. Palghat Dist. 181. 1990; Sanjappa, Legumes Ind. 15. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 238. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 165. 1994; Subram., Fl. Thenmala Division 118. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 163. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 107. 1997; Sivar. & Mathew, Fl. Nilambur 233. 1997; Sasidh., Fl. Periyar Tiger Reserve 121. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 111. 1999; Sunil, Fl. Pl. Alappuzha Dist. 275. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 107. 2002; Mohanan & Sivad., Fl. Agasthyamala 229. 2002.

*Cassia rhombifolia* Roxb., Fl. Ind. 3: 334. 1832.

*Local names:* Kanikonna, Konna

Deciduous trees, to 18 m high, bark 8-10 mm, thick, surface pale when young, dark grey when old, smooth, exfoliating in hard scales. Leaves paripinnate, alternate; stipules small, free, lateral, caudaceous; rachis 14.5-36 cm, slender, pulvinate, glabrous; leaflets 6-16, opposite, estipellate; petiolule 4-7 mm long, slender, grooved above; lamina 5-18.5 x 3-6.5 cm, ovate, ovate-lanceolate or oblong-ovate, base obtuse, round or acute, apex acuminate, margin entire, glabrous above, glaucous and puberulent beneath, coriaceous; lateral nerves 9-25, pinnate, slender, prominent, secondary laterals prominent; intercostae reticulate, prominent. Flowers bisexual, 3.7-5 cm across, yellow, in axillary drooping racemes; pedicels 3-7 cm; calyx tube short, lobes 5, 1 x 0.6 cm, ovate, apex obtuse, reflexed; petals 5, 2.5 x 1.5 cm, obovate, subequal, clawed; stamens 10, all fertile; upper 3 short with erect filaments to 7.5 mm; anthers 3 mm, basifixed; lower 3 large with curved filaments, to 3 cm; anthers 5 mm, dorsifixed; medium 4 with erect filaments to 1 cm; anthers versatile with curved beak to 6.5 mm; anthers dehiscent by apical pores; ovary half inferior, appressed-pubescent; ovules many; style to 5 mm; stigma punctiform. Fruit a pod 30-60 x 1.2-1.6 cm, cylindrical, black, shortly stipitate, indehiscent, woody, transversely septate; seeds 25-100, 6-8 mm broad, ovoid, pale brown, immersed in pulp.

*Flowering & Fruiting:* March-April

*Habitat:* Moist deciduous forests, widely planted as ornamental plant

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Cassia grandis** L. f., Suppl. Pl. 230. 1781; Sanjappa, Legumes Ind. 23. 1992.

Trees, to 15 m high, bark brown; branchlets velvety pubescent. Leaves paripinnate, alternate; stipules lateral, falcate or subulate, cauducous; rachis 14-25 cm long, stout, pulvinate, pubescent; leaflets 16-40, subopposite, estipellate; petiolule to 2 mm; lamina 1.5-4.5 x 1-2 cm, elliptic-oblong or ovate, base round, apex obtuse, retuse or apiculate, margin entire, glabrous above, woolly beneath, coriaceous; lateral nerves prominent, pinnate. Flowers bisexual, pink, in lateral simple racemes to 20 cm long; pedicels 1-2 cm long; calyx lobes 5, 6- 9 mm long, obovate, obtuse, tomentulose; petals 5, 1.5 -2 cm, pink to rose, orbicular to obovate; stamens 10, unequal; 3 lower filaments *ca.* 2 cm long, sigmoid, the others shorter; anthers pilosulous, the 3 larger ones opening by apical and basal pores, 5 on shorter filaments opening by apical and basal pores, 2 smaller abortive; ovary half inferior, stipitate, 2 cm, pubescent; ovules many; style to 6 mm. Fruit a pod, 20 -80 x 2-5.5 cm, oblong, terete, black, indehiscent; seeds many, transverse, brown, lustrous, imbedded in pulp.

*Flowering & Fruiting:* April-May

*Habitat:* Planted in parks and avenues

*Distribution*

*Kerala:* All districts

*Geographical:* Native of tropical America

**Cassia nodosa** Buch.-Ham. ex Roxb., Fl. Ind. 2: 336. 1832; Hook. f., Fl. Brit. India 2: 261. 1878; Sanjappa, Legumes Ind. 16. 1992.

*Cassia javanica* L. var. *agnes* de Wit, webbia 11: 220. 1955.

*Cassia agnes* (de Wit) Brenan, Kew Bull. 13: 180. 1958.

*Cassia javanica* L. ssp. *nodosa* (Buch.-Ham. ex Roxb.) K. & S. Larsen, Nat. Hist. Bull. Siam. Soc. 25: 205. 1974.

Trees, to 20 m high; young parts puberulent. Leaves paripinnate, alternate, stipules 1.2-2.5 cm, lateral, foliaceous; rachis 10-30 cm long, stout, pulvinate, pubescent; leaflets 8-20, opposite or subopposite; lamina 2.5-5.5 x 1.5-3.5 cm, elliptic or elliptic-oblong, ovate or ovate-oblong, base round or acute, apex acute, margin entire, glabrescent above, puberulent beneath, coriaceous; lateral nerves 4-6 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, pinkish-white, in terminal or lateral subcorymbose racemes; calyx green; sepals 5, puberulent; petals 5, 1.5-2cm long, puberulent; stamens 10, unequal; 3 with longer filaments, enlarged at the middle, recurved, others shorter, 3 much reduced. Fruit a pod, 20-70 cm long, pendulous, terete, glabrous, terete, black, indehiscent; seeds 50-80, transverse, light-brown.

*Flowering & Fruiting:* March-February

*Habitat:* Grown as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* India, Bangladesh, Myanmar, Thailand and Malesia

**Cassia roxburghii** DC., Prodr. 2: 489. 1825; Sanjappa, Legumes Ind. 20. 1992.

*Cassia marginata* Roxb., Fl. Ind. 2: 338. 1832, non Willd.; Hook. f., Fl. Brit. India 2: 262. 1878; Gamble, Fl. Pres. Madras 401(284). 1919.

*Local name:* Kada konna

Trees, to 15 m high, bark brown; branchlets velvety pubescent. Leaves paripinnate, alternate; stipules ovate, lateral, muriculate, cauducous; rachis 14-25 cm long, slender, pulvinate, pubescent; leaflets 16-30, subopposite, estipellate; petiolule to 2 mm, puberulent; lamina 1.5-4.5 x 1-2 cm, elliptic-oblong or ovate, base oblique or subacute, apex obtuse, retuse or mucronate, margin entire, glabrous above, puberulent beneath, coriaceous, lateral nerves 10-16 pairs, slender, faint, intercostae reticulate. Flowers bisexual, flame coloured, 2.5 cm across, in axillary corymbose racemes to 8 cm; pedicels to 1 cm; calyx lobes 5, 4-7 mm, ovate, obtuse; petals 5, 1.5-2 cm, pink to rose, turning yellow or orange, ovate-oblong, concave, pubescent without, clawed; stamens 10, the lower 3 filaments 2.5-3 cm long, curved; others shorter; upper 3 short with reduced filaments and anthers; 4-medium with erect filaments; ovary half inferior, stipitate, 2 cm, pubescent, ovules many; style to 6 mm. Fruit a pod, 20-30 x 2 cm long, oblong, terete, torulose, black, indehiscent; seeds many, transverse, imbedded in dry pith.

*Flowering & Fruiting:* February-May

*Habitat:* Planted as ornamental tree

*Distribution*

*Kerala:* Trivandrum, Thrissur, Palakkad

*Geographical:* Native of Sri Lanka, common in Peninsular India

**Cassia siamea** Lam., Encycl. 1: 648. 1785; Hook. f., Fl. Brit. India 2: 264. 1878; Gamble, Fl. Pres. Madras 402(285). 1919; Manilal & Sivar., Fl. Calicut 97. 1982; Mohanan, Fl. Quilon Dist. 162. 1984; Antony, Fl. Kottayam Dist. 145. 1989; Sanjappa, Legumes Ind. 20. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 240. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 164. 1996; Sivar. & Mathew, Fl. Nilambur 235. 1997; Sunil, Fl. Pl. Alappuzha Dist. 279. 2000.

*Senna siamea* (Lam.) Irwin & Barneby, Mem. NY. Bot. Gard. 35: 98. 1982.

*Cassia florida* Vahl, Symb. Bot. 3: 57. 1794.

Trees, to 12 m high; young parts puberulent. Leaves paripinnate, alternate; stipules small, subulate, cauducous; rachis 30-35 cm long, slender, pubescent, grooved above, pulvinate; leaflets 18-30, opposite, estipellate; petiolule 3-4 mm, slender, pubescent; lamina 4-7 x 1.8-2.8 cm, oblong, elliptic-oblong or ovate-oblong, base obtuse or round, apex obtuse, mucronate or retuse, margin entire, glabrous above, glabrous or minutely pubescent and glaucous beneath; lateral nerves 6-10 pairs, pinnate, faint, intercostae reticulate, obscure. Flowers 2.5-3.5 cm long, bisexual, yellow, in terminal or axillary corymbose racemose panicles; bracts linear, curved; sepals 5, 5-7 mm long, suborbicular, subequal, greenish-yellow, puberulent; petals 5, 1.5x0.8 cm, ovate-elliptic, subequal, clawed; stamens 10, upper 3 staminodes small, antheriferous ones 7, lower 2 large, curved, one medium; ovary half inferior, sessile, pubescent, deeply grooved, ovules many. Fruit a pod, 20-25x1-1.5 cm, long stipitate, strap-shaped, compressed woody with thick sutures; seeds 20-30, longitudinal.

*Flowering & Fruiting:* October-March

*Habitat:* Planted as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of South East Asia; now widely cultivated

**Cynometra beddomei** Prain, J. Asiat. Soc. Bengal 65: 478. 1897; Gamble, Fl. Pres. Madras 414(293). 1919; Sanjappa, Legumes Ind. 26. 1992; Mohanan & Sivad., Fl. Agasthyamala 23. 2002.

*Cynometra bourdillonii* Gamble, Bull. Misc. Inform. Kew 1908: 446. 1908; Gamble, Fl. Pres. Madras 413(293). 1919; Mohanan, Fl. Quilon Dist. 163. 1984; Sanjappa, Legumes Ind. 26. 1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 166. 1994; Sasidh., Higher Plants of Indian Sub-Continent 8:206.1998.

Evergreen trees, to 20 m high; bark blackish-green. Leaves paripinnate, alternate; stipules free, lateral, cauducous; rachis 30-40 mm, slender, pulvinate, grooved above, pubescent; leaflets 4-6, opposite, estipellate; petiolule 1-2 mm; lamina 2.5-5 x 1-1.8 cm, obliquely obovate-oblong or obovate, base oblique, acute or cuneate, apex obtusely acuminate, emarginate, margin entire, glabrous, coriaceous; lateral nerves 6-8 pairs, pinnate, secondary laterals present, faint; intercostae reticulate, faint. Flowers bisexual, creamy-white, in axillary clusters from conspicuous imbricate bracts; peduncle 12-20 mm, densely-patent-hairy; bracts ovate, appressed, hairy, ciliate, striate, imbricate, at length deciduous, smaller upwards; pedicel 5 mm, pubescent; receptacle 1-2 mm deep, campanulate, circumscissile under the ripening fruit; sepals 3 mm long, hairy, ciliate; petals 5, 3.5 x 1 mm, free, oblanceolate, subequal, glabrous; disc 0; stamens 10, alternately 5 and 7 mm; filaments filiform, connective cleft at base, apex apiculate; anthers versatile; ovary half inferior, densely long brown hairy; stipe 0.8 mm, exocentric; style 2.5 mm, slender, hairy upto half way; stigma capitate. Fruit a pod, reniform-globose, grooved near sutures, indehiscent; seed one.

*Flowering & Fruiting:* February-August

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Trivandrum, Wayanad, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Cynometra travancorica** Bedd., Fl. Sylv. t. 316. 1872; Hook. f., Fl. Brit. India 2: 267. 1876; Gamble, Fl. Pres. Madras 413(293). 1919; Vajr., Fl. Palghat Dist. 182. 1990; Sanjappa, Legumes Ind. 27. 1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 167. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 164. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 108. 1997.

*Local name:* Koori

Evergreen trees, to 20 m high, bole shortly buttressed, bark 3-4 mm thick, surface reddish-brown, smooth, lenticellate; blaze reddish-brown. Leaves alternate, 2-foliate; stipules small, free, lateral, cauducous; rachis 3-8 mm, stout, pulvinate, glabrous; petiolule 2-3 mm, opposite; leaflet 8-12 x 2-3 cm, often falcate, ovate-oblong, oblong or lanceolate, unequal sided, base oblique, apex acute or acuminate,



margin entire, glabrous, coriaceous; lateral nerves 6-8 pairs, pinnate, slender, prominent; intercostae reticulate, prominent. Flowers bisexual, 6-8 mm across, rosy white, in short dense flowered axillary racemes; peduncle puberulous; bracts ovate, 1-3 mm, puberulous and ciliate; bracteole ovate, 2 m long, very narrow, with only few hairs at the tip, inserted near the base of the pedicel; pedicel 2-4.5 mm, slender, pubescent, receptacle 0.25 mm deep; sepals 4, 3 mm long, oblong, reflexed, glabrous; petals 5, 4 mm long, subequal, clawed; stamens 10, alternate long and short, connective cleft at base, very slightly apiculate; filaments filiform; anthers small, versatile; ovary half inferior, semi-lunar, glabrous; stipe 0.8 mm; style 1 mm; stigma capitate. Fruit a pod 2.5-3 cm long, flat, smooth, rugose along the margin, semicircular, the inner suture nearly straight, the outer one widely curved, indehiscent; seed one.

*Flowering & Fruiting:* September-April

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Palakkad, Trivandrum, Kollam, Thrissur, Kozhikkode

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Delonix regia** (Boj. ex Hook.) Rafin., Fl. Tell. 2: 92. 1836; Gamble, Fl. Pres. Madras 396(280). 1919; Manilal & Sivar., Fl. Calicut 99. 1982; Mohanan, Fl. Quilon Dist. 165. 1984; Antony, Fl. Kottayam Dist. 146. 1989; Sanjappa, Legumes Ind. 27. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 244. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 171. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 110. 1997; Sasidh. & Sivar., Fl. Pl. Thrissur For. 166. 1996; Sasidh., Fl. Chinnar Wildlife Sanctuary 113. 1999; Sunil, Fl. Pl. Alappuzha Dist. 283. 2000.

*Poinciana regia* Boj. ex Hook., Bot. Mag. t. 2884. 1829; Hook. f., Fl. Brit. India 2: 260. 1878.

*Local names:* Alasippoomaram, Poomaram, Gulmohar

Trees, to 15 m high; branchlets warty, puberulous. Leaves bi-pinnate, alternate; stipules small, lateral; rachis 15-20 cm long, slender, pulvinate, puberulent; pinnae 8-20 pairs, opposite or subopposite, 2.7-10 cm, slender, pulvinate, puberulent, a sessile gland seen between each pinnae on upper side; leaflets 18-50, sessile, opposite; lamina 0.4-0.8 x 0.2-0.35 mm, oblong or linear-oblong, base oblique, apex obtuse, margin entire, puberulent above and pubescent beneath, membranous; nerves and nervules obscure. Flowers bisexual, crimson, in terminal or lateral corymbose panicles; calyx tube very short; lobes 5, valvate, subequal; petals 5, orbicular, imbricate; margins fimbriate; claws yellow, upper petal dissimilar and white streaked with red and yellow; stamens 10, free, declinate, long exerted; filaments villous below; anthers uniform; ovary half inferior, subsessile, ovules many; style filiform; stigma truncate, ciliolate. Fruit a pod, 40 x 6 cm, flat, elongate, woody; seeds many, oblong, transverse.

*Flowering & Fruiting:* February-July

*Habitat:* Planted as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Madagascar; grown throughout the tropics

**Dialium travancoricum** Bourd., Indian For. 30: 243. 1904; Gamble, Fl. Pres. Madras 404(286). 1919; Mohanan, Fl. Quilon Dist. 163. 1984; Sanjappa, Legumes Ind. 28. 1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 167. 1994; Sasidh., Higher Plants of Indian Sub-Continent 8: 209. 1998.

*Local name:* Malampuli

Evergreen trees, to 30 m high, bark pale brown, smooth, blaze yellow turning to pale brown, exudation red, scanty. Leaves imparipinnate, alternate; stipules small, lateral; rachis 10-15 cm, slender, glabrous, pulvinate; leaflets 5-11, subopposite or alternate, estipellate; petiolule 4-7 mm, slender; lamina 5-7.6 x 1.8-3.2 cm, ovate, ovate-lanceolate or elliptic-lanceolate, base round or acute, apex caudate-acuminate, margin entire, glabrous, coriaceous, lateral nerves 11-14 pairs, pinnate, prominent, regular, secondary laterals seen; intercostae reticulate. Flowers bisexual, 2-3 mm long, brown, in axillary or terminal fulvous-pubescent panicles; bracts and bracteoles small, cauducous; calyx tube short, divided to base; lobes 5, petaloid, imbricate; petals absent; stamens 2, free; filaments short; anthers erect, oblong; ovary half inferior, sessile, oblique, hairy; ovules 2, style subulate; stigma small, terminal. Fruit a pod 2-2.2 cm broad, ovoid, globose, dark velvety-brown, indehiscent, shell thin, brittle; endocarp spongy, red; seed one, more or less compressed, pale brown, thin.

*Flowering & Fruiting:* September-October

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Trivandrum

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Critically endangered (IUCN, 2000)

**Hardwickia binata** Roxb., Pl. Corom. t. 209. 1811; Hook. f., Fl. Brit. India 2: 270. 1878; Gamble, Fl. Pres. Madras 412(292). 1919; Sanjappa, Legumes Ind. 29. 1992; Sasidh., Fl. Chinnar Wildlife Sanctuary 113. 1999.

*Local names:* Aacha, Achamaram

Gregarious deciduous trees, bark dark brown, rough, with irregular cracks; branchlets slender, drooping. Leaves alternate, 2-foliate; stipules small, lateral, cauducous; rachis 8-75 mm long, slender, swollen at base and at tip, glabrous, estipellate; lamina 2-6 x 0.9-3.5 cm, sessile, with a minute bristle in between, obliquely ovate or obliquely oblong-ovate, base obliquely acute, apex obtuse, margin entire, glabrous, coriaceous; nerves 4-5 from base, arcuate, slender, prominent, intercostae reticulate, prominent. Flowers bisexual, greenish-yellow, in lax racemose panicles; bracts minute; bracteoles scale like; calyx tube scarcely any; lobes usually 5, orbicular, petaloid, round the small basal disc, much imbricate; petals 0; stamens 10, alternately longer and shorter; filaments filiform; anthers versatile; ovary half inferior, sessile, free, ovules 2; style filiform, stigma large, peltate. Fruit a pod, 50-80 x 10-12 mm, oblong-lanceolate, the seed at the apex where the pod dehisces, the base samaroid; seed pendulous, obovate, compressed, 2-furrowed.

*Flowering & Fruiting:* June-April

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Peninsular India

**Humboldtia bourdillonii** Prain, J. Asiat. Soc. Bengal 73: 200. 1904; Gamble, Fl. Pres. Madras 411(291). 1919; Sanjappa, Blumea 31: 331. 1986 & Legumes Ind. 30. 1992; Sasidh., Higher Plants of Indian Sub-Continent 8: 209. 1998; Sasidh., Fl. Periyar Tiger Reserve 123. 1998.

*Local name:* Adimundan

Trees, to 15 m high, bark reddish-brown, smooth; branchlets solid, glabrous. Leaves paripinnate, alternate; stipules lateral, ovate, acute, prominently veined, glabrous, appendages falcate, rounded, veined, persistent; rachis 10-12 cm long, pulvinate, obcordately winged between leaflets, glabrous; leaflets 6-12, opposite, estipellate, when lowest pair absent, a joint corresponding to its position present; petiolule 3-5 mm, stout, glabrous; lamina 7.5-25 x 1.5-6 cm, oblong-lanceolate or linear-lanceolate, base unequal or obtuse, margin entire, glabrous, chartaceous; lateral nerves 7-10 pairs, pinnate, arched, prominent, intercostae reticulate, prominent. Flowers bisexual, 7 mm long, pinkish, in corymbs on tubercles on stem and old branches, tawny velvety; pedicels 1.4-1.7 cm long, brown velvety; bracts ovate, acute, densely brown tomentose on both surface, fugacious; bracteoles 2, connate almost throughout when young, ovate-oblong, obtuse or rounded at apex, densely brown tomentose on both surface, gland present towards apex without, fugacious; calyx tube 1.4 cm long, obconical, brown tomentose, lined by the disc, persistent; lobes 4, subequal, crimson, imbricate; petals 5, white with pink veins, 3 longer and 2 shorter, clawed, obovate, obtuse to rounded at apex, sparsely pilose within, glabrous with out, sometimes a brown gland present in the middle within, fugacious; stamens 5, free, alternating with 5 minute staminodes; filaments broad at base, pilose; anthers versatile, shortly apiculate at one end; ovary half inferior, stipitate, obliquely oblong, densely pilose; ovules 4-6; style filiform, long, pilose; stigma capitate. Fruit a pod 8-11 x 2-2.5 cm, flat, oblong, velvety brown pubescent, bright red or crimson, dehiscent; sutures thick, valves prominently veined; seeds 3-5.

*Flowering & Fruiting:* December-July

*Habitat:* Evergreen forests, along stream banks

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Humboldtia brunonis** Wall., Pl. Asiat. Rar. 3: 17. t.233. 1832; Hook. f., Fl. Brit. India 2: 263. 1878; Gamble, Fl. Pres. Madras 411(291). 1919; Sanjappa, Blumea 31: 333. 1986 & Legumes Ind. 30. 1992; Ansari, Fl. Kasaragod Dist. 145. 1985; Ramach. & Nair, Fl. Cannanore Dist. 166.

Trees, to 10 m high, bark dark brown to black; blaze pink-red; branchlets solid, sometimes swollen, pubescent when young, glabrous at maturity, lenticellate. Leaves paripinnate, alternate, stipulate; stipules 1-2 x 0.25-0.5 cm, lateral, linear, prominently parallel veined, glabrous, depressed glandular; appendages broadly reniform, divergently veined, glabrous, glandular, persistent; rachis 20-40 mm long,

obscurely winged, shallowly grooved above, tomentose, pulvinate; leaflets (2)-4, opposite; petiolules 3-5 mm long, stout; lamina 7-20 x 2.2-8 cm, obovate oblong, oblong or elliptic-oblong, base unequal, apex obtusely acuminate, margin entire, glabrous, sparsely depressed glandular beneath, coriaceous; lateral nerves 7-13 pairs, pinnate, ascending, prominent, intercostae reticulate, prominent. Flowers bisexual, 2-3 cm long, white, in axillary pendulous, brown pubescent, racemes; pedicels 4-5 mm long, pilose; bracts ovate, acute, pubescent without, fugacious; bracteoles 2, connate below, obovate or obovate-oblong, obtuse at apex, pubescent on both surfaces, shortly ciliate along margin; calyx tube 8-10 mm long, lined by the disc, pubescent without; lobes 4, concave, imbricate, ovary, acute or obtuse at tip, densely pubescent without and thinly within, reddish, fugacious; petals 3, white, pink or orange, ovate, shortly clawed, veined, glabrous; stamens 5, perfect, free, alternating with 5 minute staminodes, deep pinkish; filaments 2 cm long, glabrous; anthers 2-3 mm long, versatile; ovary 5 mm long, half inferior, stipitate, obliquely linear, ovules 3-5, densely pubescent; style filiform, 10 mm long, pilose at base; stigma capitate. Fruit a pod 5-10 x 2-4 cm, dolabriform, brown pubescent when young; seeds 3-4.

*Flowering & Fruiting:* July-November

*Distribution*

*Kerala:* Kasaragode, Wayanad, Malappuram, Kannur, Kozhikkode

*Endemic to:* Southern Western Ghats

**Humboldtia decurrens** Bedd. ex Oliver in Hook., Ic. Pl. t. 2368. 1890; Gamble, Fl. Pres. Madras 411(291). 1919; Sanjappa, Blumea 31: 334. 1986 & Legumes Ind. 30. 1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 167. 1994; Subram., Fl. Thenmala Division 115. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 109. 1997; Mohanan & Sivad., Fl. Agasthyamala 232. 2002.

*Local names:* Kunthani, Malamthodappu, Nyanoli

Trees, to 15 m high, bark 3-4 mm thick, brown with prominent lenticels, rough; branches dark brown, pubescent when young, glabrous at maturity. Leaves paripinnate alternate; stipules lateral, ovate to narrowly ovate, falcate, acuminate to cuspidate at apex; prominently parallel veined, brown tomentose on both surfaces, appendages reniform with divergent reticulate veins, brown tomentose, adpressed glandular; rachis 15-36 cm long, pulvinate, obcordately or decurrently winged, wings reticulately veined, glabrous; leaflets 8-12, opposite, estipellate; petiolule 3-5 mm long, stout, densely brown tomentose; lamina 15-38 x 4-12 cm, oblong-lanceolate, base obtuse or round, apex long acuminate, margin entire, subcoriaceous, glabrous, sparsely depressed glandular beneath; lateral nerves 10-16 pairs, parallel, ascending, looped at the margin forming prominent intramarginal nerve, intercostae reticulate, prominent. Flowers bisexual, pink, 17-18 mm long, in pendulous axillary or cauliflorous racemes, tawny villous; pedicels 1-1.2 cm long, villous; bracts broadly ovate, obtuse to acute at apex, villous and glandular without, black and glabrous within, fugacious; bracteoles 2, connate at base, ovate, obtuse, brown villous on both surfaces; calyx tube upto 1.2 cm long, obconical, lined by the disc, villous; lobes 4, oblong, rounded at apex, imbricate; petals 5, pink or white, 2-2.5 x 0.5 cm, obovate or oblanceolate, clawed, obtuse to round at apex, pilose within at base; stamens 5, 3.5-4 cm long, perfect, alternating with 5 minute

staminodes; filaments filiform, broad, pilose at base; anthers versatile; ovary half inferior, stipitate, obliquely linear, villous, ovules 3-6; style filiform, glabrous; stigma capitate. Fruit a pod 7-12 x 2.7-4 cm, oblong, brown, veined, rugulose and dark brown tomentose when young, sutures thick; seeds 2-3, thick, flat, glabrous.

*Flowering & Fruiting:* January-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Lower risk: near threatened (IUCN, 2000)

**Humboldtia unijuga** Bedd., Fl. Sylv. 183. 1872, var. **unijuga**; Hook. f., Fl. Brit. India 2: 274. 1876; Gamble, Fl. Pres. Madras 411(291). 1919; Sanjappa, Legumes Ind. 30. 1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 169. 1994; Gopalan & Henry, End. Pl. India SW Ghats 260. 2000; Mohanan & Sivad., Fl. Agasthyamala 233. 2002.

Trees; to 8 m high, branches slender, solid, terete, strigose when young, glabrous and faintly suberose when mature. Leaves bifoliate, alternate; stipule lateral, 5-7 x 2.5 mm narrowly ovate, acute, prominently parallel veined, connate at base, intrapetiolar, glabrous, appendages absent; rachis 5-8 mm long, stout, glabrous; gland at the top; estipellate; leaflets subsessile, 4-15 x 2-5 cm, elliptic-lanceolate or lanceolate or narrowly ovate, base unequal, apex obtusely acuminate, margin entire, glabrous, coriaceous; lateral nerves 5-15, pinnate, looped at the margin forming intramarginal nerve, prominent; intercostae reticulate. Flowers bisexual, 1.5-2.5 cm long, crimson, in axillary as well as cauliflorous racemes; sterile bracts present at the base of racemes; peduncle pubescent; pedicel 5-10 mm long, finely brown pubescent; bracts ciliate, pubescent without; bracteoles 2, 4-5 x 1.5-2 mm, ovate, rounded at apex; calyx tube 8 mm long, obconical lined by the disc, lobes 4, pubescent, obovate, rounded at apex; petals 5, 10-15 mm long, obovate, crimson, narrowed at base, veined, glabrous; stamens 5, free, filaments 10 mm long, filiform; anthers versatile; staminodes absent; ovary 5-6 mm long, half inferior, stipitate, obliquely oblong, densely brown pubescent; style 8-10 mm long, filiform, glabrous, 8-10 mm long; stigma capitate. Fruit a pod 5-8 x 2-3 cm, compressed, oblong, deep red, veined; seeds 2-3.

*Flowering & Fruiting:* December-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Humboldtia unijuga** Bedd. var. **trijuga** Joseph & Chandras., J. Bomb. Nat. Hist. Soc. 81: 729. 1984; Sanjappa, Legumes Ind. 30. 1992; Mohanan & Sivad., Fl. Agasthyamala 234. 2002.

*Humboldtia trijuga* (Joseph & Chandras.) Mohanan, Mohanan & Henry, Fl. Thiruvananthapuram Dist. 169. 1994; Gopalan & Henry, End. Pl. India SW Ghats 257.

Trees, to 15 m high; bark greyish-brown; branches slender, spreading; branchlets terete, nodes not constricted. Leaves paripinnate, alternate; stipules lateral, 3.2 x 1.1 cm, erect, united along the outer margin about half of its length, lanceolate, oblique at base, appendage absent; rachis 85 mm long, pulvinate, narrowly winged between leaflets, glabrous; leaflets 6 (rarely 4, 8 or 10), opposite, sessile or subsessile, estipellate; lamina 5.2-17.5 x 1.6-5 cm, lanceolate, oblanceolate, elliptic to oblong, base oblique, apex acuminate, margin entire, glabrous above and glabrescent beneath, coriaceous; lateral nerves 7-11 pairs, pinnate, prominent, looped at the margin forming prominent intramarginal nerve, intercostae reticulate, prominent. Flowers bisexual, bright pink, in fascicles or in very short racemes from tubercles of main trunk or axillary from leafy branchlets, not wide opening; pedicels upto 1.75 cm long, slender, pubescent; bracts ovate, pubescent, acute; bracteoles 2, free, obovate to oblong, pubescent, glabrous inside except at base and margin, concave, obtuse to subacute; calyx tube ca.5 mm long, lined by the disc; lobes 4, unequal, elliptic-oblong to obovate, glabrous outside, sparsely pubescent at base within, abruptly obtuse to subacute at tip, shortly clawed at base; stamens 5, exerted; filaments bright pink, glabrous except at base; anthers versatile; staminodes 5, minute, erect, glabrous and pinkish at base; disc densely pubescent; ovary half inferior, stipitate, 8 mm long, pubescent; style upto 1.8 cm long, glabrous above, pubescent at base; stigma capitate. Fruit a pod, 6-10.5 x 1-2.5 cm, oblong, oblique, puberulous, compressed with persistent styler beak.

*Flowering & Fruiting:* December-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Critically endangered (IUCN, 2000)

**Humboldtia vahliana** Wight, Ic. tt. 1607,1608. 1850; Hook. f., Fl. Brit. India 2: 274. 1878; Gamble, Fl. Pres. Madras 411(291). 1919; Mohanan, Fl. Quilon Dist. 163. 1984; Sanjappa, Blumea 31: 338. 1986 & Legumes Ind. 30. 1992; Antony, Fl. Kottayam Dist. 147. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 242. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 170. 1994; Subram., Fl. Thenmala Division 114. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 165. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 109. 1997; Sasidh., Fl. Periyar Tiger Reserve 123. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 108. 2002; Mohanan & Sivad., Fl. Agasthyamala 234. 2002.

*Local names:* Karappongu, Kurappunna, Korathi

Trees, to 18 m high, bark 5-6 mm thick, dark brown mottled with white; blaze pink; internodes of the branchlets solid, terete, glabrous; branchlets sometimes zig-zag. Leaves paripinnate, alternate; stipules 1.5-3 x 2.2 cm, lateral, persistent, ovate-cordate, parallel veined, glandular, glabrous, appendages reniform, divergently veined, glandular, glabrous; rachis 10-16.5 cm, stout, obscurely winged, pulvinate, tomentose or not; leaflets 4-8, opposite, estipellate; petiolule 7-10 mm long, stout, pubescent or not; lamina 10-25 x 3-6.4 cm, oblong-lanceolate, base obtuse, apex acuminate, coriaceous, glabrous; lateral nerves 8-14 pairs, pinnate, arched, prominent; intercostae reticulate, prominent, shallow depressed glands beneath.

Flowers bisexual, white, 27-30 mm long, in many flowered, axillary brown velvety racemes; pedicel 5-6 mm long; bracts lanceolate, acute, villous on both surfaces, persistent; bracteoles 2, connate by base, obovate, rounded at apex, fugacious; calyx tube 8-10 mm long, lined by the disc, obconical, brown villous; lobes 4, obovate-oblong, rounded at apex, slightly concave; petals 5, 10-12 x 4 mm, obovate, shortly clawed, broadly rounded at apex, glabrous; stamens 5, perfect, alternating with 5 minute staminodes; filaments 10 mm long, red, pilose upto the middle; anthers versatile; ovary 4-5 mm long, half inferior, obliquely linear, ovules 3-4; style 10-15 mm long, filiform, pilose at base, reddish; stigma capitate. Fruit a pod, 15-20 x 3.7-6 cm, elliptic, compressed, sutures thick valves prominently veined, brown villous; seeds 3-4, almost orbicular, glabrous.

*Flowering & Fruiting:* February-April

*Habitat:* Along river banks in semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Kollam, Kottayam, Pathanamthitta, Trivandrum, Thrissur, Palakkad, Idukki

*Endemic to:* Southern Western Ghats

### **Humboldtia** sp.

Medium sized trees, to 18 m high, bark greenish-brown, smooth, blaze red, branchlets stout, terete, glabrous; stipule 1 x 0.5 cm, obliquely ovate, acute, 5-6 nerved, glabrous, basal appendage absent. Leaves to 25 cm long, rachis to 10 cm long, terete glabrous; leaflets 4 rarely 2, petiolule 3-5 mm long, glabrous; lamina 5-19 x 3-7.5 cm, elliptic to elliptic-obovate, base acute, obtuse or rounded, apex acute or obtusely acuminate, glabrous, chartaceous, lateral nerves 3-5 pairs, slender, arching along the margins, intercostae reticulate, faint. Flowers in racemes, axillary or from leaf scars, solitary or in groups of 2 or 3, to 13 cm long, greyish white tomentose; bracteoles 2, 4 x 4 mm, oblong, rounded at apex, villous, united at base, *ca* 1 mm long; pedicels 3 mm long, villous, calyx tube 2.5 – 3 mm long, lobes 4, subequal, larger one 5 x 2.5 mm, oblong, obtuse, villous, others 5 x 2 mm; petals 5, subequal, white, larger one obovate, acute, 7 x 5 mm, glabrous, others 7 x 3 mm; stamens 5, filaments 15-17 mm long, sparsely pilose up to the middle, anthers oblong, 2 mm long, versatile; ovary 1.5 mm long, pilose, ovules 3, style 8-10 mm long, glabrous, stigma capitate. Pod 15-17 x 4 cm, oblong, oblique, widening towards apex, beaked, compressed, smooth, glabrous, upper sutures thickened; seeds 1 or 2, orbicular, *ca* .3 cm across, brown, glabrous.

*Flowering & Fruiting:* January-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats (Kerala)

**Kingiodendron pinnatum** (Roxb. ex DC.) Harms in Engl. & Prantl, Nat. Pflanzenf. 1(1): 194. 1897; Gamble, Fl. Pres. Madras 412(292). 1919; Mohanan, Fl. Quilon Dist. 163. 1984; Sanjappa, Legumes Ind. 32. 1992; Subram., Fl. Thenmala Division 119. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 165. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 109. 1997; Sasidh., Fl. Periyar Tiger Reserve 123. 1998.

*Hardwickia pinnata* Roxb. ex DC., Prodr. 2: 487. 1825; Hook. f., Fl. Brit. India 2: 270. 1878.

*Local names:* Chukennappayin, Ennappayin, Kiyavu, Kulavu

Evergreen trees, to 30 m high, bark 5-8 mm thick, surface greyish-brown with green blotches, rough; blaze red; exuding a reddish sticky resin. Leaves imparipinnate, alternate; stipules minute, lateral, cauducous; rachis 10-15.2 cm, slender, pulvinate, glabrous; leaflets 5-9, alternate, estipellate; petiolule 5-10 mm, stout, grooved above, glabrous; lamina 4.5-10.5 x 2-4.5 cm, ovate-lanceolate, falcate or oblique, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves 8-13, pinnate, slender, prominent, secondary laterals present, intercostae reticulate, prominent. Flowers bisexual, 2-3 mm across, white, in axillary and terminal paniced racemes; calyx tube almost wanting, lobes 5, broadly ovate, imbricate; petals 0; disc very small; stamens 10, equal, filaments filiform, villous at base; anthers versatile; ovary half inferior, sessile, villous at base; ovules 2; style subulate; stigma minute, oblique. Fruit a pod, 4-5 x 2-2.5 cm, ovate-ellipsoid, turgid, obtusely beaked, prominently veined, dark brown, indehiscent; seed one, pendulous.

*Flowering & Fruiting:* February-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Thrissur, Kannur, Kozhikkode

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

***Peltophorum pterocarpum*** (DC.) Backer ex Heyne, Nutt. Pl. Ned. Ind. (ed.2) 2:755.1927; Manilal & Sivar., Fl. Calicut 97. 1982; Mohanan, Fl. Quilon Dist. 165. 1984; Sanjappa, Legumes Ind. 33. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 244. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 171. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 110. 1997; Sasidh. & Sivar., Fl. Pl. Thrissur For. 166. 1996; Sunil, Fl. Pl. Alappuzha Dist. 284. 2000.

*Inga pterocarpa* DC., Prodr. 2: 441. 1825.

*Peltophorum ferrugineum* Benth., Fl. Austr. 2: 279. 1864; Hook. f., Fl. Brit. India 2: 257. 1878.

*Poinciana roxburghii* Don, Gen. Hist. 2: 433. 1832.

*Peltophorum roxburghii* (Don) Degener, Fl. Haw. Fam. 169b.1938.

Trees, to 20 m high, young parts brown tomentulose. Leaves bipinnate, alternate, stipulate; stipules small, lateral, cauducous; rachis 21-40 cm long, stout, pulvinate, brown tomentulose; pinnae 10-12 pairs, opposite, 4-15 cm long, slender, pulvinate, brown pubescent; leaflets 14-38, opposite, estipellate; lamina 1-2 x 0.3-0.8 cm, sessile, oblong, base obliquely truncate, apex obtuse or retuse, margin entire, glabrous above, puberulent beneath, membranous; lateral nerves 4-8 pairs, pinnate, slender, prominent, intercostae reticulate, faint. Flowers bisexual, golden yellow, in terminal or lateral racemose panicles; pedicels 7-10 mm long; calyx lobes 5, ovate, 7-10 mm long minutely rufous tomentulose; petals 5, subequal, crinkled; stamens 10, filaments free, pilose at base; anthers uniform; ovary half inferior; stigma peltate. Fruit a pod, 5-11.5 x 1.7-2.8 cm, samaroid, oblong-elliptic, minutely tomentulose, longitudinally striated; seeds 1-4, lenticular, light brown, compressed.



*Flowering & Fruiting:* March-December

*Habitat:* Planted as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Sri Lanka, Andamans, Malaya Peninsula and North Australia

**Saraca asoca** (Roxb.) de Wilde, *Blumea* 15: 393. 1968; Manilal & Sivar., *Fl. Calicut* 94. 1982; Mohanan, *Fl. Quilon Dist.* 164. 1984; Ramach. & Nair, *Fl. Cannanore Dist.* 167. 1988; Antony, *Fl. Kottayam Dist.* 147. 1989; Vajr., *Fl. Palghat Dist.* 184. 1990; Sanjappa, *Legumes Ind.* 35. 1992; Anil Kumar, *Fl. Pathanamthitta Dist.* 242. 1994; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 170. 1994; Subram., *Fl. Thenmala Division* 119. 1995; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 166. 1996; Sunil, *Fl. Pl. Alappuzha Dist.* 285. 2000.

*Jonesia asoca* Roxb., *Asiat. Res.* 4: 365. 1799.

*Saraca indica* sensu Bedd., *Fl. Sylv. t.* 57. 1870; Hook. f., *Fl. Brit. India* 2: 271. 1878, non L. 1769; Gamble, *Fl. Pres. Madras* 409(289). 1919.

*Local name:* Ashokam

Trees, to 10 m high, bark 2-3 mm thick, surface brown or brownish-black, lenticellate; blaze pink. Leaves paripinnate, alternate; stipules 7-20 mm long, intra petiolar, scarious, ovate, connate; rachis 4-25 cm long, slender, pulvinate, glabrous; leaflets 6-12, opposite, estpellate; petiolule 2-10 mm long, stout, glabrous; lamina 7-28.5 x 2-8.5 cm, narrowly oblong, oblong-ovate or ovate-lanceolate, base obtuse, round, cuneate or acute, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 10-15 pairs, pinnate, arched towards the margin, slender, faint, intercostae reticulate, faint. Flowers bisexual, yellow-orange or red, in dense sessile paniculate corymbs, axillary to leaves or leaf scars; bracts ovate, small deciduous; bracteoles 4 mm long oblong-spathulate, ciliolate, coloured, subpersistent; calyx 4 cm long, petaloid, cylindric, enclosing a lobed disc; lobes 4, ovate-oblong, unequal, spreading, imbricate; petals 0; stamens 7 or 8, much exserted, free; filaments long, filiform, coloured, glabrous; anthers versatile; ovary half inferior, stipitate, the stipe adnate below to one side of the disc, pubescent; style incurved, glabrous, filiform; stigma small, capitate; ovules many. Fruit a pod 10-5 x 2-5 cm, flat, oblong, coriaceous or almost woody, tapering at both ends; continuous within; seeds 2-8, 3.8 cm long, ovoid, slightly compressed.

*Flowering & Fruiting:* March-July

*Habitat:* Evergreen forests, also grown as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* India and Myanmar

*Status:* Vulnerable (IUCN, 2000)

**Tamarindus indica** L., *Sp. Pl.* 34. 1753; Hook. f., *Fl. Brit. India* 2: 273. 1878; Gamble, *Fl. Pres. Madras* 409(290). 1919; Manilal & Sivar., *Fl. Calicut* 94. 1982; Mohanan, *Fl. Quilon Dist.* 164. 1984; Ansari, *Fl. Kasaragod Dist.* 147. 1985; Ramach. & Nair, *Fl. Cannanore Dist.* 168. 1988; Antony, *Fl. Kottayam Dist.* 147. 1989; Vajr., *Fl. Palghat Dist.* 184. 1990; Sanjappa, *Legumes Ind.* 36. 1992; Anil Kumar, *Fl. Pathanamthitta Dist.* 243. 1994; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 170. 1994; Subram., *Fl. Thenmala Division* 114. 1995;

Sasidh. & Sivar., Fl. Pl. Thrissur For. 166. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 110. 1997; Sivar. & Mathew, Fl. Nilambur 237. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 115. 1999; Sunil, Fl. Pl. Alappuzha Dist. 286. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 109. 2002.

*Local names:* Kolpuli, Puli, Valampuli

Trees, to 20 m high, bark brown to brownish-black, rough with vertical fissures; branchlets warty, tomentose. Leaves paripinnate, alternate; stipules lateral, minute, cauducous; rachis 8-13 cm long, slender, glabrous, pulvinate; leaflets 20-34, opposite, sessile, estipellate; lamina 1.5-4 x 0.4-1.3 cm, oblong, base unequal, apex obtuse, margin entire, glabrous, chartaceous; lateral nerves 10-15 pairs, pinnate, slender, obscure, looped at the margin forming intramarginal nerve; intercostae reticulate, obscure. Flowers bisexual, 1 cm across, yellow with reddish-pink dots, in lax terminal racemes; bracts and bracteoles ovate-oblong, coloured, cauducous; pedicels upto 5 mm; calyx tube narrowly turbinate, lined by disc; lobes 4, subequal, oblong, imbricate; petals 3, outer one, 1 x 0.3 cm, rolled up, pink dotted, lateral 2, 1-1.5 x 0.7-1 cm, clawed, subequal, oblong-lanceolate, lower pair scaly; stamens 9 monadelphous, only 3 fertile, others reduced to bristle, base pubescent; anthers versatile; ovary half inferior, stipitate, adnate to the disc, ovules many; style attenuate, tomentose; stigma globose. Fruit a pod 10-15 x 1-2 cm, oblong, fruit wall crustaceous, mesocarp pulpy, endocarp septate, leathery, indehiscent; seeds 3-8 or more, obovoid-orbicular, compressed, brown.

*Flowering & Fruiting:* September-April

*Habitat:* Widely grown in homesteads, also naturalised in degraded forests

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Tropical Africa; introduced and widely grown in India and other parts of tropics

## MIMOSACEAE

- |  |                              |
|--|------------------------------|
| 1. Rachis without leaflets, modified in to a leaf-like phyllode.....   | 2                            |
| 1. Rachis with leaflets, not modified in to phyllode.....  | 3                            |
| 2. Pods coiled when mature, phyllode over 3.5 cm broad.....  | <b>Acacia mangium</b>        |
| 2. Pods not coiled at maturity, phyllode to 2.5 cm broad.....  | <b>Acacia auriculiformis</b> |
| 3. Leaves simple pinnate, leaflets 2 .....   | <b>Inga cynometroides</b>    |
| 3. Leaves bipinnate, leaflets many.....  | 4                            |
| 4. Stamens ca. 10 .....  | 5                            |
| 4. Stamens more than 15.....   | 9                            |
| 5. Flowers in globose heads .....  | 6                            |
| 5. Flowers in elongated spikes.....  | 7                            |
| 6. Pinnae 1 pair, leaflets 2-5 pairs, terminal leaflets to 15 x 5 cm, pod woody .....  | <b>Xylia xylocarpa</b>       |
| 6. Pinnae ca. 6 pairs, leaflets 1-1.5 x 0.3-0.4 cm, pod thin walled.....   | <b>Leucaena leucocephala</b> |
| 7. Large unarmed trees, leaves to 50 cm long, seeds scarlet <b>Adenantha pavonina</b>  |                              |
| 7. Small trees armed trees, leaves less than 12 cm long, seeds black or brown.....   | 8                            |
| 8. Branchlets terminating in spine, upper flowers of inflorescence yellow and lower pink .....                                 | <b>Dichrostachys cinerea</b> |
| 8. Spines axillary, inflorescence yellow .....   | <b>Prosopis juliflora</b>    |
| 9. Staminal filaments free .....   | 10                           |
| 9. Staminal filaments united at base to form a tube.....   | 18                           |
| 10. Plants unarmed .....   | 11                           |
| 10. Plants armed.....  | 12                           |
| 11. Leaves silvery, glands solitary on rachis between each pair of opposite pinnule.....                                       | <b>Acacia dealbata</b>       |
| 11. Leaves dark green, 2 glands on rachis between each pair of opposite pinnules .....   | <b>Acacia mearnsii</b>       |
| 12. Flowers in globose heads .....   | 13                           |
| 12. Flowers in elongated spikes.....   | 15                           |
| 13. Stipular spines unequal, one short recurved and other straight to 4 cm long .....  | <b>Acacia planifrons</b>     |
| 13. Stipular spines small, equal.....  | 14                           |
| 14. Pod moniliform, white hoary pubescent; bark brown <b>Acacia nilotica</b> var. <b>indica</b>                                |                              |
| 14. Pod neither moniliform nor white hoary pubescent; bark yellowish.....  | <b>Acacia leucophloea</b>    |
| 15. Calyx and petals white villous, petals twice as long as the calyx .....  | 16                           |
| 15. Calyx and petals glabrous, petals thrice as long as the calyx .....  | 17                           |
| 16. Trunk yellowish-white, peels off in thin papery flakes, trunk armed with broad based prickles; branchlets pubescent, ..... | <b>Acacia polyacantha</b>    |
| 16. Trunk brown, fissured and cracked without broad based thorns, branchlets glabrous.....                                     | <b>Acacia catechu</b>        |
| 17. Leaflets more than 20 pairs per pinna; pod 4-7 cm long, obtuse at apex.....  | <b>Acacia chundra</b>        |
| 17. Leaflets less than 20 pairs per pinna; pod 7-12 cm long, apex apiculate.....   | <b>Acacia ferruginea</b>     |

18. Seeds embedded in brown pulp ..... **Samanea saman**  
 18. Seeds not embedded in pulp ..... 19  
 19. Pods twisted or curved ..... 20  
 19. Pods straight ..... 22  
 20. Branchlets with stipular spines, leaflets 2 per pinna ..... **Pithecellobium dulce**  
 20. Branchlets unarmed, leaflets 3 or more pairs per pinna ..... 21  
 21. Leaflets many, 8 x 3 mm, trapezoid ..... **Archidendron clypearia**  
 21. Leaflets 2-4 pairs, to 10 x 4 cm, lanceolate ..... **Archidendron bigeminum**  
 22. Flowers in globose heads ..... 23  
 22. Flowers in elongated spikes ..... **Paraserianthes falcataria**  
 23. Leaflets over 7 mm broad ..... 24  
 23. Leaflets under 5 mm broad ..... 25  
 24. Flowers pedicelled, in axillary fascicles, pods 3.5 – 4.5 cm broad **Albizia lebbeck**  
 24. Heads in terminal panicles, pods less than 3 cm broad ..... **Albizia procera**  
 25. Leaflets 1.5–2 x 0.4–0.5 cm, ..... **Albizia odoratissima**  
 25. Leaflets less than 1 x 0.4 cm ..... 26  
 26. Leaflets 3-4 mm broad, lower pair much smaller than others, filaments greenish-white ..... **Albizia lathamii**  
 26. Leaflets less than 2 mm broad, all pairs similar, filaments pink ..... 27  
 27. Stipules large, foliaceous midrib of leaflets towards the upper margin .....  
 ..... **Albizia chinensis**  
 27. Stipules small, deciduous, midrib of leaflets towards the centre ... **Albizia amara**

**Acacia auriculiformis** A. Cunn. ex Benth. in Hook.'s London J. Bot. 1: 377. 1842; Antony, Fl. Kottayam Dist. 148. 1989; Sanjappa, Legumes Ind. 45. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 251. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 167. 1996; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 603. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 111. 1997; Sunil, Fl. Pl. Alappuzha Dist. 288. 2000.

*Local name:* Acacia

Trees, to 15 m high, bark brown, smooth; branchlets terete, glabrous. Phyllodes alternate; stipules lateral; petiole 8-20 mm long, pulvinate, slender, glabrous; lamina 7-20 x 1-5 cm, falcate or falcate-elliptic-falcate, base attenuate, apex subacute or obtuse, margin entire, glabrous, coriaceous; 3-6 parallel ribs from the base, palmate, prominent, intercostae reticulate. Flowers bisexual, yellow, 2.5 mm, in axillary spikes, to 4-8 cm long; calyx 0.5-1 x 0.8-1 mm, campanulate; lobes 5; corolla ca. 2 mm long; lobes 5, 1.5-1.8 mm, lobes lanceolate; stamens many, 3-4 mm long; ovary superior, subsessile, glabrous; styles 3-4 mm long. Fruit a pod, 3-10 x 0.5-1 cm, flat, glabrous, woody and much twisted in irregular coils; seeds black, 0.6 x 0.5 cm, with orange-yellow coloured aril.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Grown as avenue trees, also raised in plantations

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Tropical Australia

**Acacia catechu** (L.f.) Willd., Sp. Pl. 4: 1079. 1806; Hook. f., Fl. Brit. India 2: 295. 1878; Gamble, Fl. Pres. Madras 427(303). 1919; Sanjappa, Legumes Ind. 38. 1992;

Sasidh., Fl. Chinnar Wildlife Sanctuary 117. 1999; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 606. 1996; Sasidh., Fl. Parambikulam Wildlife Sanctuary 110. 2002.

*Mimosa catechu* L. f., Suppl. Pl. 439. 1781.

*Local name:* Karingali

Deciduous, gregarious trees, to 15 m high; bark dark greyish-brown to dark brown, rough, about 1.3 cm thick, exfoliating in long, narrow rectangular strips; blaze brownish-red; branchlets brown, glabrous. Leaves bipinnate, alternate, stipulate; stipular spines slightly infra axillary, paired, 3-10 mm long, straight or hooked, occasionally lacking on flowering branchlets; rachis 8-19.5 cm, slender, pulvinate, downy, grooved above, with a gland near the base of the rachis on the upper side; pinnae 10-20 pairs, 3.6-8 cm long, opposite, downy, slender, with a gland in between the terminal 6 pairs on the lower side, leaflets 30-50, opposite, paripinnate, sessile, stipels absent; lamina 2.5-8 x 0.5-1.5 mm, linear-oblong, base unequally truncate, apex round, obtuse, or mucronate, margin entire, pubescent, chartaceous; midrib subcentral at base, lateral nerves obscure. Flowers pale yellow, sessile, in long solitary or in groups of 2-4 axillary spikes; bracts cauducous; calyx cupular-campanulate, 1-1.5 x 1.3-1.5 mm, teeth triangular or deltoid; corolla 2.5-3 mm long, lobes oblong, ovate to linear-lanceolate; stamens many, 4.5-5 mm long; ovary stipitate, 0.8-1.2 mm long, oblong-ellipsoid; style 4-5 mm long; stigma terminal. Fruit a pod 5-10 x 1-1.6 cm, flat, straight, unlobed or sinuate along margins, thin walled, beaked at apex, brown, narrowed at base into a stipe, dehiscent; seeds 3-10, orbicular or ovate, flattened.

*Flowering & Fruiting:* March-September

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India and Myanmar

**Acacia chundra** (Roxb. ex Rottl.) Willd., Sp. Pl. 4: 1078. 1806; Vajr., Fl. Palghat Dist. 185. 1990; Sanjappa, Legumes Ind. 38. 1992; Sasidh., Fl. Chinnar Wildlife Sanctuary 117. 1999.

*Mimosa chundra* Roxb. ex Rottl., Ges. Naturf. Freunde Berlin Neue Schriften 4: 207. 1803.

*Mimosa sundra* Roxb., Pl. Corom. t. 225. 1811 & Fl. Ind. 2: 562. 1832.

*Acacia sundra* (Roxb.) DC., Prodr. 2: 295. 1825; Hook. f., Fl. Brit. India 2: 295. 1878; Gamble, Fl. Pres. Madras 428(303). 1919.

*Local name:* Karingali

Trees; to 8 m high; bark rusty brown; rough, peeling off in thin flakes; branchlets smooth, glabrous, pale purplish-brown. Leaves bipinnate, alternate, stipulate; stipular spines short, hooked to 8 mm; rachis 8-10 cm long, slender, grooved above, pulvinate, glabrous; pinnae 10-15 pairs opposite, even pinnate, 2-4 cm long, slender, with a gland at the base of lowest pair of pinnae and between 1-2 extreme pairs on upper side; leaflets 30-60, opposite, sessile, stipels absent; lamina 4-10 x 1-2 mm, linear-oblong, base unequally truncate, apex obtuse, margin entire, glabrous, chartaceous, midrib subcentral, lateral nerves obscure. Flowers yellowish-white, 2 mm across, in axillary 1-3 clustered spikes shorter than leaves; calyx tube campanulate, 1 mm long, 5-lobed, glabrous; corolla three times as long

as calyx, lobes linear-lanceolate, glabrous; stamens many, connate at base; ovary stipitate, falcate, upto 1.5 mm, glabrous; style filiform; stigma small, terminal. Fruit a pod, 5-10 x 1.5-2 cm, stipitate, flat, thin, glabrous, strongly nerved, obtuse at base, apically horned; suture wavy, depressed between seeds; seeds ca.6, ovoid, greenish-brown.

*Flowering & Fruiting:* July-August

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* Peninsular India, Sri Lanka and Myanmar

**Acacia dealbata** Link, Enum. Hort. Berol. 445. 1822; Gamble, Fl. Pres. Madras 429(304). 1919; Sanjappa, Legumes Ind. 47. 1992; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 608. 1996.

Evergreen unarmed trees, to 20 m high; bark grey, fairly smooth; branchlets and leaves grey-hoary. Leaves bipinnate, alternate, stipulate; rachis 3-9 cm, slender, pulvinate, silvery pubescent; pinnae 18-21 pairs, 0.7-2.8 cm long, slender, with a gland between each pairs on the upper side, even pinnate; leaflets 20-80, opposite, sessile, minute; lamina 2-4 x 5-1 mm, linear-oblong, base obliquely truncate, apex obtuse, margin entire, silvery pubescent, glaucous, chartaceous; lateral nerves obscure. Flowers yellow, very sweet scented, heads in axillary or terminal panicles; peduncle 5-10 mm long, ochraceous tomentellous; calyx 1-1.5 x 0.5-1.5 mm, 5-fid; corolla 2.3-3.5 mm long; petals oblong; stamens many, 3.5-4.5 mm long; ovary 4-5 mm long, subsessile, oblong, style 3-4 mm long; stigma minute, terminal. Fruit a pod 2.5-8 x 0.5-1 cm, flat, straight or curved, irregularly constricted between the seeds, acuminate at the apex, glabrous, dark reddish-brown; stalk very short; seeds 2-6, 5-6 x 3.5-4 mm, horizontal.

*Flowering & Fruiting:* September-March

*Habitat:* Raised in plantation

*Distribution*

*Kerala:* Idukki

*Geographical:* Native of Australia

**Acacia ferruginea** DC., Prodr. 2: 458. 1825; Hook. f., Fl. Brit. India 2: 295. 1878; Gamble, Fl. Pres. Madras 428(303). 1919; Sanjappa, Legumes Ind. 39. 1992; Sasidh., Fl. Chinnar Wildlife Sanctuary 117. 1999; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 611. 1996.

*Mimosa ferruginea* (DC.) Roxb., Fl. Ind. 2: 561. 1832, non Rottl., 1803.

*Local names:* Baabolamaram, Gonthumaram, Karivelam

Trees; to 20 m high; bark 10-12 mm thick, dark brown, rough, deeply fissured, blaze pink; branchlets brownish or blackish. Leaves bipinnate, alternate, stipulate; stipular spines in pairs, nodal, 0.5-6 mm long, hooked or sometimes straight; rachis 3. 5-8 cm, slender, grooved above, pulvinate, glabrous, with a gland at the base of the rachis on the upper side; pinnae 4-6 pairs, opposite, even pinnate, 4.5-5.5 cm, slender, with a gland in between terminal 2 pinnae pairs on upper side; leaflets 20-44, opposite, sessile, lamina 5-8 x 2-3 mm, linear-oblong, base oblique, apex obtuse, margin entire, glabrous, chartaceous, midrib subcentral, lateral

nerves obscure. Flowers bisexual, pale yellow, 4-4.5 cm long, in spikes arranged in loose panicles; bracts and bracteoles caudicous; calyx 1-1.5 x 1.5-1.8 mm, campanulate, 5-lobed, puberulous; corolla 2.5-3 mm, twice longer than the calyx, lobes oblong, glabrous; stamens many, 3-5 mm long, basally connate; ovary stipitate, terete; style 2.5-3 mm long, filiform; stigma small, terminal. Fruit a pod 7.5-17.5 x 1.6-1.8 cm, strap shaped, flat, dark brown, round and apiculate or shortly attenuate at apex, glabrous, transversely reticulate-veined, attenuate at base into a stipe; seeds 2-6, ovate, flat.

*Flowering & Fruiting:* February-March

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Geographical:* Peninsular India and Sri Lanka

**Acacia leucophloea** (Roxb.) Willd., Sp. Pl. 4: 1083. 1806; Hook. f., Fl. Brit. India 2: 294. 1878; Gamble, Fl. Pres. Madras 427(302). 1919; Sanjappa, Legumes Ind. 41. 1992; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 615. 1996; Sasidh., Fl. Chinnar Wildlife Sanctuary 118. 1999.

*Mimosa leucophloea* Roxb., Pl. Corom. t. 150. 1800.

*Local names:* Vellavelam, Velvelam

Trees; to 20 m high; bark yellow to yellowish-brown, rough, exfoliating in irregular scales; blaze light red; branchlets yellowish-velvety. Leaves bipinnate, alternate, stipulate; stipular spines in pairs, upto 1 cm, grey, straight, puberulous; rachis 9-14 cm stout, pulvinate, grooved above, pubescent; pinnae 5-15 pairs, opposite, even pinnate, 3.5-6 cm, with a gland in between terminal 3-4 pinnae and also between basal pairs on upper side, slender, pubescent; leaflets 30-54, opposite, sessile; lamina 5-10 x 2-3 mm, linear, base oblique, truncate, apex subacute, margin ciliate, glabrous above, pubescent below, chartaceous; nerves obscure. Flowers yellow or yellowish-white, 1 mm across, sessile, in heads arranged in terminal panicles; peduncle zig-zag; bracts ovate, minute; bracteoles ca.5 in an involucre, in the middle of the peduncle; calyx 1-1.3 x 1 mm, campanulate, villous; teeth triangular; corolla 2-2.5 mm long, puberulous without, lobes ovate-oblong; stamens many, 2.5-5 mm long with glandular appendages; ovary stipitate, 0.3-0.5 mm long; style 1-1.5 mm long. Fruit a pod 6-15 x 0.8-1 cm, flat, strap-shaped, straight or sometimes curved, somewhat bullate along seeds, thin walled, round or often mucronate at apex, minutely brown tomentose, sessile to subsessile, tardily dehiscent; seeds 5-12, ovate, 5-6 x 3-4 mm.

*Flowering & Fruiting:* July-February

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* Indo-Malesia

**Acacia mangium** Willd., Sp. Pl. 4:1053.1806; Sanjappa, Legumes Ind. 50. 1992; Sasidh. & Sivar., Fl. Pl. Thrissur For. 167. 1996; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 631. 1996.

*Local name:* Manjium

Trees, to 30 m high, bark pale grey-brown to brown, rough, furrowed. Phyllode simple, alternate; stipules lateral, caudaceous; petiole 7-10 mm long, stout, pulvinate, glabrous; lamina 16-22 x 3-10 cm, elliptic-oblong or lanceolate, base attenuate, apex acute or obtuse, margin entire, glabrous, coriaceous; 3-5-ribbed from the base, palmate, prominent, intercostae reticulate. Flowers bisexual, white, in loose axillary spikes of 12 cm long; calyx gamosepalous; corolla gamopetalous, deeply lobed; stamens many; filaments free; ovary superior, puberulous. Fruit a pod, woody, twisting into spiral cluster on dehiscence; seeds brown, 3-5 x 2-3 mm, ovate-oblong, attached to the pod by orange-red folded funicle.

*Flowering & Fruiting:* November-March

*Habitat:* Raised in plantations, also grown as avenue tree

*Distribution*

*Kerala:* All districts

*Geographical:* Australia

**Acacia mearnsii** Wilde, Pl. Bequaert. 3: 61. 1925, "mearnsi"; Sanjappa, Legumes Ind. 50. 1992; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 617. 1996; Sasidh., Fl. Chinnar Wildlife Sanctuary 118. 1999.

*Acacia decurrens* (Wendl.) Willd. var. *mollis* Lindl., Bot. Reg. 5. t. 371. 1819.

Trees, to 15 m high; young parts silky; branchlets semiterete. Leaves bipinnate, alternate, stipulate; rachis 4-12 cm long, slender, pulvinate, pubescent, a gland at the base of the rachis on the upper side; pinnae 8-21 pairs, subopposite, 1.5-6 cm long, slender, a gland between each pairs on the upper side; leaflets 36-90, subsessile, subopposite; lamina 1.5-4 x 0.5-1 mm, linear or linear-oblong, base obtuse, subacute or obliquely truncate, apex obtuse or subacute, margin entire, puberulent, membranous, veins obscure. Flowers bisexual, white or creamy, sessile, heads arranged in axillary or terminal panicles or racemes; calyx 2.5-3 x 2-2.8 mm, ochraceous puberulous; lobes 5, ca. 2 x 1 mm, oblong; corolla 3.5-4 mm long; lobes 5, 2.5-3.5 x 1-2 mm, triangular-oblong; stamens 4-5 mm long; ovary superior, 4.5-5 mm long; style 4-5 mm long. Fruit a pod, 3-10 x 0.5-1 cm, flat, narrow, straight to slightly curved, usually constricted between the seeds, tomentose, blackish-brown.

*Flowering & Fruiting:* March-October

*Habitat:* Raised in plantations

*Distribution*

*Kerala:* Idukki

*Geographical:* Native of Australia, widely planted in Asia

**Acacia nilotica** (L.) Willd. ex Del. ssp. **indica** (Benth.) Brenan, Kew Bull. 12: 84. 1957; Vajr., Fl. Palghat Dist. 185. 1990; Sanjappa, Legumes Ind. 42. 1992; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 619. 1996; Sasidh., Fl. Chinnar Wildlife Sanctuary 118. 1999; Sunil, Fl. Pl. Alappuzha Dist. 288. 2000.

*Mimosa nilotica* L., Sp. Pl. 521. 1753.

*Acacia arabica* Hook.f., Fl. Brit. India 2: 293. 1878, non (Lam.) Willd. 1808; Gamble, Fl. Pres. Madras 425(301). 1919.

*Acacia arabica* Hook. f. var. *indica* Benth. in Hook.'s London J. Bot. 1: 500. 1842.

*Mimosa arabica* Lam., Encycl. 1: 19. 1783.



*Local name:* Karivelam

Trees, to 8 m high; bark black with deep narrow longitudinal fissures, running spirally up the tree, exudation gummy; blaze pinkish-brown; branchlets blackish or greyish, smooth, the young ones densely pubescent with short stiff patent hairs. Leaves bipinnate, alternate, stipulate; stipular spines in pairs, upto 5 cm, straight, slender, white with grey spots; rachis 5-7 cm, slender, pulvinate, grooved above, pubescent; pinnae 4-9 pairs, 1.5-3 cm, slender, with a gland near the lowermost pinnae on upper side, pubescent; leaflets 20-40, opposite, sessile; lamina 3-4 x 1-2 mm, linear-oblong, base oblique, apex obtuse, margin entire, glabrous, chartaceous; midrib more or less central, lateral nerves obscure. Flowers bright yellow, in heads on axillary peduncle; involucre of 2 bracteoles near or above the mid peduncle; calyx campanulate, 1-2 x 0.8-1.5 mm, glabrescent, teeth triangular to ovate; corolla 2.5-3.5 mm long, often puberulous, lobes oblong to ovate; stamens many, 4.5-5 mm long, filaments basally connate; ovary terete, stipitate, puberulous; style 5.5-6.5 mm long. Fruit a pod 7.6-23 x 1.3-2 cm, flattened, strap-shaped, straight to slightly curved, deeply constricted between seeds, bullate over seeds, beaked at apex; densely grey-felted, glaucous, greyish-green, turning black on drying, attenuate at base into stipe, dehiscent; seeds 8-13, flat 5 x 4 mm, black.

*Flowering & Fruiting:* May-December

*Habitat:* Introduced and planted

*Distribution*

*Kerala:* Idukki, Palakkad, Alappuzha

*Geographical:* North India to North Africa through West Asia

**Acacia planifrons** Wight & Arn., Prodr. 276. 1834; Hook. f., Fl. Brit. India 2: 293. 1878p.p.; Gamble, Fl. Pres. Madras 426(302). 1919; Sanjappa, Legumes Ind. 43. 1992; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 622. 1996; Sasidh., Fl. Chinnar Wildlife Sanctuary 119. 1999.

*Local name:* Kudavelam

Trees; to 7 m high; bark greyish-brown, thick with horizontal markings, branchlets warty. Leaves bipinnate, alternate, fascicled on abbreviated branchlets, stipulate; stipular spines in pairs, unequal; short ones recurved, brown, long one straight, divergent, white with brown spots; rachis 8-12 mm, slender, pulvinate, glabrous, with a gland towards the base on the upper side [absent in smaller leaves]; pinnae 3-5 pairs, slender, 0.7-1 cm, opposite, even pinnate; leaflets 10-30, opposite, estipellate; lamina 1-3 x 0.5-1 mm, linear-oblong, base oblique, apex obtuse, margin entire, glabrous, chartaceous, nerves obscure. Flowers white, heads axillary, 2-3 together, peduncles with involucre at the base; calyx campanulate, 1-2 x 1.5-2.5 mm, glabrous; corolla funnel shaped, 3-4 mm long, lobes ovate to oblong; stamens many, 3-4 mm long, filaments basally connate; ovary 1.5 mm long, sessile, glabrous; style ca. 2.5 mm long. Fruit a pod, 5-10 x 0.6-0.7 cm, slightly fleshy, circinate, entire along margin, acute at apex, glabrous, rounded to acute at base; stipe very short; seeds 6-9.

*Flowering & Fruiting:* October-April

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Geographical:* Peninsular India and Sri Lanka

**Acacia polyacantha** Willd., Sp. Pl. 4: 1079. 1806.

*Mimosa suma* Roxb., Fl. Ind. 2: 563. 1832.

*Acacia suma* (Roxb.) Buch.-Ham. ex J. Voigt, Hort. Suburb. Calc. 260. 1845; Hook. f., Fl. Brit. India 2: 294. 1878; Gamble, Fl. Pres. Madras 427(303). 1919.

Trees, to 15 m high, bark yellowish-grey, peels off in thin papery flakes; blaze pink red; branchlets yellow-pubescent; stipular spines infra-axillary, 8-10 mm long, paired, straight or hooked, occasionally lacking on flowering branches. Leaves paripinnate, alternate; rachis 4-20 cm long, slender, pubescent, softly prickled, pulvinate; a gland at the base on upper side; pinnae 15-25 pairs, 4-5 cm long, slender, pubescent; glands between uppermost 4 pairs; leaflets 30-50, opposite, sessile; lamina 5-7 × 0.5-1 mm, densely pubescent, chartaceous, base truncate, apex subacute or obtuse, margin ciliate; midrib near distal margin, lateral nerves and intercostae obscure. Flowers bisexual, 4 mm across, white, in axillary solitary or paired spikes, to 8 cm; peduncle to 1 cm; bracts to 6 mm; bracteoles cauducous; calyx 5-lobed, to 1.5 mm, tomentose; corolla to 3 mm long; lobes 5; stamens many, to 4 mm, basally connate; ovary stipitate, oblong, to 1 mm; style to 4 mm. Fruit a pod, stipitate, 8 × 1.5 cm, glabrous, grey, woody, oblong, base and apex horned; seeds 5-8.

*Flowering & Fruiting:* March-September

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Palakkad

*Geographical:* India and Sri Lanka

**Adenanthera pavonina** L., Sp. Pl. 384. 1753; Hook. f., Fl. Brit. India 2: 287. 1878; Gamble, Fl. Pres. Madras 418(296). 1919; Manilal & Sivar., Fl. Calicut 102. 1982; Mohanan, Fl. Quilon Dist. 166. 1984; Ansari, Fl. Kasaragod Dist. 149. 1985; Antony, Fl. Kottayam Dist. 150. 1989; Sanjappa, Legumes Ind. 54. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 251. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 172. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 171. 1996; Sunil, Fl. Pl. Alappuzha Dist. 290. 2000.

*Local name:* Manchadai

Deciduous trees; to 20 m high; bark grey to reddish-brown, smooth, blaze dull yellow; branchlets sparsely to densely minutely tomentellous to glabrous. Leaves bipinnate, alternate, stipulate; stipules minute, free, lateral, cauducous; rachis 14.5-62.5 cm long, stout, pulvinate, grooved above, glabrous, with a gland at the tip; pinnae 2-3 pairs, 2-42 cm, opposite or rarely subopposite, even pinnate, slender, grooved above, pulvinate, puberulent; leaflets 8-20, alternate, estipellate; petiolule up to 3 mm long; lamina 1.3-8 × 8-4.2 cm, oblong-elliptic, base slightly oblique and truncate, apex round, emarginate or obtuse and mucronate, margin entire, puberulent above and glaucous beneath, chartaceous; lateral nerves 9-10 pairs, parallel, slender, obscure, intercostae reticulate, faint. Flowers bisexual, pale yellow, 6 mm across, clustered in axillary spiciform racemes; bracts to 5 mm, linear, bracteole to 1 mm, pedicel to 3 mm; calyx tube campanulate, 1 mm, 5 toothed, pubescent; petals 5, connate below, linear-lanceolate, upto 4.5 mm long, glabrous;

stamens 10, free, filaments filiform, alternately long and short; anthers oblong, ending in a stipitate gland; ovary subsessile, flat, 3 mm; style 2 mm, filiform; stigma simple. Fruit a pod 10-25 x 0.7-1.5 cm, straight to falcate to slightly twisted, spirally coiled after dehiscence, thin, septate within, tapered at base, apex acute, glabrous; seeds 6-15, 8-10 x 7-9 mm, elliptic-lenticular, glossy, red.

*Flowering & Fruiting:* January-June

*Habitat:* Planted as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Sri Lanka, Himalayas, Myanmar, Thailand, Malaysia and China

**Albizia amara** (Roxb.) Boivin, *Encycl.* 19: 34. 1838; Hook. f., *Fl. Brit. India* 2: 301. 1878; Gamble, *Fl. Pres. Madras* 432(306). 1919; Sanjappa, *Legumes Ind.* 54. 1992; Chakrab. & Gangop., *J. Econ. Tax. Bot.* 20: 583. 1996; Sasidh., *Fl. Chinnar Wildlife Sanctuary* 119. 1999.

*Mimosa amara* Roxb., *Pl. Corom.* 1. 122. 1799.

*Acacia amara* (Roxb.) Willd., *Sp. Pl.* 4: 1074. 1806.

*Acacia wightii* Graham ex Wight & Arn., *Prodr.* 274. 1834.

*Local names:* Oonjal, Varacchi, Sulivaka, Nenmenivaka

Much branched trees; to 13 m high; bark thin, surface grey, rough, scaly; blaze yellowish, branchlets brown, pubescent. Leaves bipinnate, alternate, stipulate; stipules minute, free, lateral, lanceolate, cauducous; rachis 3-15 cm, slender, pulvinate, with a gland near the base on the upper side, yellow tomentose; pinnae 3-16 pairs, opposite, even pinnate, 2.5-7 cm, slender, rachis with a bristle at the terminal end, with a gland in between terminal pairs on the upper side or between all pairs; leaflets 20-60, opposite, even pinnate, estipellate, lamina 3-8 x 1-2 mm, sessile, linear, base oblique, apex subacute or obtuse, margin entire, ciliate or glabrous; surface appressed-pubescent or glabrescent, chartaceous; midrib more or less central, rarely towards the distal margin, lateral nerves obscure. Flowers bisexual, white, heads solitary or 2-3 in axillary fascicles, 6-8 mm long; peduncle to 5 cm, slender, densely pubescent; bracts to 5 mm, cauducous; pedicel to 1 mm, puberulous; calyx funnel-shaped, 1-2 x 1-1.5 mm, puberulous, teeth 5, short; corolla, 3-4 mm long, glabrous except the bearded apex, lobes 5, oblong-lanceolate; stamens many, 1-1.5 cm long, monadelphous at base, tube as long as or slightly shorter than the corolla tube, filaments long exerted; ovary stipitate, pubescent, style filiform, stigma minute. Fruit a pod 10-24 x 2.5-4 cm, flat, greyish-brown, veiny, straight or wavy along margin, base and apex rotund, horned, indehiscent; seeds 6-13, compressed, ovate-orbicular.

*Flowering & Fruiting:* August-February

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India, Sri Lanka and parts of East Africa

**Albizia chinensis** (Osbeck) Merr., *Amer. J. Bot.* 3: 575. 1916; Manilal & Sivar., *Fl. Calicut* 100. 1982; Mohanan, *Fl. Quilon Dist.* 167. 1984; Vajr., *Fl. Palghat Dist.* 187. 1990; Sanjappa, *Legumes Ind.* 54. 1992; Anil Kumar, *Fl. Pathanamthitta Dist.*

246. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 173. 1994; Subram., Fl. Thenmala Division 124. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 168. 1996; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 584. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 111. 1997; Sasidh., Fl. Periyar Tiger Reserve 126. 1998; Sunil, Fl. Pl. Alappuzha Dist. 291. 2000; Mohanan & Sivad., Fl. Agasthyamala 236. 2002.

*Mimosa chinensis* Osbeck, Dagbok. Ostind. Resa 233. 1757.

*Acacia stipulata* DC., Prodr. 2: 469. 1825.

*Albizia stipulata* (Roxb.) Boivin, Encycl. 19:33. 1838; Hook. f., Fl. Brit. India 2: 300. 1878.

*Mimosa stipulata* Roxb., Fl. Ind. 2: 549. 1832.

*Albizia marginata* (Lam.) Merr., Philipp. J. Sci. 5: 23. 1910; Gamble, Fl. Pres. Madras 433(307). 1919.

*Mimosa marginata* Lam., Encycl. 1:12.1783.

*Local names:* Mottavaka, Pottavaka

Deciduous trees; to 25 m high; bark 5-6 mm thick, surface brownish-grey, smooth, horizontally furrowed; blaze pink; branchlets minutely golden tomentellous. Leaves bipinnate, alternate, stipulate; stipules 2.5-4 x 1 cm, free, lateral, obliquely cordate, crisped, orange-pink, pubescent, with filiform tail, base much dilated at one side, caducous; rachis 18-35 cm, slender, grooved above, pulvinate, sparsely minutely tomentellous, with a gland near its base on upper side, pinnae 4-20 pairs, opposite, even pinnate, 8-12.5 cm long, slender, sparsely tomentellous; with a gland in between each pairs or on distal 2-3 pairs; leaflets 50-90, opposite, even pinnate, estipellate, sessile; lamina 3-6 x 15-18 mm, falcate-lanceolate or falcate, base oblique, subtruncate or obtuse, apex acute, margin entire, ciliate, glabrous above, sparsely tomentellous and glaucous beneath, chartaceous; midrib starting and ascending along the distal margin, lateral nerves obscure. Flowers bisexual, white, in globose heads, 2-6 in axillary fascicles or arranged in terminal and axillary panicles; peduncle slender, pubescent; pedicel 0.5-1 mm, pubescent; bracts stipular, persistent; calyx 2.5-5 x 1-2 mm, funnel shaped, pubescent, teeth short; corolla 6-10 mm long, funnel shaped, pubescent, lobes 5, ovate-lanceolate, stamens many, yellowish, monadelphous at the base, tube slightly shorter to or longer than the corolla tube; ovary ca. 1.5 mm long, sessile, glabrous; style upto 3 cm long. Fruit a pod, 15-20 x 2.5 cm, strap shaped, flat, reddish-brown, glossy, straight or wavy along the margin, very shortly stalked, apices round or tapering, slightly bullate over the seeds; seeds 8-20, 6-10 x 5-8 mm, ovate, flat, dull brown.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen and deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and South China

***Albizia lathamii*** Hole, Indian For. Rec. 4: 153. 1913; Gamble, Fl. Pres. Madras 432(306). 1919; Sanjappa, Legumes Ind. 56. 1992; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 589. 1996; Sajeev & Sasidh., J. Econ. Tax. Bot. 22: 629. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 120. 1999.

*Local name:* Natoonjal

Much branched trees; to 7 m high; bark greyish-brown, rough, lenticellate; branchlets brownish or blackish, 2-6 mm thick, terete, initially brownish-puberulous, becomes glabrous, white lenticellate. Leaves bipinnate, alternate, stipulate; stipule free, lateral, caducous; rachis 25-50 mm, slender, pulvinate, brownish or greyish pilose, with a gland near the base; pinnae 2-4 pairs, 1.5-5 cm long, opposite, evenly pinnate, slender, pilose, with a gland in between terminal 2 pinnae; leaflets 10-20, opposite, even pinnate, estipellate, sessile; lamina 1-1.4 x 0.3-0.8 cm, oblong-obovate, base unequal, apex round or retuse, margin entire, ciliate, tomentellous, glabrous above on maturity and sparsely pilose beneath, chartaceous, midrib more or less central; lateral nerves 3-4 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, white, in globose heads arranged in axillary corymbs; calyx campanulate, 4 x 2.5 mm, puberulous, teeth triangular; corolla funnel shaped, lobes 5, ovate-triangular; stamens many, monadelphous at the base, tube shorter than the corolla tube; ovary sessile, oblong, pubescent; style filiform; stigma minute. Fruit a pod 7.5-12 x 1.5-2 cm, strap shaped, flattened, thin walled, straight, often slightly undulate along margins, puberulous, obtuse to rounded and mucronulate at apex, acute at base, slightly bullate along seeds, blackish-brown when dry, very short; seeds ellipsoid.

*Flowering & Fruiting:* September-April

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

*Status:* Critically endangered

**Albizia lebbeck** (L.) Benth. in Hook.'s London J. Bot. 3: 87. 1844; Hook. f., Fl. Brit. India 2: 298. 1878; Gamble, Fl. Pres. Madras 432(306). 1919; Mohanan, Fl. Quilon Dist. 167. 1984; Ramach. & Nair, Fl. Cannanore Dist. 170. 1988; Sanjappa, Legumes Ind. 56. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 247. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 173. 1994; Subram., Fl. Thenmala Division 125. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 168. 1996; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 589. 1996; Sasidh., Fl. Periyar Tiger Reserve 126. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 120. 1999; Sunil, Fl. Pl. Alappuzha Dist. 292. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 111. 2002.

*Mimosa lebbeck* L., Sp.Pl.516. 1753.

*Mimosa sirissa* Roxb., Fl. Ind. 2: 544. 1832.

*Local names:* Vaka, Karivaka

Deciduous trees; to 25 m high; bark 20-25 mm thick, surface yellowish-brown, rough, deeply fissured, exfoliating in irregular semi brittle scales; blaze pinkish-yellow. Leaves bipinnate, alternate, stipulate; stipules small, free, lateral, caducous; rachis 7-9 cm long, slender, grooved above, with a gland at its base, glabrous, pulvinate, pinnae 2-4 pairs, 5.5-12 cm long, slender, glabrous, opposite, even pinnate; leaflets 8-20, opposite, estipellate, even pinnate, petiolule to 1 mm long, a gland in between each leaflets; lamina 2.7-5 x 1-2.5 cm, obliquely oblong, base of one half cuneate, other round, apex obtuse, margin entire, glabrous above and slightly pubescent beneath, coriaceous; midrib towards distal margin, lateral nerves 6-8 pairs, pinnate, slender, prominent, intercostae reticulate. Flowers

bisexual, greenish-white, in subglobose heads, 3.5-3.7 cm long, solitary or 2-4 together in axillary corymbose racemes; peduncle 6-8 cm; bracts linear, cauducous; pedicels to 3 mm; calyx tube funnel-shaped pubescent, 3-4.5×1.5-3 mm, teeth triangular; corolla infundibuliform 7-10 mm long, greenish, lobes 5, lanceolate, pubescent without; stamens many, filament tube shorter than corolla tube, filaments long exerted, green or pink; anthers very small; ovary subsessile, glabrous, style 2.5 cm, filiform; stigma minute. Fruit a pod 20-30 x 4-5 cm, flat, oblong, compressed, straw coloured, base and apex obtuse, turgid above the seeded region; seeds 8-12, 6-10 x 5-8 mm, ovate, dull dark brown, flattened.

*Flowering & Fruiting:* March-December

*Habitat:* Deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and South China

**Albizia odoratissima** (L. f.) Benth. in Hook.'s London J. Bot. 3: 88. 1844; Hook. f., Fl. Brit. India 2: 299. 1878; Gamble, Fl. Pres. Madras 431(306). 1919; Mohanan, Fl. Quilon Dist. 167. 1984; Ansari, Fl. Kasaragod Dist. 149. 1985; Manilal, Fl. Silent Valley 93. 1988; Ramach. & Nair, Fl. Cannanore Dist. 170. 1988; Vajr., Fl. Palghat Dist. 187. 1990; Sanjappa, Legumes Ind. 57. 1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 173. 1994; Subram., Fl. Thenmala Division 125. 1995; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 593. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 168. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 112. 1997; Sivar. & Mathew, Fl. Nilambur 241. 1997; Sasidh., Fl. Periyar Tiger Reserve 126. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 120. 1999; Sunil, Fl. Pl. Alappuzha Dist. 293. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 111. 2002; Mohanan & Sivad., Fl. Agasthyamala 236. 2002.

*Mimosa odoratissima* L. f., Suppl. Pl. 437. 1781.

*Acacia odoratissima* (L.f.) Willd., Sp. Pl. 4: 1063. 1806.

*Local names:* Karintakara, Kunnivaka, Nellivagai

Deciduous trees; to 30 m high; bark 10-15 mm thick, surface greyish-brown to dark brown, rough, irregularly cracked; blaze reddish-pink; branchlets blackish to brown, terete, 2-6 mm thick, initially tawny pubescent, finally glabrous. Leaves bipinnate, alternate, stipulate; stipule free, lateral, caducous; rachis 20-30 cm long, stout, grooved above, spulvinate, brown pubescent, with a gland at the base, pinnae 2-8 pairs, opposite, even pinnate, 5-13 cm long, slender, puberulent, glands between the junctions of 1-2 distal pairs of pinnae; leaflets 14-40, opposite, even pinnate, estipellate, sessile; lamina 1.8-2.5 x 0.5-1.2 cm, oblong, base oblique, apex obtuse and apiculate, margin entire, glabrous, coriaceous; midrib subcentral to submarginal, lateral nerves 3-6 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers bisexual, white, in globose heads forming terminal panicles; peduncle, slender, puberulous; calyx tube cupular, 1-1.5 x 1-1.3 mm, teeth minute, deltoid, pubescent; corolla broadly funnel shaped, lobes 5, ovate-lanceolate, pubescent; stamens many, 1.2-2 cm long, monadelphous at base, tube as long as or shorter than the corolla tube; ovary stipitate, glabrous or pilose, style filiform, stigma terminal. Fruit a pod 15-20 x 2.5-3.7 cm, flat, strap-shaped, with parallel margin or often some portion constricted, rounded to rostrate at apex,

glabrous, often glossy, reddish-brown to dark brown, finely reticulately veined; seeds 6-12, oblong, orbicular, compressed.

*Flowering & Fruiting:* April-January

*Habitat:* Deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Albizia procera** (Roxb.) Benth. in Hook.'s London J. Bot. 3: 89. 1844; Hook. f., Fl. Brit. India 2: 299. 1878; Gamble, Fl. Pres. Madras 431(306). 1919; Manilal, Fl. Silent Valley 93. 1988; Sanjappa, Legumes Ind. 58. 1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 174. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 169. 1996; Chakrab. & Gangop., J. Econ. Tax. Bot. 20: 594. 1996; Sasidh., Fl. Parambikulam Wildlife Sanctuary 111. 2002.

*Mimosa procera* Roxb., Pl. Corom. t. 121. 1798.

*Local names:* Jalavaka, Vellavaka

Deciduous trees; to 30 m high; bark 10-15 mm, thick, surface greenish-yellow, smooth, exfoliation small, irregular; blaze red; branchlets brownish to blackish or yellowish, terete, 3-13 mm thick, silky pubescent. Leaves bipinnate, alternate, stipulate; stipule free, lateral; rachis 13-30 cm long, slender, pulvinate, puberulous, with a prominent gland near its base; pinnae 2-5 (6) pairs, 9.7-27 cm long, slender, evenly pinnate, opposite, puberulous; leaflets 4-20, opposite, even pinnate, estipellate, petiolule 2-3 mm long; lamina 2.5-5 x 1.8-3 cm, obliquely oblong, obliquely ovate or obliquely oblong-ovate, base unequal, round on the upper side of the midrib and acute on the lower side, apex round or subacute, margin entire, glabrous above, white pilose beneath, with a gland between terminal pairs of leaflets, subcoriaceous, midrib subcentral, slightly towards the distal margin; lateral nerves 6-10 pairs, pinnate, slender, prominent, intercostae reticulate, obscure. Flowers bisexual, yellowish-white, in globose heads, forming axillary or terminal panicles; calyx tube narrowly obconic, 2.5-3 x 1.5-2 mm, glabrous, teeth triangular; corolla 5-7 mm long, 5-lobed; lobes oblong-elliptic, puberulous towards apex; stamens many, 8-12 mm long, monadelphous at base, tube longer than the corolla tube; ovary oblong, stipitate, glabrous, style filiform; stigma terminal. Fruit a pod 10-20 x 1.8-2.5 cm, strap-shaped, flat, thin walled, rostrate at apex, glabrous, often glossy, faintly reticulately veined, black, brown or yellow when dry, stalk very short; seeds 5-12, ovate-elliptic, compressed, greenish-brown.

*Flowering & Fruiting:* July-August

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Trivandrum, Palakkad, Thrissur, Kozhikkode

*Geographical:* Indo-Malesia and China

**Archidendron bigeminum** (L.) Neilson, Opera Bot. 76: 73. 1985.

*Mimosa bigemina* L., Sp. Pl. 517. 1753.

*Archidendron monadelphum* (Roxb.) Nielson, Adansonia 19: 21. 1979; Sanjappa, Legumes Ind. 61. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 247. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 169. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary

112. 1997; Sivar. & Mathew, Fl. Nilambur 242. 1997; Sasidh., Fl. Periyar Tiger Reserve 127. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 111. 2002.

*Mimosa monadelphica* Roxb., Fl. Ind. 2: 544. 1832.

*Pithecellobium bigeminum* (L.) Mart. ex Benth. in Hook.'s London J. Bot.3: 206. 1844; FBI 2: 303. 1878; FPM 435(308). 1919.

*Pithecellobium monadelphum* (Roxb.) Kosterm., Reinwardtia 3: 11. 1954; Manilal & Sivar., Fl. Calicut 100. 1982; Manilal, Fl. Silent Valley 94. 1988; Antony, Fl. Kottayam Dist. 152. 1989; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 176. 1994; Ramach. & Nair, Fl. Cannanore Dist. 171. 1988; Vajr., Fl. Palghat Dist. 189. 1990; Subram., Fl. Thenmala Division 123. 1995; Mohanan & Sivad., Fl. Agasthyamala 238. 2002.

*Abarema bigemina* (L.) Kosterm., Bull. Org. Sci. Res. Indonesia 51, f. 34,35. 1954; Mohanan, Fl. Quilon Dist. 165. 1984.

*Local names:* Kattukonna, Muthakolappan, Pannivaka, Varikiri

Evergreen trees; to 12 m high; bark reddish-brown, prominently lenticellate; blaze pink. Leaves bipinnate, alternate, stipulate; stipules inconspicuous; rachis 10-11 cm long, slender, pulvinate, pubescent, with a gland near its base; pinnae 2, opposite, 11-13 cm long, slender, puberulent, a gland in between 2 pinnae; leaflets 4-8, opposite, estipellate, with a gland in between every pair of leaflets; petiolule 4-5 mm; lamina 6.5-12 x 2.5-5 cm, obovate, oblong or elliptic-acuminate, base unequally acute, apex acuminate, margin entire, puberulent above and below, chartaceous; lateral nerves 8-14 pairs, pinnate, prominent, secondary lateral also prominent; intercostae reticulate. Flowers bisexual, white, in globose heads in terminal and axillary panicles; bracteoles lanceolate, persistent; calyx campanulate, 1.5 mm long, lobes 4, minute, acute; petals 4, basally connate, 4 mm long, lobes ovate, acute, valvate; stamens 4, monadelphous, much exserted; ovary sessile; style filiform; stigma minute; ovules many. Fruit a pod 10 x 1.5-2 cm, twisted, strap-shaped, dehiscent, red within; seeds 3-8, ovoid, smooth, without aril, funicle filiform.

*Flowering & Fruiting:* March-April

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Kottayam, Pathanamthitta, Palakkad, Kannur, Kollam, Trivandrum, Kozhikkode, Thrissur, Malappuram

*Geographical:* South West India, Eastern Himalayas, Myanmar and Sri Lanka

**Archidendron clypearia** (Jack) Nielson, Adansonia 19: 15. 1979; Sanjappa, Legumes Ind. 60. 1992; Gangop. & Chakrab., J. Econ. Tax. Bot. 17: 686. 1993; Sasidh., Fl. Periyar Tiger Reserve 127. 1998.

*Inga clypearia* Jack, Malayan Misc, 2: 78. 1822.

*Pithecellobium subcoriaceum* Thw., Enum. Pl. Zeyl. 100. 1895; Hook. f., Fl. Brit. India 2: 305. 1878; Gamble, Fl. Pres. Madras 434(308). 1919; Mohanan & Sivad., Fl. Agasthyamala 239. 2002.

*Pithecellobium anamalayanum* Bedd., Fl. Sylv. t. 189. 1872.

*Abarema subcoriacea* (Thw.) Kosterm., Bull. Natuur. ord. Indonesia 20: 41. 1954.

*Local name:* Mazhavaka



Unarmed trees, to 12 m high; young parts rusty tomentose. Leaves bipinnate, alternate, stipulate; stipules; rachis 5-16 cm long, slender, tomentose, pulvinate; glands at the base on upper side; pinnae 3-12 pairs, opposite, 2.3-6.5 cm, slender, pubescent, gland one half way between each pair of pinnae; leaflets 14-50, sessile, opposite, stipels absent; glands in between each pair of leaflets; lamina 0.6-1 x 0.1 x 0.3-0.4 cm, oblong or oblong-trapezoid, base oblique, apex obtusely acute, mucronate; margin entire, recurved, glabrous above, villous beneath, coriaceous; midrib more or less central, often ascending diagonally, lateral nerves obscure. Flowers bisexual, greenish-white, arranged in 6 flowered globular spike, in terminal panicles 2.5 cm across; calyx campanulate, 1.2 x 1-1.5 mm, golden pubescent, 5 toothed; corolla funnel shaped, 4-7 mm, golden pubescent; lobes ovate to oblong; stamens many, monadelphous at base, 7-10 mm long, exerted; ovary stipitate, pubescent, 1-celled, ovules many; style filiform; stigma minute. Fruit a pod, 7-11 cm long, hispid, curved in to circle, orange within, dorsal suture coriaceous; seeds 4-12, 5 mm across, black, compressed.

*Flowering & Fruiting:* December-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Trivandrum

*Geographical:* India and Sri Lanka

**Dichrostachys cinerea** (L.) Wight & Arn., Prodr. 271. 1834; Hook. f., Fl. Brit. India 2: 288. 1878; Gamble, Fl. Pres. Madras 419(297). 1919; Ansari, Fl. Kasaragod Dist. 149. 1985; Vajr., Fl. Palghat Dist. 187. 1990; Sanjappa, Legumes Ind. 64. 1992; Sasidh., Fl. Chinnar Wildlife Sanctuary 122. 1999.

*Mimosa cinerea* L., Sp. Pl. 520. 1753, non L. 517. 1753.

*Local names:* Veeravriksham, Vedathala

Small thorny trees; to 6 m high spines axillary, straight, often leaf bearing; bark grey or brownish, with vertical fissures, peeling off in thin flake; branchlets densely pubescent, spine-tipped. Leaves bipinnate, alternate, stipulate; stipules 2, minute, lateral; rachis 30-65 mm, slender, pulvinate, pubescent; pinnae 5-15 pairs, 1.5-2 cm, opposite, even pinnate, slender, pulvinate, pubescent, with a gland between each pair; leaflets 24-50, opposite, sessile, estipellate; lamina 0.2-0.3 x 0.1 cm, oblong, base obtuse, apex acute, margin entire, ciliate, tomentose, chartaceous; nerves obscure. Flowers polygamous, 2 mm across, in solitary or axillary paired spikes; upper flowers bisexual, yellow; lower ones neuter, pink or purple; bracts oblong; calyx tube campanulate, lobes 5; petals 5, lanceolate connate below, pubescent, valvate; stamens 10, free, exerted, anthers ending in stalked glands; ovary 0.5 mm, subsessile, pubescent; style 3 mm; stigma terminal, truncate. Fruit a pod, linear, flat, coiled, continuous within, indehiscent or opening from apex; seeds 4-6, ovoid, compressed.

*Flowering:* October

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Palakkad

*Geographical:* India and Sri Lanka

**Inga cynometroides** (Bedd.) Bedd. ex Baker in Hook.f., Fl. Brit. India 2: 306. 1876; Gamble, Fl. Pres. Madras 435(309). 1919; Mohanan, Fl. Quilon Dist. 167. 1984; Sasidh., Higher Plants of Indian Sub-Continent 8: 212. 1998.

*Calliandra cynometroides* Bedd., Fl. Sylv. t. 317. 1873; Sanjappa, Legumes Ind. 62. 1992; Sasidh., Fl. Shenduruny Wildlife Sanctuary 112. 1997.

Glabrous small trees; to 6 m high; branches spiny; bark greyish-brown. Leaves alternate, bifoliate, stipulate; stipule spiny; rachis 18-35 mm long, stout, pulvinate, glabrous, with a gland at the tip on upper side in between two leaflets and an appendage on the lower side; leaflets 2, petiolule upto 3 mm, estipellate; lamina 4.2-12 x 1.5-5.5 cm, elliptic, elliptic lanceolate or elliptic-oblong, halves dissimilar, base obliquely attenuate, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 4-8 pairs, pinnate, prominent; intercostae reticulate. Flowers bisexual or unisexual, in axillary solitary globose heads, 16-18 mm long; calyx 3-lobed; petals 3, greenish-yellow, connate, valvate; stamens many, long-exserted, monadelphous; anthers minute; ovary sessile; style filiform; stigma minute. Fruit a pod, 8-12 x 1.5-1.8 cm, pale brown, subsessile, linear, falcate, with a hook at the tip, base narrowed suture thickened, glabrous; seeds 5-6, orbicular or obovate, compressed.

*Flowering & Fruiting:* March-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Possibly extinct (Nayar, 1997)

**Leucaena leucocephala** (Lam.) de Wit, Taxon 10: 54. 1961 & 24: 352. 1975; Sasidh., Fl. Shenduruny Wildlife Sanctuary 114. 1997; Sasidh. & Sivar., Fl. Pl. Thrissur For. 171. 1996; Sivar. & Mathew, Fl. Nilambur 243. 1997; Sunil, Fl. Pl. Alappuzha Dist. 294. 2000.

*Mimosa leucocephala* Lam., Encycl. 1: 12. 1783.

*Leucaena glauca* Benth., Hook. J. Bot. 4: 416. 1842; Hook. f., Fl. Brit. India 2: 290. 1878; Gamble, Fl. Pres. Madras 419(297). 1919.

*Leucaena latisiliqua* sensu (L.) Gillis, Taxon 23: 190. 1974,p.p.; Manilal & Sivar., Fl. Calicut 101. 1982; Antony, Fl. Kottayam Dist. 151. 1989; Vajr., Fl. Palghat Dist. 190. 1990; Sanjappa, Legumes Ind. 67. 1992; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 174. 1994.

*Local names:* Ippilippil, Subaul

Trees, to 9 m high; branchlets puberulous. Leaves bi-pinnate, alternate; stipules small, cauducous; rachis 12-22 cm, slender, pulvinate, puberulent; pinnae 4-6 pairs, 4-15 cm, even pinnate, a gland between the lowest pair or a little lower down on the petiole on the upper side; leaflets 16-40, opposite, subsessile; lamina 0.8-2 x 0.2-0.6 cm, obliquely oblong or obliquely-lanceolate, base obliquely truncate, apex acute or acuminate, margin entire, membranous, glabrous above, pubescent and glaucous beneath; lateral nerves and intercostae obscure. Flowers bisexual, greenish-white, in axillary umbels, globose, to 1.2 cm across solitary or 2-3 together; peduncle to 4 cm; calyx 3 mm, 5-toothed; petals 5, free; stamens 10; filaments 7 mm; ovary superior, shortly stipitate, puberulent; styles as long as

ovary; stigma simple. Fruit a pod, 18-20 x 1.5-2.5 cm, linear-oblong, flat, dehiscent; seeds 15-20, brown, glossy.

*Flowering & Fruiting:* November-May

*Habitat:* Cultivated for fuel wood and fodder

*Distribution*

*Kerala:* All districts

*Geographical:* Originally from Tropical America; now Pantropical

**Paraserianthes falcataria** (L.) Neils., *Adansonia* 5: 327. 1983; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 114. 1997; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 171

*Adenantha falcataria* L., *Sp. Pl.* (ed. 2) 550. 1762.

*Albizia falcataria* (L.) Fosb., *Reinwardtia* 7: 88. 1965; Sanjappa, *Legumes Ind.* 59. 1992; Chakrabarty & Gangop., *J. Econ. Tax. Bot.* 20: 586. 1996.

*Albizia moluccana* Miq., *Fl. Ind. Bat.* 1: 26. 1855; Vajr., *Fl. Palghat Dist.* 190. 1990.

*Local names:* Albizia, Kattamaram

Trees, to 30 m high, bark greyish-brown, lenticellate; branchlets terete, glabrescent.

Leaves bipinnate, alternate; stipules linear, cauducous; rachis 16. 5-22 cm, slender, pulvinate, pubescent, a gland 2-3 cm above the base or in between the lower pairs of pinnae; pinnae 7-12 pairs, opposite, 1.5-12 cm, slender, puberulent, glands just below the distal 3 pairs on the upper side; leaflets 10-40, opposite, sessile; lamina 0.7-1.5 x 0.3-0.6 cm, obliquely oblong, base obliquely obtuse, apex obliquely acute, margin entire, puberulent, chartaceous; lateral nerves and intercostae obscure. Flowers bisexual, creamy, to 1 cm across, in axillary panicles to 20 cm; bracts to 1 cm; calyx tube 3 mm, pubescent; petals 5, pubescent with out; stamens many; staminal tube 3 mm; filaments to 1 cm; ovary superior. Fruit a pod 9-12 x 1.5-2 cm, winged on one margin; seeds upto 15, ellipsoid.

*Flowering & Fruiting:* February-April

*Habitat:* Raised in plantations, also in homesteads

*Distribution*

*Kerala:* Kollam, Thrissur, Trivandrum

*Geographical:* New Guinea, New Britain, Solomon Islands

**Pithecellobium dulce** (Roxb.) Benth. in Hook. 's *Lond. J. Bot.* 3: 199. 1844; Hook. f., *Fl. Brit. India* 2: 302. 1878; Gamble, *Fl. Pres. Madras* 434(308). 1919; Manilal & Sivar., *Fl. Calicut* 100. 1982; Antony, *Fl. Kottayam Dist.* 152. 1989; Vajr., *Fl. Palghat Dist.* 189. 1990; Sanjappa, *Legumes Ind.* 71. 1992; Sasidh., *Fl. Chinnar Wildlife Sanctuary* 122. 1999; Sunil, *Fl. Pl. Alappuzha Dist.* 299. 2000; Sasidh., *Fl. Parambikulam Wildlife Sanctuary* 112. 2002.

*Mimosa dulcis* Roxb., *Pl. Corom.* 1: 67. t.99. 1798.

*Inga dulcis* (Roxb.) Willd., *Sp. Pl.* 4: 1005. 1806.

*Local name:* Kodakapuli

Trees, to 20 m high; branchlets densely tomentose. Leaves bi-pinnate, alternate; stipular spines to 2 cm, erect; rachis 1-3 cm long, slender, pubescent, grooved above, pulvinate, a solitary gland at the top on upper side; pinnae 2, 4-10 mm long, slender, pubescent, grooved above, a solitary gland at the top on upperside; leaflets 2, opposite; stipels 1 mm, linear; petiolule to 1 mm; lamina 1.5-3.5 x 0.5-1.5 cm,

oblong-oblongate, inequilateral, base and apex obtuse, margin entire, glabrous, chartaceous; lateral nerves 5-7 pairs, pinnate, slender, faint, intercostae reticulate, obscure. Flowers bisexual, 5 mm across, creamy, heads arranged in axillary or terminal paniced spikes; peduncle to 2 cm; calyx campanulate, pubescent, lobes 5; petals 5, to 4 mm, connate in the middle, densely tomentose without; stamens many, monadelphous; filaments to 7 mm; ovary superior, sessile, ovules many; stigma minute. Fruit a pod, 8×1 cm, circinate or falcate, moniliform, turgid, dehiscent; seeds orbicular; aril white.

*Flowering & Fruiting:* November-March

*Habitat:* Grown as avenue tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Tropical America, grown in the tropics

**Prosopis juliflora** (Sw.) DC., Prodr. 2: 447. 1825; Sanjappa, Legumes Ind. 72. 1992; Sasidh., Fl. Chinnar Wildlife Sanctuary 123. 1999; Sunil, Fl. Pl. Alappuzha Dist. 300. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 113. 2002.

*Mimosa juliflora* Sw., Prodr. 85. 1788.

*Local name:* Sali, Vanni

Trees, to 10 m high, bark deeply wavyly fissured, yellowish-brown; branchlets zig-zag, glabrous; spines straight, ca. 5 mm long, solitary or paired, divergent, upto 5 cm long on older branches. Leaves bi-pinnate, alternate; stipular thorn to 1.5 cm long; petiole 1-5 cm long, slender; pinnae 2-4, even pinnate, 3-11 cm long, slender, flattened, ending in a short bristle, a circular gland near the base of lower pinnae; leaflets 22-36, opposite; petiolule to 3mm; lamina 6-23 x 1.5-5 mm, oblong or linear-oblong, base obtuse, apex obtuse, emarginate or mucronulate, margin entire, glabrous, chartaceous; midrib slightly excentric; lateral nerves prominent beneath. Flowers bisexual, 1.5 mm across, greenish-yellow, subsessile, in axillary spikes, to 12 cm long; bracteoles minute; calyx 1.5 mm long, campanulate, glabrous, 5-toothed; petals 5, ligulate, sub coherent at base; stamens 10, free, slightly exerted; anthers with an apical gland; ovary superior, stipitate, pubescent, ovules many; style filiform; stigma minute. Fruit a pod, 20-30 x 1.5 cm, pale yellow, glossy, smooth, flattened, with straight parallel sutures or irregularly sub moniliform; seeds ovoid, brown, embedded in pulpy mesocarp.

*Flowering & Fruiting:* October-February

*Habitat:* Planted as fuel wood tree

*Distribution*

*Kerala:* Idukki, Alappuzha, Palakkad

*Geographical:* Northern South America, C. America to Mexico and Antilles, widely naturalised in Tropical Asia

**Samanea saman** (Jacq.) Merr., J. Wash. Acad. Sc. 6: 47. 1916; Manilal & Sivar., Fl. Calicut 102. 1982; Ansari, Fl. Kasaragod Dist. 151. 1985; Ramach. & Nair, Fl. Cannanore Dist. 172. 1988; Antony, Fl. Kottayam Dist. 152. 1989; Sanjappa, Legumes Ind. 72. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 251. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 114. 1997; Sasidh. & Sivar., Fl. Pl. Thrissur For. 171. 1996; Sunil, Fl. Pl. Alappuzha Dist. 301. 2000.

*Mimosa samanea* Jacq., Frag. 15. t. 19. 1809.

*Enterolobium saman* (Jacq.) Prain ex King, J. Asiat. Soc. Bengal 66: 252. 1898.

*Pithecellobium saman* (Jacq.) Benth. in Hook. Lond. J. Bot. 3: 216. 1844.

*Local names:* Rain tree, Mazhamaram, Urakamthoongimaram

Trees, to 25 m high, bark yellowish-brown, rough, deeply fissured; branchlets pubescent. Leaves bipinnate, alternate, stipulate; stipules lateral, small, lanceolate, densely pubescent, cauducous; rachis 19-24 cm long, stout, pubescent, pulvinate, glands between pinnae pairs on the upper side; pinnae 6-7 pairs, 3-15 cm long, pulvinate, slender, grooved above, pubescent, 2-glands at the top of the pulvinate on the upper side and one between each pair of leaflets; leaflets 6-16, opposite, subsessile, estipellate; lamina 1.5-4.5 × 1-3 cm, trapezoid or ovate-oblong, base obliquely truncate, apex obtuse, mucronate, margin entire, glabrous above, pubescent and glaucous beneath, coriaceous; lateral nerves 4-11 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, pinkish-white, subsessile, in dense heads; peduncle 6-10 cm long, pubescent, solitary or 2-3 together in the axils of upper leaves; calyx 3-5 mm long, funnel shaped, pilose, lobes 5, broadly triangular; corolla 8-13 mm long, pinkish, funnel shaped, puberulous, lobes 5, ovate, half as long as the tube; stamens many, 3 cm long, connate at the base in a tube one-third as long as the corolla tube, apex pink, base white; ovary superior, glabrous, sessile, stigma minute. Fruit a pod, 12-20 × 1-2.5 cm, indehiscent, slightly flattened and depressed between the seeds, sutures thickened; epicarp thin, crustaceous, glossy brown, mesocarp pulpy, light brown, sticky; endocarp firmly crustaceous, forming continuous septa between the seeds; seeds 16-20, 1 × 0.6 cm, smooth, brown, glossy.

*Flowering & Fruiting:* February-December

*Habitat:* Grown as avenue tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Central and South America; widely planted in the tropics as avenue tree

***Xylia xylocarpa*** (Roxb.) Taub., Bot. Centralbl. 47: 395. 1891; Gamble, Fl. Pres. Madras 417(295). 1919; Manilal & Sivar., Fl. Calicut 101. 1982; Mohanan, Fl. Quilon Dist. 168. 1984; Ansari, Fl. Kasaragod Dist. 152. 1985; Ramach. & Nair, Fl. Cannanore Dist. 172. 1988; Antony, Fl. Kottayam Dist. 153. 1989; Vajr., Fl. Palghat Dist. 190. 1990; Sanjappa, Legumes Ind. 73. 1992; Anil Kumar, Fl. Pathanamthitta Dist. 250. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 176. 1994; Subram., Fl. Thenmala Division 123. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 171. 1996; Sivar. & Mathew, Fl. Nilambur 245. 1997; Sasidh., Fl. Periyar Tiger Reserve 128. 1998; Sunil, Fl. Pl. Alappuzha Dist. 301. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 113. 2002.

*Mimosa xylocarpa* Roxb., Pl. Corom. t. 100. 1798.

*Xylia dolabriformis* sensu Bedd., Fl. Sylv. t. 186. 1872, non. Benth. 1842; Hook. f., Fl. Brit. India 2: 286. 1878 p.p.

*Local names:* Irul, Irulpool, Irumullu, Kadamaram, Pangal

Deciduous trees; to 20 m high; bole often fluted; bark 10-15 mm thick, reddish-brown, mottled with white, rough, exfoliations irregular; brittle; blaze yellowish with pink tinge. Leaves bipinnate, alternate, stipulate; stipules small, free, lateral, deciduous; rachis 4-18 cm long, stout, glabrous, pulvinate, with an orbicular gland

at tip; pinnae 2, opposite, even pinnate 8-30 cm, slender, glabrous; leaflets 4-18, opposite, estipellate, with a gland between each pairs; petiolule 3-5 mm, stout; lamina 5-33.5 x 2.5-6 cm, oblong-acuminate, elliptic or elliptic-oblong, base obtuse or acute, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 6-12 pairs, pinnate, prominent; intercostae reticulate. Flowers bisexual, sessile, dull yellow, in axillary globose heads; bracteole club shaped; calyx 4 mm long, tubular, 5-toothed; petals 5, 1.5 cm long, linear, slightly connate at base, valvate; stamens 10, free, exserted, filaments slender; anthers tipped with a stalked gland which is early deciduous; ovary sessile, style filiform; stigma terminal. Fruit a pod 10-15 x 5-6 cm, flat, broadly falcate, woody, compressed, dehiscent, septate between the seeds; seeds 4-10, oblong, compressed, brown, shining.

*Flowering & Fruiting:* February-December

*Habitat:* Moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

### ROSACEAE

1. Flowers in axillary racemes, calyx tube free from the ovary.....**Prunus ceylanica**
1. Flowers in terminal corymbose panicles.....2
2. Leaves elliptic or obovate, obliquely acuminate at apex; seeds ellipsoid, compressed.....**Photinia integrifolia** var. **sublanceolata**
2. Leaves elliptic-ovate to lanceolate, margin crenate; seeds triquetrous .....**Photinia serratifolia**

**Photinia integrifolia** Lindl., Trans. Linn. Soc. London 13: 103. 1821, var. **sublanceolata** Miq., Fl. Ind. Bat. 1: 387. 1857; Manilal, Fl. Silent Valley 96. 1988; Sivar. & Mathew, Fl. Nilambur 246. 1997; Mohanan & Sivad., Fl. Agasthyamala 240. 2002.

*Photinia notoniana* Wight & Arn., Prodr. 1: 302. 1834; Hook. f., Fl. Brit. India 2: 380. 1878; Gamble, Fl. Pres. Madras 445(316). 1919; Sasidh., Fl. Chinnar Wildlife Sanctuary 123. 1999.

*Local name:* Kalappamaram

Trees, to 10 m high; bark reddish-brown. Leaves simple, alternate; stipules subulate, lateral, deciduous; petiole 25-32 mm, stout, glabrous, grooved above; lamina 6-13 x 5-7.5 cm, elliptic, or obovate, base acute or oblique, apex obliquely acuminate, margin entire, glabrous, coriaceous; lateral nerves 10-14 pairs, slender, parallel, faint, intercostae reticulate, faint. Flowers bisexual, pinkish-white, in much branched terminal corymbs; peduncle, branches of inflorescence and pedicels with a cover of short appressed hairs; bracteoles absent; calyx tube adnate to the ovary; lobes 5, short, persistent; petals 5, spreading, claws of the petals glabrous; stamens 20, inserted on the mouth of the calyx; ovary half inferior, densely pilose at apex, 2-3-celled, ovules 2 in each cell; styles 2 to 3, more or less connate at base; stigma truncate. Fruit a drupe, reddish-purple with 2 pyrenes each in a crustaceous endocarp; seeds compressed, pointed at both ends.

*Flowering & Fruiting:* December-April

*Distribution*

*Kerala:* Idukki, Malappuram, Trivandrum, Palakkad, Kollam, Kozhikkode  
*Geographical:* India and Sri Lanka

**Photinia serratifolia** (Desf.) Kalkman, *Blumea* 21: 424. 1973; Sasidh., *Fl. Periyar Tiger Reserve* 128. 1998.

*Crataegus serratifolia* Desf., *Cat. Hort. Paris* (ed. 3) 408. 1829.

*Photinia lindleyana* Wight & Arn., *Prodr.* 302.1834; Hook. f., *Fl. Brit. India* 2:380.1878; Gamble, *Fl. Pres. Madras* 445(315). 1919.

Trees, to 15 m high, branchlets glabrous, some times hairs when young. Leaves simple, alternate; stipule subulate, lateral, cauducous; petiole 15-30 mm long, stout, grooved above, glabrous; lamina 8.5-18 x 3.5-8.5 cm, oblong, elliptic, ovate, elliptic-ovate or ovate-lanceolate, base acute to round, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 5-14 pairs, pinnate, slender, faint, secondary lateral present, intercostae reticulate, faint. Flowers bisexual, white, 3 mm across, in terminal corymbs; bracts small, subulate, cauducous; calyx obconical, upper half free from the ovary, glabrous; sepals 5, triangular, persistent; petals 5, 3-4.5 x 3-3.5 mm, suborbicular to broadly ovate, shortly but distinctly clawed, slightly hairy inside at base; stamens 16-20, free, inserted on the mouth of the calyx; filaments upto 3 mm; ovary half inferior, hairy on the free top, 2-celled, ovules 2 in each cell, sessile; styles 2, free, glabrous. Fruit a drupe, subglobular to obovoid with a more or less flattened apex, upper part of the hypanthium and sepals closely appressed against the top of the fruit; seeds 2-4, obovoid, triquetrous.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

**Prunus ceylanica** (Wight) Miq., *Fl. Ind. Bot.* 1: 366. 1855; Mohanan, *Fl. Quilon Dist.* 169. 1984; Ansari, *Fl. Kasaragod Dist.* 152. 1985; Manilal, *Fl. Silent Valley* 97. 1988; Ramach. & Nair, *Fl. Cannanore Dist.* 172. 1988; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 177. 1994; Vajr., *Fl. Palghat Dist.* 190. 1990; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 172. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 115. 1997; Sivar. & Mathew, *Fl. Nilambur* 247. 1997; Sasidh., *Fl. Periyar Tiger Reserve* 129. 1998; Sasidh., *Fl. Chinnar Wildlife Sanctuary* 123. 1999; Sasidh., *Fl. Parambikulam Wildlife Sanctuary* 113. 2002; Mohanan & Sivad., *Fl. Agasthyamala* 241. 2002.

*Polydontia zeylanica* Wight, *Illustr.* 1: 203. 1840, "Polyodontia".

*Pygeum zeylanicum* Bedd., *Fl. Sylv.* t. 59. 1871.

*Pygeum acuminatum* Colebr., *Trans. Linn. Soc. London* 12: 300. t.18. 1818; Hook. f., *Fl. Brit. India* 2: 318. 1878; Gamble, *Fl. Pres. Madras* 439(311). 1919, non *Prunus acuminata* (Wall.) Dietr. 1803.

*Pygeum wightianum* Blume ex Muell. in Walp., *Ann.* 4: 642. 1857; Hook. f., *Fl. Brit. India* 2: 319. 1878; Gamble, *Fl. Pres. Madras* 439(311). 1919.

*Pygeum gardneri* Hook.f., *Fl. Brit. India* 2: 321. 1878; Gamble, *Fl. Pres. Madras* 439(311). 1919.

*Pygeum sisparens* Gamble, Bull. Misc. Inform. Kew 1918: 238. 1918; Gamble, Fl. Pres. Madras 438(311). 1919.

*Local names:* Attanaripongu, Naikambagam, Irattani

Evergreen trees, to 25 m high, bark 6-8 mm thick, brownish-black, rough, vertically fissured and shallowly horizontally cracked forming thin tessellate flakes; branchlets prominently lenticellate. Leaves simple, alternate; stipules small, lateral, cauducous; petiole 10-22 mm, stout, grooved above, glabrous; lamina 10-21 x 4.5-8.5 cm, ovate, ovate-lanceolate, oblong-lanceolate, or elliptic-ovate, base acute, round or oblique, apex acuminate or obtusely acute, margin entire, glabrous, coriaceous; lateral nerves 5-9 pairs, pinnate, prominent, slender, intercostae reticulate, prominent, 2 pitted glands at base on either side of the midrib often present. Flowers bisexual, 5-6 mm across, white, in axillary racemes; bracts forming a cone in buds, deciduous; calyx tube campanulate; lobes 5-6, ovate, acute or obtuse, densely hairy; petals 5-6, oblong, tomentose without; stamens 20-30; filaments slender, incurved; anthers small; ovary sessile, inferior, 1-celled, glabrous, ovules 2, pendulous; style 1, subulate; stigma capitate. Fruit a drupe 20-25 x 35-37 mm, depressed globose, obscurely 2-lobed, glabrous; seeds 2, globose.

*Flowering & Fruiting:* September-April

*Habitat:* Evergreen, semi-evergreen and moist deciduous forests

*Distribution*

*Kerala:* Kasaragode, Kannur, Thrissur, Idukki, Malappuram, Palakkad, Trivandrum, Kollam, Wayanad

*Geographical:* Indo-Malesia

#### CHRYSOBALANACEAE

1. Leaves elliptic-lanceolate, 5-7 cm broad; racemes puberulent.....**Atuna indica**

1. Leaves lanceolate, less than 3 cm broad; racemes silky villous **Atuna travancorica**

**Atuna indica** (Bedd.) Kosterm., Reinwardtia 7: 423. 1969.

*Parinarium indicum* Bedd., Ic. t. 109. 1868-1874; Hook. f., Fl. Brit. India 2:311.1878; Gamble, Fl. Pres. Madras 437(310). 1919.

Evergreen trees, bark brown, smooth, thin; blaze reddish. Leaves simple, alternate, stipulate; stipules free, lateral, lanceolate; petiole 6-12 mm long, stout, glabrous; lamina 17-21 x 5.5-7.5 cm, elliptic-lanceolate, elliptic-oblong or elliptic-ovate, base acute, apex acuminate or obtusely acuminate, margin entire, glabrous, chartaceous; lateral nerves 12-18 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, white, in axillary or terminal corymbose racemes; bracts brown, hairy; calyx tube funnel-shaped, pubescent; lobes 5, imbricate; petals 5, white, inserted to the mouth of calyx tube; stamens many; filaments basally connate, anthers small; ovary adnate to the side of calyx tube, 2-celled, ovules 2, erect; style filiform, basal; stigma truncate. Fruit a drupe, 3.5-4 x 2.5-3 cm, ovoid, smooth.

*Flowering & Fruiting:* November-June

*Distribution*

*Kerala:* Malappuram

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)



**Atuna travancorica** (Bedd.) Kosterm., Reinwardtia 7: 423. 1969; Mohanan, Fl. Quilon Dist. 169. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 178. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 172. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 114. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 114. 2002.

*Parinarium travancoricum* Bedd., Ic. t. 189. 1868-1874; Hook. f., Fl. Brit. India 2: 311. 1878; Gamble, Fl. Pres. Madras 437(310). 1919.

*Local name:* Kallankai maram

Evergreen trees to 25 m high, bark greyish-brown mottled with white, smooth, thin; blaze dull red; branchlets pubescent. Leaves simple, alternate; stipules free, lateral, subulate; petiole 2-6 mm, stout, grooved above, silky tomentose when young and glabrous at maturity; lamina 4-16.5 x 1.7-4.8 cm, elliptic, elliptic-oblong or elliptic-lanceolate, base acute, apex acuminate or acute, margin entire, glabrous and glossy above except silky pubescent midrib, coriaceous; lateral nerves 11-17 pairs, pinnate, prominent, secondary laterals prominent, intercostae reticulate, prominent. Flowers bisexual, 1.5 cm across, pale lavender, usually in axillary silky-villous, slender drooping racemes; bracts ovate-lanceolate, villous; calyx tube funnel-shaped, lobes ovate-cuspidate, villous outside; petals 5, 7 mm long, inserted on the mouth of calyx tube, deciduous; stamens numerous, purple; filaments connate at base; anthers small; ovary superior, adnate to the side of the calyx tube, 2-celled, ovules 2, erect; style filiform, basal; stigma truncate. Fruit a drupe 2-3.5 x 2-3 cm, suborbicular, compressed brown, smooth.

*Flowering & Fruiting:* February-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Trivandrum, Thrissur, Palakkad

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)

## RHIZOPHORACEAE

- |    |  |                                |
|----|--|--------------------------------|
| 1. | Trees growing in marshy sea coasts; embryo exalbuminous, viviparous .....      | 2                              |
| 1. | Trees growing in the inland areas; seeds not viviparous, embryo albuminous.... | 7                              |
| 2. | Petals 4, entire, stamens 8 .....  | 3                              |
| 2. | Petals 5 or more, laciniate, or 2 lobed, stamens 10 or more .....              | 4                              |
| 3. | Petals glabrous, cymes 2-flowered.....   | <b>Rhizophora apiculata</b>    |
| 3. | Petals villous along the margins and inside, cymes 3-7 flowered .....          | <b>Rhizophora mucronata</b>    |
| 4. | Calyx lobes and petals 8-14 .....  | 5                              |
| 4. | Calyx lobes and petals 5-6 .....   | <b>Kandelia candal</b>         |
| 5. | Flowers 2.5-3.5 cm long, solitary .....  | 6                              |
| 5. | Flowers 1.2 cm long, in axillary cymes .....                                   | <b>Bruguiera cylindrica</b>    |
| 6. | Petals glabrous, except the base.....  | <b>Bruguiera gymnorrhiza</b>   |
| 6. | Petals densely ciliate along the margins .....                                 | <b>Bruguiera sexangula</b>     |
| 7. | Stamens many, ovary 2-celled, leaves entire. ....                              | <b>Carallia brachiata</b>      |
| 7. | Stamens 8, ovary 3-celled, leaves crenate .....                                | <b>Blepharistemma serratum</b> |

**Blepharistemma serratum** (Dennst.) Suresh in Nicols. *et al.*, Interp. Hort. Malab. 214. 1988; Sasidh. & Sivar., Fl. Pl. Thrissur For. 174. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 115. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 116. 2002.

*Rodschiedia serrata* Dennst., Schluss. Hort. Malab. 16, 24, 31. 1818.

*Gynotroches membranifolia* Miq., Anal. Bot. Ind. 3: 7. 1852.

*Blepharistemma corymbosum* Benth., J. Proc. Linn. Soc. Bot. 3: 65, 78. 1858; Hook. f., Fl. Brit. India 2: 441. 1878; Gamble, Fl. Pres. Madras 460(326). 1919.

*Blepharistemma membranifolia* (Miq.) Ding Hou in Steenis, Fl. Males. ser. 1, 5: 489. 1958; Nair & Mohanan, J. Econ. Tax. Bot. 2:233.1981; Mohanan, Fl. Quilon Dist. 171. 1984; Ramach. & Nair, Fl. Cannanore Dist. 175. 1988; Antony, Fl. Kottayam Dist. 155. 1989; Mohanan & Sivad., Fl. Agasthyamala 246. 2002.

*Local name:* Nirkurunda

Trees to 8 m high; bark yellowish-brown, smooth, lenticellate; branchlets lenticellate; young shoots pubescent. Leaves simple, opposite, decussate, stipulate; stipules interpetiolar, cauducous; petiole 6-10 mm long, slender, pubescent; lamina 4.5-15 x 2-7 cm, elliptic, elliptic-oblong or oblong, base acute or attenuate; glabrous, membranous; lateral nerves 5-9 pairs, slender, pinnate, prominent, intercostae reticulate, obscure. Flowers polygamodioecious, 4 mm across, white, in many flowered axillary cymes; bracteoles absent; calyx tube campanulate, adnate to the base of the ovary, lobes 4, erect; petals 4, clawed, spathulate, lacerate at apex, white, inserted around a 8-lobed disc, disc lobes long in male short in bisexuals; stamens 8, inserted on the margin of the disc, small in female, filaments ciliate, anthers oblong; ovary 3-celled; ovules 2 in each cell; style short in males, longer in female; stigma shortly 3-lobed. Fruit a 3-valved capsule, 6 mm across, yellowish, subglobose, acute; seeds covered with yellow aril.

*Flowering & Fruiting:* February-July

*Habitat:* Moist deciduous and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* Kollam, Kottayam, Thrissur, Palakkad, Kannur, Trivandrum

*Endemic to:* Western Ghats

*Status:* Vulnerable (Nayar, 1997)

**Bruguiera cylindrica** (L.) Blume, Enum. Pl. 1: 93. 1827; Sunil, Fl. Pl. Alappuzha Dist. 308. 2000.

*Rhizophora cylindrica* L., Sp. Pl. 443. 1753.

*Bruguiera malabarica* Arn., Ann. Mag. Nat. Hist. 1: 369. 1838; Hook. f., Fl. Brit. India 2: 438. 1878.

*Local name:* Kuttikandal

Trees, to 6 m high; occasionally buttressed; under ground roots producing numerous knee roots; bark grey, cracked, lenticellate; branchlets terete, glabrous, with conspicuous, narrow, stipular scars. Leaves simple, opposite, decussate, stipulate; stipules inter petiolar, to 3.5 cm long, golden yellow; petiole 10-30 mm long, terete, glabrous, stout, grooved above; lamina 4-13 x 2-5.5 cm, elliptic or oblanceolate, base cuneate, apex acute, margin entire, glabrous, coriaceous, bronze-green coloured above, pale green beneath; lateral nerve 6-9 pairs, parallel, slender, looped near the margin, secondary lateral numerous, obscure, intercostae reticulate, obscure. flowers bisexual, greenish-white, 1.6 x 0.9-1.2 cm, in axillary cymes,

usually of 3-flowered, rarely branched with upto 6 flower; peduncle 0.8-0.5 cm long, terete, glabrous; flowers usually sessile, rarely middle flowers pedicellate; calyx tube, campanulate, smooth, glabrous, greenish-white; lobes 6-9, each 5 mm long, narrow, thick, fleshy, glabrous; petals 6-9, 3.5 mm long, free, white, apically bilobed, with a long bristle in the sinus of the lobes, lobes equal, tip more or less round with 3 or 4 cilia on each, margin densely hairy in the lower half and at the base except the stalk; stamens 10, in pairs of unequal length, filaments 2-2.5 mm long, terete, anthers basifixed, mucronate; ovary half inferior, inserted and fused with the calyx cup, 2-celled, ovules 2 in each, pendulous; style 6 mm long, filiform; stigma bifid. Fruit a drupe, 1.5 cm long, reddish-green, calyx lobes reflexed; seed one; hypotyle 10-16 x 6 mm, cylindric, surface slightly ridged, green with brownish tinge.

*Flowering & Fruiting:* December-October

*Habitat:* Mangrove forests

*Distribution*

*Kerala:* Kollam, Alappuzha, Ernakulam, Kozhikkode, Kannur, Kasaragode

*Geographical:* Indo-Malesia

**Bruguiera gymnorrhiza** (L.) Savi. in Lam., Encycl. 4: 696. 1797, "gymnorhiza"; Hook. f., Fl. Brit. India 2: 437. 1878; Mohanan, Fl. Quilon Dist. 171. 1984; Antony, Fl. Kottayam Dist. 156. 1989; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 180. 1994; Sunil, Fl. Pl. Alappuzha Dist. 308. 2000.

*Rhizophora gymnorrhiza* L., Sp. Pl. 447. 1753.

*Bruguiera rheedei* Blume, Enum. Pl. 1: 92. 1827.

*Bruguiera conjugata* Merr., Philipp. J. Sci. 9: 118. 1914, non *Rhizophora conjugata* L. 1753; Gamble, Fl. Pres. Madras 456(324). 1919.

*Local name:* Kandal

Evergreen trees, to 6 m high; bole occasionally buttressed, underground roots producing numerous knee roots; bark greyish to black, roughly fissured, lenticellate; branchlets terete, glabrous, reddish-green, with conspicuous, narrow brown stipular scar encircling the node. Leaves simple, opposite, decussate, stipulate; stipules interpetiolar, 3.5-5 cm long, reddish; petiole 20-45 mm long, terete, stout, grooved above, reddish, glabrous; lamina 6-17 x 3-7.5 cm, elliptic, elliptic-oblong or ovate-lanceolate, base cuneate, apex acute, coriaceous, glabrous, reddish-green above, pale green beneath; lateral nerves 9-12 pairs, parallel, slender, looped near the margin, secondary laterals present, obscure, intercostae reticulate, obscure. Flowers bisexual, reddish-pink, 2.5-3.5 x 2.4 cm, solitary, axillary, drooping; pedicels 1.5-2.5 cm long, curved, bright red; calyx tube campanulate, red or dark pink, glabrous, enclosing the ovary; lobes 12-16, to 2 cm long, narrow, thick, fleshy, glabrous, persistent; petals 12-16, 1.1-1.3 cm long, free, shortly stalked, brown, deeply bilobed with a bristle in the sinus of the lobes; bristle not exceeding the petal lobes; lobes equal, more or less round with 2-4 cilia on each, basal margin of the petals with dense stiff hairs, stamens slightly unequal in length; filaments 5-6 mm long, anthers 4-5 mm long, basifixed, mucronate, lobes slightly unequal; ovary half inferior, inserted within and fused with the calyx cup, 2-4-celled, ovules 2, in each cell, pendulous, style 1.5 cm long, filiform, terete; stigma 3-4 fid. Fruit a drupe 2-2.5 cm long, reddish-green, conoid with persistent erect calyx

lobes; seed one; hypocotyl 10-25 cm x 1.2 cm, cylindrical, with a blunt tip, surface slightly ridged, green with brownish tinge.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Mangrove forests

*Distribution*

*Kerala:* Kollam, Kottayam, Trivandrum, Alappuzha, Ernakulam

*Geographical:* Indo-Malesia, Africa and Madagascar

**Bruguiera sexangula** (Lour.) Poir. in Lam., *Encycl. Suppl.* 4: 262. 1816.

*Rhizophora sexangula* Lour., *Fl. Cochinch.* 297. 1790.

*Bruguiera eriopetala* Wight & Arn., *Ann. Nat. Hist.* 1: 368. 1838; Hook. f., *Fl. Brit.*

*India* 2: 438. 1878; Gamble, *Fl. Pres. Madras* 458(325). 1919.

Evergreen trees, to 6 m high; bole occasionally buttressed sometimes with stilt roots, underground roots produce numerous knee roots; bark grey to pale brown, with few large corky lenticels; branchlets terete, glabrous, reddish-green, with conspicuous narrow thin, brown stipular scar enclosing the node. Leaves simple, opposite, decussate, stipulate; stipules interpetiolar, 3-4 cm long, green or yellowish; petiole 18-35 mm long, stout, terete, grooved above, orange-yellow; lamina 8-13 × 4-6 cm, elliptic to elliptic-oblong or ovate-lanceolate, base cuneate, apex acute, glabrous, coriaceous, reddish-green above, pale green beneath; lateral nerves 9-10 pairs, pinnate, slender, obscure, intercostae reticulate, obscure. Flowers bisexual, reddish-orange, 2.5-3.5-2.6 cm long, axillary, solitary, drooping, pedicels 6-12 mm long, stout, glabrous, yellow or brownish; calyx tube ribbed to the base, glabrous, lobes 10-14, to 1.8 cm long, narrow, thick, fleshy, glabrous, persistent; petals 10-14, free, to 1.5 cm long, shortly stalked, white when young, changing gradually to brown, deeply bilobed with a bristle in the sinus of the lobes; lobes equal, tip acute with vestiges of 1-3 cilia on each, outer margin of the petal fringed from the base to the apex with dense, stiff, white, silky hairs; stamens in pairs of unequal length, filaments 5-6 mm long; anthers 4-5 mm long, basifixed, mucronate, lobes slightly unequal; ovary half inferior, inserted within and fused with the calyx cup, 3-celled, ovules 2 in each cell, pendulous; style 1.5 cm long, filiform; stigma 3-4 fid. Fruit a drupe, reddish-green, 2-2.5 cm long, conoid, with erect calyx lobes; seed one; hypocotyl 10-15 x 1.2 cm, cylindrical, with blunt tip, surface slightly ridged.

*Flowering & Fruiting:* July-December

*Habitat:* Mangrove forests

*Distribution*

*Kerala:* Kollam

*Geographical:* Indo-Malesia

**Carallia brachiata** (Lour.) Merr., *Philipp. J. Sci.* 15: 249. 1919; Manilal & Sivar., *Fl.*

*Calicut* 104. 1982; Mohanan, *Fl. Quilon Dist.* 172. 1984; Ramach. & Nair, *Fl.*

*Cannanore Dist.* 175. 1988; Antony, *Fl. Kottayam Dist.* 156. 1989; Vajr., *Fl. Palghat*

*Dist.* 194. 1990; Anil Kumar, *Fl. Pathanamthitta Dist.* 255. 1994; Mohanan &

Henry, *Fl. Thiruvananthapuram Dist.* 180. 1994; Sasidh. & Sivar., *Fl. Pl. Thrissur*

*For.* 174. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 115. 1997; Sivar. &

Mathew, *Fl. Nilambur* 252. 1997; Sasidh., *Fl. Periyar Tiger Reserve* 132. 1998;

Sunil, Fl. Pl. Alappuzha Dist. 309. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 116. 2002; Mohanan & Sivad., Fl. Agasthyamala 247. 2002.

*Diatoma brachiata* Lour., Fl. Cochinch. 296. 1790.

*Carallia integerrima* DC., Prodr. 3: 33. 1828; Gamble, Fl. Pres. Madras 459(325). 1919.

*Local names:* Vallabham, Vankana, Varrungu

Evergreen trees; to 25 m; bark 10-12 mm thick, dark grey, corky, furrowed, prominently pustular-lenticellate; blaze pink, petiole 6-10 mm stout, glabrous; lamina 4-11 x 2-7 cm, obovate, or obovate-oblong, base attenuate or acute, apex acute or obtuse, margin entire, recurved, coriaceous, glabrous and glossy; lateral nerves 6-10 pairs, slender, pinnate, obscure, secondary laterals present; intercostae reticulate, obscure. Flowers bisexual, cream coloured, sessile, small, in short, trichotomous axillary branching cymes; bracteoles minute, calyx tube campanulate, lobes 5-8, ovate, acute, valvate; petals 5-8, clawed, orbicular-cordate, margin deeply lacerate, reddish, inserted on a crenulate disc; disc 10-16 lobed; stamens 10-16, inserted with them on the disc, one of each pair opposite the petal, slightly longer than the other filament, which is opposite to a sepal; filaments filiform; anthers small; ovary half inferior, 3-5-celled; ovules 2 in each cell; style subulate; stigma 4-lobed. Fruit a drupe, 5-6 mm across, red, filiform; seed one, bright orange, subreniform.

*Flowering & Fruiting:* October-April

*Habitat:* Semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and Australia

**Kandelia candel** (L.) Druce, Rep. Bot. Exch. Club. British Ist. 1913: 4210. 1914; Manilal & Sivar., Fl. Calicut 103. 1982; Mohanan, Fl. Quilon Dist. 172. 1984; Ansari, Fl. Kasaragod Dist. 154. 1985; Antony, Fl. Kottayam Dist. 157. 1989; Sunil, Fl. Pl. Alappuzha Dist. 310. 2000.

*Rhizophora candel* L., Sp. Pl. 443. 1753.

*Kandelia rheedei* Wight & Arn., Prodr. 311. 1834; Hook. f., Fl. Brit. India 2: 437. 1878; Gamble, Fl. Pres. Madras 457(324). 1919.

*Local name:* Cherukandal

Evergreen trees, to 6 m high; bole buttressed; bark dark brown, smooth; branchlets, terete, glabrous, reddish-brown; stipular scar narrow, thin, brown layered; leaf scar round, prominent. Leaves simple, opposite, decussate, stipulate, clustered at the shoot apex; stipules 2.5 cm long, pale green; petiole 15-20 mm long, stout, glabrous; lamina 8.5-12 x 3-4.5 cm, oblong or lanceolate, base cuneate, apex emarginate, margin entire, glabrous, coriaceous, shiny-green above and pale green beneath; lateral nerves 7-9 pairs, pinnate, slender, obscure, intercostae obscure. Flowers bisexual, white, 2.2 x 3.3 cm, in axillary dichotomously branched 4-flowered cymes; peduncle 4.4 cm long, terete, glabrous; bracts minute, cupular, at each node on peduncle; pedicel 3 mm long, terete, glabrous; bracteoles 2, connate to form a cup enclosing the calyx base, glabrous; calyx white, tube cupular, smooth, glabrous, enclosing the ovary; lobes 5, 1.5 cm long, linear, thick, fleshy, glabrous, persistent; petals 5, free, 5 mm long, white, deeply bilobed, lobes equal with 3-6 cilia at apex, glabrous; stamens many, free, inserted on the rim of calyx cup,

filaments unequal, 0.7-1.2 cm long, terete, anthers basifixed, bilobed; ovary half inferior, inserted and fused with the calyx cup, single celled, ovules 6, pendulous, attached to the tip of central axis; style filiform, terete; stigma minutely 3-lobed. Fruit a drupe, 1.5-2 cm long, ovoid-conical; calyx lobes reflexed; peduncle elongating; seed one; hypocotyl 40 x 1.5 cm, spindle shaped, slightly curved with pointed radicle, surface smooth, green; cotyledonary collar protruded and exposed on maturity.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Mangroves forests

*Distribution*

*Kerala:* Kasaragode, Kottayam, Malappuram, Kozhikkode, Alappuzha, Ernakulam, Kollam, Kannur

*Geographical:* Indo-Malesia and China

**Rhizophora apiculata** Blume, Enum. Pl. 1: 91. 1827; Mohanan, Fl. Quilon Dist. 173. 1984; Sunil, Fl. Pl. Alappuzha Dist. 311. 2000.

*Rhizophora candelaria* DC., Prodr. 3:32.1828; Gamble, Fl. Pres. Madras 456(323).1919.

*Rhizophora conjugata* Arn., Ann. Nat. Hist. 1: 363. 1838; Hook. f., Fl. Brit. India 2: 436. 1878.

*Local name:* Kaya kandel

Evergreen trees, to 5 m high; trunk and lower branches supported by numerous profusely looping stilt roots and prop roots corky, lenticellate; bark brown, fissured; branchlets terete, glabrous, reddish-brown or greyish-white, with conspicuous circular, scaly, brown stipular scar. Leaves simple, opposite, decussate, clustered towards the apex; stipules interpetiolar, 9 x 1.5 cm, pale red; petiole 20-30 mm long, stout, grooved above, pale green, glabrous; lamina 13-17 x 4-7 cm, elliptic, oblong, oblanceolate or ovate-lanceolate, base cuneate, apex apiculate, margin entire, glabrous, coriaceous, dark, green above, pale green beneath; lateral nerves 10-15 pairs, slender, pinnate, secondary laterals present, obscure; intercostae reticulate, faint. Flowers bisexual, greenish-white, 2.2 x 1.5 cm, sessile, in axillary unbranched 2 flowered cymes; peduncle to 5 mm long, glabrous; bracts small, connate; bracteoles 2, connate, cupular, 5 mm across, dark brown, surface wrinkled and cracked, enclosing the base of the calyx; calyx externally fissured, brownish-yellow outside and yellowish-white and glabrous within; lobes 4, 1.5 x 0.7 cm, ovate-oblong, acute, fleshy, persistent; petals 4, free, 9 x 2.5 mm, narrow-lanceolate, acute, white, thin, flat, glabrous, persistent; stamens 11 or 12, free, sessile, inserted on the margin of the receptacular disc; anthers 8 mm long, multilocellate; pistil conoid, slightly angled; ovary half inferior, inserted within and fused with the calyx cup, 2-celled, ovules 2 in each cell, pendulous, style short, stigma bifid. Fruit a drupe, 2-4 cm long, conical, pericarp brown, thick, leathery, calyx lobes reflexed; seed one; hypocotyl 50 x 1.8 cm, piercing the apex of the fruit, cylindrical, thick towards the radicle tip, tip blunt, straight with a slight curvature at plumular end; cotyledonary collar protruded and exposed on maturity.

*Flowering & Fruiting:* Through the year

*Distribution*

*Kerala:* Kollam, Alappuzha, Ernakulam, Kozhikkode, Kannur, Kasaragode

*Geographical:* Indo-Malesia

**Rhizophora mucronata** Poir. in Lam., Tabl. Encycl. 2: 517. 1794; Hook. f., Fl. Brit. India 2: 435. 1878; Gamble, Fl. Pres. Madras 456(323). 1919; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 180. 1994; Sunil, Fl. Pl. Alappuzha Dist. 312. 2000.

*Rhizophora mangle* Roxb., Fl. Ind. 459. 1832.

*Rhizophora candelaria* Wight & Arn., Prodr. 310. 1834, non DC. 1828.

*Local names:* Panachikandal, Pikantal

Evergreen trees, to 6 m high; branches horizontal; trunk and lower branches supported by numerous profusely looping stilt-roots and prop roots, lenticellate, bark brown, longitudinally fissured; branchlets, terete, brownish-green, glabrous, with prominent, rough, thick, brown layer of stipular scar, prominent. Leaves simple, opposite decussate, stipulate, clustered at the shoot apex; stipules 2, interpetiolar, 6 x 1.2 cm, pale green with pinkish tinge, overlapping the apical bud, subcylindric; petiole 25-35 mm long, stout, glabrous, grooved above, pale green; lamina 12.5-14.5 x 5.5-8.5 cm, elliptic-ovate, base cuneate, apex mucronate, glabrous, coriaceous, green above, pale green beneath with numerous black dots; lateral veins 8-9 pairs, pinnate, slender, inconspicuous, secondary laterals also present, intercostae reticulate. Flowers bisexual, yellowish-white, 2.5 x 1.5 cm, in axillary dichotomously or trichotomously branched or unbranched 2-4 flowered cymes; peduncle 3-5 cm long, terete, glabrous, pendulous; bracts small, cupular; pedicel 5 mm long; bracteole 2, connate to form a dilated cupular part enclosing the base of the calyx tube; calyx yellowish-white, calyx tube smooth, enclosing the base of the pistil, lobes 4, 1.2 x 0.6 cm, ovate, acute, thick, fleshy, glabrous; petals 4, 1 x 0.2 cm, white, lanceolate, densely hairy along the margins, hairs white, uniseriate; stamens 8, free, inserted on the margin of the receptacular disc; filaments 2 mm long, terete, anthers basifixed, multilocellate; pistil conoid; ovary half inferior, inserted within and fused with the calyx cup, ovules 2 in each cell, pendulous; style short; stigma bifid. Fruit a drupe, 5-7 cm long, ovoid or conoid, pericarp brown, thick, leathery, glabrous, calyx lobes reflexed, brown; seed one, hypocotyl 50 x 1.8 cm, cylindrical, slightly curved, tapering towards the radicle end, surface rough warty, green; cotyledonary collar protruded and exposed on maturity.

*Flowering & Fruiting:* Throughout the year

*Habitat:* Mangrove swamps

*Distribution*

*Kerala:* Trivandrum, Alappuzha, Ernakulam

*Geographical:* Paleotropics

#### COMBRETACEAE

- |    |  |                             |
|----|--|-----------------------------|
| 1. | Flowers in globose heads .....   | <b>Anogeissus latifolia</b> |
| 1. | Flowers in spikes or panicles .....  | 2                           |
| 2. | Leaves alternate, clustered at apex of branchlets .....  | 3                           |
| 2. | Leaves opposite or subopposite, equidistant .....  | 6                           |
| 3. | Leaves obovate, petiole less than 1 cm long; fruit keeled all along the margins ....                     | <b>Terminalia catappa</b>   |
| 3. | Leaves elliptic or elliptic-obovate, petiole 4-10 cm long; fruit obovoid or subglobose, not keeled ..... | <b>Terminalia bellirica</b> |
| 4. | Fruit winged.....  | 5                           |
| 4. | Fruit not winged.....  | 7                           |

5. Fruit with 3 unequal wings, ..... **Terminalia paniculata**
5. Fruit with 5 equal wings ..... 6
6. Veins of wings curved upwards; petiole with 1 or 2 glands at apex .....  
..... **Terminalia cuneata**
6. Veins of wings straight, horizontal; lamina with 2 stalked glands below near the  
petiole ..... **Terminalia elliptica**
7. Branchlets and inflorescence tomentose; lateral nerves 7 or 8 pairs; fruit  
ellipsoid or obovoid, yellowish ..... **Terminalia chebula**
7. Branchlets and inflorescence glabrous; lateral nerves 10-15 pairs; fruit oblong  
or elliptic oblong, brown speckled with white dots.... **Terminalia travancorensis**

**Anogeissus latifolia** (Roxb. ex DC.) Wall. ex Guill. & Perr., Fl. Seneg. Tent. 7: 280. 1832; Hook. f., Fl. Brit. India 2: 450. 1878; Gamble, Fl. Pres. Madras 466(330). 1919; Manilal, Fl. Silent Valley 101. 1988; Ramach. & Nair, Fl. Cannanore Dist. 176. 1988; Vajr., Fl. Palghat Dist. 195. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 256. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 181. 1994; Subram., Fl. Thenmala Division 129. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 176. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 116. 1997; Sivar. & Mathew, Fl. Nilambur 253. 1997; Gangop. & Chakrab., J. Econ. Tax. Bot. 21: 288. 1997; Sasidh., Fl. Periyar Tiger Reserve 133. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 126. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 116. 2002; Mohanan & Sivad., Fl. Agasthyamala 248. 2002.

*Conocarpus latifolia* Roxb. ex DC., Prodr. 3: 16. 1828.

*Local names:* Kalkanjiram, Mazhukanjiram, Njama, Vellanava

Deciduous trees, to 18 m high, bark 10-12 mm thick, surface grey or yellowish-grey, smooth, subverrucose, lenticellate; blaze pinkish-brown; branchlets brown to reddish-brown, drooping, terete, pubescent. Leaves simple, opposite to alternate, estipulate; petiole 5-15 mm, slender, grooved above, glabrous; lamina 2.5-18 x 1.7-9 cm, elliptic, elliptic-oblong, suborbicular, or oblong-obovate, base obtuse, round, cuneate or acute, apex obtuse, emarginate or mucronate, margin entire, glabrous, subcoriaceous; lateral nerves 4-11 paired, pinnate, prominent beneath, arched towards the margin, intercostae scalariform, prominent. Flowers bisexual, 5-6 mm across, pale green or yellow, in axillary aggregated globose heads; peduncle puberulous; pedicel reduced or absent; calyx tube 2 winged, 3-5.5 mm long, produced above the ovary, villous inside, teeth 5, ovate-triangular, to 1 mm long; stamens 10, in 2 series, exserted, 1.5-3 mm long; anthers small; ovary inferior, 1-celled, densely tomentose; ovules 2, pendulous; style 2-3 mm long, thickened at base, villous; stigma simple. Fruit a drupe, 6-8 mm across, greenish-yellow, compressed, puberulous, circular; wings 2, margin entire or slightly undulate, beaked; seed one, obovate.

*Flowering & Fruiting:* October-December

*Habitat:* Moist and dry deciduous forests

*Distribution*

*Kerala:* Idukki, Kollam, Pathanamthitta, Malappuram, Thrissur, Palakkad, Kannur, Trivandrum

*Geographical:* India, Sri Lanka and Pakistan



**Terminalia bellirica** (Gaertn.) Roxb., Pl. Corom. t. 198. 1805; Hook. f., Fl. Brit. India 2: 445. 1878; Gamble, Fl. Pres. Madras 463(328). 1919; Manilal & Sivar., Fl. Calicut 105. 1982; Mohanan, Fl. Quilon Dist. 175. 1984; Ansari, Fl. Kasaragod Dist. 156. 1985; Ramach. & Nair, Fl. Cannanore Dist. 178. 1988; Vajr., Fl. Palghat Dist. 196. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 259. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 183. 1994; Subram., Fl. Thenmala Division 130. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 177. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 118. 1997; Sivar. & Mathew, Fl. Nilambur 258. 1997; Gangop. & Chakrab., J. Econ. Tax. Bot. 21: 338. 1997; Sasidh., Fl. Periyar Tiger Reserve 134. 1998; Sunil, Fl. Pl. Alappuzha Dist. 323. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 117. 2002; Mohanan & Sivad., Fl. Agasthyamala 249. 2002.

*Myrobalanus bellirica* Gaertn., Fruct. 2: 90. t. 97. ff. a-d.1791, "bellirica".

*Local names:* Thanni, Tusham, Myrobalan

Deciduous trees, to 35 m high, bole often buttressed; bark 10-20 mm thick, surface blackish-grey, smooth, vertically shallowly fissured, exfoliations small, semi-fibrous; blaze yellow; branches sympodial; branchlets terete, thinly fulvous-hairy, leaf scars prominent. Leaves simple, opposite or alternate, clustered at the tip of branchlets, estipulate; petiole 15-80 mm, stout, slightly grooved above, glabrous; lamina 9-35 x 5-16 cm, obovate, elliptic or obovate-elliptic; base obliquely cuneate, attenuate or acute; apex obtusely acuminate, margin entire, both surface pubescent when young, glabrous at maturity, coriaceous, eglandular; lateral nerves 7-10 pairs, pinnate, prominent; intercostae reticulate. Flowers bisexual, greenish-yellow, 5-6 mm across, in axillary spikes; peduncle puberulous; bracteoles 0.5-2 mm long, linear-lanceolate, caducous; calyx tube 2-2.5 x 1.3-2 mm, rusty pubescent, constricted above the ovary; lobes 5, cream, triangular, tomentose; disc 5-lobed, villous; petals absent; ovary 1.5 mm, inferior, tomentose, 1-celled; ovules 2 or 3, pendulous; style 4 mm, subulate; stigma small. Fruit a drupe 2-2.5 x 1.8 cm, obovoid, obscurely 5-ridged, yellowish-brown, honed, not winged, softly tomentose; seed one, ellipsoid.

*Flowering & Fruiting:* December-January

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Terminalia catappa** L., Syst. Nat. (ed.12) 2: 674. 1767 & Mant. Pl. 2: 519. 1771; Hook. f., Fl. Brit. India 2: 444. 1878; Gamble, Fl. Pres. Madras 463(328). 1919; Manilal & Sivar., Fl. Calicut 104. 1982; Mohanan, Fl. Quilon Dist. 175. 1984; Antony, Fl. Kottayam Dist. 159. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 260. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 183. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 178. 1996; Gangop. & Chakrab., J. Econ. Tax. Bot. 21: 342. 1997; Sunil, Fl. Pl. Alappuzha Dist. 324. 2000.

*Local names:* Adamaram, Kadappa, Oodal, Thalli-thenga

Trees, to 25 m high, often buttressed; bark brownish to grey, smooth; young shoots rusty or brown tomentose; branchlets brown to reddish-brown, terete with prominent leaf scars, glabrous on ageing. Leaves simple, alternate, densely

clustered at the tip of branchlets; estipulate; petiole 8-15 mm long, stout, pubescent; lamina 13-34 × 6-20 cm, obovate, orbicular-obovate, base cuneate, acute or attenuate, apex round, obtuse, retuse or apiculate, margin entire, glabrous above, puberulent beneath, coriaceous; lateral nerves 6-13 pairs, pinnate, prominent, intercostae reticulate, prominent; domatia occasionally present; 2 prominent glands on either side at the base of the midrib beneath. Flowers polygamous, 4 mm across, sessile, white or yellowish-green, in axillary simple, rusty pubescent racemes to 8-21 cm long; calyx tube 3-5 × 1-1.3 mm, pubescent, expanded portion cupular, 3.5-5 × 3-5 mm; teeth 5, triangular or ovate, 1-2 × 1.5-2 mm, acute, glabrous; petals absent; stamens 10; filaments 3-4 mm long; anthers oblong, disc villous; ovary inferior, 5 mm long, 1-celled, ovule pendulous; style 2-4 mm long. Fruits a drupe, 3-7 × 2.5-4.5 cm, broadly ellipsoid to ovoid, laterally compressed, inflated, brown or reddish-brown, glabrous, glossy.

*Flowering & Fruiting:* March-January

*Habitat:* Grown as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Malaysia to North Australia and Polynesia, commonly planted in the tropics

**Terminalia chebula** Retz., Obs. Bot. 5: 31. 1789; Hook. f., Fl. Brit. India 2: 446. 1878, p.p.; Gamble, Fl. Pres. Madras 464(328). 1919; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 183. 1994; Sasidh., Fl. Chinnar Wildlife Sanctuary 127. 1999; Gangop. & Chakrab., J. Econ. Tax. Bot. 21: 345. 1997; Sasidh., Fl. Periyar Tiger Reserve 134. 1998; Mohanan & Sivad., Fl. Agasthyamala 250. 2002.

*Myrobalanus chebula* (Retz.) Gaertn., Fruct. 2: 91. t. 97. 1791.

*Local name:* Kadukka

Deciduous trees, to 25 m high, bark 5-6 mm thick, surface dark brown to black, fissures shallow, vertical, exfoliating in thick scales; blaze yellowish-brown; young shoots densely pubescent; branchlets brownish or greyish, glabrous. Leaves simple, opposite to alternate, exstipulate; petiole 12-25 mm long, stout, grooved above, pubescent, 2 sessile glands at the top; lamina 9.5-28 × 4-13 cm, ovate, elliptic, obovate or elliptic-obovate, base round, obtuse, oblique or subtruncate, apex acute, acuminate, obtuse or apiculate, margin entire, glabrous above tawny villous beneath, coriaceous; lateral nerves 6-12 pairs, pinnate, ascending, prominent, arched towards the margin, intercostae reticulate, prominent. Flowers bisexual, greenish-white, 5-6 mm across, in terminal and axillary spikes with offensive smell; bracts 2-3 mm long; calyx tube 1.5-2.5 × 0.8-1 mm, villous, constricted above the ovary, lobes 5, creamy, triangular, 1.5 mm; petals 0; stamens 10 in 2 rows; filaments 4-6 mm; disc 5-lobed, villous; ovary 2 mm long, inferior, densely villous, 1-celled; style 5 mm, subulate; stigma terminal. Fruit a drupe 3-4 × 2-2.5 cm, obovoid, woody, obscurely 5 angled, glabrous, greenish-yellow; seed one.

*Flowering & Fruiting:* February-August

*Habitat:* Dry and moist deciduous forests

*Distribution*

*Kerala:* Idukki, Trivandrum, Palakkad

*Geographical:* South Asia

**Terminalia cuneata** Roth, Nov. Pl. Sp. 379. 1821; Gangop. & Chakrab., J. Econ. Tax. Bot. 16:556.1992; Gangop. & Chakrab., J. Econ. Tax. Bot. 21: 349. 1997.

*Pentaptera cuneata* (Roth) DC., Prodr. 3: 14. 1828.

*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn., Prodr. 314. 1834; Hook. f., Fl. Brit. India 2: 447. 1878; Gamble, Fl. Pres. Madras 465(329). 1919; Ansari, Fl. Kasaragod Dist. 155. 1985; Ramach. & Nair, Fl. Cannanore Dist. 178. 1988; Manilal, Fl. Silent Valley 102. 1988; Vajr., Fl. Palghat Dist. 196. 1990; Sasidh., Fl. Chinnar Wildlife Sanctuary 127. 1999.

*Pentaptera arjuna* Roxb. ex DC., Prodr. 3: 14. 1828.

*Terminalia berryi* Wight & Arn., Prodr. 314. 1834.

*Local names:* Attumaruthu, Kulamaruthu, Neermaruthu, Puzhamatthi, Vellamatthi  
Evergreen trees, to 30 m, bole often buttressed; bark 6-8 mm thick, surface pinkish-grey, smooth, flaking off in thin layers; blaze pink; exudation red, gummy; branchlets drooping. Leaves simple, opposite to alternate, estipulate; petiole 5-15 mm long, stout, grooved above, glabrous; lamina 7.5-16 x 3.7-8.5 cm, oblong, elliptic, oblong-ovate or oblong-obovate, base round, obtuse or cordate, apex obtuse or round, margin crenulate or entire, glabrous, coriaceous, 2 glands at the base on the lowerside; lateral nerves 10-17 pairs, pinnate, arched towards the margin, prominent, intercostae reticulate, prominent. Flowers bisexual, dull yellow, 2-3 mm across, in short axillary spikes; calyx tube 0.5-2 x 1-1.5 mm, constricted above the ovary, pubescent; lobes 5, cream, 1.5 mm, triangular, glabrous; disc 5-lobed, pilose; petals 0; stamens 10, in 2 rows; filaments 3-4 mm, subulate, exerted; anthers small; ovary ovoid, 1.5 mm, inferior, pubescent, 1-celled; ovules 2 or 3, pendulous; style subulate, small. Fruit a drupe, 6 x 3 cm, oblong, 5-7 winged; wings equal, lines on the wings oblique and curving upwards, apex notched; seed one.

*Flowering & Fruiting:* November-June

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Palakkad, Kannur

*Geographical:* Sri Lanka and India

**Terminalia elliptica** Willd., Sp. Pl. 4: 969. 1806; Gangop. & Chakrab., J. Econ. Tax. Bot. 16:601.1992 & 21: 351. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 118. 2002.

*Terminalia alata* Heyne ex Roth, Nov. Pl. Sp. 379. 1821; Subram., Fl. Thenmala Division 131. 1995; Sivar. & Mathew, Fl. Nilambur 258. 1997.

*Terminalia crenulata* Roth, Nov. Pl. Sp. 380. 1821; Gamble, Fl. Pres. Madras 465(329). 1919; Ansari, Fl. Kasaragod Dist. 156. 1985; Ramach. & Nair, Fl. Cannanore Dist. 178. 1988; Anil Kumar, Fl. Pathanamthitta Dist. 260. 1994; Subram., Fl. Thenmala Division 130. 1995; Vajr., Fl. Palghat Dist. 197. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 178. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 118. 1997; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 183. 1994; Sasidh., Fl. Periyar Tiger Reserve 134. 1998; Mohanan & Sivad., Fl. Agasthyamala 250. 2002.

*Terminalia coriacea* (Roxb.) Wight & Arn., Prodr. 315. 1834; Gamble, Fl. Pres. Madras 465(329). 1919; Ramach. & Nair, Fl. Cannanore Dist. 178.

*Pentaptera coriacea* Roxb., Fl. Ind. 2: 438. 1832.

*Terminalia tomentosa* (Roxb. ex DC.) Wight & Arn., Prodr. 314. 1834; Hook. f., Fl. Brit. India 2: 447. 1878; Gamble, Fl. Pres. Madras 465(329). 1919.

*Terminalia tomentosa* (Roxb. ex DC.) Wight & Arn. var. *crenulata* (Roth) Clarke in Hook.f., Fl. Brit. India 2: 448. 1878.

*Pentaptera crenulata* (Roth) Roxb., Fl. Ind. 2: 438. 1832.

*Local names:* Karimaruthu, Kuramaruthu, Matthi, Thembavu

Deciduous trees, to 30 m high; bark 15-20 mm thick, surface grey-black, very rough, deeply vertically fissured, horizontally cracked, forming tessellated, thick flakes; blaze red. Leaves simple, opposite to subopposite, exstipulate; petiole 10-20 mm long, stout, grooved above, glabrous; lamina 13-20 x 5-13 cm, oblong, oblong-ovate, elliptic-oblong or elliptic-ovate; base oblique; apex acute, round, or obtuse, margin entire or crenulate, glabrous, coriaceous, midrib with 2 stalked glands near the base beneath; lateral nerves 10-20 pairs, parallel, prominent, intercostae scalariform, prominent. Flowers bisexual, dull yellow, 2-3 mm across, in terminal and axillary paniculate spikes; peduncle tomentose; bracteoles 1-2 mm long, linear or subulate; calyx tube 1-2 x 1-1.8 mm, angled, base pubescent, constricted above the ovary, lobes 5, ovate, yellow, densely villous inside; petals absent; stamens 10 in 2 rows; filaments 4-5 mm; disc 5-lobed, villous; ovary 2.5 mm long, inferior, densely villous, 1-celled; ovules 2 or 3, pendulous; style 4 mm, subulate; stigma small. Fruit a drupe 3.5 x 5.5 cm, longitudinally 5-winged, glabrous; wings equal, thin, pubescent, lines on the wings horizontal, apex round, coriaceous, reddish-brown; seed one.

*Flowering & Fruiting:* April-May

*Habitat:* Moist and dry deciduous forests

*Distribution*

*Kerala:* Kasaragode, Kannur, Pathanamthitta, Palakkad, Kollam, Trivandrum, Thrissur, Malappuram, Idukki

*Geographical:* India and Sri Lanka

***Terminalia paniculata*** Roth, Nov. Pl. Sp. 383.1821; Hook. f., Fl. Brit. India 2:448.1878; Gamble, Fl. Pres. Madras 465(329). 1919; Manilal & Sivar., Fl. Calicut 104. 1982; Mohanan, Fl. Quilon Dist. 175. 1984; Ansari, Fl. Kasaragod Dist. 157. 1985; Manilal, Fl. Silent Valley 102. 1988; Ramach. & Nair, Fl. Cannanore Dist. 179. 1988; Antony, Fl. Kottayam Dist. 159. 1989; Vajr., Fl. Palghat Dist. 197. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 260. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 184. 1994; Subram., Fl. Thenmala Division 130. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 178. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 119. 1997; Sivar. & Mathew, Fl. Nilambur 259. 1997; Gangop. & Chakrab., J. Econ. Tax. Bot. 21: 357. 1997; Sasidh., Fl. Periyar Tiger Reserve 135. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 118. 2002; Mohanan & Sivad., Fl. Agasthyamala 251. 2002.

*Pentaptera paniculata* (Roth) Roxb., Fl. Ind. 2: 442. 1832.

*Local names:* Maruthu, Pullamaruthu, Manjamaruthu

Deciduous trees, to 30 m high, bole often fluted; bark 15-20 mm thick, surface brown, rough, vertical fissures shallow, fibrous, blaze reddish-pink, mottled; young

parts silky pubescent; branchlets reddish. Leaves simple, lower leaves subopposite, upper alternate, exstipulate; petiole 12-15 mm long, stout, slightly grooved above, glabrous; lamina 10-24 x 5-10 cm, elliptic, oblong, ovate, elliptic-oblong or ovate-oblong, base round, obtuse, cordate or oblique; apex acute or acuminate, margin entire; rusty pubescent when young and glabrescent when mature, coriaceous, 2 sessile glands beneath the base of the lamina or at the junction of petiole and lamina; lateral nerve 5-15 pairs, pinnate, prominent, arched towards the margin, prominent, intercostae reticulate, obscure. Flowers bisexual, white, sessile, 6-12 mm across, in axillary and terminal panicles, tomentose; bracteoles 2-5 mm, linear-lanceolate, recurved; calyx tube 1-1.2 x 0.8-1 mm, constricted above the ovary, pubescent, lobes 5, cream, triangular, villous within; petals 0; stamens 10 in 2 rows; filaments 3-4 mm; disc 5-lobed, villous; ovary 1 mm, inferior, 1-celled; ovules 2 or 3, pendulous; style to 4 mm, subulate, stigma terminal. Fruit a drupe 13 x 12 mm, reddish-brown, rusty tomentose, with one large and 2 small wings; seed one.

*Flowering & Fruiting:* August-February

*Habitat:* Moist and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* Kozhikkode, Kottayam, Kasaragode, Kannur, Kollam, Malappuram, Palakkad, Pathanamthitta, Trivandrum, Thrissur

*Endemic to:* Peninsular India

**Terminalia travancorensis** Wight & Arn., Prodr. 314. 1834; Gamble, Fl. Pres. Madras 464(329). 1919; Raghavan & Kulkarni, J. Econ. Tax. Bot. 5: 219. 1984; Mohanan, Fl. Quilon Dist. 176. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 184. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 178. 1996; Gangop. & Chakrab., J. Econ. Tax. Bot. 21: 361. 1997; Sasidh., Fl. Periyar Tiger Reserve 135. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 118. 2002.

*Terminalia angustifolia* sensu Roxb., Fl. Ind. 2: 437. 1832, non Jacq. 1776; Hook. f., Fl. Brit. India 2: 449. 1878.

*Local names:* Kattukadukka, Kodakai, Peikkadukka

Evergreen trees, to 30 m high, bole often buttressed, bark 5-6 mm thick, surface yellowish-grey, smooth. Leaves simple, opposite to alternate, estipulate; petiole 12-30 mm long, slender, grooved above, glabrous; lamina 8-16 x 2.5-5 cm, ovate-lanceolate, or oblong-lanceolate or elliptic-lanceolate, base unequally acute or round, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 12-18 pairs, parallel, prominent, arched towards the margin; intercostae reticulate, obscure. Flowers bisexual, white, 3-4 mm across, in axillary and terminal paniculate spikes; branches hispid; calyx tube constricted above the ovary; lobes 5, hispid outside, densely villous inside; petals 0; disc 5 lobed, villous; stamens 10 in 2 rows; filaments 4 mm long; ovary densely tomentose, inferior; style subulate; stigma terminal. Fruit a drupe 3-3.5 x 1.3 cm, ellipsoid, 5-angled, speckled with brown spots, glabrous, yellowish-brown; seed one.

*Flowering & Fruiting:* May-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Thrissur, Palakkad, Idukki, Trivandrum

**MYRTACEAE**

1.	Flowers in elongated spicate racemes.....	2
1.	Flowers in cymes or panicles.....	3
2.	Stamens free, filaments crimson .....	<b>Callistemon citrinus</b>
2.	Stamens united in bundles, filaments white .....	<b>Melaleuca leucodendron</b>
3.	Leaves alternate .....	4
3.	Leaves opposite or subopposite, decussate.....	7
4.	Flowers solitary, axillary; juvenile leaves sessile, amplexicaule.....	<b>Eucalyptus globulus</b>
4.	Flowers in umbels or in racemes, axillary or from leaf scars; juvenile leaves petiolate .....	5
5.	Leaves more than 2.5 cm broad, lateral nerves numerous very close .....	<b>Eucalyptus grandis</b>
5.	Leaves less than 2.5 cm broad, lateral nerves about 3-5 mm apart.....	6
6.	Operculum several times longer than the base of the bud, base of operculum swollen; valves prominently exserted.....	<b>Eucalyptus tereticornis</b>
6.	Operculum 2 times longer than the base of bud; valves shortly beaked .....	<b>Eucalyptus camaldulensis</b>
7.	Ovules 4 in each cell, pendulous.....	<b>Meteoromyrtus wynaadensis</b>
7.	Ovules many in each cell on axile placentum.....	8
8.	Calyx tube funnel shaped .....	9
8.	Calyx tube turbinate .....	13
9.	Leaves ovate, 1.5-3.5 cm long, sessile, base rounded. <b>Syzygium parameswaranii</b>	
9.	Leaves otherwise, 4-15 cm long, base acute.....	10
10.	Flowers in panicle of umbellules; fruit white .....	<b>Syzygium zeylanicum</b>
10.	Flowers in few flowered cymes; fruit red or yellow .....	11
11.	Leaves lanceolate or elliptic with few or without glands.. <b>Syzygium lanceolatum</b>	
11.	Leaves obovate or elliptic-oblancheolate, prominently glandular .....	12
12.	Lateral nerves few distant; flower bud highly aromatic... <b>Syzygium aromaticum</b>	
12.	Lateral nerves close and parallel; flower bud not aromatic <b>Syzygium palghatense</b>	
13.	Cymes few flowered on old wood .....	<b>Syzygium rama-varmae</b>
13.	Inflorescence many flowered axillary, terminal or subterminal not on old wood	14
14.	Flowers 0.4-1 cm across, hypanthium to .5 cm across; calyx tube without a thickened staminal disk at mouth.....	15
14.	Flowers 1.5-3 cm across, hypanthium 1-2 cm across; calyx tube with a thickened staminal tube at mouth .....	29
15.	Branchlets distinctly quadrangular .....	16
15.	Branchlets terete.....	21
16.	Lateral nerves many close and parallel; leaves 1.5-2.5 cm broad .....	17
16.	Lateral nerves few, distant; leaves 3-8 cm broad .....	18
17.	Petals falling in one piece, calyptrate; leaves ovate or ovate-lanceolate .....	<b>Syzygium rubicundam</b>
17.	Petals free, cauducous; leaves oblanceolate or obovate .... <b>Syzygium myhendrae</b>	
18.	Cymes mostly axillary; sometimes terminal .....	<b>Syzygium travancoricum</b>

18. Cymes lateral usually from the scar of fallen leaves, sometimes also axillary ... 19

19.	Petals free, leaves glaucous beneath .....	<b>Syzygium malabaricum</b>
19.	Petals calyptrate; leaves not glaucous beneath.....	20
20.	Leaves pellucid gland dotted; lateral nerves regular; calyx tube obconic .....	<b>Syzygium tamilnadensis</b>
20.	Leaves not gland dotted; lateral nerves irregular; calyx tube obovoid .....	<b>Syzygium stocksii</b>
21.	Petiole 2-4 mm long; stout; leaves 1.5-4 cm broad .....	22
21.	Petiole 10-30 mm long, stout or slender; leaves 4-8 cm broad.....	25
22.	Leaf apex obtuse, acute or acuminate; petals not gland dotted .....	23
22.	Leaf apex rounded or emarginate; petals gland dotted .....	<b>Syzygium calophyllifolium</b>
23.	Leaves very narrow; long elliptic; flowers mostly in lateral elongate cymes .....	<b>Syzygium heyneanum</b>
23.	Leaves broader; shortly elliptic or obovate; flowers mostly in terminal corymbose cymes.....	24
24.	Fruit purple black; leaf base attenuate or acute .....	<b>Syzygium caryophyllaeum</b>
24.	Fruit deep violet; leaf base cordate or obtuse .....	<b>Syzygium benthamianum</b>
25.	Leaves membranous; branches of cymes slender, pedicel slender.....	<b>Syzygium gardneri</b>
25.	Leaves coriaceous; branches of cymes stout; pedicel stout.....	26
26.	Cymes mostly from the axils; berry obliquely ventricose ....	<b>Syzygium chavaran</b>
26.	Cymes mostly from the leaf scars; berry globose or obovoid .....	27
27.	Cymes congested; stalk and pedicel stout and short.....	<b>Syzygium densiflorum</b>
27.	Cymes elongate or lax; stalk and pedicel long .....	28
28.	Lateral nerves distant, arching; cymes mostly terminal also axillary .....	<b>Syzygium makul</b>
28.	Lateral nerves close and parallel; cymes mostly from leafless nodes .....	<b>Syzygium cumini</b>
29.	Leaves cordate or rounded at base .....	<b>Syzygium mundagam</b>
29.	Leaves acute or narrowed at base .....	30
30.	Branchlets quadrangular .....	<b>Syzygium jambos</b>
30.	Branchlets terete.....	31
31.	Pedicel 2-4 mm long.....	32
31.	Pedicel 7-20 mm long.....	33
32.	Flowers white, cymes terminal few flowered; secondary laterals not prominent....	<b>Syzygium bourdillonii</b>
32.	Flowers pinkish; cymes terminal and axillary many flowered; secondary laterals prominent .....	<b>Syzygium aqueum</b>
33.	Leaves chartaceous; secondary nerves faint; calyx tube cylindrical broadened above .....	<b>Syzygium laetum</b>
33.	Leaves thickly coriaceous; secondary nerves very prominent; calyx tube obconic..	34
34.	Intercostae and intramarginal nerve very prominent; flower red.....	<b>Syzygium malaccensis</b>
34.	Intercostae and intramarginal nerve obscure; flowers white.....	35



35. Calyx tube 8-13 mm long; leaves broadly elliptic or broadly obovate.....  
 ..... **Syzygium periyarensis**
35. Calyx tube 4-6 mm long; leaves elliptic or elliptic lanceolate .....  
 ..... **Syzygium hemisphericum**

**Callistemon citrinus** (Curt.) Skeels, U.S. Dept. Agric. Bur. Pl. Ind., Bull. 282: 49. 1913; Manilal & Sivar., Fl. Calicut 108. 1982; Antony, Fl. Kottayam Dist. 161. 1989; Sasidh., Fl. Parambikulam Wildlife Sanctuary 118. 2002.

*Metrosideros citrina* Curt., Bot. Mag. 8, t.260. 1794.

*Metrosideros lanceolata* Smith, Trans. Linn. Soc. London 3: 272. 1797.

*Callistemon lanceolatus* (Smith) Sweet, Fl. Austral. sub. t. 29. 1828.

*Local name:* Australian bottle brush

Trees, to 10 m high, bark dark brown, vertically striated; blaze pink changing to reddish-brown; branches drooping; young shoots silky tomentose. Leaves simple, alternate, estipulate, crowded towards the tip of branchlets; petiole 2-4 mm long, flattened, villous when young; lamina 3-7 x 0.4-0.9 cm, elliptic-lanceolate or lanceolate, base acute or cuneate, apex acute, margin entire, ciliate, when young, glabrous when mature, coriaceous, glandular punctate; lateral nerves faint, more or less distinctly pinnate. Flowers bisexual 2-2.5 cm long, red, in spikes; calyx 4-5 mm long, adnate to ovary, pubescent; lobes 5, margin ciliate; petals 5, 4-6 x 4 mm, greenish, concave, obtuse, glandular, deciduous; stamens many, connate at base, up to 2 cm long; filaments red, exerted; anthers very small, versatile; ovary inferior, 3-celled, ovules many, placentation axile; style terminal, red, upto 2 cm long; stigma simple. Fruiting calyx not much enlarged, the truncate orifice usually open.

*Flowering & Fruiting:* March-December

*Habitat:* Grown as ornamental plant

*Distribution*

*Kerala:* All districts

*Geographical:* Native in East Australia, widely cultivated

**Eucalyptus camaldulensis** Dehnh., Cat. Pl. Hort. Camald. (ed. 2) 61: 20. 1832; Sasidh. & Sivar., Fl. Pl. Thrissur For. 185. 1996; Sasidh., Fl. Parambikulam Wildlife Sanctuary 119. 2002.

Large trees. Bark smooth or loosely rough in upper half. Juvenile leaves 7-11 x 2-3 cm, petiolate, opposite, lanceolate to broadly lanceolate, glaucous, discolourous; intermediate leaves alternate, petiolate, glabrous, lanceolate; adult leaves alternate, petiole 10-15 mm long, stout, glabrous; lamina 15-25 x 2-3 cm, lanceolate, base acute or obtuse, apex acuminate, margin entire, glabrous, coriaceous, concolourous, dull green; lateral nerves many, pinnate, prominent, intercostae reticulate, pellucid-punctate. Flowers bisexual, 1-1.5 cm across, axillary in umbels, to 7 flowered; peduncle to 2 cm long, pedicel 5-10 mm long, buds 10 x 5 cm, shortly pedicellate, hypanthium hemispherical, operculum conical or rostrate; stamens many, free, 0.5-1 cm; anthers obovoid, 0.5-1 mm, versatile; ovary inferior, adnate to the hypanthium, 3-5 celled, ovules many; style simple; stigma capitate. Capsule 0.5 x 1 cm, globose or hemispherical, sessile, valves exerted; seeds many.

*Flowering & Fruiting:* March-October

*Habitat:* Raised in plantations, also planted as avenue tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native in Australia

**Eucalyptus globulus** Labill., Rel. Voy. Rech. Perouse 1: 153. 1799; Gamble, Fl. Pres. Madras 486(343). 1919; Manilal, Fl. Silent Valley 102. 1988; Sasidh. & Sivar., Fl. Pl. Thrissur For. 185. 1996.

*Local name:* Yukali

Trees, to 30 m high; bark smooth, peeling off in long stripes. Leaves of the seedlings opposite, sessile, amplexicaul, 6-12 x 2.5-7 cm, bluish-green, glaucous, strongly discolourous, juvenile leaves opposite, sessile, 7-15 x 4-9 cm, elliptic-ovate, glaucous, strongly discolourous, amplexicaule; intermediate leaves alternate, petiolate, glabrous, broadly lanceolate; adult leaves alternate; petiole to 30 mm, stout, glabrous; lamina 10-30 x 3-4 cm, falcate or lanceolate, base acute or obtuse, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves many, pinnate, prominent, intercostae reticulate, pellucid-punctate. Flowers bisexual, to 4 cm across, axillary, solitary; buds sessile, 3 x 2 cm, turbinate, warty, glaucous; hypanthium ribbed, to 1 cm; operculum long, flat, with a central knob; stamens many, free, 0.5-1.5 cm; anthers obovoid, 0.5-1 mm, versatile; ovary inferior, adnate to the hypanthium, 3-5-celled, ovules many; style simple; stigma capitate. Fruit a capsule, sessile, globose or hemispherical, 4-ribbed, warty, disc broad, convex; valves 3-5; seeds many.

*Flowering & Fruiting:* February-September

*Habitat:* Grown as avenue tree as well as raised in plantation

*Distribution*

*Kerala:* Palakkad, Idukki, Thrissur

*Geographical:* Native of Tasmania; widely cultivated in Sri Lanka and India

**Eucalyptus grandis** Hill ex Maid. Forest Fl. n.s. Wales 1: 79. 1903 & Crit. Rev. Eucalypt. 4: 338. 1920; Anil Kumar, Fl. Pathanamthitta Dist. 261. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 185. 1996; Sasidh., Fl. Periyar Tiger Reserve 140. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 127. 1999.

Trees to 50 m high; bark white, smooth. Leaves simple, alternate, estipulate [seedling leaf opposite for 4 or 5 pairs]; petiole to 30 mm long, slender, glabrous; juvenile leaves 10-14 x 5.5-8.5 cm; adult leaves 10-16 x 2-3 cm, ovate, falcate or lanceolate, base oblique, obtuse, attenuate or subacute, apex acuminate, margin entire, glabrous, coriaceous, gland-dotted; lateral nerves many, pinnate, faint, looped near the margin forming intramarginal nerve, intercostae reticulate. Flowers bisexual, white, in 7-11 flowered axillary umbels; pedicels to 3.5 mm; hypanthium obconical, to 5 mm, glaucous, ribbed; operculum hemispherical or beaked, to 4 mm; stamens many, 2-7 mm, with a distal adaxial gland; ovary inferior, adnate to the hypanthium, 3-4-celled, ovules many; style simple, stigma capitate. Fruit a capsule, 5-8 x 4-6 mm, sessile or pedicellate, pyriform, 4 or 5 valved, often glaucous, disc narrow; seeds many.

*Flowering & Fruiting:* September-April

*Habitat:* Raised in plantations

*Distribution*

*Kerala:* Idukki, Thrissur, Pathanamthitta, Wayanad, Palakkad

*Geographical:* Native of Australia

**Eucalyptus tereticornis** Smith, Spec. Bot. New Holl. 41. 1795 & Trans. Soc. London 3: 284. 1797; Anil Kumar, Fl. Pathanamthitta Dist. 261. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 125. 1997; Sasidh. & Sivar., Fl. Pl. Thrissur For. 185. 1996; Sivar. & Mathew, Fl. Nilambur 266. 1997.

*Local name:* Yukali

Trees, to 25 m high, bark white, smooth; branchlets apically angular, pubescent when young. Leaves simple, alternate, estipulate[ seedling leaves opposite ]; petiole to 25 mm long, stout, glabrous; seedling leaves 5-12.5 x 1.5-6 cm; juvenile leaves 12-22 x 4.5-10 cm; adult leaves 10-20 x 1-2 cm, ovate, elliptic, lanceolate or linear-lanceolate, base subacute, cuneate or oblique, apex acuminate, margin entire, glabrous, coriaceous, gland-dotted; lateral nerves many, pinnate, faint, lopped near the margin forming intramarginal nerve, intercostae reticulate. Flowers bisexual, white, 1.5 cm across, in 7-11 flowered axillary umbels; pedicel to 1 cm; hypanthium campanulate, 3.5 cm, rugose; operculum conical, 1-1.5 cm, horn-shaped, apex acute; stamens many; filaments unequal; ovary inferior, adnate to the hypanthium, 3-4-celled, ovules many; style simple, stigma capitate. Fruit a capsule, 6-8 x 4-5 mm, pedicellate, truncate-globular, disc ascending; seeds many.

*Flowering & Fruiting:* March-November

*Habitat:* Raised in plantations, also planted as avenue tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Australia

**Melaleuca leucodendron** L., Mant. Pl. 1: 105. 1767.

Trees, to 8 m high; bark spongy, peeling off in large sheets; young parts silky white tomentose; branches slender, pendulous. Leaves simple, alternate, spiral, clustered towards the tip, estipulate; petiole 4-7 mm, slender, flattened, silky tomentose; lamina 4-6 x 1-2 cm, elliptic or elliptic-ovate, base acute or cuneate, apex acute or acuminate, margin entire, silky tomentose when young, glabrous at maturity, glandular-punctate, coriaceous; 5-7-ribbed from the base, prominent, intercostae reticulate, prominent. Flowers bisexual, in terminal or subterminal spikes, solitary or 2-3 together; calyx tube urceolate, adnate to the ovary at the base, lobes 5, short, orbicular, scarious towards on the margins; petals 5, round, spreading; stamens many, united at the base into 5 bundles, each with 5-8 filaments; ovary inferior, 3-celled, ovules many; style terminal, filiform. Fruit a loculicidal capsule; seeds many.

*Flowering & Fruiting:* November-June

*Habitat:* Cultivated

*Distribution*

*Kerala:* Malappuram, Ernakulam, Wayanad

*Geographical:* Native of Australia

**Meteoromyrtus wynaadensis** (Bedd.) Gamble, Bull. Misc. Inform. Kew 1918: 241. 1918 & Fl. Pres. Madras 485(343). 1919; Ramach. & Nair, Fl. Cannanore Dist. 179.

*Eugenia wynaadensis* Bedd., Ic. t. 161. 1868-1874; Hook. f., Fl. Brit. India 2: 506. 1879.

Trees, to 6 m high; young parts and inflorescence fulvous. Leaves simple, opposite, estipulate; petiole 2-5 mm long, slender, grooved above, tomentose; lamina 4-8 x 1.5-2.5 cm, elliptic, elliptic-oblong or oblong-lanceolate, base acute, apex acuminate, margin entire, recurved, glabrous when mature, membranous; lateral nerves many, slender, parallel, close, faint, looped at the margin forming intramarginal nerve, intercostae reticulate, faint. Flowers bisexual, white, small, axillary or supra axillary; pedicel villous; bracteoles 2, linear, arising below the calyx tube and longer than the calyx; calyx tube short, not produced beyond the ovary, furnished with annual disc at the mouth; lobes 4, lanceolate, villous, rather longer than petals; petals 4, suborbicular, pellucid punctate, margin ciliate; stamens many, inserted in a ring around the disc; anthers small; ovary inferior, 2-celled, ovules 4 in each cell; pendulous from the apex; style elongate; stigma subcapitate.

*Flowering & Fruiting:* February-August

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Wayanad

*Endemic to:* Southern Western Ghats

*Status:* Critically endangered (IUCN, 2000)

**Syzygium aqueum** (Burm.f.) Alston, Ann. Roy. Bot. Gard. (Peradeniya) 11: 204. 1929.

*Eugenia aquea* Burm.f., Fl. Ind. 114. 1768; Hook. f., Fl. Brit. India 2: 473. 1878.

*Local name:* Chamba, Watery rose-apple

Trees, to 6 m high, bark tawny-brown; branchlets first bluntly quadrangular, quickly terete. Leaves simple, opposite, estipulate; petiole 1-5 mm long, stout, glabrous; lamina 4.5-23 x 1.5-11 cm, elliptic-obovate, obovate or elliptic-oblong, base cuneate, subcordate or obtuse, apex obtuse, obtusely acuminate, acuminate or subretuse, margin entire, glabrous, coriaceous; lateral nerves 9-14 pairs, parallel, prominent, looped near the margin the margin forming intramarginal nerve, secondary laterals present, intercostae reticulate, gland-dotted. Flowers bisexual, pinkish-white, 10 in terminal or subterminal axillary cymes, sessile; calyx tube 1.5-3 cm long, funnel shaped; lobes 5, 6 mm long, ovate; petals 5, 12 x 8 mm, oblong, obtuse, concave; stamens many, inflexed in bud, 1.5 cm long; filaments brilliantly pink; anthers white; ovary inferior, ovules many. Fruit a berry, 2 cm across, globose, red.

*Flowering & Fruiting:* January-June

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Malaysia

**Syzygium aromaticum** (L.) Merr. & Perry, Mem. Amer. Acad. Arts. 18: 196. 1939; Anil Kumar, Fl. Pathanamthitta Dist. 269. 1994.

*Caryophyllus aromaticus* L., Sp. Pl. 515. 1753.

*Eugenia caryophyllata* Thunb., Diss. 1. 1788; Hook. f., Fl. Brit. India 2: 506. 1879.

*Local name:* Grambu, Clove

Trees, 6 m high; bark pale brown. Leaves simple, opposite; petiole 10-20 mm long, slender, glabrous; lamina 7-12 x 3-5 cm, elliptic or oblanceolate, base attenuate or cuneate, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves many, parallel, many, obscure, looped near the margin forming intramarginal nerve, intercostae reticulate, obscure, punctate beneath. Flowers bisexual, in 4 cm long cymes; calyx 1.5 x 6 mm, tubular, verrucose with 4 hook like involute ascending segments; petals 10 x 5 mm, elliptic, calyptrate; stamens many, inflexed in the bud; ovary inferior. Fruit a berry, dark purple.

*Flowering & Fruiting:* December-March

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Molucanna Islands (Indonesia)

**Syzygium benthamianum** (Wight *ex* Duthie) Gamble, Fl. Pres. Madras 478(338).

1919; Vajr., Fl. Palghat Dist. 199. 1990; Sasidh., Fl. Periyar Tiger Reserve 137.

1998; Mohanan & Sivad., Fl. Agasthyamala 257. 2002.

*Eugenia arnotiana* (Walp.) Wight var. *benthamiana* Wight *ex* Duthie in Hook.f., Fl. Brit. India 2: 484. 1878.

Trees, to 10 m high; bark brown; branchlets terete. Leaves simple, opposite, subsessile; petiole to 3 mm; lamina 4-9 x 1.5-4 cm, ovate, obovate, elliptic or elliptic-oblong, base cordate or obtuse, apex obtusely acute or obtusely acuminate, margin entire, glabrous, coriaceous, glandular punctate; lateral nerves many, parallel, slender, close, looped very near to the margin forming intramarginal nerve, intercostae reticulate, prominent. Flowers bisexual, in terminal and axillary corymbs of umbellules; pedicel short; calyx tube 2.5 mm long, 3 mm across, turbinate, glabrous; lobes 4; no thick disc; petals 4, 3 x 3 mm, free, deciduous; stamens many, bent inwards at the middle in the bud; filaments 4 mm long, glabrous; ovary inferior, 2-celled, ovules many; style 1; stigma simple. Fruit a berry 7 x 4 mm, obovoid, glabrous, deep violet.

*Flowering & Fruiting:* December-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Trivandrum, Palakkad

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Syzygium bourdillonii** (Gamble) Rathkr. & Nair, J. Econ. Tax. Bot. 4: 287. 1983;

Mohanan, Fl. Quilon Dist. 179. 1984; Mohanan & Henry, Fl. Thiruvananthapuram

Dist. 187. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 121. 1997; Sasidh., Fl.

Periyar Tiger Reserve 137. 1998; Mohanan & Sivad., Fl. Agasthyamala 258. 2002.

*Jambosa bourdillonii* Gamble, Bull. Misc. Inform. Kew 1918: 239. 1918 & Fl. Pres. Madras 414(335). 1919.

Trees, to 10 m high. Leaves simple, opposite, estipulate; petiole 3-5 mm, slender, grooved above, glabrous; lamina 8-12 x 3-4 cm, elliptic-oblanceolate or elliptic-lanceolate, base cuneate or acute, apex acuminate or obtusely acuminate, margin entire, glabrous, chartaceous, glandular-punctate; lateral nerves 8-10 pairs,

parallel, very prominent beneath, looped near the margin forming intramarginal nerve; intercostae reticulate, faint. Flowers bisexual, white, in terminal few flowered cymes; pedicel 5 mm long, subtetragonal; calyx tube campanulate, ca.1 cm; lobes 4, round, 3 mm long, recurved, persistent, furnished with thickened staminal disc; petals 4, orbicular, gland-dotted; stamens many, free, longer than the petals, bent inwards in the middle regularly when in bud, later unfolding; ovary inferior, 2-celled, many ovuled; style slender, hairy; stigma slightly acute. Fruit a berry, apparently small, crowned by the calyx tube and thickened disc.

*Flowering & Fruiting:* February-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Trivandrum

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)

**Syzygium calophyllifolium** Walp., Rep. 2: 180. 1843; Gamble, Fl. Pres. Madras 480(339). 1919; Manilal, Fl. Silent Valley 104. 1988; Sivar. & Mathew, Fl. Nilambur 261. 1997; Mohanan & Sivad., Fl. Agasthyamala 260. 2002.

*Eugenia calophyllifolia* (Walp.) Wight, Ic. t. 1000. 1845; Hook. f., Fl. Brit. India 2: 494. 1878.

Evergreen trees, to 20 m high; bark thick, brown, rough; blaze pink; branchlets terete. Leaves simple, opposite, estipulate; petiole 2-3 mm, stout, glabrous; lamina 2-5 x 1.5-3 cm, obovate or suborbicular, base obtuse, or round, obtusely acute or slightly emarginate, margin entire, glabrous, pellucid dotted, coriaceous; lateral nerves many, parallel, slender, very close, prominent, looped at the margin forming intramarginal nerve, intercostae reticulate, slender but prominent. Flowers bisexual, white, in dense terminal corymbs; peduncle 4 angled, articulated at ramifications; calyx tube 3 mm long, ovoid; lobes 4, minute; petals 4, calyptrate; stamens many, bent inwards at the middle in bud; ovary inferior, 2-celled; ovules many; style 5-6 mm long. Fruit a berry, 10-12 mm long, oblong or obovoid, dark purple.

*Flowering & Fruiting:* February-May

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Malappuram, Trivandrum, Palakkad, Kozhikkode

*Geographical:* Western Ghats and Sri Lanka

**Syzygium caryophyllatum** (L.) Alston in Trimen, Handb. Fl. Ceylon 6: (Suppl.) 116. 1931; Manilal & Sivar., Fl. Calicut 107. 1982; Mohanan, Fl. Quilon Dist. 179. 1984; Ansari, Fl. Kasaragod Dist. 158. 1985; Ramach. & Nair, Fl. Cannanore Dist. 181. 1988; Antony, Fl. Kottayam Dist. 160. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 264. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 188. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 121. 1997; Sivar. & Mathew, Fl. Nilambur 262. 1997; Sunil, Fl. Pl. Alappuzha Dist. 327. 2000; Mohanan & Sivad., Fl. Agasthyamala 260. 2002.

*Myrtus caryophyllata* L., Sp. Pl. 472. 1753.

*Syzygium caryophyllaeum* sensu Gamble, Fl. Pres. Madras 480(339).1919, non Gaertn. 1788.

*Eugenia caryophyllaea* Wight, Ic. t. 540. 1842; Hook. f., Fl. Brit. India 2: 490. 1878.

*Local names:* Cherujara, Karinjara

Trees, to 6 m high; bark thick, reddish-brown; branchlets terete. Leaves simple, opposite, estipulate; petiole upto 3 mm long, stout, glabrous; lamina 3-8 x 1.3-3.5 cm, obovate or obovate-oblong, base attenuate or acute, apex obtuse, obtusely acute or emarginate, margin entire, glabrous, coriaceous, brown on drying, pellucid-dotted; lateral nerves many, close, slender, prominent looped at the margin forming intramarginal nerve; intercostae reticulate. Flowers bisexual, white, 5 mm across, in terminal corymbose cymes, inflorescence branches moderately thick, ascending; calyx tube 2-2.5 mm long, turbinate, no thick disc; petals calyptrate, stamens numerous, bent inwards at the middle when in bud, 2.5-3.5 mm long; ovary inferior, 2-celled, ovules many; style 1; stigma simple. Fruit a berry, 5 mm across globose, black.

*Flowering & Fruiting:* February-January

*Habitat:* Evergreen and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Western Ghats and Sri Lanka

**Syzygium chavaran** (Bourd.) Gamble, Fl. Pres. Madras 480(340). 1919; Sasidh. & Sivar., Fl. Pl. Thrissur For. 181. 1996; Sasidh., Fl. Parambikulam Wildlife Sanctuary 120. 2002.

*Eugenia chavaran* Bourd., For. Trees Travancore 188. 1908.

*Local name:* Chavaran

Trees, to 25 m high; bark to 2 cm thick, greyish-brown; blaze red; branchlets terete. Leaves simple, opposite, estipulate. Petiole 13-30 mm, stout, grooved above, glabrous; lamina 10-21 x 4-9 cm, elliptic, oblong or elliptic-oblong, base attenuate or acute, apex obtusely acuminate or acuminate, margin entire, glossy above, glabrous, coriaceous, pellucid-dotted; lateral nerves many, parallel, close, slender, looped at the margin forming intramarginal nerve, prominent, intercostae reticulate, faint. Flowers bisexual, 1-1.5 cm across, white, in axillary and terminal compound cymes, branches stout, divaricating at right angles; pedicel not distinct; calyx tube turbinate, less than 5 mm long, mouth 5-6 mm across, lobes 4; no thickened disc; petals calyptrate; stamens many, free, bent inwards at the middle when in bud; ovary inferior, 2-celled, ovules many in each cell; style 1; stigma simple. Fruit a berry, 3-4 x 2-2.5 cm, obliquely ventricose, bluish-purple, crowned by the 3-5 mm long calyx limb.

*Flowering & Fruiting:* December-April

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Thrissur, Palakkad

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)

**Syzygium cumini** (L.) Skeels, U. S. DA. Bur. Pl. Industr. Bull. 248: 2. 1912; Manilal & Sivar., Fl. Calicut 107. 1982; Mohanan, Fl. Quilon Dist. 180. 1984; Manilal, Fl. Silent Valley 104. 1988; Ramach. & Nair, Fl. Cannanore Dist. 181. 1988; Antony, Fl. Kottayam Dist. 160. 1989; Vajr., Fl. Palghat Dist. 199. 1990; Anil Kumar, Fl.

Pathanamthitta Dist. 264. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 188. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 181. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 122. 1997; Sivar. & Mathew, Fl. Nilambur 262. 1997; Sasidh., Fl. Periyar Tiger Reserve 137. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 128. 1999; Sunil, Fl. Pl. Alappuzha Dist. 327. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 120. 2002; Mohanan & Sivad., Fl. Agasthyamala 261. 2002.

*Myrtus cumini* L., Sp. Pl. 471. 1753.

*Eugenia jambolana* Lam., Encycl. 3: 198. 1789; Hook. f., Fl. Brit. India 2: 499. 1879.

*Syzygium jambolanum* (Lam.) DC., Prodr. 3: 259. 1828; Gamble, Fl. Pres. Madras 481(340). 1919.

*Local names:* Njara, Njaval

Evergreen trees, to 30 m high, bole often crooked, bark 8-10 mm thick, light grey, mottled with dark grey, rough, with shallow exfoliated depressions; blaze red; branchlets glabrous. Leaves simple, opposite, exstipulate; petiole 10-25 mm long, stout, grooved above, glabrous; lamina 7.5-18 x 2.5-8 cm, elliptic, ovate-lanceolate, elliptic-lanceolate, elliptic-oblong, elliptic-obovate, ovate-obovate or oblong-ovate, base acute, apex acuminate or obtusely acuminate, margin entire, glabrous, coriaceous, minutely punctate; lateral nerves many, parallel, close, slender, raised beneath, looped near the margin forming intramarginal nerve; intercostae reticulate, prominent. Flowers bisexual, 1 cm across, greenish-white, sessile, in compound trichotomous cymes from leafless nodes, sometimes terminal and axillary; calyx tube 2 x 3 mm, turbinate; lobes 4, obscure; petals 4, calyptrate; stamens many; filaments red, subulate, 2-5 mm long; ovary inferior, 2 mm, 2-celled; ovules many; style subulate, filiform. Fruit a berry 10-15 mm long, black with pink mesocarp, oblong or globose, crowned by persistent calyx.

*Flowering & Fruiting:* December-April

*Habitat:* Evergreen and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

***Syzygium densiflorum*** Wall. ex Wight & Arn., Prodr. 329. 1834; Vajr., Fl. Palghat Dist. 199. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 265. 1994; Sasidh., Fl. Periyar Tiger Reserve 137. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 129. 1999; Mohanan & Sivad., Fl. Agasthyamala 261. 2002.

*Syzygium arnottianum* Walp., Rep. 2:180.1843; Gamble, Fl. Pres. Madras 475(338). 1919; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 187. 1994; Subram., Fl. Thenmala Division 134. 1995.

*Eugenia arnottiana* (Walp.) Wight, Ic. t. 999. 1845; Hook. f., Fl. Brit. India 2: 483. 1878.

*Local names:* Ayuri, Karayambuvu, Njaval

Evergreen trees, to 20 m high; bark surface blackish-grey, rough; branchlets terete. Leaves simple, opposite, estipulate; petiole 5-20 mm long, slender, grooved above, glabrous; lamina 3.5-8 x 1.8-3.7 cm, elliptic, elliptic-lanceolate or elliptic-oblong, base attenuate or acute, apex acuminate or caudate acuminate, margin entire, glabrous, glandular punctate, coriaceous, olive-green when dry; lateral nerves



many, parallel, close, prominent, looped at the margin forming intramarginal nerve, intercostae reticulate, prominent. Flowers bisexual, creamy, 10-12 mm long, sessile, in dense clusters forming compact, terminal trichotomous cymes; calyx tube to 5 mm, turbinate; lobes 4; no thick disc; petals free, deciduous; stamens many free, bent inwards at the middle in bud; ovary inferior, 2-celled, ovules many; style 1; stigma simple. Fruit a berry, oblong-ovoid, dark purple, fleshy.

*Flowering & Fruiting:* April-June

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad, Kollam, Trivandrum, Kozhikkode

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Syzygium gardneri** Thw., Enum. Pl. Zeyl. 117. 1859; Gamble, Fl. Pres. Madras 479(339). 1919; Mohanan, Fl. Quilon Dist. 180. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 188. 1994; Subram., Fl. Thenmala Division 135. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 181. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 122. 1997; Sivar. & Mathew, Fl. Nilambur 264. 1997; Sasidh., Fl. Periyar Tiger Reserve 137. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 121. 2002; Mohanan & Sivad., Fl. Agasthyamala 262. 2002.

*Eugenia gardneri* (Thw.) Bedd., For. Man. Bot. 108. 1874; Hook. f., Fl. Brit. India 2: 489. 1878.

*Eugenia cymosa* Lam. var. *rostrata* Duthie in Hook.f., Fl. Brit. India 2: 482. 1878.

*Local names:* Aattunjaval, Karinjaval, Kattayiri

Evergreen trees, to 30 m high, bark 8-10 mm thick, surface yellowish-white, granulated, peeling off in small flakes; outer part of the inner bark fibrous, pale pink; blaze brown; branches slender, terete. Leaves simple, opposite, estipulate; petiole 10-15 mm long, slender, grooved above, glabrous, pellucid-dotted; lamina 5-10 x 2.5-5 cm, elliptic, elliptic-ovate or ovate-lanceolate, base acute, apex caudate-acuminate, margin entire, glabrous and glossy, membranous; lateral nerves many, slender, parallel, very close, prominent, looped near the margin forming distinct intramarginal nerve, intercostae reticulate, prominent. Flowers bisexual, 4-5 mm across, white, in axillary and terminal trichotomous cymes, branches slender, divaricate nearly at right angles; pedicels 2-5 mm long; calyx tube 2 x 3 mm, turbinate, lobes 4, obtuse, obscure; no thick disc; petals calyptrate; stamens many, free, bent inwards at the middle when in bud; filaments 4 mm long; ovary inferior, 2-celled, ovules many; style 1; stigma simple. Fruit a berry 5-8 mm across, ovoid, rarely globose, purple.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Malappuram, Trivandrum, Thrissur, Palakkad, Idukki

*Geographical:* Western Ghats and Sri Lanka

**Syzygium hemisphericum** (Wight) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.):115. 1931; Mohanan, Fl. Quilon Dist. 180. 1984; Manilal, Fl. Silent Valley 105. 1988; Vajr., Fl. Palghat Dist. 199. 1990; Anil Kumar, Fl. Pathanamthitta Dist.

265. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 189. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 122. 1997; Sivar. & Mathew, Fl. Nilambur 264. 1997; Sasidh., Fl. Periyar Tiger Reserve 138. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 129. 1999.

*Eugenia hemispherica* Wight, Ic. t. 525. 1842; Hook. f., Fl. Brit. India 2: 477. 1878.

*Jambosa hemispherica* (Wight) Walp., Rep. 2: 191. 1843; Gamble, Fl. Pres. Madras 474(335). 1919.

*Local names:* Payinjaval, Tholnjavaal, Venjara

Trees, to 27 m high, bark surface dark-brown, smooth; branchlets terete. Leaves simple, opposite, estipulate; petiole 10-20 mm, stout, grooved above, glabrous; lamina 5.5-17.5 x 2-5 cm, elliptic, elliptic-lanceolate, elliptic-oblongate or ovate-lanceolate, base cuneate or acute, apex acute, acuminate or caudate-acuminate, margin entire, coriaceous, glabrous, pellucid-dotted; lateral nerves 8-16 pairs, pinnate, slender, obscure, looped near the margin forming intramarginal nerve, intercostae reticulate, obscure. Flowers bisexual, 3-4 cm across, white or rose, densely packed; pedicel 5 mm long; calyx tube 6 mm long, shortly and stoutly obconic, lobes 4, 3 x 6 mm, obtuse; disc thick; petals 4, 7 mm across, free; stamens many, bent inwards in middle regularly when in bud; filaments 15 mm long; ovary inferior, 2-celled, ovules many; style slender; stigma slightly acute. Fruit a berry, 23-25 mm across, globose, purple, crowned by calyx lobes.

*Flowering & Fruiting:* March-June

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Palakkad, Trivandrum, Idukki, Thrissur

*Geographical:* South India and Sri Lanka

***Syzygium heyneanum*** (Duthie) Wall. ex Gamble, Fl. Pres. Madras 482(341). 1919; Ansari, Fl. Kasaragod Dist. 158. 1985; Ramach. & Nair, Fl. Cannanore Dist. 181. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 189. 1994; Sivar. & Mathew, Fl. Nilambur 265. 1997; Sasidh., Fl. Periyar Tiger Reserve 138. 1998.

*Eugenia heyneana* Duthie in Hook.f., Fl. Brit. India 2: 500. 1879.

*Eugenia salicifolia* Wight, Ic. t. 539. 1844, non DC. 1828.

*Local name:* Vallamanchi

Trees, to 6 m high; branchlets obscurely quadrangular. Leaves simple, opposite, estipulate; petiole 4-5 mm long, slender, grooved above, glabrous; lamina 6-10 x 1.3-3 cm, oblong or elliptic, base acute, apex obtuse or retuse, margin entire, coriaceous, glabrous, pale beneath, glandular punctate; lateral nerves many parallel, close, but slightly irregular, very slender, slightly prominent on both sides, looped at the margin forming intramarginal nerve, intercostae reticulate, slender prominent as lateral nerves. Flowers bisexual bisexual, small, sessile, white, in lateral, terminal or rarely axillary cymes; calyx tube 2 x 3.5 mm, turbinate, no thick disc; petals calyptrate, 3 mm across; stamens many, free, bent inwards at the middle when in bud; filaments 3 mm long; ovary 2-celled; ovules many; style 1; stigma simple. Fruit a berry, obovoid, 1-1.5 x 0.5-0.7 cm, crowned with the cup-like calyx limb.

*Flowering & Fruiting:* April-May

*Habitat:* Along the banks of streams in evergreen forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Malappuram, Kannur, Trivandrum

*Endemic to:* South West India

**Syzygium jambos** (L.) Alston in Trimen, Handb. Fl. Ceylon 6(Suppl.):115. 1931; Manilal & Sivar., Fl. Calicut 107. 1982; Mohanan, Fl. Quilon Dist. 180. 1984; Manilal, Fl. Silent Valley 105. 1988; Ramach. & Nair, Fl. Cannanore Dist. 184. 1988; Antony, Fl. Kottayam Dist. 161. 1989; Vajr., Fl. Palghat Dist. 200. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 189. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 123. 1997; Sasidh., Fl. Periyar Tiger Reserve 138. 1998.

*Eugenia jambos* L., Sp. Pl. 470. 1753; Hook. f., Fl. Brit. India 2: 474. 1878.

*Jambosa vulgaris* DC., Prodr. 3: 286. 1828; Gamble, Fl. Pres. Madras 474(336). 1919.

*Local names:* Malaykachampa, Seemachamba, Chamba

Trees, to 15 m high, branchlets terete, glabrous. Leaves simple, opposite, decussate, estipulate; petiole 7-10 mm long, slender, glabrous, grooved above; lamina 10-18 x 2.5-5.5 cm, elliptic, elliptic-oblong or elliptic-lanceolate, base acute, obtuse or cuneate, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 10-16 pairs, pinnate, prominent, arched towards the margin forming intra marginal nerves, intercostae reticulate, prominent. Flowers bisexual, white, to 6 cm across in terminal cymes to 10 cm; pedicel to 2 cm; calyx tube 1.5 cm, turbinate; lobes 4, 8 x 6 mm, ovate-orbicular, subequal, persistent; petals 4, 1.5 x 1.8 cm, free, concave, spreading, orbicular; disc thick, lining the calyx; stamens many; filaments exerted, basally subconnate, unequal; ovary inferior, to 8 mm long, 2-celled, ovules many; style filiform, subulate. Fruit a berry, 3 x 2.5 cm, white or pink, fleshy, oblong; seeds brown.

*Flowering & Fruiting:* October-January

*Habitat:* Cultivated

*Distribution*

*Kerala:* Kollam, Kottayam, Idukki, Palakkad, Kannur, Trivandrum, Kozhikkode

*Geographical:* Native of Malaysia, planted in Tropical Asia and Australia

**Syzygium laetum** (Buch.-Ham.) Gandhi in Sald. & Nicols., Fl. Hassan Dist. 282. 1976; Mohanan, Fl. Quilon Dist. 181. 1984; Manilal, Fl. Silent Valley 106. 1988; Ramach. & Nair, Fl. Cannanore Dist. 182. 1988; Vajr., Fl. Palghat Dist. 200. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 265. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 189. 1994; Subram., Fl. Thenmala Division 134. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 181. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 123. 1997; Sasidh., Fl. Periyar Tiger Reserve 138. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 121. 2002; Mohanan & Sivad., Fl. Agasthyamala 262. 2002.

*Eugenia laeta* Buch.-Ham., Mem. Wern., Nat. Hist. Soc. 5: 338. 1826; Hook. f., Fl. Brit. India 2: 479. 1878.

*Jambosa laeta* (Buch.-Ham) Blume, Mus. Bot. Lugd.-Bat. 1:104.1849; Gamble, Fl. Pres. Madras 474(335). 1919.

*Eugenia pauciflora* Wight, Ic. t. 526. 1842.

*Jambosa pauciflora* (Wight) Wight, Illustr. 2: 14. 1850.

*Local name:* Kollinjal

Trees, to 10 m high, bark greyish-white, smooth; branchlets slender, terete. Leaves simple, opposite, estipulate; petiole 5-10 mm long, stout, grooved above, glabrous; lamina 6-15 x 2-6 cm, elliptic, ovate, elliptic-ovate, elliptic-oblong or elliptic-lanceolate, base cuneate, attenuate or acute, apex acuminate or obtusely acuminate, margin entire, glabrous, chartaceous, pellucid-punctate; lateral nerves 10-15 pairs, parallel, slender, forming intramarginal nerve near the margin (not at the margin), intercostae reticulate, slender, faint. Flowers bisexual, 4-5 cm across, crimson or lemon yellow, solitary or 2-5 together in axillary or terminal cymes; pedicel 2-5 cm long; calyx tube 1.5-2 cm long, slenderly funnel shaped below, suddenly broadening above; lobes 4, 8 x 8 mm, orbicular, persistent; thick disc present; petals 4, 10 x 10 mm, orbicular, punctate; stamens numerous, 2-3 cm long, yellow or pink, bent inwards in the middle regularly in bud; ovary inferior, 2-celled, ovules many; style longer than the stamens; stigma slightly acute. Fruit a berry 2-2.5 x 1.5 cm, oblong, crowned by calyx lobes.

*Flowering & Fruiting:* December-July

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Kannur, Palakkad, Thrissur, Trivandrum

*Endemic to:* Southern Western Ghats

***Syzygium lanceolatum*** (Lam.) Wight & Arn., Prodr. 330. 1834; Ansari, Fl. Kasaragod Dist. 159. 1985; Manilal, Fl. Silent Valley 106. 1988; Vajr., Fl. Palghat Dist. 200. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 183. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 123. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 129. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 121. 2002.

*Eugenia lanceolata* Lam., Encycl. 3: 200. 1789.

*Syzygium wightianum* Wall. ex Wight & Arn., Prodr. 330. 1834; Gamble, Fl. Pres. Madras 478(338). 1919.

*Eugenia wightiana* (Wall. ex Wight & Arn.) Wight, Ic. t. 529. 1842; Hook. f., Fl. Brit. India 2: 485. 1878.

*Local name:* Njal

Trees, to 12 m high, bark greyish-brown, smooth; branchlets terete. Leaves simple, opposite, estipulate; petiole 4-6 mm long, slender, grooved above, glabrous; lamina 7.5-12.5 x 2-3.7 cm, elliptic, elliptic-oblong, or elliptic-lanceolate, base cuneate or acute, apex obliquely acuminate or acute, margin entire, glabrous, chartaceous, pellucid-dotted; lateral nerves many, parallel, slender, not always close, obscure, looped at the margin forming intramarginal nerve, intercostae reticulate, obscure. Flowers bisexual, white, 5 mm across, in axillary and terminal cymes; pedicel to 2 mm; calyx tube 12 x 3 mm, elongate, funnel shaped, lobes 4, short; no thick disc; petal 4, often many, 3 x 3 mm, suborbicular; stamens many, bent inwards at the middle in bud, 6 mm long; ovary inferior, 2-celled; ovules many; style 1; stigma simple. Fruit a berry 10-12 mm long, ovoid-turbinate, bright scarlet.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen and shola forests, also in sacred groves

*Distribution*

*Kerala:* Kasaragode, Idukki, Palakkad, Kollam, Thrissur, Kozhikkode

*Geographical:* South India and Sri Lanka

**Syzygium makul** Gaertn., Fruct. 1: 166.1778; Manilal *et al.*, J. Econ. Tax. Bot. 5: 419. 1984; Manilal, Fl. Silent Valley 106. 1988; Suresh in Manoharan *et al.*, Silent Valley-Whispers of Reason 176.

*Eugenia sylvestris* Moon *ex* Wight, Ic. t. 532. 1843; Hook. f., Fl. Brit. India 2: 493. 1879.

Small trees, bark smooth, pale-brown first, becoming thinly flaked and dipped, pale orange-brown; branches terete, glabrous, pale cream-brown; young leaves bright crimson. Leaves simple, opposite, estipulate; petiole 8-15 mm, long, stout; lamina 9-17 x 4.5-7 cm, narrowly obovate or elliptic or elliptic-obovate, base cuneate, apex acuminate, acumen twisted, margin subrevolute, chocolate-brown beneath on drying, coriaceous; lateral nerves many, slender, parallel, looped near the margin forming intramarginal nerve, prominent, intercostae reticulate, prominent. Flowers bisexual, white, in dense terminal or subterminal axillary cymes; calyx upto 3 x 2 mm, campanulate, obscurely 4-5 segmented; petals 4-5, upto 4 mm long, concave, fugacious; stamens numerous, upto 4 mm long; ovary inferior, 2-celled, ovules many. Fruit a berry, 1 x 0.8 cm, purplish, subglobose, with a terminal unlobed crown.

*Flowering & Fruiting:* January-July

*Distribution*

*Kerala:* Palakkad

*Geographical:* South India and Sri Lanka

**Syzygium malabaricum** (Bedd.) Gamble, Fl. Pres. Madras 481(340). 1919; Mohanan, Fl. Quilon Dist. 181. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 266. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 183. 1996; Sasidh., Fl. Periyar Tiger Reserve 139. 1998.

*Eugenia malabarica* Bedd., Fl. Sylv. t. 199. 1872; Hook. f., Fl. Brit. India 2: 497. 1879. Trees, to 12 m high, bark greyish-brown, smooth; blaze dull yellow; branchlets tetragonous. Leaves simple, opposite, estipulate; petiole 6-25 mm, stout, grooved above; lamina 6-13 x 2.2-8 cm, obovate or obcordate, base cuneate, apex obtuse or retuse, margin entire coriaceous, glabrous, nearly glaucous beneath, pellucid-dotted, lateral nerves 8-10 pairs, pinnate, faint, meeting in loops only, intercostae reticulate, obscure. Flowers bisexual, 2.5 mm across, white, in short branching axillary or lateral cyme; pedicel short; calyx tube turbinate, glabrous, lobes 4, minute, triangular, no thick disc; petals 4, free, orbicular; stamens numerous, bent inwards at the middle when in bud; ovary inferior, 2-celled, ovules many; style 1; stigma simple. Fruit a berry, 5-6 mm across, globose.

*Flowering & Fruiting:* July-August

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Thrissur, Idukki

*Endemic to:* Southern Western Ghats

**Syzygium malaccensis** (L) Merr. & Perry, J. Arnold Arbor. 19: 215. 1938.

*Eugenia malaccensis* L., Sp. Pl. 470. 1753; Hook. f., Fl. Brit. India 2: 471. 1878.

*Local names:* Pananeerjamba, Pomerac

Trees, to 10 m high; bark grey-brown, smooth; branchlets terete-compressed. Leaves simple, opposite, estipulate; petiole 8-15 mm, stout, grooved above; lamina 16-34 x 5-13 cm, elliptic; base cuneate, coriaceous, glabrous, glossy, gland dotted; lateral nerves 10-15 pairs, pinnate, slender, prominent, looped near the margin forming intramarginal nerves, intercostae reticulate, prominent. Flowers bisexual, large; calyx tube 1.5 cm; lobes round, unequal; petals large, glandular, suborbicular; stamens 2 cm, many, bent inwards in middle when in bud; ovary inferior, 2-celled, ovules many; style long. Fruit a berry, large, to 5 x 3 cm.

*Flowering & Fruiting:* March-August

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Malaysia, cultivated in other parts of Tropical Asia

**Syzygium mundagam** (Bourd.) Chithra in Henry *et al.*, Fl. Tamilnadu 1: 157. 1983; Mohanan, Fl. Quilon Dist. 181. 1984; Manilal, Fl. Silent Valley 107. 1988; Ramach. & Nair, Fl. Cannanore Dist. 182. 1988; Vajr., Fl. Palghat Dist. 200. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 266. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 190. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 183. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 124. 1997; Sasidh., Fl. Periyar Tiger Reserve 139. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 121. 2002; Mohanan & Sivad., Fl. Agasthyamala 263. 2002.

*Eugenia mundagam* Bourd., For. Trees Travancore 182. 1908; Subram., Fl. Thenmala Division 133. 1995.

*Jambosa mundagam* (Bourd.) Gamble, Fl. Pres. Madras 473(335). 1919.

*Local names:* Kattuchampa, Mundagam

Trees, to 15 m high, bark 6-8 mm thick, brown, smooth; blaze reddish; branchlets tetragonous. Leaves simple, opposite, estipulate; petiole 3-7 mm, stout, glabrous; lamina 12-30 x 5-12.5 cm, oblong or elliptic-oblong, base cordate, apex acute or obtuse, margin entire, coriaceous, glandular punctate; lateral nerves 18-22 pairs, pinnate, looped near the margin forming intramarginal nerve, secondary laterals prominent, intercostae reticulate, raised below. Flowers bisexual, 4 cm across, white, in terminal many flowered corymbs; pedicel 5 mm long; calyx tube stout, funnel shaped, lobes 4, 6 mm across, suborbicular; furnished with a thick disc; petals 4, 1.2 x 1.5 cm, orbicular; stamens many, free, bent inwards in the middle regularly when in the bud; ovary inferior, 2-celled, many ovuled; style slender, longer than stamens; stigma slightly acute. Fruit a berry, 2.5 cm across, ovoid, greenish-pink.

*Flowering & Fruiting:* February-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Palakkad, Kannur, Trivandrum, Thrissur

*Endemic to:* Southern Western Ghats

**Syzygium myhendrae** (Bedd. ex Brandis) Gamble, Fl. Pres. Madras 478(338). 1919; Gopalan & Henry, End. Pl. India SW Ghats 398. 2000; Sasidh. *et al.*, J. Econ. Tax. Bot. 26: 609. 2002.

*Eugenia myhendrae* Bedd. ex Brandis, Indian Trees 325. 1906.

Trees, to 12 m high, bark greyish; blaze pink; branchlets tetragonous. Leaves simple, opposite, estipulate; petiole 2-5 mm long, slender, glabrous; lamina 3-7 x 2-2.5 cm, oblanceolate or obovate, base cuneate, apex obtusely acuminate, tip of acumen obtuse, margin entire, glabrous, coriaceous; lateral nerves many, slender, close, parallel, obscure, looped at the margin forming intramarginal nerves; intercostae reticulate, obscure. Flowers bisexual, small, white, sessile in terminal corymbose cymes of umbellules, branches of inflorescence quadrangular; calyx tube 3 mm, turbinate; lobes 4, round, petals 4, cauducous; stamens many, regularly folded at middle in bud, to 5 mm long; ovary inferior, 2-celled, ovules many; style filiform, shorter than the stamens; stigma simple, acute. Fruit sessile, 7-8 mm across, globose, pink-purple, crowned by persistent calyx limb.

*Flowering & Fruiting*: January-June

*Distribution*

*Kerala*: Idukki, Kollam

*Endemic to*: Southern Western Ghats

*Status*: Endangered (IUCN, 2000)

**Syzygium palghatense** Gamble, Bull. Misc. Inform. Kew 1918: 240. 1918 & Fl. Pres. Madras 480(339). 1919; Sasidh., Fl. Parambikulam Wildlife Sanctuary 122. 2002; Sujanapal & Sasidh., Rheedia 12: 189. 2002.

Trees, to 15 m high, bark greyish outside and muddy brown inside, smooth; branchlets subtetragonous, become terete on maturity. Leaves simple, opposite or subopposite, estipulate; petiole 3-5 mm, slender, grooved above, glabrous; lamina 3.5-8.3 x 2-3.5 cm, elliptic, elliptic-oblong or elliptic-obovate, base cuneate or acute, apex obtusely acuminate or acute, margin reflexed, glabrous, chartaceous, sparsely gland dotted on lower surface; lateral nerves many, parallel, slightly distant, slender, 2-4 mm apart with numerous secondary laterals, faint, looped at the margin forming intramarginal nerve, intercostae reticulate, obscure. Flowers bisexual, white, in terminal or axillary cymes of 2-3 cm long; pedicel to 2 mm long; calyx tube funnel shaped, 8-12 mm long, 5 mm at mouth; lobes 4; no thick disc; petals 2.5 mm across, creamy white, calyptrate, cauducous at early stage; stamens many, to 8 mm long, bent inwards in middle at bud; ovary inferior, 2-celled, ovules many; style 1; stigma simple. Fruit a berry 10-13 x 4-5 mm, obconic with a hollow depression at apex, crowned by the calyx limb, prominently ribbed on drying.

*Flowering & Fruiting*: January-June

*Distribution*

*Kerala*: Palakkad

*Endemic to*: Southern Western Ghats (Kerala)

*Status*: Critically endangered (IUCN, 2000)

**Syzygium parameswaranii** Mohanan & Henry, J. Bomb. Nat. Hist. Soc. 84: 408. 1987; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 192. 1994; Sasidh., Fl.

Periyar Tiger Reserve 139. 1998; Gopalan & Henry, End. Pl. India SW Ghats 400. 2000; Mohanan & Sivad., Fl. Agasthyamala 264. 2002.

Trees, to 6 m high; branchlets tetragonous. Leaves simple, opposite, estipulate; petiole 1-3 mm, stout, glabrous; lamina 2-3 x 2-3.5 cm, ovate, base round or obtuse, apex subacute or acute obtuse, margin entire, recurved, glabrous, coriaceous; lateral nerves many, parallel, slender, rather close, faint, looped at the margin forming intramarginal nerve, intercostae reticulate, obscure. Flowers bisexual, greenish-white, 8 x 2.8 mm, funnel shaped, in dense terminal umbellate cymes; panicles subsessile; pedicel 3-18 mm long, slender, glabrous; calyx tube 1-1.2 cm long; lobes 4, 1 x 1-1.5 mm, ovate, obtuse; petals 4, 3 x 2.5 mm, suborbicular, calyptrate, obtuse, gland dotted along the main nerve, stamens many; filaments 2.5-3 mm long, dilated at base; ovary inferior, 2-celled, ovules many; style 9 mm long; stigma simple. Fruit a berry, 1-1.5 x 0.5-0.6 cm, top shaped; 1-2 seeded, calyx tube persistent at the top of berry.

*Flowering & Fruiting:* January-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Idukki

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)

**Syzygium periyarensis** Jomy & Sasidh., Rheedia 9: 155. 1999.

Evergreen trees, to 15 m high, bark greyish-white, smooth; branchlets terete. Leaves simple, opposite, estipulate; petiole 7-15 mm long, stout, dark brown, glabrous; lamina 11-15 x 7-9 cm, obovate or broadly elliptic, base acute or obtuse, apex obtusely acute, acumen *ca.* 0.5 cm long, margin entire, glabrous, coriaceous, sparingly black punctate below; lateral nerves 7-14 pairs, parallel looped near the margin forming intramarginal nerve, prominent, intercostae reticulate, faint. Flowers bisexual, white, in terminal corymbose cymes, 5-8 cm across, few flowered; pedicel 4.5 mm long; pseudo pedicel 3 mm long; calyx tube 12 x 12 mm, tube above the ovary 3-4 mm high; lobes 4 *ca.* 6 x 12 mm, broadly ovate, obtuse; petals 4, white, *ca.* 13 mm across, orbicular, concave; stamens numerous, many seriate, filaments 11-18 mm long, inflexed in bud; anthers 1.5 mm long, ovate, obtuse; disc prominent, 2-3 mm thick, shortly creneate; ovary inferior, conical, 2-celled, ovules many; style 22 mm long; stigma indistinct. Fruit a berry.

*Flowering & Fruiting:* March-April

*Habitat:* Along banks of rivers in evergreen forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats (Kerala)

**Syzygium rama-varmae** (Bourd.) Chithra in Nair & Henry, Fl. Tamil Nadu I: 157. 1983; Gopalan & Henry, End. Pl. India SW Ghats 403. 2000; Mohanan & Sivad., Fl. Agasthyamala 264. 2002.

*Eugenia rama-varmae* Bourd., Indian For. 30: 147. t. 2. 1904.

*Jambosa rama-varmae* (Bourd.) Gamble, Fl. Pres. Madras 474(335). 1919.



Trees, to 15 m high, bark brown, blaze pale brown. Leaves simple, opposite, estipulate; petiole stout, 0.65 mm long, glabrous; lamina 11.5-26 x 4.2-8 cm, elliptic-oblong, elliptic-ovate, or elliptic-lanceolate, base rounded, apex acute to acuminate; margin entire, glabrous, coriaceous; lateral nerves 15-20 pairs, parallel, prominent, looped near margin forming intramarginal nerves, intercostae reticulate, prominent. Flowers bisexual, white, 4-5 cm across, in few flowered lateral cymes; calyx tube short, thick, 7 cm, truncate, lobes 4; petals 4, 1-1.5 cm orbicular; stamens many; filaments 1-1.3 cm long, bent inwards in middle when in bud; ovary inferior, 2-celled, ovules many; style 1.5 cm long; stigma slightly acute. Fruit a berry, greenish-pink, spherical; seeds 1-2.

*Flowering & Fruiting:* January-June

*Distribution*

*Kerala:* Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Syzygium rubicundum** Wight & Arn., Prodr. 330. 1834; Gamble, Fl. Pres. Madras 479(339). 1919; Mohanan, Fl. Quilon Dist. 182. 1984; Ramach. & Nair, Fl. Cannanore Dist. 183. 1988; Anil Kumar, Fl. Pathanamthitta Dist. 267. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 124. 1997; Sasidh., Fl. Periyar Tiger Reserve 140. 1998; Mohanan & Sivad., Fl. Agasthyamala 265. 2002.

*Eugenia rubicunda* (Wight & Arn.) Wight, Ic. t. 538. 1842; Hook. f., Fl. Brit. India 2: 495. 1878.

*Eugenia lissophylla* (Thw.) Bedd., For. Man. Bot. 108. 1874; Hook. f., Fl. Brit. India 2: 488. 1878.

*Syzygium lissophylla* Thw., Enum. Pl. Zeyl. 117. 1859.

Trees, to 15 m high, bark pale brown, thin, smooth; branchlets tetragonous. Leaves simple, opposite, estipulate; petiole 5-6 mm long, slender, grooved above, glabrous; lamina 2.5-10 x 1.5-5.5 cm, ovate-lanceolate, elliptic-obovate or ovate, base attenuate or cuneate, apex caudate acuminate or obtusely acuminate, margin entire, glabrous, coriaceous; lateral nerves many, parallel, close, very slender, faint, looped at the margin forming obscure intramarginal nerve, intercostae reticulate, obscure. Flowers bisexual, small, pinkish-white, in axillary and terminal, densely flowered, corymbose cymes; shortly pedicelled; calyx tube 2 x 2.5 mm long, turbinate, lobes 4; no thickened disc, petals 3 mm across, calyptrate; stamens many, free, bent inwards at the middle in bud; filaments 4 mm long, spreading; ovary inferior, 2-celled, many ovules in each cell; style 1; stigma simple. Fruit a berry, 6 mm across, globose, purplish-black.

*Flowering & Fruiting:* December-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Kannur, Trivandrum

*Geographical:* South India and Sri Lanka

**Syzygium stocksii** (Duthie) Gamble, Fl. Pres. Madras 481(340). 1919.

*Eugenia stocksii* Duthie, Hook. f., Fl. Brit. India 2: 498. 1878.

Lofty trees, to 15 m high, bark greyish-brown; branchlets tetragonus. Leaves simple, opposite, estipulate; petiole 10-20 mm long, stout, grooved above, glabrous; lamina 8.5-17 x 4-7.5 cm, elliptic, elliptic-oblong or elliptic-obovate, base narrowed and decurrent on petiole, apex rounded or obtusely acuminate, margin entire, chartaceous, glabrous; lateral nerves 9-12 pairs, parallel but very irregular, distant, prominent, curving upwards and becoming faint towards the margin forming indistinct intramarginal nerve, intercostae reticulate, obscure. Flowers bisexual, small, cymes axillary and from the leafless axils half the length of or equaling the leaves; peduncle 2.5-5 cm, branches slender angled; calyx lobes 4, rounded or subacute; no thick staminal disc; petals calyptrate; stamens many, bent inwards at the middle when in bud; ovary inferior, 2-celled, ovules many; style 1; stigma simple. Fruit a berry, pink-purple, 0.8 x 6 cm.

*Flowering & Fruiting:* March-June

*Distribution*

*Kerala:* Wayanad

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Syzygium tamilnadensis** Rathkr. & Chithra in Nair & Henry, Fl. Tamil Nadu India 1: 158. 1983; Ramach. & Nair, Fl. Cannanore Dist. 183. 1988; Sasidh., Fl. Chinnar Wildlife Sanctuary 129. 1999; Mohanan & Sivad., Fl. Agasthyamala 265. 2002.

*Eugenia montana* Wight, Ic. t. 1060. 1846, non Aubl. 1775; Hook. f., Fl. Brit. India 2: 488. 1878.

*Syzygium montanum* (Wight) Gamble, Fl. Pres. Madras 479(339). 1919, non Thw. 1859.

*Local name:* Kallunjaval

Evergreen trees, to 20 m high, bark dark brown, peeling off in small flakes; branchlets tetragonous. Leaves simple, opposite, estipulate; petiole 5-16 mm, stout, grooved above, glabrous; lamina 3-12.5 x 2.5-7.5 cm, elliptic, obovate or elliptic-obovate, base cuneate, apex obtuse or emarginate, margin entire, glabrous, coriaceous, pellucid-dotted; lateral nerves many, parallel, slender, slightly distant, prominent, looped near the margin forming intramarginal nerve; intercostae reticulate, slender, faint. Flowers bisexual, 5 mm across, sessile, white, in axillary or terminal corymbose panicles, inflorescence branches stout; calyx tube 3 mm long, obconic; lobes 4; no thick disc; petals calyptrate; stamens many, bent inwards regularly middle in bud, filaments 5-6 mm long; ovary inferior, 2-celled; ovules many; style 1; stigma simple. Fruit a berry, 6-8 mm across, globose, purple, succulent, crowned by calyx limb.

*Flowering & Fruiting:* February-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Wayanad, Trivandrum

*Endemic to:* Southern Western Ghats

**Syzygium travancoricum** Gamble, Bull. Misc. Inform. Kew 1918: 240. 1918 & Fl. Pres. Madras 480(339). 1919; Nair & Mohanan, J. Econ. Tax. Bot. 2: 234. 1981; Mohanan, Fl. Quilon Dist. 182. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 267.

1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 192. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 185. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 125. 1997; Sunil, Fl. Pl. Alappuzha Dist. 333. 2000.

*Local names:* Poriyal, Vathamkollimaram

Evergreen trees, to 25 m high, bark surface greyish-brown, longitudinally fissured, peeling off in thin irregular flakes, inner bark grey; branchlets tetragonous. Leaves simple, opposite, estipulate; petiole 10-20 mm long, stout, grooved above, glabrous; lamina 8-16.5 x 5-8.5 cm, ovate or ovate-oblong, base narrowed and decurrent on petiole, apex acuminate, acumen folded, obtuse, margin entire, chartaceous, glabrous; lateral nerves 10-15 pairs, parallel but very irregular, distant, prominent, looped near the margin forming indistinct intramarginal nerve, intercostae reticulate, faint. Flowers bisexual, white, mostly in axillary lax cymose corymbose; peduncle 4.5-5 (8) cm long, their branches also long, ascending; calyx tube short, 1 mm across, lobes 4, very short; no thickened staminal disc; petals white, calyptrate; stamens numerous, free, bent inwards at middle when in bud; ovary inferior, 2-celled, ovules many; style 1; stigma simple. Fruit a berry, oblong-obtuse on both sides, 1 x 0.5 cm, deep violet, pericarp juicy; seed one.

*Flowering & Fruiting:* April-June

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Trivandrum, Ernakulam, Thrissur, Alappuzha, Pathanamthitta

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Critically endangered (IUCN, 2000)

***Syzygium zeylanicum*** (L.) DC., Prodr. 3: 260.1828; Gamble, Fl. Pres. Madras 479(338). 1919; Manilal & Sivar., Fl. Calicut 108. 1982; Mohanan, Fl. Quilon Dist. 182. 1984; Ramach. & Nair, Fl. Cannanore Dist. 183. 1988; Antony, Fl. Kottayam Dist. 161. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 269. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 192.1994; Subram., Fl. Thenmala Division 134. 1995; Sunil, Fl. Pl. Alappuzha Dist. 333. 2000; Sunil, Fl. Pl. Alappuzha Dist. 333. 2000.

*Myrtus zeylanica* L., Sp. Pl. 472. 1753.

*Eugenia zeylanica* (L.) Wight, Illustr. 2: 15. 1841; Hook. f., Fl. Brit. India 2: 485. 1878.

*Local names:* Chaliyakkani, Poochappazham, Velutthakanali

Trees, to 10 m high, bark black.. Leaves simple, opposite, estipulate; petiole 3-8 mm long, stout, grooved above, glabrous; lamina 2.4-9.5 x 0.8-5.5 cm, elliptic-lanceolate, linear-lanceolate, ovate, ovate-lanceolate or oblong, base obtuse, round or acute, apex acute or acuminate, margin entire, pellucid dotted, glabrous, glossy, coriaceous; lateral nerves many, parallel, looped near the margin forming intramarginal nerve, prominent, intercostae reticulate, slender, faint. Flowers bisexual, in axillary and terminal cymes, small, white; peduncle 4-6 mm long; pedicel 3-4 mm long, slender; calyx tube campanulate, greyish, gland-dotted, 25-30 mm long; lobes 5, 1 mm long, ovate; petals 5, 1.5-2 mm long, free, deciduous, white; stamens many, free, bent inwards at the middle when in bud; filament 4-6 mm long; no thickened staminal disc; ovary inferior, 2-celled, ovules many; style 1, 4-6 mm long; stigma simple. Fruit a berry, 6-12 mm long, white, gland-dotted, crowned with calyx segments.

*Flowering & Fruiting:* January-April

*Habitat:* Banks of streams in evergreen forests, also in the plains

*Distribution*

*Kerala:* Kollam, Kozhikkode, Pathanamthitta, Kannur, Trivandrum, Alappuzha, Kottayam

*Geographical:* Indo-Malesia

### LECYTHIDACEAE

1. Inflorescence cauliflorous; stamens in two unequal bunches forming a hood over the ovary ..... **Couroupita guianensis**
1. Inflorescence not cauliflorous; stamens free..... 2
2. Fruit 4-angled, stamens pink ..... **Barringtonia acutangula**
2. Fruit globose, smooth, stamens white ..... **Careya arborea**

**Barringtonia acutangula** (L.) Gaertn., Fruct. 2: 97, t.101. 1790; Hook. f., Fl. Brit. India 2: 508. 1879; Gamble, Fl. Pres. Madras 487(344). 1919; Manilal & Sivar., Fl. Calicut 109. 1982; Mohanan, Fl. Quilon Dist. 183. 1984; Ansari, Fl. Kasaragod Dist. 160. 1985; Antony, Fl. Kottayam Dist. 162. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 269. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 185. 1996; Sivar. & Mathew, Fl. Nilambur 266. 1997; Sunil, Fl. Pl. Alappuzha Dist. 334. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 122. 2002.

*Eugenia acutangula* L., Sp. Pl. 471. 1753.

*Local names:* Attupezhu, Cheriyasamsthradhi, Neerpezhu

Evergreen trees, to 15 m high, bark 10-12 mm thick, surface dark brown, rough, rich in tannin; blaze yellow; branchlets densely tomentose. Leaves simple, alternate, clustered towards the tip of branchlets; stipules lateral, cauducous; petiole 6-12 mm long, slender, glabrous; lamina 7-18 x 2.5-7 cm, oblanceolate, obovate or elliptic-obovate, base cuneate, or attenuate, apex obtuse, round or subacute, margin finely serrate, glabrous, subcoriaceous; lateral nerves 8-12 pairs, pinnate, slender, prominent, intercostae reticulate, slender, prominent. Flowers bisexual, 6-8 mm across, red, in terminal pendulous racemes; bracts small, deciduous; calyx tube campanulate, adnate to the ovary; lobes 4, ovate, acute, imbricate; petals 4, ovate, obtuse, imbricate, basally connate, adnate to the staminal tube; stamens many, in several rows; filaments exerted, filiform, 1.5 cm long, pink, connate below; ovary inferior, 2 mm, 2-celled, ovules 6-8 in each cell; style to 2 cm, filiform; stigma small. Fruit a fibrous berry, 2.5-3.8 cm long, oblong-ovoid, bluntly quadrangular; seed one, ovoid.

*Flowering & Fruiting:* March-May

*Habitat:* Along riverbanks and water courses

*Distribution*

*Kerala:* Kasaragode, Kottayam, Kozhikkode, Thrissur, Kollam, Alappuzha, Malappuram, Pathanamthitta

*Geographical:* Indo-Malesia to Australia

**Careya arborea** Roxb., Pl. Corom. t. 218. 1811; Hook. f., Fl. Brit. India 2: 511. 1879; Gamble, Fl. Pres. Madras 488(345). 1919; Manilal & Sivar., Fl. Calicut 108. 1982; Mohanan, Fl. Quilon Dist. 183. 1984; Ansari, Fl. Kasaragod Dist. 160. 1985; Manilal, Fl. Silent Valley 108. 1988; Ramach. & Nair, Fl. Cannanore Dist. 184.

1988; Antony, Fl. Kottayam Dist. 163. 1989; Vajr., Fl. Palghat Dist. 201. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 270. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 193. 1994; Subram., Fl. Thenmala Division 136. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 186. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 125. 1997; Sivar. & Mathew, Fl. Nilambur 267. 1997; Sasidh., Fl. Periyar Tiger Reserve 140. 1998; Sunil, Fl. Pl. Alappuzha Dist. 336. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 124. 2002; Mohanan & Sivad., Fl. Agasthyamala 266. 2002.

*Local names:* Aalam, Alasoo, Pezhu

Deciduous trees, to 12 m high, bark 10-12 mm thick, brownish, rough, exfoliations small, more or less triangular; fibrous; blaze reddish-brown, stratified; branchlets pubescent. Leaves simple, alternate, estipulate, clustered at the tips of branchlets; petiole 10 mm long, slender, pubescent; lamina 15-30 x 5-15 cm, obovate, oblong-obovate, base cuneate or attenuate and decurrent on petiole, apex round or shortly acuminate, margin crenate-serrate, glabrous, membranous; lateral nerves 10-12 pairs, parallel, prominent, intercostae reticulate, prominent. Flowers bisexual, greenish-white, 5-10 mm across, in terminal spikes; peduncle woody; bracts 3, unequal; calyx tube campanulate, glabrous, adnate to ovary and not produced beyond the ovary; lobes 4, ovate, imbricate; petals 4, elliptic-oblong, revolute along margin, cauducous; disc annular; stamens numerous in several rows, slightly connate at base, inserted on the top of calyx; filaments subulate, purple, exserted, inner and outer rows without anthers; ovary inferior, 4-5-celled, ovules many in each cell; style long, filiform; stigma capitate. Fruit a berry, 5-7.5 cm across, globose, green, pericarp fibrous, crowned with sepals and style.

*Flowering & Fruiting:* February-July

*Habitat:* Moist and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Tropical Asia

**Couroupita guianensis** Aublet, Hist. Pl. Guiane 708. t. 282. 1775; Antony, Fl. Kottayam Dist. 162. 1989.

*Local name:* Nagalingamaram, Cannon ball tree

Trees, bark smooth. Leaves simple, alternate, spiral, crowded at the apices of branchlets estipulate; petiole 20-40 mm long, stout, swollen at the tip and base, glabrous; lamina 10-21 x 4.5-10 cm, obovate or oblong-ovate, base obtuse, apex acute, obtuse or emarginate, margin entire, crenate or serrate, glabrous, coriaceous; lateral nerves 10-11 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, pink, in racemes on trunk on lower branches; sepals short; petals 5 x 2.5 cm; stamens many, fused into a curved spathulate androphore; ovary half inferior. Fruit globose, berry, surface scurfy, to 10-12 cm across.

*Flowering & Fruiting:* March-December

*Habitat:* Grown in gardens and temple premises

*Distribution*

*Kerala:* All districts

*Geographical:* Native of South America

## LYTHRACEAE

1. Flowers 5-6 cm across, pink or mauve; calyx ribbed ..... **Lagerstroemia speciosa**
1. Flowers *ca.* 1 cm across, white; calyx smooth ..... 2
2. Fruit subglobose, pedicel slender, calyx tube with a ring inside the lobes  
..... **Lagerstroemia parviflora**
2. Fruit oblong or ellipsoid, pedicel stout, calyx tube without a ring inside the lobes  
..... **Lagerstroemia microcarpa**

**Lagerstroemia microcarpa** Wight, Ic. t. 109. 1839; Mohanan, Fl. Quilon Dist. 189. 1984; Manilal, Fl. Silent Valley 113. 1988; Ramach. & Nair, Fl. Cannanore Dist. 192. 1988; Antony, Fl. Kottayam Dist. 170. 1989; Vajr., Fl. Palghat Dist. 205. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 281. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 202. 1994; Subram., Fl. Thenmala Division 144. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 195. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 133. 1997; Sivar. & Mathew, Fl. Nilambur 277. 1997; Sasidh., Fl. Periyar Tiger Reserve 148. 1998; Sunil, Fl. Pl. Alappuzha Dist. 346. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 131. 2002; Mohanan & Sivad., Fl. Agasthyamala 286. 2002.

*Lagerstroemia lanceolata* Wall. ex Clarke in Hook.f., Fl. Brit. India 2: 576. 1879; Gamble, Fl. Pres. Madras 513(362). 1919.

*Lagerstroemia thomsonii* Koehne in Engl., Pflanzenr. IV 216(17): 251. 1903; Gamble, Fl. Pres. Madras 513(362). 1919.

*Local names:* Vellilavu, Venthekku

Deciduous trees, to 30 m high, bark 6-8 mm thick, greyish or greyish-white, smooth, peeling off in thin long and broad flakes; blaze creamy yellow, outer parts brittle, inner layers fibrous; branches knotted. Leaves simple, opposite, distichous, stipulate; stipules 2, intrapetiolar, deciduous; petiole 6-15 mm long, slender, glabrous; lamina 4.5-10 x 3.7-6.5 cm, elliptic-lanceolate or ovate-lanceolate, base attenuate or acute, apex acute or acuminate, margin entire, glabrous and shining above, velvety pubescent beneath, chartaceous; lateral nerves 6-10 pairs, pinnate, prominent, intercostae scalariform, faint. Flowers bisexual, 5-6 mm across, white, in axillary and terminal panicles; calyx smooth, hoary, without a ring; lobes 6, triangular, persistent, reflexed; petals 6, 3 mm long, obovate, white, clawed; stamens numerous, inserted at the base of calyx tube; filaments long, exerted; ovary half inferior, sessile, glabrous, 4-6-celled, ovules many; style long, curved; stigma capitate. Fruit a capsule, 8-12 mm long, ovoid, 4-6 valved, dehiscent; seeds many, elongate, falcately winged, brownish.

*Flowering & Fruiting:* June-February

*Habitat:* Moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Endemic to:* Western Ghats

**Lagerstroemia parviflora** Roxb., Pl. Corom. t. 66. 1795; Gamble, Fl. Pres. Madras 514(362). 1919; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 202. 1994.

*Local names:* Cimanii, Malamaruthu

Deciduous trees, to 15 m high; bark dark brown or greyish-black, vertically furrowed, exfoliating in long, thin flakes; blaze dull yellow. Leaves simple, opposite; stipules intrapetiolar, deciduous; petiole to 5 mm long, slender, glabrous; lamina 3.5-7.5 x 2-3 cm, elliptic, obovate-elliptic or oblong, base round or acute, apex acute, acuminate or obtuse-retuse, margin entire, glabrous or shortly pubescent beneath, coriaceous; lateral nerves 6-8 pairs, pinnate, slender, prominent; intercostae reticulate, prominent. Flowers bisexual, 2 mm across, white, fragrant, in lax axillary panicles; calyx tube 7 mm, campanulate, with a ring inside, smooth with out; lobes 6, to 3 mm, appressed to the capsule in fruit; petals 6, to 6 mm, ovate-suborbicular; claw 4 mm; stamens many, inserted near the base of the calyx tube, exerted; filaments to 1 cm; anthers 0.5 mm; ovary 2.5 mm, half inferior, sessile, glabrous, 4-6-celled, ovules many; style to 1 cm, curved; stigma capitate. Fruit a capsule, 3 x 1.5 cm, 3-4 valved, ovoid, brown; seeds many; wing terminal with a thick curved back.

*Flowering & Fruiting:* March-February

*Habitat:* Moist and dry deciduous forests

*Distribution*

*Kerala:* Trivandrum, Wayanad

*Geographical:* Tropical Himalaya, India and Myanmar

**Lagerstroemia speciosa** (L.) Pers., Syn. 2:72.1806; Manilal & Sivar., Fl. Calicut 114.

1982; Mohanan, Fl. Quilon Dist. 189. 1984; Ramach. & Nair, Fl. Cannanore Dist.

192. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 203. 1994; Sunil, Fl.

Pl. Alappuzha Dist. 347. 2000.

*Lagerstroemia reginae* Roxb., Pl. Corom. t. 65. 1796; Ansari, Fl. Kasaragod Dist. 166.

1985; Subram., Fl. Thenmala Division 143. 1995; Vajr., Fl. Palghat Dist. 205. 1990.

*Lagerstroemia flos-reginae* Retz., Obs. Bot. 5: 25.1788; Hook. f., Fl. Brit. India 2:577.1879; Gamble, Fl. Pres. Madras 513(362). 1919.

*Lagerstroemia hirsuta* (Lam.) Willd., Sp. Pl. 2: 1178. 1799; Anil Kumar, Fl.

Pathanamthitta Dist. 281. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 195. 1996;

Sasidh., Fl. Shenduruny Wildlife Sanctuary 132. 1997; Sivar. & Mathew, Fl.

Nilambur 278. 1997; Sasidh., Fl. Periyar Tiger Reserve 148. 1998; Sasidh., Fl.

Parambikulam Wildlife Sanctuary 131. 2002; Mohanan & Sivad., Fl. Agasthyamala

286. 2002.

*Adambea hirsuta* Lam., Encycl. 1: 39. 1783.

*Local names:* Manimaruthu, Poomaruthu

Deciduous trees, to 25 m high, bark 4-6 mm thick, yellowish-brown, smooth; fibrous; blaze striated, creamy-yellow turning to brown. Leaves simple, opposite or subopposite; stipules intrapetiolar, deciduous; petiole 6-12 mm long, stout, glabrous; lamina 7.5-25 x 3-10 cm, ovate-lanceolate, elliptic-lanceolate or elliptic-oblong base obtuse, round or acute, apex acute, margin entire, glabrous, coriaceous; lateral nerves 11-19 pairs, parallel, prominent beneath, intercostae reticulate, prominent. Flowers bisexual, 5-7 cm across, mauve or pink, in terminal panicles; inflorescence branches puberulous; pedicel 1 cm long; calyx tube 1 x 1.3 cm, hemispherical, puberulous, ribbed without; lobes 6, triangular, acute; petals 6, 4 x 2.5 cm, obovate, clawed, margins crispate; stamens many, inserted near the base of the calyx tube; filaments exerted; ovary half inferior, sessile, glabrous, 6-

celled, ovules many; style 2 cm long, curved; stigma capitate. Fruit a capsule, 18-30 mm long, ovoid, brown, woody, dehiscent; seeds 10-12 mm long, winged, pale brown.

*Flowering & Fruiting:* March-November

*Habitat:* Semi-evergreen and evergreen forests, mostly along banks of streams; also planted as avenue tree

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

### SONNERATIACEAE

1. Stamens pink..... **Sonneratia caseolaris**  
1. Stamens white ..... **Sonneratia alba**

**Sonneratia alba** J. E. Smith in Rees, Cyclop. 2: 33. 1819; Hook. f., Fl. Brit. India 2: 580. 1879.

Evergreen trees, to 7 m high; pneumatophores 75 x 0.8 cm, straight, stout, conical, outer thin layer flaky, yellowish-brown; bark brown, cracked; branchlets terete, glabrous; nodes swollen with 2 lateral pairs of circular glands. L. eaves simple, opposite, stipulate; petiole 5-10 mm long, stout, glabrous, white or pink; lamina 4.5-11 x 3-9 cm, broadly elliptic, ovate, obovate, oblong or suborbicular; base cuneate; apex obtuse; coriaceous, slightly fleshy, glabrous; lateral nerves 7-13 pairs, parallel, looped near the margin forming intramarginal nerve, intercostae reticulate, obscure. Flowers bisexual, white, 6.5 x 8 cm, in terminal axillary or leaf opposed clusters of 2, 3 or rarely solitary; pedicel 1-4 cm long terete, glabrous; bracteoles 2, green; calyx green outside, white within, calyx cup 2 x 2.5 cm, angular, glabrous, enclosing the basal portion of the pistil, lobes 6-8, 2 x 1 cm, oblong, acute, thick, greenish outside, reddish within, coriaceous, glabrous, persistent; petals 6-8, 26 x 0.75 mm, linear, white with reddish tinge towards apex, membranous, glabrous; stamens numerous, free, inflexed in bud, inserted in several rows on the terminal raised rim of the calyx cup, white, thread like, anthers reniform, medifixed, bilobed; pistil 7 x 1.5 cm, glabrous, white, globose but flattened above with a depression around the stylar base, many celled, ovules many; style coiled in bud, to 6 cm, white, terete; stigma a capitate, pale green. Fruit a drupe 4 cm across, green, flattened above with persistent calyx and style and with a depression around the stylar base; pericarp smooth, glabrous, calyx lobes reflexed; seeds many embedded in the fleshy pulp of the placenta, falcate, surface rough.

*Flowering & Fruiting:* February-June

*Habitat:* Mangrove forests

*Distribution*

*Kerala:* Kannur, Kozhikkode

*Geographical:* Paleotropics

**Sonneratia caseolaris** (L.) Engl. in Engl. & Prantl, Nachtr. 261. 1897; Gamble, Fl. Pres. Madras 515(364). 1919; Mohanan, Fl. Quilon Dist. 190. 1984; Ansari, Fl. Kasaragod Dist. 168. 1985; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 203. 1994; Sunil, Fl. Pl. Alappuzha Dist. 362. 2000.

*Rhizophora caseolaris* L. in Stickman, Herb. Amboin. 13. 1754 p.p.

*Sonneratia acida* L.f., Suppl. Pl. 252. 1781; Hook. f., Fl. Brit. India 2: 573. 1879.



*Local names:* Blatti, Chakkara kandal, Thirala

Evergreen trees, to 8 m high; pneumatophores 1 m long and 6 cm diameter, straight, stout, corky, conical, brownish grey or orange-coloured, outer thin layer flaky; bark brown, cracked; branchlets pendulous; angled, greenish-brown, glabrous; nodes swollen with 2 lateral pair of circular glands. Leaves simple, opposite-decussate, estipulate; petiole 5-10 mm long, stout, red, glabrous; lamina 4-11 x 3.5-6.5 cm, broadly ovate or broadly elliptic, base cuneate, apex mucronate, emarginate or obtuse, glabrous, coriaceous, thick, slightly fleshy, green; lateral veins 10-15 pairs, parallel, looped near the margin forming intramarginal nerve, slender, obscure, intercostae reticulate, obscure. Flowers bisexual, pink, 6 x 5-7 cm, terminal, solitary; bracts rudimentary, in conspicuous; pedicel 5-10 mm long, quadrangular, glabrous; calyx green outside, white within, calyx cup 1.8 x 2 cm, smooth, glabrous, enclosing the basal portion of the pistil; lobes 6, 2 x 1 cm, oblong, elliptic, acute, greenish outside, purplish-white within, thick, coriaceous, glabrous, persistent; petals 6, 2 x 0.2 cm, free, purple to violet red, acuminate, apex wrinkled and coiled, membranous, glabrous, cauducous; stamens many, free, inflexed in bud, inserted in several rows on the terminal raised rim of the calyx cup, conspicuous, cauducous; filaments upto 4.2 cm long, reddish below, white above, thread like, anthers reniform, medifixed, bilobed; ovary 1 cm across, globose, white, many celled, ovules many in each cell; style coiled in bud, to 6 cm, white, terete; stigma capitate. Fruit a drupe, 7 cm across, globose, slightly flattened, calyx lobes horizontal, pericarp smooth, glabrous; seeds many, embedded in the fleshy pulp of the placenta, angular with rough surface.

*Flowering & Fruiting:* Throughout the year

*Distribution*

*Kerala:* Kasaragode, Kollam, Trivandrum, Alappuzha, Kannur

*Geographical:* Indo-Malesia and Australia

#### **DATISCEAE**

**Tetrameles nudiflora** R. Br. in Bennett, Pl. Jav. Rar. 79. t.17. 1838; Hook. f., Fl. Brit. India 2: 627. 1879; Gamble, Fl. Pres. Madras 544(384). 1919; Mohanan, Fl. Quilon Dist. 197. 1984; Ansari, Fl. Kasaragod Dist. 181. 1985; Vajr., Fl. Palghat Dist. 217. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 299. 1994; Subram., Fl. Thenmala Division 156. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 208. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 138. 1997; Sivar. & Mathew, Fl. Nilambur 304. 1997; Sasidh., Fl. Periyar Tiger Reserve 158. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 139. 2002; Mohanan & Sivad., Fl. Agasthyamala 293. 2002.

*Tetrameles grahamiana* Wight, Ic. t. 1956. 1853.

*Local names:* Cheeni, Vellapasa

Deciduous dioecious trees, to 45 m high, bole buttressed; bark 10 mm thick, greyish-white, smooth, tuberculate-lenticellate; blaze dull yellow. Leaves simple, alternate, exstipulate, crowded at the apex of branchlets; petiole 5-15 cm long, slender, tomentose; lamina 7.5-20 x 5-12 cm, orbicular-ovate or broadly ovate, base cordate, apex acute-acuminate, margin glandular-serrate, coriaceous, glabrous above, densely tomentose beneath; nerves 3-5 from base, palmate, prominent, lateral nerves 4-9 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers

unisexual, yellowish-green; female flowers sessile, in spicate pendulous panicles; male flowers subsessile, in pubescent panicles; male flowers: 4 mm across, calyx tube very short; lobes 4, ovate, united at base; petals absent; stamens 4, opposite the calyx lobes, inserted around a flat central disc; pistillode rudimentary; female flowers: 4 x 3 mm; calyx connate with the ovary, 4-gonous; lobes 4, short; petals absent; staminodes absent; ovary inferior, 1-celled, ovules numerous on 4 parietal placentae; styles 4, subulate; stigmas club shaped. Fruit a capsule, 5-6 mm long, urceolate, faintly 8-ribbed, glandular, crowned by persistent calyx segments, opening at top; seeds minute, brown.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen, semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Kollam, Idukki, Pathanamthitta, Malappuram, Palakkad, Thrissur, Trivandrum, Wayanad

*Geographical:* Paleotropics

#### ARALIACEAE

- |    |  |  |
|----|--|--|
| 1. | Leaflets 2 .....   | <b>Schefflera chandrasekharanii</b>              |
| 1. | Leaflets 3 or more .....   | 2  |
| 2. | Flowers sessile, bracts 4, prominent .....   | <b>Schefflera capitata</b>                       |
| 2. | Flowers capitate, bracts 2 or 0 .....  | 3  |
| 3. | Flowers in paniced racemes .....   | <b>Schefflera racemosa</b>                       |
| 3. | Flowers in umbels .....  | 4  |
| 4. | Petiolules more than 5 cm long .....   | <b>Schefflera wallichiana</b>                    |
| 4. | Petiolules less than 3 cm long .....   | 5  |
| 5. | Leaflets less than 5 cm long, obtuse or emarginated at apex.....                       | <b>Schefflera bourdillonii</b>                   |
| 5. | Leaflets over 7 cm long, acute or acuminate at apex .....                              | 6  |
| 6. | Umbels <i>ca.</i> 2-5 cm across, bracts, bracteoles and pedicels wooly tomentose ..... | <b>Schefflera rostrata</b> var. <b>micrantha</b> |
| 6. | Umbels <i>ca.</i> 1.5 cm across, bracts, bracteoles and pedicels glabrous .....        | <b>Schefflera rostrata</b> var. <b>rostrata</b>  |

**Schefflera bourdillonii** Gamble, Bull. Misc. Inform. Kew 1919: 228. 1919 & Fl. Pres. Madras 570(403). 1919; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 216. 1994; Sasidh., Fl. Periyar Tiger Reserve 165. 1998; Gopalan & Henry, End. Pl. India SW Ghats 364. 2000; Mohanan & Sivad., Fl. Agasthyamala 301. 2002.

Trees, to 8 m high, often epiphytic. Leaves digitately compound. alternate, spiral; stipules intrapetiolar, connate within the petiole; rachis 4-10 cm long, slender, sheathing at the base, glabrous; leaflets 5-8; petiolule 0.5-1.5 cm, slender, articulate; lamina 4-9 x 0.6-2 cm, obovate, elliptic-obovate or rhomboid, base attenuate or cuneate, apex obtuse, emarginate, margin entire, reflexed, glabrous, coriaceous; lateral nerves 2-7 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual often polygamous, 5 mm across, in subterminal stellate villous umbellate racemes upto 4 cm long; pedicels 5-10 mm long; calyx truncate, lobes 0; petals 5, ovate, acuminate, inflexed; staminodes in females 5, subulate; stamens 5; ovary inferior, 5-celled; styles short, not connate in to a cylindrical column. Fruit a berry, 3 mm across, 5-angled; seeds compressed.

*Flowering & Fruiting:* January-August

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

***Schefflera capitata*** (Wight & Arn.) Harms in Engl. & Prantl, Nat. Pflanzenf. 3(8): 36. 1894; Gamble, Fl. Pres. Madras 571(403). 1919; Ramach. & Nair, Fl. Cannanore Dist. 207. 1988; Manilal, Fl. Silent Valley 127. 1988.

*Paratopia capitata* Wight & Arn., Prodr. 378. 1834.

*Brassaia capitata* (Wight & Arn.) Clarke in Hook.f., Fl. Brit. India 2: 732. 1879.

*Local name:* Etilamaram

Small trees, to 10 m high; Leaves digitately compound, alternate, stipulate; stipules connate within the petiole; rachis 5-15 cm, cylindrical, base sheathing, glabrous; leaflets 6-8, petiolule 2.5-5 cm; lamina 5-15 x 3-7 cm, elliptic-lanceolate, elliptic-oblong, lanceolate or oblong; base acute, obtuse or round; apex acuminate or obtusely acuminate; margin entire, glabrous, coriaceous; lateral nerves 6-15 pairs, ascending, pinnate; intercostae reticulate. Flowers bisexual, yellowish-white, sessile, 4 mm across, umbels in panicles of racemes, bracteoles 4; calyx truncate, lobes 5; petals 5, valvate, stamens 5; ovary 5-celled, style small. Fruit a berry, subglobose, seeds compressed.

*Flowering & Fruiting:* February-May

*Distribution*

*Kerala:* Kannur, Palakkad, Wayanad

*Endemic to:* Southern Western Ghats

***Schefflera chandrasekharanii*** Ramam. & Rajan, J. Bomb. Nat. Hist. Soc. 79: 163. 1982; Shanavas & Santhosh, J. Econ. Tax. Bot. 19: 543. 1995.

Small trees; bark papery, branchlets terete, lenticellate. Leaves digitately compound, alternate, stipulate; stipules adnate within the petiole; rachis cylindrical glabrous, base sheathing; petiolule 5-15 mm long, terete; leaflets 1-2; 5-10 x 3-4 cm, obovate; base cuneate or oblique; apex apiculate; margin crenate, wavy; coriaceous, glabrous; lateral nerves 5-7 pairs, pinnate, prominent; intercostae reticulate. Flower bisexual, in terminal umbellate panicles; peduncle 2 cm long, pedicel 1-2 mm long, tomentose; calyx 1 mm long, cup shaped, adnate to the ovary; petals 5, 1 mm long, ovate, glabrous; stamens 5, inserted around the disc, filaments incurved, anthers oblong; ovary 5-celled, ovule 1 in each cell, style short.

*Fruiting:* March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

***Schefflera racemosa*** (Wight) Harms in Engl. & Prantl, Nat. Pflanzenf. 3(8): 38. 1894; Gamble, Fl. Pres. Madras 570(402). 1919; Ramach. & Nair, Fl. Cannanore Dist.

208. 1988; Antony, Fl. Kottayam Dist. 185. 1989; Sasidh., Fl. Periyar Tiger Reserve 165. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 143. 1999.

*Hedera racemosa* Wight, Ic. t. 1015. 1845.

*Heptapleurum racemosum* (Wight) Bedd., Fl. Sylv. t. 214. 1872; Hook. f., Fl. Brit. India 2: 729. 1879.

*Local names:* Charuka, Etilamaram

Medium sized trees, to 10 m high; young parts rusty tomentose. Leaves digitately compound, alternate, stipulate; stipules adnate within the petiole; rachis 12-23 cm long, stout, sheathing at base, glabrous; leaflets 4-8; petiolule 2.5-5 cm long, slender, grooved above, glabrous; lamina 9.5-18 x 3.8-6 cm, elliptic or elliptic-lanceolate, base acute; apex acuminate, margin entire or wavy, glabrous, glaucous beneath, chartaceous; lateral nerves 7-14 pairs, ascending, slender, raised; intercostae reticulate, obscure. Flowers bisexual, pale green, in paniculate racemes from stout older branches; bracts, bracteoles and pedicels rusty pubescent, bracts persistent; calyx 5-toothed, obtuse; petals 5, ovate, acute, valvate; stamens as many as petals; ovary cells as many as petals; styles 5, short, connate in a cylindrical column, stigma distinct. Fruit a berry, 5-6 mm across, 5-celled, 5 angled, ovoid, glabrous with persistent style.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Kottayam, Kannur

*Endemic to:* Western Ghats

***Schefflera rostrata*** (Wight) Harms in Engl. & Prantl, Nat. Pflanzenf. 3(8): 38. 1894, var. **rostrata**; Gamble, Fl. Pres. Madras 569(402). 1919; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 216. 1994; Mohanan & Sivad., Fl. Agasthyamala 301. 2002.

*Hedera rostrata* Wight, Ic. tt. 1013,1014.1845, p.p.

*Heptapleurum rostratum* (Wight) Bedd., For. Man. Bot. 122. 1874; Hook. f., Fl. Brit. India 2: 729. 1879.

Trees, to 8 m high. Leaves digitately compound, alternate, stipulate; stipules adnate within the petiole; rachis 8-20 cm, cylindrical, glabrous, base sheathing; leaflets 5-9; petiolule 20-60 mm; lamina 17.5-18 x 2-8 cm, elliptic, elliptic lanceolate or elliptic oblong; base acute or narrowed; apex acuminate; margin entire or denticulate, glabrous, coriaceous; lateral nerves 7-8 pairs, pinnate, prominent. Flowers bisexual, pale green, 2.5 mm across, in terminal racemose umbels, bracts and bracteoles woolly; calyx lobes 5, tomentose; petals 5; stamens 5, anthers basifixed; ovary 5-celled, styles 5, exserted, persistent, ovules pendulous. Fruit a berry, beaked, globose, 5 angled, seeds compressed.

*Flowering & Fruiting:* March-June

*Distribution*

*Kerala:* Trivandrum

*Endemic to:* Southern Western Ghats

***Schefflera rostrata*** (Wight) Harms var. **micrantha** (Clarke) Mahesh., Bull. Bot. Surv. India 2: 376. 1960; Manilal, Fl. Silent Valley 127. 1988; Anil Kumar, Fl. Pathanamthitta Dist. 305. 1994; Sivar. & Mathew, Fl. Nilambur 310. 1997.

*Hedera rostrata* Wight, Ic. tt. 1013, 1014. 1945, p.p.

*Heptapleurum rostratum* (Wight) Bedd. var. *micranthum* Clarke in Hook.f., Fl. Brit. India 2: 729. 1879.

*Schefflera micrantha* (Clarke) Gamble, Fl. Pres. Madras 569(402). 1919, non Ridley.

Small trees, to 7 m high. Leaves digitately compound, alternate, stipulate; stipules adnate within the petiole; rachis 6.5-16 cm long, cylindric, base sheathing, glabrous; leaflets 5, petiolule 15-25 mm, lamina 4-15 x 1.5-4.5 cm, elliptic, lanceolate or broadly obovate, base narrowed, acute or obtuse; apex acuminate or caudate acuminate; margin entire, wavy, chartaceous, glabrous; lateral nerves 6-12 pairs, pinnate, slender, faint, prominent; intercostae reticulate. Flowers bisexual, in lateral panicles or racemes of small umbels, 1.2 cm across, bract and bracteoles glabrous; calyx 6-8 toothed; petals 6-8, stamens 6-8, anthers dorsifixed; ovary 6-8-celled, ovules pendulous stigma 6-8. Fruit a berry, 6-8 angled.

*Flowering & Fruiting*: April-August

*Habitat*: Evergreen forests

*Distribution*

*Kerala*: Pathanamthitta, Malappuram, Palakkad

*Endemic to*: Southern Western Ghats

***Schefflera wallichiana*** (Wight & Arn.) Harms in Engl. & Prantl, Nat. Pflanzenf. 3(8): 38. 1894; Gamble, Fl. Pres. Madras 570(403). 1919; Mohanan, Fl. Quilon Dist. 201. 1984; Ramach. & Nair, Fl. Cannanore Dist. 209. 1988; Antony, Fl. Kottayam Dist. 185. 1989; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 216. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 212. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 141. 1997; Sasidh., Fl. Periyar Tiger Reserve 165. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 143. 2002.

*Paratropia wallichiana* Wight & Arn., Prodr. 77. 1834.

*Heptapleurum wallichianum* (Wight & Arn.) Clarke in Hook.f., Fl. Brit. India 2: 730. 1879.

*Local names*: Kannimaram, Modakom

Trees, sometimes epiphytic on other trees; upto 12 m; bark 5-8 mm thick, surface grey, rough; branchlets 2 cm thick. Leaves digitately, compound, alternate, stipulate; stipules adnate within the petiole, 1.5 cm broad, hyaline; rachis 17-37 cm long, stout, cylindric, glabrous, sheathing at base; petiolule 4-6.5 cm long, whorled, stout; leaflets 5-8, 14-24 x 5-8 cm, oblong or ovate, base subcordate, truncate or round; apex obtusely acuminate or acute; margin entire, coriaceous, glabrous; lateral nerves 10-21 pairs, very slender, nearly horizontal; intercostae obscure. Flowers bisexual, pale green, 6-8 mm across, 12-20 together in umbels on elongate racemes arranged in panicles on short axis; pedicel 7 mm long; calyx truncate; petals 5, valvate, cohering in a cap which is raised by stamens; stamens 5; ovary inferior, syncarpous, cells as many as petals; style absent; stigma sessile. Fruit a berry, 5-6 mm across, globose, 5 angled, crowned with disc; pyrenes 5, 1-seeded.

*Flowering & Fruiting*: April-May

*Habitat*: Evergreen forests

*Distribution*

*Kerala*: Kollam, Kottayam, Idukki, Thrissur, Kannur, Trivandrum, Palakkad, Kozhikkode

*Geographical*: South India and Sri Lanka

## CORNACEAE

1. Leaf with a row of black punctuate glands on either side of midrib acumen twisted ..... **Mastixia arborea** ssp. **arborea**
1. Leaf without black punctuate glands, acumen straight.....  
..... **Mastixia arborea** ssp. **meziana**

**Mastixia arborea** (Wight) Bedd., Fl. Sylv. t. 216. 1872, ssp. **arborea**; Hook. f., Fl. Brit. India 2:745.1879; Gamble, Fl. Pres. Madras 573(405). 1919; Manilal & Sivar., Fl. Calicut 129. 1982; Manilal, Fl. Silent Valley 128. 1988; Matthew, Fasc. Fl. Ind. 25: 14. 1988; Anil Kumar, Fl. Pathanamthitta Dist. 307. 1994; Sasidh., Fl. Periyar Tiger Reserve 166. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 143. 1999; Mohanan & Sivad., Fl. Agasthyamala 302. 2002.

*Bursinopetalum arboreum* Wight, Ic. t. 956. 1845.

*Local names:* Erambamaram, Kattukarpooram, Malamkumizhu

Trees, to 25 m high, bark pale brown, mottled with dark brown; lenticels up to 1.3 mm; outer bark 2-3 mm thick, shallowly fissured with white blotches outside; inner bark 10-15 mm thick; blaze yellow; exudation insignificant, black in course of time; branchlets subglabrous. Leaves simple, alternate, estipulate; petiole 10-30 mm, slender, grooved above, flattened, ferruginous-villous when young; lamina 6-19 x 2-8 cm, elliptic, elliptic-oblong, elliptic-obovate or obovate, base attenuate or cuneate, apex acuminate, acumen twisted, margin entire, glabrous, coriaceous; lateral nerves 4-10 pairs, pinnate, prominent, intercostae reticulate, faint; glands prominent on either side of midrib beneath. Flowers bisexual, yellowish-green, in terminal corymbose rusty tomentose panicles; lower bracts lanceolate, upto 5 mm, thick, subglabrous; bracteoles 2; calyx tube campanulate, pubescent, lobes 5, spreading, disc yellow, fleshy, shining, 4-5 lobed; petals 5, ovate, fleshy, with an apical notched but without median ridge, valvate; stamens 5, outside the disc, erect; filaments short; anther oblong-cordate; ovary inferior, adnate to the calyx tube, 1-celled; ovule 1, pendulous near the top of the cell; style short, cylindric. Fruit a drupe, cylindric-ovoid, 3.2 cm long, smooth, greenish-purple, persistent disc and sepals in conspicuous; seed ellipsoid.

*Flowering & Fruiting:* February-May

*Habitat:* Shola and evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Kozhikkode, Palakkad

*Endemic to:* Western Ghats

**Mastixia arborea** (Wight) Bedd. ssp. **meziana** (Wang.) Matthew, Blumea 23: 89. 1976; Mohanan, Fl. Quilon Dist. 201. 1984; Matthew, Fasc. Fl. Ind. 19: 27. 1988; Vajr., Fl. Palghat Dist. 225. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 217. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 142. 1997; Sasidh., Fl. Periyar Tiger Reserve 166. 1998; Subram., Fl. Thenmala Division 160. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 213. 1996; Sasidh., Fl. Parambikulam Wildlife Sanctuary 143. 2002.

*Mastixia meziana* Wang., Feddes Repert. 4: 336. 1907; Gamble, Fl. Pres. Madras 573(405). 1919.

*Mastixia pentandra* sensu Clarke in Hook.f., Fl. Brit. India 2: 746. 1879, non Blume 1826; Gamble, Fl. Pres. Madras 574(405). 1919.

*Local names:* Neerkurunnu, Vella-adambu

Trees, to 30 m high, bark 2 cm thick, greyish-brown, smooth; lenticels upto 2.5 mm; blaze yellow; branchlets densely ferruginous-villous when young, subglabrous later. Leaves simple, alternate, estipulate; petiole 10-35 mm long, stout, flattened, grooved above, glabrous; lamina 4-20 x 2.5-10 cm, elliptic, elliptic-oblong, obovate or elliptic-ovate, base cuneate, obliquely attenuate or obtuse, apex obtusely acuminate or acute, margin entire, chartaceous to coriaceous, glabrous or puberulous when young, glabrous when mature, almost glaucous beneath; lateral nerves 4-6 pairs, pinnate, prominent, ascending towards margin, intercostae reticulate. Flowers bisexual, 3 mm across, greenish-yellow, in terminal dense panicles, ferruginous velvety when young, sparsely so later; lower bracts foliaceous, upto 15 mm, rather thin, villous; occasionally bracteole on the receptacle; calyx tube campanulate, 2.5 x 2 mm, lobes 5, deltoid, puberulous, imbricate; disc fleshy, yellow, 4-5 lobed; petals 2.5-3 x 2-2.5 mm, appressed hairy outside, thin, valvate; stamens 5; filaments 1.5-2 mm; anthers 1 mm, oblong-cordate; ovary inferior, 1-celled, ovule 1, pendulous near the top; style 1-1.5 mm, cylindrical. Fruit a drupe 3-3.5 x 2 cm, cylindric ovoid, smooth, greenish-purple, persistent disc and sepals inconspicuous.

*Flowering & Fruiting:* January-May

*Habitat:* Evergreen forests

*Distribution*

Kerala: Kollam, Palakkad, Trivandrum, Thrissur, Idukki, Wayanad

*Endemic to:* Southern Western Ghats

#### ALANGIACEAE

***Alangium salvifolium*** (L. f.) Wang. in Engl., Pflanzenr. IV 220b(41): 9. 1910; Gamble, Fl. Pres. Madras 572(404). 1919; Matthew, Fasc. Fl. Ind. 19: 5. 1988; Antony, Fl. Kottayam Dist. 186. 1989; Vajr., Fl. Palghat Dist. 224. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 306. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 217. 1994; Sunil, Fl. Pl. Alappuzha Dist. 404. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 144. 2002.

*Grewia salvifolia* L. f., Suppl. Pl. 409. 1781.

*Alangium lamarckii* Thw., Enum. Pl. Zeyl. 133. 1859; Hook. f., Fl. Brit. India 2: 741. 1879.

*Local name:* Ankolam

Small trees, to 15 m high, bark greyish-brown; blaze yellow; branchlets tomentose. Leaves simple, alternate, estipulate; petiole 7-10 mm, tomentose, slender; lamina 7-15 x 3-4 cm, oblong, elliptic or ovate, base oblique or obtuse, apex acute, margin entire, chartaceous, glabrous above, puberulous beneath; 3-5 nerved at base, lateral nerves 4-7 pairs, pinnate, ascending, prominent, intercostae reticulate, prominent. Flowers bisexual, white, fragrant, 1.5 cm across, in axillary cymes or fascicles; pedicel 4 mm, jointed, pubescent; bracts 4 mm, ovate; calyx 3 mm, adnate to ovary, cupular, tomentose; lobes 10, triangular-ovate; petals 10, 2.5 x 5 cm, linear-oblong, tomentose; stamens to 20; filaments 1 cm long, base fleshy, villous, subconnate at base; anthers linear; ovary inferior, 2 mm, turbinate, 1-

celled, 1-ovuled, pendulous, ovary surmounted by a disc, enclosing the style; style 2 mm long, glabrous; stigma capitate. Fruit a berry, *ca.* 2-3 x 1-1.5 cm, subglobose, brownish-red, pubescent, crowned with calyx lobes; seed one, ovoid.



*Flowering & Fruiting:* March-June

*Habitat:* Dry deciduous forests, also grown in homesteads in the plains

*Distribution*

*Kerala:* Trivandrum, Kottayam, Alappuzha, Kollam, Pathanamthitta, Palakkad

*Geographical:* India, Sri Lanka, China, Vietnam, Thailand and Africa

#### CAPRIFOLIACEAE

1. Leaves with punctate glands below; inflorescence with reddish-brown peltate scales, corolla lobes spreading ..... **Viburnum punctatum**

1. Leaves without punctate glands; inflorescence glabrous, corolla lobes erect ..... **Viburnum coriaceum**

**Viburnum coriaceum** Blume, Bijdr. 656. 1826; Hook. f., Fl. Brit. India 3: 5. 1880; Gamble, Fl. Pres. Madras 576(407). 1919; Manilal, Fl. Silent Valley 129. 1988.

*Viburnum hebanthum* sensu Wight, Ic. t. 1023. 1845, non Thw. 1859.

Evergreen trees, to 7 m high, bark grey. Leaves simple, opposite, stipulate; petiole 10-40 mm long, slender, grooved above, glabrous; lamina 6.4-17.5 x 2.5-5.5 cm, ovate-lanceolate or elliptic-lanceolate, base acute or obtuse, apex acuminate, margin entire or slightly serrate, glabrous, chartaceous; lateral nerves 4-6 pairs, pinnate, prominent, intercostae reticulate, prominent, domatia present. Flowers bisexual, white, 3 mm across, in terminal or subterminal umbellate corymbs; bracteoles deciduous; calyx tube 2 mm long, pubescent, lobes 5, persistent, obtuse; corolla tube 4 mm long, tubular, glabrous; lobes 5, short, ovate-obtuse, erect, ciliate; stamens 5, inserted on the corolla tube; filaments short; ovary inferior, oblong, 1-celled, ovules 1, pendulous; style short, stigma 3 lobed. Fruit a drupe 8 x 5 mm, elliptic, compressed, ribbed, beaked, reddish-brown; seed one, 6 x 4 mm, elliptic.

*Flowering & Fruiting:* February-June

*Habitat:* Margins of shola forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India, Bhutan, Myanmar and Indonesia

**Viburnum punctatum** Buch.-Ham. ex D. Don, Prodr. Fl. Nepal 142. 1825; Hook. f., Fl. Brit. India 3: 5. 1880; Mohanan, Fl. Quilon Dist. 203. 1984; Antony, Fl. Kottayam Dist. 187. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 308. 1994; Sasidh., Fl. Periyar Tiger Reserve 167. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 144. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 144. 2002.

*Viburnum acuminatum* Wall. ex DC., Prodr. 4: 325. 1830; Gamble, Fl. Pres. Madras 575(406). 1919.

*Local name:* Konakkara

Trees, to 12 m high, bark greyish-brown, blaze dull-red with narrow darker streaks; young parts and inflorescence covered by minute peltate scales. Leaves simple, opposite, stipulate; petiole 5-20 mm, grooved above, slender, peltate scaly; lamina 3.5-13 x 1-5 cm, elliptic, elliptic-obovate, elliptic-oblong or elliptic-lanceolate, base

acute, apex acute or acuminate, margin entire, recurved, glabrous above, punctate and covered with peltate scales beneath, coriaceous; lateral nerves 5-10 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, white, 5 mm across, in terminal umbellate corymbs; bracteoles persistent; calyx tube 2 mm long; lobes 5, obtuse; corolla rotate, shortly tubular, 2.5 mm long, white, pubescent; lobes 5, ovate, obtuse, spreading; stamens 5, inserted on the corolla tube; filaments erect; anthers oblong-cordate; ovary inferior, 1-celled, oblong, ovule 1, pendulous; style short, stigma broadly 3 lobed, decurrent, subsessile. Fruit a drupe 8 x 5 mm, ovoid, compressed, punctate, reddish-brown, crowned with persistent style; seed one, compressed, ventrally concave.

*Flowering & Fruiting:* January-August

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Kottayam, Pathanamthitta, Palakkad, Idukki

*Geographical:* Indo-Malesia

### RUBIACEAE

- |     |   |                                |
|-----|---|--------------------------------|
| 1.  | Leaves 3 at a node .....  | <b>Wendlandia thyrsoides</b>   |
| 1.  | Leaves 2 at a node .....  | 2                              |
| 2.  | Flowers arranged in globose heads.....  | 3                              |
| 2.  | Flowers arranged otherwise .....  | 9                              |
| 3.  | Calyx tubes fused in a fleshy mass .....  | 4                              |
| 3.  | Calyx tubes free not forming fleshy mass .....                                    | 5                              |
| 4.  | Ovules many in each cell; leaves glabrous below.....                              | <b>Ochreinauclea missionis</b> |
| 4.  | Ovule solitary in each cell; leaves pubescent below .....                         | <b>Morinda pubescens</b>       |
| 5.  | Calyx tube truncate, not lobed .....  | 6                              |
| 5.  | Calyx tube distinctly lobed .....   | 7                              |
| 6.  | Calyx limb elongated; leaf apex acute or acuminate .....                          | <b>Mitragyna tubulosa</b>      |
| 6.  | Calyx limb short; leaf apex obtuse .....  | <b>Mitragyna parviflora</b>    |
| 7.  | Leaves ovate-cordate; corolla lobes valvate .....                                 | <b>Haldina cordifolia</b>      |
| 7.  | Leaf base acute or obtuse; corolla lobes imbricate.....                           | 8                              |
| 8.  | Seeds winged; stigma globose .....  | <b>Neonauclea purpurea</b>     |
| 8.  | Seeds not winged; stigma fusiform .....   | <b>Neolamarckia cadamba</b>    |
| 9.  | Cells of ovary many ovuled.....   | 10                             |
| 9.  | Cells of ovary 1 or 2 ovuled .....  | 15                             |
| 10. | Fruit a dehiscent capsule, seeds winged .....                                     | 11                             |
| 10. | Fruit an indehiscent berry, seeds not winged .....                                | 12                             |
| 11. | Flowers sessile; fruiting spikes erect; leaves obovate                            | <b>Hymenodictyon obovatum</b>  |
| 11. | Flowers pedicelled; fruiting spikes drooping; leaves broadly ovate or oblong..... | <b>Hymenodictyon orixense</b>  |
| 12. | Ovary 2-celled .....  | 13                             |
| 12. | Ovary 1-celled .....  | 14                             |
| 13. | Branches spines or thorns; seeds embedded in pulp .....                           | <b>Tamilnadia uliginosa</b>    |
| 13. | Branches without axillary spines or thorns; seeds not embedded in pulp .....      | <b>Aidia gardneri</b>          |
| 14. | Leaves sessile; calyx teeth short .....   | <b>Gardenia gummifera</b>      |
| 14. | Leaves petioled; calyx teeth elongated, lanceolate.....                           | <b>Gardenia resnifera</b>      |
| 15. | Flowers 4-merous; style 2 lobed at apex.....                                      | 16                             |

15. Flowers 5-merous; style not lobed at apex..... 17  
 16. Leaves elliptic-oblong or lanceolate, narrowed at base ..... **Ixora brachiata**  
 16. Leaves elliptic or obovate, obtuse or rounded at base, to 12 x 5 cm . **Ixora pavetta**  
 17. Flowers in cymes, bracts reduced, pedicels pubescent; fruit globose.....  
 ..... **Psydrax dicoccus**  
 17. Flowers in umbels or subumbels, pedicels glabrous; fruit laterally compressed,  
 broader ..... **Psydrax umbellata**

**Aidia densiflora** (Wall.) Masam., Sci. Rep. Kanazawa Univ. 4 : 85. 1955.

*Randia gardneri* auct. non (Thw.) Hook. f. in Benth & Hook. f., Gen. Pl. 2: 88. 1873;  
 Hook. f., Fl. Brit. India 3: 11. 1880; Gamble, Fl. Pres. Madras 617(435). 1921; Anil  
 Kumar, Fl. Pathanamthitta Dist. 337. 1994.

*Aidia gardneri* (Lour.) Tirveng., Adansonia 35: 11. 1978; Mohanan & Henry, Fl.  
 Thiruvananthapuram Dist. 220. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary  
 144. 1997; Sasidh., Fl. Periyar Tiger Reserve 168. 1998; Mohanan & Sivad., Fl.  
 Agasthyamala 306. 2002.

*Griffithia gardneri* Thw., Enum. Pl. Zeyl. 158. 1859.

*Local name:* Meenkara

Trees, to 20 m high, bark 6-8 mm thick, surface greyish-brown, mottled; branches  
 horizontal. Leaves simple, opposite; stipules triangular; petioles 5-12 mm long,  
 stout, glabrous; lamina 7-19 x 1.8-6 cm, elliptic, lanceolate, elliptic-oblong, base  
 acute, apex acuminate, margin entire, coriaceous, glabrous; lateral nerves 7-10  
 pairs, pinnate, ascending, prominent; intercostae reticulate, obscure. Flowers  
 bisexual, white, 6-8 x 5-6 mm, in leaf opposed cymes; peduncles and pedicels hairy;  
 bracts scaly; calyx tube short, lobes 5; corolla tube 2-2.5 mm long, hairy at throat,  
 lobes 5, 8 mm long, lanceolate, tube longer than lobes; stamens 5; anthers 5 mm  
 long, linear, inserted in the mouth of corolla tube; ovary 2-celled, inferior, ovules  
 many, sunk in placentae attached to the septum; style slender, hairy; stigma bifid.  
 Fruit a berry, 6-8 mm across, globose, dark blue; seeds embedded in the pulp.

*Flowering & Fruiting:* February-August

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Idukki, Trivandrum

*Geographical:* Peninsular India and Sri Lanka

**Gardenia gummifera** L. f., Suppl. Pl. 164. 1781; Hook. f., Fl. Brit. India 3: 116. 1880;  
 Gamble, Fl. Pres. Madras 618(436). 1921; Sasidh., Fl. Chinnar Wildlife Sanctuary  
 148. 1999.

*Local names:* Kambimaram, Somanadikayam

Small trees, to 8 m high, bark 0.64 cm, greyish-brown, smooth; blaze dull yellow;  
 exudation bright yellow resinous; branches and branchlets virgate, young parts  
 pubescent. Leaves simple, opposite, decussate; stipules intrapetiolar, connate;  
 petiole 1-4 mm, stout, glabrous; lamina 4-8 x 1.5-4 cm, ovate, obovate or obovate-  
 oblong, base obtuse, round or subcordate, apex acute or obtuse, margin entire,  
 puberulent when young, glabrous when mature, shiny, coriaceous; lateral nerves 8-  
 20 pairs, parallel, prominent, intercostae reticulate, prominent; domatia present.  
 Flowers bisexual, white turns to yellow, axillary, solitary or in lax cymes; calyx 4.5  
 mm, truncate, lobes 5, 1.5 mm, triangular, puberulous without, acute; corolla 4.5

cm across, cylindrical, lobes 5, 2.5 x 1.5 cm, puberulous without, obovate, obtuse; stamens 5, 1 cm long, included; ovary 6 x 3.5 mm, inferior, 1-celled, 5-gonous, ovules many; style 2.5 cm; stigma 5 angled, fusiform. Fruit a berry, 4 x 3 cm, ellipsoid or oblong; seeds rugose.

*Flowering & Fruiting:* December-May

*Habitat:* Dry deciduous forests near streams

*Distribution*

*Kerala:* Idukki

*Endemic to:* Peninsular India

**Gardenia resinifera** Roth, Nov. Pl. Sp. 150. 1821; Vajr., Fl. Palghat Dist. 231. 1990; Sasidh., Fl. Chinnar Wildlife Sanctuary 148. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 148. 2002.

*Gardenia lucida* Roxb., Fl. Ind. 1: 707.1832; Hook. f., Fl. Brit. India 3:115.1880; Gamble, Fl. Pres. Madras 618(436). 1921.

*Local name:* Dikamali

Trees, to 10 m high, bark 0.85 cm, greenish-grey, exfoliating in irregular flakes; blaze creamy yellow; exudation yellow resinous. Leaves simple, opposite, decussate; stipules intrapetiolar, connate in to a sheath; petiole 3-7 mm, stout, glabrous; lamina 7-18 x 4-8 cm, elliptic, base obtuse, rounded or attenuate, apex obtuse or obtusely acute, margin entire or wavy, glabrous, shiny above, coriaceous; lateral nerves 12-30 pairs, parallel, prominent beneath; intercostae scalariform, slender; domatia present. Flowers bisexual, white turns to yellow in axillary, solitary or in lax cymes; calyx tubular, lobes 5, lanceolate, puberulous without, acuminate; corolla tube 3 cm long, lobes 5, 3 x 2 cm, obovate, puberulous without; stamens 5; anthers exerted, oblong; ovary 6 mm, terete, 8 x 3 mm, inferior, ovules many; style 3.5 cm thick; stigma club shaped. Fruit a berry, 2 x 1.5 cm with crown of calyx, ellipsoid; seeds rugose.

*Fruiting:* December

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India, Bangladesh and Myanmar

**Haldina cordifolia** (Roxb.) Ridsd., Blumea 24: 361. 1978; Mohanan, Fl. Quilon Dist. 208. 1984; Ansari, Fl. Kasaragod Dist. 189. 1985; Ramach. & Nair, Fl. Cannanore Dist. 215. 1988; Vajr., Fl. Palghat Dist. 231. 1990; Subram., Fl. Thenmala Division 183. 1995; Anil Kumar, Fl. Pathanamthitta Dist. 314. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 219. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 148. 1997; Sivar. & Mathew, Fl. Nilambur 321. 1997; Sasidh., Fl. Periyar Tiger Reserve 172. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 148. 2002; Mohanan & Sivad., Fl. Agasthyamala 312. 2002.

*Nauclea cordifolia* Roxb., Pl. Corom. t. 53. 1796.

*Adina cordifolia* (Roxb.) Hook. f. ex Brand., For. Fl. 263. t.33. 1874; Hook. f., Fl. Brit. India 3: 24. 1880; Gamble, Fl. Pres. Madras 584(412). 1921.

*Local names:* Manjakadambu, Malamkadambu

Deciduous trees, to 30 m high, bark 1.3 cm, grey-brown, exfoliating in small patches; blaze pink-red; bole buttressed; tree crown ovoid; bark 10-12 mm thick, grey-brown, often pitted; blaze reddish; branches horizontal; branching monopodial; young shoots pubescent. Leaves simple, opposite, decussate, stipulate; stipules 10-12 x 7 mm, intrapetiolar, obovate, foliaceous, cauducous; petiole 4-10 cm long, stout, pubescent; lamina 10-20 x 10-20, orbicular or ovate or broadly ovate, base cordate, apex acuminate, margin entire, glabrous above, pubescent beneath, chartaceous; nerves 5-7 from base, lateral nerves 3-5 pairs, pinnate, prominent, regular; intercostae scalariform, prominent; domatia present. Flowers bisexual, yellow, in axillary globose heads 3-4 mm long, mixed with many filiform bracteoles; hypanthium 1-2 mm long, densely hairy; calyx cupular, 1.5-2 mm long, tube short, lobes 5, 1.3-1.8 mm long; corolla 7-9 mm long, 5-ridged, densely finely hairy outside, lobes 5, oblong, 1-2 mm long, densely hairy; stamens 5, exserted; filaments 0.5 mm; anthers 1-2 mm long, oblong; ovary 2-celled, inferior; ovules many on a pendulous placenta; style filiform; stigma globose. Fruit a capsule, 2-3 mm long, of 2 dehiscent cocci, turbinate, brown; seeds many with tail at one end and a bifid wing other end.

*Flowering & Fruiting:* October-March

*Habitat:* Moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Kollam, Idukki, Pathanamthitta, Malappuram, Palakkad, Kannur, Trivandrum, Thrissur

*Geographical:* India, Myanmar, Sri Lanka and Indo-China

**Hymenodictyon obovatum** Wall. in Roxb., Fl. Ind. 2: 153. 1824; Hook. f., Fl. Brit. India 3: 36. 1880; Gamble, Fl. Pres. Madras 589(416). 1921; Mohanan, Fl. Quilon Dist. 211. 1984; Manilal, Fl. Silent Valley 133. 1988; Vajr., Fl. Palghat Dist. 232. 1990; Subram., Fl. Thenmala Division 184. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 223. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 153. 1997; Sasidh., Fl. Periyar Tiger Reserve 175. 1998; Mohanan & Sivad., Fl. Agasthyamala 320. 2002.

*Local name:* Malamkalli

Deciduous trees, to 15 m high, bark 6-7 mm thick, grey-black, rough, exfoliations small, brittle; blaze red; young parts pubescent. Leaves simple, opposite; stipules 3.7-5 cm, interpetiolar; petiole 2-12 cm, slender, glabrous, grooved above; lamina 4-24 cm x 2.5-10 cm, obovate, elliptic-obovate or elliptic, base attenuate, acute, oblique or subtruncate, apex acuminate, obtusely acuminate, margin entire, glabrous, pubescent below, chartaceous; lateral nerves 5-8 pairs, pinnate, prominent beneath; intercostae reticulate, prominent; domatia present. Flowers bisexual, white, subsessile, terminal racemes; bracts 2, leafy; bracteoles; calyx tube short, lobes 5, puberulous without, ovate, acute; corolla tube short, expanding in a campanulate bilobed limb, lobes 5, ovate, glabrous, valvate; stamens 5, inserted between the lobes; anthers lanceolate, sagitate; ovary 2-celled, inferior, ovules many; style slender, exserted; stigma fusiform. Fruit a capsule, 10-12 mm long, 2 valved, erect, ovoid, brown; seeds 5-6 mm long, narrowly winged.

*Flowering & Fruiting:* June-October

*Habitat:* Semi-evergreen and moist deciduous forests

*Distribution*

Kerala: Kollam, Idukki, Trivandrum, Thrissur, Palakkad  
Endemic to: Western Ghats

**Hymenodictyon orixense** (Roxb.) Mabb., Taxon 31: 66. 1982; Antony, Fl. Kottayam Dist. 194. 1989; Ansari, Fl. Kasaragod Dist. 194. 1985; Vajr., Fl. Palghat Dist. 233. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 233. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 223. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 153. 1997; Sivar. & Mathew, Fl. Nilambur 329. 1997; Sasidh., Fl. Periyar Tiger Reserve 175. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 150. 1999; Sunil, Fl. Pl. Alappuzha Dist. 427. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 151. 2002; Mohanan & Sivad., Fl. Agasthyamala 320. 2002.

*Cinchona orixensis* Roxb., Bot. Descr. Swietenia 21. 1793 & in Med. Facts Obs. 6: 152. 1795.

*Cinchona excelsa* Roxb., Pl. Corom. t. 106. 1799.

*Hymenodictyon excelsum* (Roxb.) Wall. in Roxb., Fl. Ind. 2: 149. 1824; Hook. f., Fl. Brit. India 3: 35. 1880; Gamble, Fl. Pres. Madras 589(416). 1921.

*Local names:* Chakkathekku, Itthil, Perumtholi

Deciduous trees, to 20 m high, bark 2 cm thick, grey to greyish-brown, rough, vertically fissured and cracked; blaze orange red; branches pubescent. Leaves simple, opposite, decussate; stipules interpetiolar, leafy, membranous, caudaceous; petiole 3-20 cm long, stout, flattened, pubescent, slightly grooved above; lamina 10-25 x 8-20 cm, ovate or elliptic-ovate, base attenuate, apex acute or acuminate, margin entire, pubescent on both sides, chartaceous; lateral nerves 7-11 pairs, pinnate, prominent; intercostae reticulate, prominent. Flowers bisexual, pale green, 5-6 mm long, in axillary and terminal racemes; bracts 2, leafy, persistent; bracteoles linear; calyx tube short, truncate to globose, lobes 5, puberulous without, acute, deciduous; corolla tube slender, elongate, limb expanding, lobes 5, puberulous without; stamens 5, attached on the corolla limb; anthers lanceolate-sagittate; ovary 2-celled, inferior, ovules many; style long, slender, stigma fusiform. Fruit a capsule, 2.5 cm long, flat, elliptic, pendulous, 2 valved, brown; seeds many, broadly winged.

*Flowering & Fruiting:* July-January

*Habitat:* Deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Ixora brachiata** Roxb. ex DC., Prodr. 4: 488. 1830; Hook. f., Fl. Brit. India 3: 142. 1880; Gamble, Fl. Pres. Madras 631(445). 1921; Mohanan, Fl. Quilon Dist. 211. 1984; Ansari, Fl. Kasaragod Dist. 195. 1985; Ramach. & Nair, Fl. Cannanore Dist. 219. 1988; Antony, Fl. Kottayam Dist. 195. 1989; Vajr., Fl. Palghat Dist. 233. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 320. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 234. 1994; Subram., Fl. Thenmala Division 176. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 225. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 155. 1997; Sivar. & Mathew, Fl. Nilambur 330. 1997; Sasidh., Fl. Periyar Tiger Reserve 176. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 151. 2002; Mohanan & Sivad., Fl. Agasthyamala 324. 2002.

*Local name:* Marachethi

Evergreen trees, to 8 m high, bark smooth, greyish-brown; blaze pink; branchlets terete, glabrous. Leaves simple, opposite, decussate; stipule 4-4.5 mm x 5-6 mm, interpetiolar, apex acute; petiole 5-20 mm long, stout, glabrous; lamina 7.5-20 x 3-7 cm, elliptic-oblong, obovate, elliptic or elliptic-oblong, base attenuate, acute or cuneate, apex obtuse, margin entire, glabrous, coriaceous; lateral nerves 6-20, pinnate, very slender; intercostae reticulate, slender. Flowers bisexual, white, fragrant, small, sessile, in terminal, long peduncle, bracteate, paniced cyme; peduncles and pedicels puberulus; calyx tube minute, 4 toothed, membranous; corolla tube 6 mm long, slender, lobes 4, oblong, recurved; stamens 4, attached to the mouth of corolla tube; anthers sagittate; ovary 2-celled, inferior, ovules one in each cell; style filiform; stigma bifid. Fruit berry, red-purple, 5 mm across, globose, glabrous; pyrenes planoconvex.

*Flowering & Fruiting:* January-May

*Habitat:* Semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Kottayam, Kannur, Palakkad, Pathanamthitta, Malappuram, Kollam, Trivandrum, Thrissur, Idukki

*Endemic to:* Western Ghats

***Ixora pavetta*** Andr., Bot. Repos. t. 78. 1799; Ramach. & Nair, Fl. Cannanore Dist. 222. 1988; Sasidh., Fl. Chinnar Wildlife Sanctuary 151. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 152. 2002.

*Ixora arborea* Roxb. ex Smith in Rees, Cyclop. 19: 5. 1811.

*Ixora parviflora* Vahl, Symb. Bot. 3:11. t.52.1794, non Lam. 1791; Hook. f., Fl. Brit. India 2:142.1880; Gamble, Fl. Pres. Madras 631(445). 1921.

*Local name:* Soochimulla

Evergreen trees, to 10 m high, bark 5-6 mm thick, dark brown; blaze pink; branchlets woody. Leaves simple, opposite, decussate; stipules interpetiolar, ovate-acuminate; petiole 4-8 mm long, stout, glabrous; lamina 6-14 cm x 3.5-7.5 cm, obovate, elliptic, elliptic-obovate, obovate-oblong, base subcordate, obtuse or round, apex obtuse, margin entire, glabrous, thick coriaceous; lateral nerves 10-15 pairs, pinnate, very slender, prominent beneath; intercostae reticulate, slender. Flowers bisexual 5-6 mm long, white, in terminal panicles; calyx truncate, 4 toothed, teeth minute; corolla tube 6 mm long, lobes 4, 4 x 2 mm, oblong, recurved; stamens 4, attached to the mouth of corolla; anthers sagittate; ovary 1.7 mm, 2-celled, inferior, ovule one in each cell; style exerted; stigma bifid. Fruit a berry, 5-6 mm across, globose, succulent, black, pyrenes 2, planoconvex.

*Flowering & Fruiting:* January-March

*Habitat:* Dry and moist deciduous forests

*Distribution*

*Kerala:* Idukki, Kannur, Palakkad, Wayanad

*Geographical:* India, Sri Lanka and Bangladesh

***Mitragyna parvifolia*** (Roxb.) Korth., Observ. Naocl. Ind. 19. 1839; Gamble, Fl. Pres. Madras 585(413). 1921; Manilal & Sivar., Fl. Calicut 133. 1982; Manilal, Fl. Silent Valley 136. 1988; Ramach. & Nair, Fl. Cannanore Dist. 225. 1988; Vajr., Fl. Palghat Dist. 236. 1990; Subram., Fl. Thenmala Division 183. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 227. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 158. 1997; Sivar. & Mathew, Fl. Nilambur 334. 1997; Sasidh., Fl. Periyar Tiger Reserve 179.

1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 152. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 154. 2002.

*Nauclea parvifolia* Roxb., Pl. Corom. t. 52. 1796.

*Stephegyne parvifolia* (Roxb.) Korth., Verh. Nat. Gesch. Ned. Bezitt. Bot. 161.1842; Hook. f., Fl. Brit. India 3:25.1880.

*Local names:* Poochakadambu, Rosekadambu, Veembu

Deciduous trees, to 25 m high, bark 20-25 mm thick, grey-black, smooth exfoliations thin, irregular, fibrous; blaze pink, traversed by whitish rays; branchlets subterete. Leaves simple, opposite, decussate; stipules 1 cm long, interpetiolar, ovate-oblong or obovate, foliaceous, membranous, cauducous; petiole 10-40 mm long, stout, grooved above, glabrous; lamina 5-16 cm x 2.5-10 cm, variable, ovate, orbicular, elliptic or ovate-oblong, base obtuse, attenuate, acute or subcordate, apex obtuse or round; margin entire, glabrous, coriaceous; lateral nerves 6-10 pairs, pinnate, prominent beneath; intercostae scalariform, slender; domatia present. Flowers bisexual, creamy white, 10-12 mm long, in terminal heads; peduncle supported by a pair of bract like oblong leaves; bracteoles small, subulate; calyx tube short, truncate, rim even; corolla tube funnel shaped, 8 mm long, villous inside, lobes 4-5 oblong, reflexed; stamens 5, attached towards the apex of corolla tube; anthers apiculate; ovary 2-celled, inferior, ovules many; style filiform; stigma mitriform, hollow at base. Fruit capsules in globose heads, 2-3 mm long, ribbed, separating in to two cocci, brown; seeds many, small, 10-ribbed.

*Flowering & Fruiting:* March-December

*Habitat:* Moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Idukki, Palakkad, Kannur, Thrissur, Kollam, Kozhikkode, Malappuram

*Geographical:* Indo-Malesia

**Mitragyna tubulosa** (Arn.) Hav., J. Linn. Soc. Bot. 33: 71. 1897; Gamble, Fl. Pres. Madras 585(413). 1921; Manilal & Sivar., Fl. Calicut 133. 1982; Ansari, Fl. Kasaragod Dist. 197. 1985; Antony, Fl. Kottayam Dist. 197. 1989; Vajr., Fl. Palghat Dist. 237. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 324. 1994; Subram., Fl. Thenmala Division 184. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 227. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 159. 1997; Sivar. & Mathew, Fl. Nilambur 336. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 154. 2002; Mohanan & Sivad., Fl. Agasthyamala 331. 2002.

*Nauclea tubulosa* Arn. in Thw., Enum. Pl. Zeyl. 137. 1859.

*Stephegyne tubulosa* (Arn.) Hook.f. ex Bedd., Fl. Sylv. t.29. f.1. 1869; Hook. f., Fl. Brit. India 3: 25. 1880.

*Local names:* Malamthumba, Naikadambu

Deciduous trees, to 15 m high, bark 20-25 mm thick, greyish-green, smooth; blaze creamy yellow; branches horizontal. Leaves simple, opposite, decussate; stipules 8 mm long, interpetiolar, 0.8 cm long, oblong, obtuse; petiole 10-30 mm long, slender, glabrous; lamina 10-20 x 3.5-12.5 cm, ovate, elliptic, elliptic-ovate or ovate-oblong, base truncate, obtuse or attenuate, apex acute to acuminate, margin entire, glabrous, coriaceous; lateral nerves 7-12 pairs, pinnate, slender, prominent beneath; intercostae scalariform, very slender; domatia absent. Flower bisexual, purplish-pink, 10-12 mm long, in terminal heads; bracts 2, leafy, on the peduncle;



receptacle hirsute; bracteoles many, paleaceous, ciliate on margin; calyx tube truncate, elongate, obconic, glabrous; corolla tube funnel shaped, lobes 5, reflexed; stamens 5, attached at the throat of corolla tube, filaments short; anthers oblong, apiculate; ovary 2-celled, inferior, ovules many; style filiform; stigma mitriform, hollow at base. Fruit a capsule, ovoid, ribbed, yellowish-brown, in globose heads *ca.* 2 cm across; seeds many, minute, winged.

*Flowering & Fruiting:* April-May

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Kottayam, Pathanamthitta, Palakkad, Trivandrum, Kollam, Malappuram, Kozhikkode, Thrissur

*Endemic to:* Peninsular India

**Morinda pubescens** J. E. Smith in Rees, *Cyclop.* 24: 3. 1813; Mohanan, *Fl. Quilon Dist.* 214. 1984; Vajr., *Fl. Palghat Dist.* 237. 1990; Anil Kumar, *Fl. Pathanamthitta Dist.* 324. 1994; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 237. 1994; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 228. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 159. 1997; Sunil, *Fl. Pl. Alappuzha Dist.* 432. 2000; Sasidh., *Fl. Parambikulam Wildlife Sanctuary* 154. 2002; Mohanan & Sivad., *Fl. Agasthyamala* 332. 2002.

*Morinda tinctoria* Roxb., *Fl. Ind.* 2: 197. 1824; Hook. f., *Fl. Brit. India* 3: 156. 1880; Gamble, *Fl. Pres. Madras* 651(459). 1921.

*Morinda exserta* Roxb., *Fl. Ind.* 1: 545. 1832.

*Morinda coreia* Buch.-Ham., *Trans. Linn. Soc. London* 13: 537. 1822; Manilal & Sivar., *Fl. Calicut* 144. 1982; Sasidh., *Fl. Chinnar Wildlife Sanctuary* 153. 1999.

*Local names:* Manjanathi, Manjapavetta

Deciduous trees, to 12 m high, bark pale brown, thick, vertically fissured and irregularly cracked; blaze turmeric yellow. Leaves simple, opposite, decussate; stipules interpetiolar, connate, sheathing, bifid at apex; petiole 5-20 mm long, stout, pubescent, grooved above, glabrous; lamina 7.5-25 x 2-8 cm, elliptic-lanceolate, oblanceolate or elliptic-oblong, base acute, cuneate or attenuate, apex acute to acuminate, margin entire, pubescent or tomentose, chartaceous; lateral nerves 7-12 pairs, pinnate, prominent; intercostae reticulate, slender; domatia present. Flowers bisexual, white, in terminal, globose heads; calyx limb truncate; corolla 2 cm long; tube 1 mm long, villous within; lobes 4, oblong, recurved; stamens 4, attached to the throat of corolla; anthers exserted; ovary 1.5 mm, 2-celled or incompletely 4-celled, inferior; style 4 mm; stigma 2 lobed. Fruit a syncarp, 15-18 mm across, globose, pyrenes 4, oblong; seeds not winged.

*Flowering & Fruiting:* March-June

*Habitat:* Moist and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Neolamarckia cadamba** (Roxb.) Bosser, *Adansonia ser.* 4. 6: 247. 1984; Ramach. & Nair, *Fl. Cannanore Dist.* 227. 1988; Anil Kumar, *Fl. Pathanamthitta Dist.* 327. 1994; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 232. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 161. 1997; Sivar. & Mathew, *Fl. Nilambur* 340. 1997; Sasidh.,

Fl. Periyar Tiger Reserve 181. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 156. 2002; Mohanan & Sivad., Fl. Agasthyamala 338. 2002.

*Nauclea cadamba* Roxb., Fl. Ind. 2: 121. 1824.

*Anthocephalus chinensis* sensu A. Rich. ex Walp., Rep. 2: 491. 1843, non *Cephalanthus chinensis* Lam. 1785; Manilal & Sivar., Fl. Calicut 133. 1982; Mohanan, Fl. Quilon Dist. 204. 1984.

*Anthocephalus cadamba* (Roxb.) Miq., Fl. Ind. Bat. 2: 135. 1850; Hook. f., Fl. Brit. India 3: 23. 1880.

*Anthocephalus indicus* A. Rich., Mem. Rubiac. 157. 1830; Gamble, Fl. Pres. Madras 583(411). 1921.

*Local names:* Aattuthekku, Kadaarvayura, Kadambu, Kadhamba-vriksham, Kodavara, Vellakadambu

Deciduous trees, to 20 m high, bark 6-8 mm, pale brown, vertically shallowly grooved, exfoliating in small rectangular flakes; blaze yellowish-brown; bole straight; branches horizontal. Leaves opposite, decussate; stipules interpetiolar, lanceolate, cauducous; petiole 20-45 mm, stout, glabrous; lamina 10-25 x 6-12 cm, ovate or elliptic-oblong, base truncate or obtuse, apex acuminate, margin entire, glabrous above, pubescent beneath; lateral nerves 10-14 pairs, pinnate, prominent; intercostae scalariform, prominent. Flowers bisexual, yellowish, in globose heads, 2-4.5 cm across; calyx tube 2-3 mm in diameter, tube globose, lobes 5, 5-6 x 3-4 mm, membranous; corolla tube 6-8 mm long, lobes 5, oblong, acute, 3-4 cm long, glabrous; stamens 5, 3 mm long, anthers sagittate, sessile; ovary 3-4 mm long, 2-celled at base, 4-celled above, inferior, ovules many; style exerted to 5-6 mm, entire; stigma clavate. Fruit a capsule on a fleshy globose receptacle, 3.5-5 cm across, orange yellow, capsule membranous; seeds many, angular, minute.

*Flowering & Fruiting:* April-August

*Habitat:* Along banks of rivers and streams in evergreen forests, also in the plains

*Distribution*

*Kerala:* Kollam, Kozhikkode, Pathanamthitta, Malappuram, Kannur, Idukki, Trivandrum, Thrissur, Palakkad, Kottayam

*Geographical:* Asia, Pacific and Australia

***Neonauclea purpurea*** (Roxb.) Merr., Interpr. Rumph. Herb. Amboin. 483. 1917; Gamble, Fl. Pres. Madras 584(412). 1921; Sasidh., Fl. Periyar Tiger Reserve 182. 1998.

*Nauclea purpurea* Roxb., Pl. Corom. t. 54. 1796; Hook. f., Fl. Brit. India 3: 26. 1880.

*Local name:* Manjanirkadambu

Small trees, to 15 m high; bark greyish-brown, exfoliating in small irregular flakes; blaze creamy-yellow. Leaves simple, opposite, decussate; stipules interpetiolar, entire, flat, deciduous; petiole 10-20 mm, stout, glabrous; lamina 10-17.5 x 4-7.3 cm, elliptic or elliptic-lanceolate, base attenuate, apex acute or acuminate, margin entire, glabrous, chartaceous; lateral nerves 6-8 pairs, pinnate, prominent; intercostae scalariform, slender. Flowers bisexual, purple, 12 mm long, sessile, heads 4 cm across, in axillary or terminal heads, mixed with many bracteoles; calyx tube angular, lobes 5, hispid, corolla tube 8 mm long, funnel shaped, glabrous, lobes 5, obovate, obtuse, imbricate; stamens 5, included, attached to the throat of corolla; anthers oblong, apiculate; ovary 2-celled, inferior, ovules many in each cell,

pendulous; style 15 mm long, thickened; stigma globose. Fruit a globose receptacle bearing capsule, 5 x 3 mm, obovoid, truncate, hispid above; seeds many, flat, winged, bifid at the tip.

*Flowering & Fruiting:* December-May

*Habitat:* River banks in evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kollam

*Endemic to:* Peninsular India

**Ochreinauclea missionis** (Wall. ex G. Don) Ridsd., *Blumea* 24: 332. 1978; Mohanan, *Fl. Quilon Dist.* 215. 1984; Ansari, *Fl. Kasaragod Dist.* 200. 1985; Anil Kumar, *Fl. Pathanamthitta Dist.* 328. 1994; Subram., *Fl. Thenmala Division* 182. 1995; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 231. 1996; Sivar. & Mathew, *Fl. Nilambur* 341. 1997.

*Nauclea missionis* Wall. ex G. Don, *Gen. Hist.* 3: 467. 1834; Hook. f., *Fl. Brit. India* 3: 27. 1880; Gamble, *Fl. Pres. Madras* 582(411). 1921.

*Sarcocephalus missionis* (Wall. ex G. Don) Havil, *J. Linn. Soc. Bot.* 33: 32. 1897.

*Local names:* Attuvanchi, Neervanchi

Evergreen trees, to 12 m high, bark greyish-brown, shallowly irregularly grooved; blaze dull yellow; young shoots glabrous. Leaves simple, opposite, decussate, stipulate; stipules 4-10 x 2-5 mm, oblong, obtuse, semi persistent, glabrous; petiole 5-15 mm long, stout, glabrous; lamina 8-14 x 3.5-6 cm, elliptic, elliptic-obovate or elliptic-oblong, base attenuate or decurrent, apex acute or obtuse, margin entire, glabrous, membranous to chartaceous; lateral nerves 10-13 pairs, pinnate, regular, prominent beneath, intercostae reticulate, slender. Flowers bisexual, yellowish-white, 5-6 mm long, in terminal 2.5-3 cm diameter heads, hypanthia mutually connate at apex; calyx tube short; lobes 4-5, 2-3 mm long, oblong to trigonal-oblong, pubescent below; corolla infundibular, 8-10 mm long, greenish-yellow; lobes 4-5, 2-3 mm long, pubescent outside; stamens inserted in the upper part of the tube; stamens 4-5, attached to the throat of corolla; filaments short; anthers 1 mm long, basifixed, introrse, conspicuously protruding from the throat; ovary 2-locular, inferior; placentae attached to the middle of the septum, heart shaped; ovules many; style 7-10 mm, exserted; stigma spindle shaped. Fruit a drupe, globose, fleshy; seeds ovoid, few in each cell.

*Flowering & Fruiting:* June-November

*Habitat:* Riverine forests

*Distribution*

*Kerala:* Kasaragode, Kollam, Pathanamthitta, Malappuram, Thrissur

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Psyrdrax dicoccos** Gaertn., *Fruct.* 1: 125. t.26. f.2. 1788.

*Canthium didymum* (Brandis) Hook.f., *Fl. Brit. India* 3: 132. 1880, non Gaertn. f. 1806.

*Plectronia didyma* Benth. & Hook. f. ex Brandis, *For. Fl.* 276.1874; Gamble, *Fl. Pres. Madras* 624(440). 1921.

*Canthium dicoccum* (Gaertn.) Teijsm. & Binn., Cat. Hort. Bog. 113. 1866; Mohanan, Fl. Quilon Dist. 205. 1984; Antony, Fl. Kottayam Dist. 189. 1989; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 223. 1994; Sasidh., Fl. Periyar Tiger Reserve 169. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 146. 1999.

*Local name:* Irumbarappan

Evergreen trees, to 12 m high, bark white, corky. Leaves simple, opposite, distichous; stipules interpetiolar, cuneate, triangular, cuspidate; petiole 4-10 mm, stout, glabrous; lamina 7-12 x 2.4-4.5 cm, elliptic, elliptic-lanceolate, ovate or ovate-lanceolate; base cuneate or acute, apex acuminate; margin entire, recurved, glabrous, shiny coriaceous; lateral nerves 2-4 pairs, pinnate, prominent, ascending; intercostae reticulate, obscure beneath; domatia present. Flower bisexual, pentamerous in axillary cymes, 10 mm long; calyx tube short, lobes ciliate; corolla lobes 5, oblong, reflexed, tube densely villous; stamens 5; filaments short, disc round, cushion like; ovary 2-celled, inferior; ovules one in each cell, pendulous; style 14 mm long, glabrous. Fruit a drupe, 0.8 cm long, globose, compressed, glabrous; pyrene rugose.

*Flowering & Fruiting:* March-June

*Habitat:* Evergreen, semi-evergreen and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* Kollam, Kottayam, Trivandrum, Idukki

*Geographical:* Indo-Malesia and China

***Psydrax umbellata*** (Wight) Bridson, Kew Bull. 48: 762. 1993; Sasidh., Fl. Parambikulam Wildlife Sanctuary 161. 2002.

*Canthium umbellatum* Wight, Ic. t. 1034. 1845; Hook. f., Fl. Brit. India 3: 132. 1880.

*Plectronia didyma* (Gaertn. f.) Kurz var. *umbellata* (Wight) Gamble, Fl. Pres. Madras 624(440). 1921.

*Canthium dicoccum* (Gaertn.) Teijsm. & Binn. var. *umbellatum* (Wight) Sant. & Merch., Bull. Bot. Surv. India 3: 107. 1961; Manilal, Fl. Silent Valley 129. 1988; Ramach. & Nair, Fl. Cannanore Dist. 212. 1988; Vajr., Fl. Palghat Dist. 229. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 311. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 223. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 217. 1996; Sasidh., Fl. Chinnar Wildlife Sanctuary 147. 1999; Sunil, Fl. Pl. Alappuzha Dist. 409. 2000.

*Local name:* Nanjul

Evergreen trees, bark yellowish-grey, shallowly fissured; blaze pale brown; branchlets tetragonous. Leaves simple, opposite decussate; stipules interpetiolar, connate; petiole 6-10 mm, stout, glabrous; lamina 8-15 x 3-6 cm, elliptic, lanceolate, elliptic-oblong, elliptic-obovate, oblong-lanceolate, ovate or ovate-lanceolate, base acute or attenuate, apex acuminate, caudate-acuminate or obtusely acuminate, margin entire, glabrous, coriaceous; lateral nerves 3-6 pairs, pinnate, slender, faint; intercostae reticulate, faint. Flowers bisexual, white, in axillary, compact umbels; peduncle 5 mm long, stout; calyx tube short, 5-toothed; corolla tube campanulate; lobes 5, valvate, reflexed; anthers 5, subsessile on the mouth of the corolla; ovary inferior, 2-celled, ovules one in each cell; style columnar; stigma capitate. Fruit a drupe, 1.2 cm long, ovoid, black; pyrenes 1-2.

*Flowering & Fruiting:* February-August

*Habitat:* Moist deciduous forests and sacred groves

*Distribution*

*Kerala:* Idukki, Kannur, Palakkad, Thrissur, Pathanamthitta, Alappuzha, Trivandrum

*Geographical:* Indo-Malesia and China

**Tamilnadia uliginosa** (Retz.) Tirveng. & Sastry, Mauritius Inst. Bull. 8: 85. 1979; Manilal & Sivar., Fl. Calicut 132. 1982; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 245. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 239. 1996; Sivar. & Mathew, Fl. Nilambur 352. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 163. 2002; Mohanan & Sivad., Fl. Agasthyamala 361. 2002.

*Gardenia uliginosa* Retz., Obs. Bot. 2: 14. 1781; Mohanan, Fl. Quilon Dist. 206. 1984.

*Randia uliginosa* (Retz.) DC., Prodr. 4: 386. 1830; Hook. f., Fl. Brit. India 3: 110. 1880; Gamble, Fl. Pres. Madras 615(434). 1921.

*Catunaregam uliginosa* (Retz.) Sivar. in Manilal & Sivar., Manilal & Sivar., Fl. Calicut 132. 1982.

*Xeromphis uliginosa* (Retz.) Mahesh., Bull. Bot. Surv. India 3: 92. 1961.

*Local names:* Karei, Punnankara, Pindichakka

Deciduous trees, to 7 m high, bark reddish-brown; branchlets 4 angled, terminating with one or two pair of sharp thorns. Leaves simple, opposite, decussate; stipule interpetiolar, 3-5 x 5-7 mm, broadly triangular, acuminate; petiole 5-10 mm, stout, glabrous; lamina 5-18 x 2-8 cm, obovate, oblanceolate or obovate-oblong, base cuneate or attenuate, apex obtuse or round, margin entire, glabrous above and pubescent and glaucous beneath; lateral nerves 5-10 pairs, pinnate, prominent beneath; intercostae reticulate, slender; domatia present. Flowers bisexual, white, 5 cm across, solitary, at the end of branchlets, dimorphic with large and sessile, small and stalked; calyx tube 1-1.2 x 0.3-0.4 cm, turbinate, silky pubescent at throat, lobes 5, suborbicular; corolla tube short, lobes 5, large, spreading, orbicular, hairy at mouth, imbricate; stamens 5; anthers linear; ovary 2-celled, inferior, ovules many; style stout; stigma thick, 2 lobed. Fruit a berry, 4-5 x 2.5-3.5 cm, ovoid or ellipsoid, smooth, yellow; seeds smooth, compressed.

*Flowering & Fruiting:* August-March

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Thrissur, Wayanad, Malappuram, Trivandrum, Kollam, Kozhikkode, Palakkad

*Geographical:* India and Myanmar

**Wendlandia thyrsoides** (Schult.) Steud., Nomencl. Bot. (ed. 2) 2: 786. 1841; Ramach. & Nair, Fl. Cannanore Dist. 238. 1988; Manilal, Fl. Silent Valley 145. 1988; Antony, Fl. Kottayam Dist. 204. 1989; Vajr., Fl. Palghat Dist. 244. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 341. 1994; Sivar. & Mathew, Fl. Nilambur 354. 1997; Sasidh., Fl. Periyar Tiger Reserve 190. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 158. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 163. 2002; Mohanan & Sivad., Fl. Agasthyamala 364. 2002.

*Canthium thyrsoides* Schult. in Roem. & Schult., Syst. Veg. 6: 207. 1820.

*Wendlandia notoniana* Wall. ex Wight & Arn., Prodr. 403. 1834; Hook. f., Fl. Brit. India 3: 40. 1880; Gamble, Fl. Pres. Madras 588(415). 1921.

*Local names:* Pekanarakam, Vellathalachedi

Trees, to 8 m high, bark orange-brown, fibrous; branchlets terete to angular, tomentose. Leaves simple, ternate whorled; stipule interpetiolar, 6 mm long, ovate, obtuse, bifid, often recurved, tomentose; petiole 4-10 mm, stout, pubescent; lamina 4-15 x 1.5-7 cm, elliptic, elliptic-lanceolate or elliptic-obovate, base cuneate or attenuate, apex acute or acuminate, margin entire, tomentose beneath, glabrous above on ageing, chartaceous; lateral nerves 5-12 pairs, pinnate, prominent beneath; intercostae reticulate, slender. Flowers bisexual, pale yellow, fragrant, 6 mm long, in dense terminal panicles; peduncle densely pubescent; bracts and bracteoles lanceolate; calyx subglobose, pubescent, lobes 5, short, valvate; corolla tube elongate, slender 2.5 mm, funnel shaped, sparsely hairy within, lobes 5, imbricate; stamens 5, exserted; anthers oblong, subsessile; ovary depressed globose, 2-celled, inferior, ovules many on globose placenta; style filiform; stigma 2 fid. Fruit a capsule, globose, 2 valved; seeds small; testa membranous.

*Flowering & Fruiting:* December-April

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Kottayam, Kannur, Pathanamthitta, Malappuram, Palakkad, Trivandrum, Idukki, Thrissur

*Geographical:* Peninsular India and Sri Lanka

#### ASTERACEAE

1. Leaves tomentose, dense beneath; heads 1-flowered..... **Vernonia arborea**
1. Leaves glabrous or glabrescent; heads 4-6 flowered..... **Vernonia travancorica**

**Vernonia arborea** Buch.-Ham., Trans. Linn. Soc. London 14: 218. 1824; Hook. f., Fl. Brit. India 3: 239. 1881; Mohanan, Fl. Quilon Dist. 235. 1984; Ramach. & Nair, Fl. Cannanore Dist. 256. 1988; Manilal, Fl. Silent Valley 160. 1988; Vajr., Fl. Palghat Dist. 257. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 370. 1994; Uniyal in Hajra *et al.*, Fl. Ind. 13: 359. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 255. 1996; Sivar. & Mathew, Fl. Nilambur 381. 1997; Sasidh., Fl. Periyar Tiger Reserve 211. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 173. 2002; Mohanan & Sivad., Fl. Agasthyamala 391. 2002.

*Monosis wightiana* DC. in Wight, Contrib. 1. 1834 & Ic. t. 1085. 1846.

*Vernonia monosis* Benth. ex Clarke, Comp. Ind. 24. 1876p.p., non Sch.-Bip. 1847; Gamble, Fl. Pres. Madras 672(473). 1921.

*Vernonia arborea* Buch.-Ham. var. *wightiana* (DC.) Hook.f., Fl. Brit. India 3: 239. 1881.

*Local names:* Eerakatthira, Karana, Kadavari, Malanperuva

Trees; to 12 m high; bark 5-6 mm thick, grey, mottled with white and green, rough, marked with vertical cracks, exfoliations small, squarish, outer bark dead, corky, inner bark creamy with black streaks, semi fibrous. Branchlets densely brown silky tomentose. Leaves simple, alternate, estipulate; petiole 7-21 mm long, stout, densely pubescent, grooved above; lamina 10-29 x 4-10 cm, obovate, elliptic-obovate or elliptic-oblongate; base acute, obtuse, cuneate or attenuate; apex acuminate; margin entire or distantly serrate, chartaceous, glabrous above and

densely brown tomentose beneath; lateral nerves 8-13 pairs, parallel, prominent, raised beneath; intercostae subscalariform. Flowers bisexual, purple, in heads arranged in terminal tomentose panicles; capitula 1 flowered, receptacle small; involucre tubular 0.3 cm across; phyllaries thick scarious-outer orbicular-ovate 1.3-1 mm, pubescent without, obtuse, inner one oblong, 4.5 x 1.5 mm, thinly ciliate-glabrescent, 3-nerved, faint, ending abruptly in the middle, calyx tube adnate to the ovary, pappus 1 seriate, to 7 mm, barbellate; corolla 5 mm across; tube cylindrical 6.5 mm, lobes lanceolate, 3.5 mm; stamens 5, inserted within the corolla tube, anthers 2.5 mm, base fimbriate, basifixed, connate, connective produced upwards; ovary oblong, 1-celled, shortly beaked above, 2.2 x 1.5 mm, narrowed below ovule solitary, erect, style 1 cm, linearly 2 fid; stigma puberulous, recurved, acute. Fruit an achene, 2 mm long, 10-ribbed with glands in between, pappus hairs white.

*Flowering & Fruiting:* September-March

*Habitat:* Evergreen forests, often along the margins

*Distribution*

*Kerala:* Kollam, Malappuram, Idukki, Pathanamthitta, Palakkad, Kannur, Trivandrum, Thrissur, Wayanad

*Geographical:* Indo-Malesia

**Vernonia travancorica** Hook.f., Fl. Brit. India 3: 240. 1881; Gamble, Fl. Pres. Madras 673(473). 1921; Mohanan, Fl. Quilon Dist. 236. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 270. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 182. 1997; Uniyal in Hajra *et al.*, Fl. Ind. 13: 391. 1995; Sasidh., Fl. Periyar Tiger Reserve 214. 1998; Mohanan & Sivad., Fl. Agasthyamala 397. 2002.

*Vernonia volkameriaefolia* sensu Bedd., Fl. Sylv. t. 225. 1872 non DC. 1836.

*Local name:* Thempu

Trees; to 6 m high; bark grey or greyish-brown with narrow vertical fissures; blaze dull yellow with black streaks; branchlets pubescent. Leaves simple, alternate, estipulate; petiole 6-25 mm, stout, pubescent, grooved above; lamina 5-24 x 2.5-10 cm; obovate or elliptic-oblancoate; base cuneate or attenuate; apex obtuse or obtusely acute, margin entire, undulate or distantly dentate towards distal end, glabrous, chartaceous; lateral nerves 4-8 pairs, regular, pinnate, ascending, prominent; intercostae reticulate. Flowers bisexual, pink, head homogamous of 4-6 florets, in terminal subpyramidal panicles; outer bracts orbicular, obtuse, hairy; inner bracts 7 x 2.5 mm, oblong, obtuse, glabrous; calyx tube adnate to the ovary, limb of long copious pappus; corolla 10 mm long, tubular, pink, lobes 5, glabrous; stamens 5, inserted within the corolla tube, filaments free, anthers basifixed, connate, connective produced upwards, anthers obtusely auricled at base; ovary 1-celled, ovule solitary, erect, style arms yellowish-brown, puberulous. Fruit an achene, 10-ribbed, ribs prominent with yellow glands between; pappus similar, 9-10 mm long, setaceous, white, bent at base.

*Flowering & Fruiting:* February-July

*Habitat:* Grasslands and shola forests

*Distribution*

*Kerala:* Kollam, Idukki, Trivandrum

*Endemic to:* Western Ghats

## VACCINIACEAE

**Vaccinium leschenaultii** Wight, Ic. t. 1188. 1848; Hook. f., Fl. Brit. India 3: 455. 1882; Gamble, Fl. Pres. Madras 742(521). 1921; Manilal, Fl. Silent Valley 164. 1988; Sivar. & Mathew, Fl. Nilambur 387. 1997; Sasidh., Fl. Periyar Tiger Reserve 219. 1998; Mohanan & Sivad., Fl. Agasthyamala 401. 2002.

*Local names:* Kalavu, Kelamaram

Trees, to 7 m high; bark thin, greyish-brown; branchlets slender. Leaves simple, alternate, estipulate; petiole 3-10 mm slender, glabrous; lamina 2.5-6.5 x 1-3 cm, ovate, elliptic or elliptic-obovate, base attenuate, acute or obtuse, apex acute or acuminate, margin serrate, glabrous, coriaceous, lateral nerves 4-6 pairs, pinnate, ascending, slender, intercostae reticulate, faint. Flowers bisexual, pink, in axillary and terminal, racemose panicles; pedicel 3 mm long; bracts cauducous, 2 mm long, calyx tube ovoid, adnate to ovary, 5 toothed, ciliate; corolla urceolate; tube 6-8 mm long; lobes 5; stamens 10, free; anthers produced at the apex into 2 cylindrical tubes; ovary inferior, 5-celled, ovules many; style stout; stigma 5 lobed. Fruit a berry, 7-13 mm across, smooth, globose, glabrous, red; seeds pale brown.

*Flowering & Fruiting:* February-April

*Habitat:* Shola forests

*Distribution*

*Kerala:* Idukki, Malappuram, Trivandrum, Palakkad, Kozhikkode

*Endemic to:* Southern Western Ghats

#### ERICACEAE

**Rhododendron arboreum** J. E. Smith ssp. **nilagiricum** (Zenk.) Tagg. in Stevenson, Sp. Rhod. 15. 1930; Manilal, Fl. Silent Valley 165. 1988; Sasidh., Fl. Periyar Tiger Reserve 219. 1998.

*Rhododendron arboreum* J. E. Smith var. *nilagirica* (Zenk.) Clarke in Hook.f., Fl. Brit. India 3: 466. 1881.

*Rhododendron nilagiricum* Zenk., Amer. Sci. Nat. ser. 2. 6: 150. 1836; Gamble, Fl. Pres. Madras 743(523). 1921.

*Local names:* Alanchi, Kattupoovarasu

Trees, bark brown, rough, vertically shallowly fissured, flaking off in scales; branchlets stout. Leaves simple, alternate, clustered towards the tip of branchlets, estipulate; petiole 10-20 mm long, stout, tomentose; lamina 3.7-12.7 x 2.5-5 cm, oblong-ovate, oblong-lanceolate or elliptic-oblong, base obtuse or round, apex obtuse, apiculate, margin entire, glabrous above, tomentose beneath; lateral nerves 8-14 pairs, pinnate, prominent, intercostae reticulate, faint. Flowers bisexual, dark crimson or pink, in terminal capitate racemes, rarely solitary or axillary; bracts broad, silky, cauducous; bracteoles linear; calyx lobes 5; corolla urceolate; lobes 5; stamens 10, free; filaments slender; anthers oblong; ovary superior, 5-celled, ovules many; style slender; stigma capitate. Fruit a capsule, oblong, woody; valves at length reflexed; seeds many.

*Flowering & Fruiting:* February-June

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* Southern Western Ghats

*Status:* Rare (Nayar, 1997)



## MYRSINACEAE

1. Flowers in axillary or lateral fascicles; corolla lobes valvate .....2
1. Flowers in axillary or lateral racemes or umbels; corolla lobes imbricate..... 4
2. Flowers sessile; leaves elliptic or obovate..... **Myrsine capitellata** var. **sessilis**
2. Flower pedicelled; leaves obovate or oblanceolate.....3
3. Pedicels 4-5 mm long; branchlets stout; leaves obovate, to 3 cm wide .....  
..... **Myrsine thwaitesii**
3. Pedicels 1-3 mm long; branchlets not stout; leaves less than 1.5 cm wide .....  
..... **Myrsine wightiana**
4. Leaves rhomboid, margin often recurved; flowers 6 mm across **Ardisia rhomboidea**
4. Leaves obovate or oblanceolate, margin not recurved; flowers 1.3 cm across  
..... **Ardisia solanacea**

**Ardisia rhomboidea** Wight, Ic. t. 1213. 1848; Hook. f., Fl. Brit. India 3: 529. 1882; Gamble, Fl. Pres. Madras 755(531). 1921; Sasidh., Fl. Periyar Tiger Reserve 222. 1998; Mohanan & Sivad., Fl. Agasthyamala 405. 2002.

Trees, to 7 m high. Leaves simple, alternate, estipulate; petiole 4-7 mm long, slender, glabrous when mature; lamina 2-10 x 2-3.5 cm, rhomboid, base attenuate or cuneate, apex acuminate, acute or obtuse, margin entire or very obscurely crenulate, recurved, glabrous, with scattered brown glands on both sides, chartaceous; nerves obscure. Flowers bisexual, 3-3.5 mm across, pinkish-white, in axillary compound umbellate cymes; peduncle 1-1.5 cm long; pedicel 6-8 m long, slender, red puberulus; bracts lanceolate; calyx lobes 5, 0.5-1 mm long, triangular-ovate, ciliate, punctate with red glands on one side; corolla lobes 5, 2.5-3 mm long, pink, rotate, ovate-lanceolate, punctate; stamens 5; filaments short; anthers apiculate, sagitate; ovary 1 mm across, superior, 1-celled, ovules few to many, globose; style simple; stigma terminal. Fruit a berry, 5-6 mm across, with persistent stylar base.

*Flowering & Fruiting:* September-December

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Trivandrum

*Endemic to:* Southern Western Ghats

**Ardisia solanacea** Roxb., Pl. Corom. t. 27. 1795 & Fl. Ind. 1:580.1832; Gamble, Fl. Pres. Madras 756(531).1921; Ramach. & Nair, Fl. Cannanore Dist. 262. 1988; Antony, Fl. Kottayam Dist. 229. 1989; Vajr., Fl. Palghat Dist. 263. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 259. 1996; Sivar. & Mathew, Fl. Nilambur 390. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 177. 2002.

*Ardisia humilis* sensu Wight, Ic.t.1212. 1848, non Vahl 1794; Hook. f., Fl. Brit. India 3: 529. 1882.

*Local names:* Kuzhimundan, Molakka

Trees, to 6 m high; bark brown, smooth. Leaves simple, alternate, estipulate; petiole to 10 mm long, stout, glabrous; lamina 10-18 x 4-6 cm, obovate, elliptic-obovate or oblanceolate, base cuneate, apex acuminate or acute, margin entire or obscurely crenate, glabrous, glaucous beneath, coriaceous, gland-dotted; lateral nerves 9-20

pairs, parallel, slender, obscure, secondary laterals faint, intercostae obscure. Flowers bisexual, 1.3 cm across, bright pink, in axillary or lateral umbels; peduncle 5-(12) cm long; bracts 1.5-2 mm long, concave, deciduous; calyx lobes 5, 3 x 1.5 mm, concave, ovate, obtuse, ciliate, persistent, leathery, twisted to right; corolla 2.5 cm across; lobes 5, twisted to right, in bud, 10 x 7 mm, ovate, coriaceous, punctate; stamens 5, connivent around style, exserted; filaments short; anthers sagitate, 7 mm; ovary superior, globose 3 x 2 mm, 1-celled, ovules many; style elongate, as long as the corolla lobes; stigma terminal. Fruit a berry 8 mm across, globose, bright red.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Malappuram, Kottayam, Palakkad, Kannur, Thrissur, Wayanad

*Geographical:* Indo-Malesia and West China

**Myrsine capitellata** Wall. in Roxb., Fl. Ind. 2: 295. 1824; Hook. f., Fl. Brit. India 3: 512. 1882.

*Rapanea capitellata* (Wall.) Mez in Engl., Pflanzenr. IV 236(9): 356. 1902; Gamble, Fl. Pres. Madras 750(528). 1921; Sasidh., Fl. Periyar Tiger Reserve 226. 1998.

Trees, to 15 m high; branchlets stout, glabrous, covered with numerous closely placed leaf scars. Leaves simple, alternate below, opposite above, estipulate; petiole 5-7 mm long, stout, glabrous; lamina 5-12 x 1-4.5 cm, elliptic, oblanceolate or obovate, base cuneate or attenuate, apex acute or obtusely acute, margin entire, glabrous, coriaceous; lateral nerves 6-8 pairs, pinnate, faint, intercostae obscure. Flowers bisexual, white, sessile, very shortly stalked in umbellate fascicles, axillary or around branchlets; peduncle 1.5 mm; bracts minute; calyx lobes 5, 1.5 mm, ciliate, acute; corolla 5 mm across; lobes 5, oblanceolate, 3.5 mm, valvate, gland-dotted; stamens 5, exserted, subsessile; ovary superior, 1 mm, conical, ovules few; style 0.3 mm; stigmas 3, flat, spreading. Fruit a drupe, 4 mm across, globose, brownish-black; seed one, globose.

*Flowering & Fruiting:* March-May

*Habitat:* Shola forests

*Distribution*

*Kerala:* Idukki

*Geographical:* India, Nepal and Bhutan

**Myrsine thwaitesii** (Mez) Wadhwa in Dassanayake & Clayton, eds. Revised Handb. Fl. Ceylon 13: 159. 1999.

*Rapanea thwaitesii* Mez in Engl., Pflanzenr. IV 236(9): 357. 1902; Gamble, Fl. Pres. Madras 751(528). 1921.

*Local names:* Cheeramaram

Trees, to 7 m high; branchlets thick. Leaves simple, alternate, estipulate; petiole 5-10 mm, slender, glabrous; lamina 7-10 x 2.5-3.5 cm, ovate or oblanceolate, base attenuate, apex acute, rounded or emarginate, margin entire, marked with resinous dots, glabrous, coriaceous, nerves obscure. Flowers polygamous or dioecious 3 mm across, in umbels; pedicels short, 4-5 mm; calyx 3 mm wide, lobes 4-5, acute,

ciliate, gland dotted; corolla tube short, lobes 4-5, 3 x 1.5 mm, sparsely gland dotted, spreading; stamens inserted on the corolla, filaments absent, anthers ovate; ovary 1 mm, free, globose, 1-celled; style 0.5 mm. Fruit a berry, 4 mm across, purple, globose; seed one.

*Flowering & Fruiting:* February-May

*Habitat:* Shola forests

*Distribution*

*Kerala:* Idukki

*Geographical:* South India and Sri Lanka

**Myrsine wightiana** Wall. ex DC., Trans. Linn. Soc. London 17: 106. 1834.

*Myrsine capitellata* Wall. var. *lanceolata* Clarke in Hook.f., Fl. Brit. India 3: 512. 1882.

*Myrsine capitellata* sensu Wight, Ic. t. 1211. 1848, non Wall. 1824.

*Rapanea wightiana* (Wall. ex DC.) Mez in Engl., Pflanzenr. IV 236(9): 360. 1902; Gamble, Fl. Pres. Madras 751(528). 1921; Manilal, Fl. Silent Valley 167. 1988; Vajr., Fl. Palghat Dist. 265. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 275. 1994; Sasidh., Fl. Periyar Tiger Reserve 226. 1998; Mohanan & Sivad., Fl. Agasthyamala 410. 2002.

*Local name:* Cheeramaram

Trees, to 10 m high, branchlets slender, with prominent petiolar scars. Leaves simple, alternate, clustered towards the tip of branchlets; petiole to 10 mm long; lamina 7.5-8 x 1.5-3.5 cm, oblanceolate, base attenuate, apex acute, margin entire, recurved, glabrous, coriaceous, punctate; lateral nerves 6-8 pairs, obscure. Flowers polygamous, 4 mm across, in 5-8 flowered fascicles; pedicel to 1 mm long; bracts ovate; calyx tube 1 mm long; lobes 5, 0.1-0.15 cm long, cuneate, punctate, acute, ciliate; corolla lobes 5, 2-3 mm long, glandular hairy along the margin; stamens 5, sessile, basifixed; ovary superior, ovoid, 1-celled; style short; stigma slightly 2-lobed. Fruit a berry, 3 mm wide, subglobose, purple; seed single, globose.

*Flowering & Fruiting:* January-June

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Trivandrum, Palakkad, Kozhikkode, Idukki

*Geographical:* South India and Sri Lanka

#### SAPOTACEAE

1. Stamens as many as the number of corolla lobes.....2
1. Stamens more than the number of corolla lobes ..... 8
2. Staminodes present, older trunk thorny ...**Xantolis tomentosa** var. **elengioides**
2. Staminodes absent, trunk without thorns.....3
3. Corolla lobes 5, stamens 5 ..... 4
3. Corolla lobes 18-24, stamens 6 or 8..... 5
4. Leaves elliptic, golden brown tomentose below..... **Chrysophyllum cainito**
4. Leaves oblong, glabrous below ..... **Chrysophyllum roxburghii**
5. Calyx lobes 8, stamens 8..... **Mimusops elengi**
5. Calyx lobes 6, stamens 6..... 6
6. Calyx lobes 7-9 mm long, fruit globose or ovoid, brown scurfy, 3.5-7 cm long.....  
..... **Manilkara zapota**

6. Calyx lobes less than 4 mm long, fruit less than 2 cm long, smooth .....2  
7. Leaves to 6 x 4 cm, fruit ellipsoid, 1.2 cm long ..... **Manilkara hexandra**  
7. Leaves to 9 x 5 cm, fruit depressed globose, 2 cm across .. **Manilkara roxburghii**  
8. Calyx lobes 6..... 9  
8. Calyx lobes 4..... 11  
9. Pedicels less than 0.5 cm long, fruit obovoid or globose ..... **Palaquium ravii**  
9. Pedicels more than 1.5 cm long, fruit ellipsoid ..... 10  
10. Anthers long apiculate, hairy at apex..... **Palaquium ellipticum**  
10. Anthers acute, not hairy at apex ..... **Palaquium bourdillonii**  
11. Stamens 16 or more, ovary 6-8-celled ..... 12  
11. Stamens 8, ovary 4-celled ..... 14  
12. Pedicels and calyx glabrous ..... **Madhuca neriifolia**  
12. Pedicels and calyx tomentose ..... 13  
13. Leaves broadly elliptic, lateral nerves about 12 pairs. ....  
..... **Madhuca longifolia var. latifolia**  
13. Leaves spatulate or oblanceolate ..... **Madhuca bourdillonii**  
14. Leaf margin not recurved, nervules close and parallel..... **Isonandra lanceolata**  
14. Leaf margin recurved, nervules not as above..... 15  
15. Leaves oblanceolate; anthers tip villous or not ..... **Isonandra perrottetiana**  
15. Leaves obovate; anthers apiculate ..... 16  
16. Intercostae prominent; corolla lobes rounded ..... **Isonandra montana**  
16. Intercostae faint; corolla lobes oblong ..... **Isonandra stocksii**

**Chrysophyllum cainito** L., Sp. Pl. 192. 1753; Gamble, Fl. Pres. Madras 759(533). 1921; Manilal & Sivar., Fl. Calicut 156. 1982; Ansari, Fl. Kasaragod Dist. 220. 1985; Antony, Fl. Kottayam Dist. 230. 1989; Sasidh. & Sivar., Fl. Pl. Thrissur For. 269. 1996; Sunil, Fl. Pl. Alappuzha Dist. 493. 2000.

*Local name:* Star apple

Trees, to 25 m high; bark greyish to dark brownish-black, vertically shallowly cracked; young parts golden-ferruginous silky. Leaves simple, alternate, distichous, estipulate; petiole 8-20 mm long, stout, grooved above, silky pubescent; lamina 5.5-14 × 2.5-7 cm, elliptic, elliptic-oblong, ovate or elliptic-ovate, base acute or obtuse, apex obtusely acuminate or acuminate, margin entire, glabrous and shining above, golden-ferruginous silky beneath, coriaceous; lateral nerves 10-26 pairs, parallel, prominent, intercostae reticulate, faint. Flowers bisexual, white, 5-20 in axillary fascicles; pedicels 0.5-1.5 cm long, silky; sepals 5, 1.5-2 mm long, coppery, ovate, silky outside; corolla 3.5-4 mm long; tube equalling the length of the lobes; lobes 5, ovate, silky outside; stamens 5, included; anthers extrorse; ovary superior, silky, ovules many; style included. Fruit a berry, 2.5-3 x 1 cm, white to purplish-black; broadly ellipsoid to globose; seeds 3-10, laterally compressed.

*Flowering & Fruiting:* June-December

*Habitat:* Cultivated, also runs wild

*Distribution*

*Kerala:* All districts

*Geographical:* Native of West Indies

**Chrysophyllum roxburghii** G. Don, Gen. Hist. 4: 33. 1837-1838; Hook. f., Fl. Brit. India 3: 535. 1882; Gamble, Fl. Pres. Madras 758(533). 1921; Vajr., Fl. Palghat Dist. 265. 1990; Subram., Fl. Thenmala Division 201. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 264. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 187. 1997; Sivar. & Mathew, Fl. Nilambur 394. 1997; Sasidh., Fl. Periyar Tiger Reserve 226. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 178. 2002.

*Donella roxburghii* (Don) Pierre ex Lecomte, Fl. Indo-Chine 3: 897. 1930.

*Chrysophyllum lanceolatum* (Blume) A. DC. in DC., Prodr. 8: 162. 1844, *nom. illeg.*; Mohanan, Fl. Quilon Dist. 240. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 276. 1994.

*Nycterisition lanceolatum* Blume, Bijdr. 676. 1826.

*Local names:* Noolambazham, Pulichakka, Aatha

Evergreen trees, to 30 m high, bark grey or pale brown, smooth, cracked vertically, inner bark fibrous; exudation milky; branches horizontal; young shoots densely ferruginous pubescent. Leaves simple, alternate, scattered, spreading distichously, estipulate; petiole 3-10 mm long, slender, pubescent; lamina 4-17 x 2-5 cm, elliptic-oblong, oblong-lanceolate, base acute, apex acuminate or caudate-acuminate, margin entire, glabrous when mature, shiny, coriaceous; lateral nerves many, parallel, close, slender, looped near margin forming intramarginal nerve; intercostae reticulate. Flowers bisexual, green or greenish-white, in axillary fascicles, pedicels 3-5 mm long, pubescent; calyx lobes 5-6, sepals 2 x 1.5 mm, imbricate, concave, obtuse; corolla campanulate, lobes 5-6 tube, 0.7-1.2 mm long, 1 mm long, 1.5 mm wide, villous along margin, subacute; stamens 5-6, included; filaments subulate; anthers ovate; ovary densely hairy, 5-6 locular, superior, ovules one in each cell; style short, 1 mm long, glabrous; stigma blunt. Fruit a berry, globose, 3-5 cm across, yellowish-green; seeds brownish-yellow, subellipsoid, compressed, shiny.

*Flowering & Fruiting:* April-November

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Malappuram, Palakkad, Trivandrum, Thrissur, Idukki

*Geographical:* Tropical Asia

**Isonandra lanceolata** Wight, Ic. t. 359. 1840; Hook. f., Fl. Brit. India 3: 539. 1882; Gamble, Fl. Pres. Madras 761(535). 1921; Mohanan, Fl. Quilon Dist. 240. 1984; Manilal, Fl. Silent Valley 167. 1988; Ramach. & Nair, Fl. Cannanore Dist. 263. 1988; Antony, Fl. Kottayam Dist. 230. 1989; Vajr., Fl. Palghat Dist. 266. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 378. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 276. 1994; Subram., Fl. Thenmala Division 202. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 264. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 187. 1997; Sivar. & Mathew, Fl. Nilambur 395. 1997; Sasidh., Fl. Periyar Tiger Reserve 227. 1998; Sunil, Fl. Pl. Alappuzha Dist. 494. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 179. 2002; Mohanan & Sivad., Fl. Agasthyamala 411. 2002.

*Isonandra wightiana* A. DC. in DC., Prodr. 8: 187. 1844; Hook. f., Fl. Brit. India 3: 539. 1882.

Trees, to 8 m high, bark thin, brown, cracked; blaze light red; exudation white; branchlets sympodial. Leaves simple, alternate or alternate spiral, estipulate; petiole

7-15 mm, stout, pubescent when young; lamina 8-20 x 3-8 cm, elliptic, elliptic-oblong, lanceolate or oblanceolate, base cuneate, apex acuminate, margin entire, glabrous, chartaceous; lateral nerves 8-13 pairs, pinnate, regular, prominent, raised beneath, slender, ascending; intercostae scalariform, prominent. Flowers bisexual, cream, in axillary, short pedicelled fascicles; calyx lobes 4, 3 mm long, ovate-acute, hairy without; corolla campanulate 2 mm long; stamens 8, subequal, attached near the base of corolla; anther tip apiculate; ovary 1 mm long, 4-celled, superior, brown hairy; style 2 mm long, subulate. Fruit a berry, 1.5 cm long, ellipsoid, orange-yellow.

*Flowering & Fruiting:* August-October

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* All districts

*Geographical:* South India and Sri Lanka

**Isonandra montana** (Thw.) Gamble, Fl. Pres. Madras 761(535). 1921; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 276. 1994; Mohanan & Sivad., Fl. Agasthyamala 412. 2002.

*Isonandra wightiana* A. DC. var. *montana* Thw., Enum. Pl. Zeyl. 177. 1864; Hook. f., Fl. Brit. India 3: 540. 1882.

Trees, to 15 m high, bark blackish; blaze pink; exudation white; branches short, sympodial. Leaves simple, alternate, spiral, estipulate; petiole 6-12 mm, slender, glabrous, grooved above; lamina 4-6.5 x 1.2-3.5 cm, elliptic, elliptic-obovate or obovate, base cuneate, apex obtuse to acuminate, margin entire, recurved, coriaceous, glabrous; lateral nerves 4-7 pairs, pinnate, regular, arched towards margin, raised beneath; intercostae subscalariform. Flowers bisexual, cream, from the leafless nodes; pedicels 1 mm long, pubescent; calyx lobes 4, 2-3 mm long, triangular, obtuse; corolla lobes 4, rounded, 2-3 mm, tube short; stamens 8, subequal, attached near the base of corolla; filaments erect; anthers hairy; ovary 4-celled, villous without, 1 mm long; style short, 1 mm long; stigma truncate. Fruit a berry, 8 x 4 mm, oblong; seeds ellipsoid, laterally compressed.

*Flowering & Fruiting:* March-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum

*Geographical:* South India and Sri Lanka

**Isonandra perrottetiana** A. DC. in DC., Prodr. 8: 188. 1844; Hook. f., Fl. Brit. India 3: 539. 1882; Gamble, Fl. Pres. Madras 761(535). 1921; Ramach. & Nair, Fl. Cannanore Dist. 263. 1988; Sasidh., Fl. Periyar Tiger Reserve 227. 1998; Mohanan & Sivad., Fl. Agasthyamala 412. 2002.

*Isonandra candolleana* Wight, Ic. t. 1220. 1850; Hook. f., Fl. Brit. India 3: 539. 1882; Gamble, Fl. Pres. Madras 761(535). 1921.

*Local name:* Karimpala

Trees, to 10 m high; bark smooth, brown; exudation milky. Leaves simple, alternate, spiral, estipulate; petiole 3-7 mm, stout, grooved above, glabrous; lamina 5-11 x 2.5-4 cm, elliptic, oblanceolate or obovate-oblong, base acute, apex obtuse,

acuminate or obtusely acute, margin entire, recurved, glabrous, coriaceous; lateral nerves 10-12 pairs, pinnate, prominent, intercostae subscalariform. Flowers bisexual, dull-white, in sessile densely packed, axillary fascicles; pedicels 2 mm long, tomentose; bracts and bracteoles obtuse; sepals 2+2, broadly ovate, very unequal, the exterior much larger, hairy and ciliate; corolla deeply 4-partite; lobes obovate-oblong, emarginate, longer than the tube; stamens 8, subequal, attached at the base of the corolla, 1-seriate; anthers oblong-lanceolate, black-hairy at tip; staminodes absent; ovary superior, densely hairy, 4-celled; style subulate. Fruit a berry, 17 x 10 mm, obovoid, cuspidate, glabrous.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Kannur, Trivandrum, Kozhikkode, Idukki

*Endemic to:* Southern Western Ghats

**Isonandra stocksii** Clarke in Hook.f., Fl. Brit. India 3: 539. 1882; Gamble, Fl. Pres. Madras 761(535). 1921; Sasidh. & Sivar., Fl. Pl. Thrissur For. 264. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 187. 1997; Sasidh., Fl. Periyar Tiger Reserve 227. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 179. 2002.

Trees, to 8 m high, bark brown; branchlets stout; sympodial. Leaves simple, alternate-spiral, estipulate; petiole 5-8 mm long, stout, glabrous, grooved above; lamina 4-9 x 2-5 cm, obovate, base cuneate, apex obtuse or obtusely acute or slightly emarginate, margin entire, revolute, glabrous, coriaceous; lateral nerves 6-8 pairs, pinnate, regular, raised beneath; intercostae obscure. Flowers bisexual, yellow, from the leafless nodes, fascicled, sessile; bracts and bracteoles minute, obtuse; calyx lobes 4, 2 x 2 mm, ovate, obtuse, hairy outside; corolla 5 mm long, lobes 4, oblong, emarginate, curved in; stamens 8, subequal, attached near the base of corolla; anthers oblong, acute; ovary 4-celled, superior, tomentose; style linear.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Kollam, Thrissur, Palakkad

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Madhuca bourdillonii** (Gamble) H.J. Lam, Bull. Bot. Buitenz. ser.3, 7: 463. 1927; Mohanan, Fl. Quilon Dist. 241. 1984; Sasidh. & Sivar., Fl. Pl. Thrissur For. 265. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 188. 1997.

*Bassia bourdillonii* Gamble, Bull. Misc. Inform. Kew 1921: 121. 1921 & Fl. Pres. Madras 763(536). 1921.

*Bassia fulva* Bourd., For. Trees Travancore 238. 1908, non (Thw.) Bedd. 1882.

*Local name:* Thandidiyan, Ponavu

Trees, to 30 m high, bark 6-8 mm thick, surface greyish-brown, shallowly fissured; blaze pink-red; latex milky white; younger branches fulvous tomentose. Leaves simple, alternate, crowded at the tip of branchlets, estipulate; petiole 15-45 mm,

slender, pubescent, swollen at base; lamina 15-30 x 6.5-7.5, linear-elliptic, oblanceolate or spathulate, base cuneate, apex acute or shortly obtusely acuminate, margin entire, fulvous tomentose when young, becoming glabrous above and glabrescent below, except the midrib, coriaceous; lateral nerves 20-25 pairs, parallel, nearly right angles to midrib, slender; intercostae reticulate, faint. Flowers bisexual, yellowish-white, 1.7 cm long, in axillary fascicles, appear along with new flush; peduncles 2.5-3.8 cm; pedicels 1.5-2 cm long, densely brown tomentose; calyx lobes 4, ovate, outer 0.7 x 0.6 cm, brown tomentose; corolla campanulate, tube broad, 12-lobed; stamens 24, in two whorls; filaments short; anthers 3.5 mm long, glabrous, ovate, connective appendage 1 mm long; ovary ovoid, glabrous, 11 or 12-celled, superior; style subulate, elongate. Fruit a berry, green, smooth, ovoid, 3.7 cm across; seeds 4-5, ellipsoid.

*Flowering & Fruiting:* November-July

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Thrissur

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Madhuca longifolia** (Koenig) Macbr. var. **latifolia** (Roxb.) A. Chev., Rev. Int. Bot. Appl. Agric. Trop. 23: 149. 1943; Vajr., Fl. Palghat Dist. 267. 1990; Sasidh., Fl. Chinnar Wildlife Sanctuary 179. 1999.

*Bassia latifolia* Roxb., Pl. Corom. t.20. 1795; Hook. f., Fl. Brit. India 3:544.1882; Gamble, Fl. Pres. Madras 763(536). 1921.

*Madhuca indica* J. Gmelin, Syst. Nat. 2:799. 1791; Sivar. & Mathew, Fl. Nilambur 395. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 179. 2002.

*Madhuca latifolia* (Roxb.) J.F. Macbr. in Contr. Gray Herb. Harv. Univ. (ns) 53: 17. 1918.

*Local names:* Ilupa, Irippa, Njannal

Trees, to 20 m high, bark grey, 1.3 cm thick, vertically cracked, exfoliating in thin scales; blaze reddish-brown or dark red; exudation milky. Leaves simple, alternate, clustered at the end of branchlets; stipules lateral, lanceolate, cauducous; petiole 20-40 mm long, stout, glabrous; lamina 10-25 x 6-12 cm, elliptic, base round, obtuse or cuneate, apex acute, acuminate or apiculate, margin entire, glabrous, coriaceous; lateral nerves 9-14 pairs, parallel, prominent, intercostae reticulate, faint. Flowers bisexual, creamy, axillary; calyx lobes 4 [ 2 +2], obovate, fulvous tomentose, acute; corolla tube 8 mm long, lobes 6-12, oblong; stamens 16, roughly in 3 series; anthers 3.5 mm, sparsely hairy; connectives apiculate; ovary superior, 3 mm long, 6-celled; style 2.5 cm long, exerted, pubescent below; stigma obtuse. Fruit a berry, ovoid, greenish, fleshy, tawny-tomentose with out; pedicel stout; seeds 2.

*Flowering:* November

*Habitat:* Banks of rivers in semi-evergreen forests

*Distribution*

*Kerala:* Palakkad, Thrissur, Malappuram

*Geographical:* India and Myanmar



**Madhuca neriifolia** (Moon) H. J. Lam, Bull. Jard. Bot. Buitenz. ser. 3, 7:182, 265. 1925; Mohanan, Fl. Quilon Dist. 241. 1984; Ansari, Fl. Kasaragod Dist. 220. 1985; Ramach. & Nair, Fl. Cannanore Dist. 264. 1988; Antony, Fl. Kottayam Dist. 231. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 379. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 277. 1994; Subram., Fl. Thenmala Division 202. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 265. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 188. 1997; Sivar. & Mathew, Fl. Nilambur 396. 1997; Sasidh., Fl. Periyar Tiger Reserve 227. 1998; Sunil, Fl. Pl. Alappuzha Dist. 497. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 179. 2002; Mohanan & Sivad., Fl. Agasthyamala 413. 2002.

*Bassia neriifolia* Moon, Cat. Pl. Ceylon 36. 1824.

*Bassia malabarica* Bedd., For. Man. Bot. 140:1872; Hook. f., Fl. Brit. India 3:544.1882; Gamble, Fl. Pres. Madras 763(537). 1921.

*Local names:* Attu-ilippa, Neeririppa, Wallangi

Evergreen trees, to 15 m high, bark 6-8 mm thick, dark brown to grey, knotty, deeply fissured and peeling off in rectangular strips, 3 cm long, 2 cm wide; blaze pink-red; latex milky; young shoots glabrous. Leaves simple, alternate, crowded at the tip of branchlets, stipulate; petiole 6-18 mm long, stout, grooved above, glabrous; lamina 8-15 x 2.5-5.5 cm, elliptic-lanceolate, linear-oblong, oblong-lanceolate, oblanceolate, elliptic-oblong or obovate, base acute or attenuate, apex obtuse or acute, margin entire, glabrous, coriaceous, glossy, slender; lateral nerves 15-22 pairs, slender, parallel; intercostae reticulate, faint, slender. Flowers bisexual, yellowish-white, in axillary subterminal fascicles, 10-12 mm across, pedicels minutely tomentose, enlarges in fruit; calyx tube ovate-acute, 0.7 x 0.5 cm, minutely tomentose; corolla lobes 8-10, campanulate, 1.5-2 cm long, tomentose outside except the margins; stamens 16-20 in 2 rows, anthers linear, appendage 1 mm long, filaments short, villous; anthers lanceolate, long ciliate at base, connective produced; ovary 0.5 cm long, oblong, superior, glabrous without, 6-8-celled, ovules 1 in each cell; style slender 2-2.5 cm long. Fruit a berry, 2-3 cm long, 1-1.5 cm wide ellipsoid, beaked; seed one, pale brown and shining, narrowly ellipsoid, 2.5 cm long, compressed, acute at both ends, the hilum extending the whole length.

*Flowering & Fruiting:* November-March

*Habitat:* Banks of rivers in evergreen and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* India and Sri Lanka

**Manilkara hexandra** (Roxb.) Dubard, Ann. Inst. Bot. Geol. Colon. Marseille 23: 9. f.2. 1915; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 277. 1994; Sasidh., Fl. Chinnar Wildlife Sanctuary 179. 1999.

*Mimusops hexandra* Roxb., Pl. Corom. t. 15. 1795; Hook. f., Fl. Brit. India 3: 549. 1882; Gamble, Fl. Pres. Madras 766(538). 1921.

*Mimusops indica* A. DC. in DC., Prodr. 8: 205. 1844.

*Local names:* Mullupala, Pazhamunnippala, Khirni

Evergreen trees, to 20 m high, bark blackish-grey, longitudinally fissured and cracked, rough; blaze crimson red; exudation milky; bole straight. Leaves simple, alternate, estipulate; petiole 8-20 mm, slender, slightly grooved above, glabrous; lamina 5-10 x 3-4.5 cm, elliptic, elliptic-obovate, obovate or ovate-oblong; base acute; apex obtuse or emarginate; margin entire, glabrous, coriaceous; lateral nerves 10-20 pairs, closely pinnate, slender, midrib raised below; intercostae reticulate. Flowers bisexual, 7 mm across, white, 1 or 2 axillary; pedicel to 3.5 cm long; calyx lobes 6, in 2 series of 3 each, 2.5 x 2 mm, reflexed, ovate, subacute, rusty-tomentose outside; corolla 3 x 1.5 mm, lobes 18 in 3 series of 6 each, valvate; stamen 6-8, alternating with staminodes, bifid; staminodes shorter than stamen, filaments glabrous, lanceolate; ovary pubescent, 12-celled, superior; style 4-5 mm, subulate; stigma simple. Fruit a berry, ellipsoid, 1.5 x 8 mm, reddish-yellow; seed usually one.

*Flowering & Fruiting:* September-November

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Trivandrum

*Geographical:* Sri Lanka, India, Siam and Indo-China

**Manilkara roxburghiana** (Wight) Dubard, Ann. Inst. Bot. Geol. Colon. Marseille 23: 10. f.3. 1915; Sasidh., Fl. Chinnar Wildlife Sanctuary 179. 1999.

*Mimusops roxburghiana* Wight, Ic. t. 1588.1850; Hook. f., Fl. Brit. India 3:548.1882; Gamble, Fl. Pres. Madras 766(538). 1921.

*Local name:* Kannupala

Evergreen trees, to 18 m high, bark brownish-black, rough; blaze pink; latex milky. Leaves simple, alternate spiral, estipulate; petiole 13-25 mm, slender, glabrous; lamina 5-7 x 3-4.5 cm, oblong, elliptic, base rounded, apex obtuse or emarginate, margin entire, glabrous, coriaceous; lateral nerves many, pinnate, faint; midrib raised below; intercostae reticulate. Flowers bisexual, white, axillary or terminal, 2-5 together; pedicel to 3 cm long; calyx lobes 6, sepals 9 x 4 mm, ovate, hirsute; corolla lobes 18-24, 1 cm long; stamens 6, attached to the corolla tube; filaments short; anthers 3 mm; staminodes alternate with stamens, fimbriate, long, lanceolate, glabrous; ovary 2 mm, superior, villous at base, 6-celled; style 15 mm, subulate. Fruit a berry, 2 cm long, globose, depressed; seeds 3-6.

*Flowering & Fruiting:* December-March

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

**Manilkara zapota** (L.) P.Royen, Blumea 7: 410. 1953; Antony, Fl. Kottayam Dist. 231. 1989; Vajr., Fl. Palghat Dist. 268. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 380. 1994; Subram., Fl. Thenmala Division 201. 1995; Sunil, Fl. Pl. Alappuzha Dist. 497. 2000.

*Achras zapota* L., Sp. Pl. 1190. 1753.

*Achras sapota* L., Sp. Pl. (ed.2) 469. 1762; Hook. f., Fl. Brit. India 3: 534. 1882; Gamble, Fl. Pres. Madras 759(533). 1921; Sasidh. & Sivar., Fl. Pl. Thrissur For. 269. 1996.

*Sapota achras* Mill., Gard. Dict. (ed. 1) 8. 1768.

*Manilkara achras* (Mill.) Fosberg., Taxon 13: 255. 1964; Manilal & Sivar., Fl. Calicut 157. 1982.

*Local names:* Chiku, Sappota

Trees, to 15 m high, young parts covered with brown hairs; exudation milky white latex. Leaves simple, alternate, spiral, clustered towards the apex of branchlets; petiole 10-30 mm long, stout, glabrous; lamina 7-15.5 × 2.5-4.5 cm, elliptic, elliptic-obovate or elliptic-oblancoate, base acute or attenuate, apex slightly acuminate with retuse tip, margin entire, glabrous, coriaceous; lateral nerves many parallel, slender, faint, intercostae reticulate, obscure. Flowers bisexual, white, solitary or in pairs from the axils of upper leaves; pedicels 0.8-2 cm long, scurfy; sepals 6, 3+3; 6.5-10 mm long; corolla 0.7-1.1 cm long, campanulate, greenish-white or cream; lobes 6, irregularly 2-3 toothed; stamens 6, inserted at the top of the corolla tube; filaments free or partly fused with the staminodes; anthers extrorse; staminodes 6, alternating with the stamens, bifid, laciniate, irregularly divided; disc annular, tomentose; ovary superior, hairy, many celled, ovules many; style terminal. Fruit a berry, 3.5-8 × 3-6 cm, ovoid or ellipsoid, scaly; seeds 1.5-2.5 cm long, many, black.

*Flowering & Fruiting:* February-August

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of South America; widely cultivated in the tropics

**Mimusops elengi** L., Sp. Pl. 349. 1753; Hook. f., Fl. Brit. India 3: 548. 1882; Gamble, Fl. Pres. Madras 765(538). 1921; Manilal & Sivar., Fl. Calicut 157. 1982; Mohanan, Fl. Quilon Dist. 241. 1984; Ansari, Fl. Kasaragod Dist. 221. 1985; Antony, Fl. Kottayam Dist. 232. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 379. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 277. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 267. 1996; Sivar. & Mathew, Fl. Nilambur 397. 1997; Sasidh., Fl. Periyar Tiger Reserve 228. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 180. 1999; Sunil, Fl. Pl. Alappuzha Dist. 498. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 180. 2002; Mohanan & Sivad., Fl. Agasthyamala 414. 2002.

*Local names:* Bakulam, Elengi, Mukura

Evergreen trees, to 20 m high, bark dark grey, cracked or fissured longitudinally, scaly, rough; lenticels vertical; blaze pink with red streaks; exudation white; young branches brown pubescent. Leaves simple, alternate, spiral, stipulate; stipules lanceolate, caducous; petiole 15-40 mm long, slender, grooved above, pubescent; lamina 4-12 × 3.5-7.5 cm; elliptic or elliptic-oblong, base round or obtuse, apex obtuse to acuminate, margin entire, glabrous, coriaceous; lateral nerves many, slightly raised beneath, parallel, slender, looped near the margin forming intramarginal nerves; intercostae reticulate. Flowers bisexual, white, fragrant, 1-3 in axillary fascicles, pedicel 1 cm long; calyx lobes 8 in 2 series of 4 each, thick, outer lanceolate, valvate, pubescent; petals 9 mm long, lobes with 2 dorsal

appendages, corolla 1 cm across; lobes 24, 3 series of 8 each, with hairs on back and margins, acuminate; stamens 8, alternating with pilose staminodes; filaments 1 mm, anthers oblong, cordate, 3 mm, connectives apiculate; staminodes lanceolate, acuminate, fimbriate, pilose; ovary 0.1-0.15 cm long, void, hirsute without, 6-8-celled; 1 ovule in each cell; style columnar, 5 mm; stigma minutely fimbriate. Fruit a berry, yellow, ovoid, 2.5 cm long, 1.5 cm across, fleshy, epicarp thin; seeds usually 1, oblong-ellipsoid, laterally compressed.

*Flowering & Fruiting:* December-August

*Habitat:* Semi-evergreen and evergreen forests, also grown in homesteads

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

***Palaquium bourdillonii*** Brandis, Indian Trees 424. 1906; Gamble, Fl. Pres. Madras 765(537). 1921; Nair & Mohanan, J. Econ. Tax. Bot. 3: 576. 1982; Mohanan, Fl. Quilon Dist. 241. 1984; Subram., Fl. Thenmala Division 204. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 190. 1997; Gopalan & Henry, End. Pl. India SW Ghats 316.

Trees, to 25 m high, bark greyish-brown; blaze pink red; exudation milky; branchlets sympodial, terete, ferruginous tomentose when young. Leaves alternate, subopposite or in indistinct whorls, estipulate; petiole 6-20 mm long, stout, tomentose; lamina 9.5-17.5 x 3-8 cm, lanceolate, obovate, oblanceolate or obovate-elliptic, base cuneate, apex obtuse, acute, obtusely acuminate to subcuspidate, margin entire, glabrous above, puberulous beneath, coriaceous; lateral nerves 8-12 pairs, pinnate, slender, raised beneath; intercostae reticulate. Flowers bisexual, yellowish, in solitary or in few flowered axillary clusters; pedicels 2.5-4 cm long, pubescent, brown; calyx lobes 6 in 2 series; corolla campanulate, 5 mm long, lobes 6; stamens 12, attached to the base of corolla, extrorse; anthers acute, connective produced; ovary villous, 6-celled, superior, style subulate. Fruit a berry 3.5 x 1.7 cm, glabrous, fleshy, ellipsoid, beaked; seed one.

*Flowering & Fruiting:* March-October

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Kollam

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Vulnerable (IUCN, 2000)

***Palaquium ellipticum*** (Dalz.) Baill., Traite, Bot. Med. Phan. 1500. 1884; Gamble, Fl. Pres. Madras 764(537). 1921; Mohanan, Fl. Quilon Dist. 242. 1984; Manilal, Fl. Silent Valley 168. 1988; Ramach. & Nair, Fl. Cannanore Dist. 264. 1988; Vajr., Fl. Palghat Dist. 267. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 380. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 278. 1994; Subram., Fl. Thenmala Division 204. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 267. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 190. 1997; Sivar. & Mathew, Fl. Nilambur 397.

1997; Sasidh., Fl. Periyar Tiger Reserve 228. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 180. 2002; Mohanan & Sivad., Fl. Agasthyamala 414. 2002.

*Bassia elliptica* Dalz. in Hook. 's J. Bot. Kew Gard. Misc. 3: 36. 1851.

*Dichopsis elliptica* (Dalz.) Benth. in Benth. & Hook. f., Gen. Pl. 2: 658. 1876; Hook. f., Fl. Brit. India 3: 542. 1882.

*Local names:* Choppala, Pachendi, Pali

Evergreen trees, to 30 m high, bark 0.85 cm, dark brown mottled with white, trunk without branches for a considerable height; blaze reddish-pink; exudation milky; young parts minutely pubescent, branches glabrous, sympodial. Leaves simple, alternate, spiral, clustered towards the tip, estipulate; petiole 12-25 mm long, slender, slightly pubescent; lamina 4-11 x 3-4.5 cm, elliptic, elliptic-obovate, base acute, apex obtusely acuminate, margin entire, glabrous above, glabrescent below, dark green above, pale yellow, coriaceous; lateral nerves 7-12 pairs, pinnate, slender, prominent below; intercostae reticulate, slender. Flowers bisexual, white, fragrant, in axillary fascicles; pedicels 2.5 cm, pubescent; calyx lobes 6 in 2 series, outer 3 valvate, inner 3 imbricate, densely villous, outer 3 ovate, inner 3 lanceolate; corolla lobes 6, campanulate, tube shorter than lobes, lobes ovate-oblong; stamens 12-20, extrorse; filaments short, hairy; anthers lanceolate, connective produced; ovary tomentose, 6-celled, superior; style exserted, glabrous, subulate. Fruit a berry, 3-4 x 1.5 cm, fleshy, ellipsoid, smooth, green; seeds 1 or 2, large.

*Flowering & Fruiting:* February-July

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Malappuram, Thrissur, Palakkad, Kannur, Trivandrum, Wayanad

*Endemic to:* Western Ghats

***Palaquium ravii*** Sasidh. & Vink, Blumea 35: 385. 1991; Sasidh. & Sivar., Fl. Pl. Thrissur For. 267. 1996; Sasidh., Fl. Periyar Tiger Reserve 228. 1998.

*Local name:* Pali

Trees, to 25 m high, bark smooth, greyish-brown; blaze red; exudation milky; branchlets sympodial, minutely appressed tomentose, glabrescent. Leaves simple, alternate, spiral, crowded towards the apex; stipules 1-2 x 0.8-1 mm, ovate to sublanceolate, pubescent without, glabrous within, cauducous; petiole 15-25 mm, stout appressed pubescent, glabrescent; lamina 7-11.5 x 3.5-6.5 cm, obovate, lanceolate, elliptic oblanceolate, base attenuate, apex obtuse or rounded, margin entire, appressed-pubescent, glabrescent, coriaceous; lateral nerves 5-8 pairs, pinnate, prominent; intercostae reticulate, slender. Flowers bisexual, creamy white, solitary or in 2-8 flowered axillary clusters; pedicels 7-9 mm long, minutely greyish-brown tomentose; sepals 6, biseriate, obtuse to acute, minutely brownish tomentose with out, glabrous within, outer sepals ovate, 4-5 x 2.5-3 mm, inner ones ovate-oblong 4-5 x 2-2.5 mm; corolla tube 3 mm long, lobes 5 x 2 mm, oblong, acute to rounded or truncate, throat woolly but otherwise glabrous; stamens 12, biseriate, glabrous; filaments 3 mm long, anthers 1 mm long, apex bifid, ovary globose, 1.5-2 x 1.5-2 mm, hirsute, 12-ribbed, 6-celled; style 7-9 mm long, stigma

muticous. Fruit 2 x 1.5-1.8 cm, glabrous, obovoid; seeds 1 or 2, ellipsoid or suborbicular.

*Flowering & Fruiting:* April-February

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Thrissur, Palakkad

*Endemic to:* Southern Western Ghats (Kerala)

*Status:* Endangered (IUCN, 2000)

**Xantolis tomentosa** (Roxb.) Rafin. var. **elengioides** (A. DC.) Vajr., Biol. Mem. 22: 86. 1977; Vajr., Fl. Palghat Dist. 267. 1990; Sasidh., Fl. Parambikulam Wildlife Sanctuary 180. 2002.

*Sideroxylon tomentosum* Roxb. var. *elengioides* (A. DC.) Gamble, Fl. Pres. Madras 759(534). 1923.

*Sapota elengioides* A. DC., Prodr. 8: 176. 1844,p.p.

*Achras elengioides* (A. DC.) Bedd., Fl. Sylv. t. 235. 1872.

Trees, to 18 m high, bark cracked, reddish-brown; blaze pink; exudation milky, scanty older parts with stout thorns, branchlets thinly pubescent, reddish when young. Leaves simple, alternate, estipulate; petiole 5-7 mm long, stout, glabrous, grooved above; lamina 4-9 x 2-4 cm, obovate, base acute, attenuate, apex obtuse or slightly acute, margin entire, glabrous, coriaceous; lateral nerves 9-12 pairs, slender, midrib raised beneath; intercostae reticulate. Flowers bisexual, white, fragrant; sepals 6, biseriate, ovate, acute, hairy, inner small; corolla 10 mm long campanulate, lobes 5-6, imbricate, lobes lanceolate, throat densely hairy; stamens 6, filaments hairy at base; ovary hairy, superior, ovules on axile placenta; style 10 mm long; style cylindrical; stigma small. Fruit a berry, 3 x 1.5 cm, ovoid, fleshy, apiculate.

*Flowering & Fruiting:* October-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* South India

## EBENACEAE

1. Leaves to 2 cm broad ..... **Diospyros buxifolia**
1. Leaves more than 3 cm broad ..... 2
2. Flowers 5-merous; sometimes calyx 4-lobed ..... 3
2. Flowers 4-merous ..... 12
3. Mature leaves glabrous ..... 4
3. Mature leaves variously hairy or at least on the nerves below ..... 9
4. Fruits with 8-10 deep longitudinal grooves; leaves punctate ... **Diospyros sulcata**
4. Fruits smooth, without longitudinal grooves; leaves not punctate ..... 5
5. Female flowers solitary, axillary ..... 6
5. Female flowers cauliflorous, axillary in clusters or in short cymes from the base of tender shoot ..... 7

- 6. Male inflorescence with a pair of ovate-cordate bracts; fruits obtusely 5-angled; yellowish-brown puberulous ..... **Diospyros paniculata**
- 6. Male inflorescence without a pair of bracts; fruits subglobose but not 5-angled; brown scurfy tomentose..... **Diospyros peregrina**
- 7. Female flowers from old wood; intercostae scalariform.... **Diospyros bourdillonii**
- 7. Female flowers axillary or from the base of the new shoots; intercostae reticulate ..... 8
- 8. Fruits glabrous at maturity; leaf base cuneate or acute ..... **Diospyros ovalifolia**
- 8. Fruit densely brown tomentose at maturity; leaf base truncate or rounded ..... **Diospyros pyrrocarpoides**
- 9. Stamens 5..... **Diospyros melanoxylon** var. **melanoxylon**
- 9. Stamens 10 or more ..... 10
- 10. Stamens 10 in unequal pairs; female flowers in axillary fascicles..... **Diospyros candolleana**
- 10. Stamens more than 10, not in unequal pairs; female flowers solitary, axillary. 11

11. Leaves acute or caudate-acuminate at apex; fruits densely coppery-rusty haired on maturity ..... **Diospyros hirsuta**
11. Leaves obtuse or obtusely acute at apex; fruits glabrous at maturity ..... **Diospyros melanoxydon** var. **tupru** [p.p]
12. Mature leaves glabrous ..... 13
12. Mature leaves pubescent..... 18
13. Stamens 6-16 ..... 14
13. Stamens 20-36 ..... 16
14. Lateral nerves 3-5 pairs; pedicel 1.5-2 cm long; fruits covered with hairy scales ..... **Diospyros foliosa**
14. Lateral nerves 5-11 pairs; pedicel 2-10 mm long; fruits smooth without hairy scales ..... 15
15. Basal pairs of lateral nerves alternate; fruits 3-5 cm across; male flowers in shortly stalked cymes..... **Diospyros crumenata**
15. Basal pairs of lateral nerves opposite; fruits 1-2 cm across; male flowers in short axillary umbellate clusters ..... **Diospyros ebum**
16. Leaf reticulations areolate; fruits covered with short brown hairs ..... **Diospyros racemosa**
16. Leaf reticulations not areolate; fruits not covered with brown hairs ..... 17
17. Lowest pairs of lateral nerves alternate; stamens 24 in pairs; corolla campanulate ..... **Diospyros sylvatica**
17. Lowest pairs of lateral nerves opposite; stamens 36 in groups of 4; corolla salver shaped ..... **Diospyros assimilis**
18. Male flowers solitary or in pairs; fruits with yellow stinging hairs..... **Diospyros pruriens**
18. Male flowers in cymes or racemes, more than 3; fruits without yellow stinging hairs ..... 19
19. Ovary 6-8-celled..... 20
19. Ovary 4-6-celled..... 22
20. Staminodes 8; filaments villous..... **Diospyros nilagirica**
20. Staminodes 3 or 4; filaments glabrous ..... 21
21. Male flowers in axillary umbels; corolla urceolate ..... **Diospyros montana**
21. Male flowers in cymes; corolla tubular ..... **Diospyros oocarpa**
22. Larger branches with strong thorns; leaf base cordate, subcordate, obtuse or truncate ..... **Diospyros cordifolia**
22. Leaf base acute, round, cuneate or attenuate; larger branches without thorns 23
23. Lateral nerves 3-6 pairs; fruit stalk 1-2 cm long..... **Diospyros ghatensis**
23. Lateral nerves 7-12 pairs; fruit stalk 0.5 cm long ..... 24
24. Staminodes 6-9 or absent; male flowers 3 or 4 in axillary cymes ..... **Diospyros melanoxydon** var. **tupru** [p.p]
24. Staminodes 4; male flowers 6-8 in axillary cymes ... **Diospyros courtallumensis**

**Diospyros assimilis** Bedd., Madras For. Rep. 20. t.1. 1866-1867; Hook. f., Fl. Brit. India 3: 558. 1882; Gamble, Fl. Pres. Madras 775(545). 1923; Sasidh., Fl. Periyar Tiger Reserve 229. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 181. 2002.

*Local names:* Karinthali, Karu, Mushtambi

Evergreen dioecious trees, to 20 m high, bark 4-6 mm thick, black, mottled with green and white, cracked; outer bark 1 mm thick, dark black, dead, inner bark 4-5 mm thick, brittle, yellowish-brown; blaze yellow; branchlets thinly tomentose.



Leaves simple, alternate, estipulate; petiole 5-10 mm long, slender, glabrous; lamina 7-17.5 x 3.5-6.5 cm, elliptic-oblong or elliptic-obovate, base acute or unequally round, apex acuminate, margin entire, glabrous, chartaceous; lateral nerves 4-7 pairs, lowest pair usually opposite, pinnate, prominent, intercostae reticulate, prominent, pellucid. Flowers unisexual, pale yellow, sessile; male flowers 7-8 mm across, in dense axillary cymes; female flowers larger, solitary; peduncle 3-5 mm long, covered with imbricating bracts; calyx 2 mm long, cupular, densely tomentose in female; lobes 4, ovate, obtuse, glabrous, margin ciliate, reflexed; corolla 10 mm long, salver shaped, densely minutely tomentose; lobes 4, 6 x 4 mm, ovate, acute, tomentose outside; stamens 36, in groups of 4; filaments glabrous, unequal; anthers shortly unequal, acute, connective thinly villous along the back; ovary superior, 8-celled, ovule 1-in each cell Fruit a berry, globose, green, smooth.

*Flowering:* March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Thrissur, Kollam, Palakkad

*Endemic to:* Western Ghats

**Diospyros bourdillonii** Brandis, Indian Trees 435. 1906; Gamble, Fl. Pres. Madras 777(546). 1923; Mohanan, Fl. Quilon Dist. 242. 1984; Vajr., Fl. Palghat Dist. 268. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 381. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 279. 1994; Subram., Fl. Thenmala Division 207. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 269. 1996; Sivar. & Mathew, Fl. Nilambur 399. 1997; Sasidh., Fl. Periyar Tiger Reserve 229. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 181. 2002.

*Local names:* Kakkakarimaram, Karikkodal, Therikku

Evergreen dioecious trees, to 25 m high, bole fluted, buttressed; bark 6-8 mm thick, black, rough, brittle, flaking off in thin scales, blaze pink; young shoots strigose. Leaves simple, alternate, estipulate, drooping; petiole 5-10 mm long, stout, pubescent when young; lamina 7-17 x 2.5-8 cm, oblong, ovate-oblong, oblong-obovate or oblong-lanceolate, base round or obtuse, apex acuminate, margin entire, glabrous, coriaceous, lateral nerves 6-8 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers unisexual, white; male flowers in rusty tomentose axillary cymes, 10-12 mm long; pedicels 3 mm long; female flowers in brown tomentose compound cymes from old wood; pedicels 5 mm long; calyx 5-lobed, lobes 3 mm long, ovate, acute, brown tomentose, corolla tube urceolate, hispid; lobes 5, white, orbicular, deflexed; stamens 12-18, in 2 rows, equal; staminodes 10. Fruit a berry, 7.5 cm across, globose, dark green; persistent calyx cup-like, woody with short pointed lobes.

*Flowering & Fruiting:* March-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Palakkad, Pathanamthitta, Malappuram, Trivandrum, Thrissur, Idukki

*Endemic to:* Southern Western Ghats

**Diospyros buxifolia** (Blume) Hiern, Trans. Cambridge Philos. Soc. 12:218.1873; Vajr., Fl. Palghat Dist. 269. 1990; Subram., Fl. Thenmala Division 207. 1995; Sasidh. &

Sivar., Fl. Pl. Thrissur For. 270. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 192. 1997; Sasidh., Fl. Periyar Tiger Reserve 230. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 181. 2002; Mohanan & Sivad., Fl. Agasthyamala 416. 2002.

*Leucoxyllum buxifolium* Blume, Bijdr. 1169. 1826.

*Diospyros microphylla* Bedd., Ic. t. 133. 1868-1874; Hook. f., Fl. Brit. India 3: 559. 1882; Gamble, Fl. Pres. Madras 776(546). 1923.

*Local names:* Elichevian, Elichuzhi, Malamuringa

Dioecious trees, to 30 m high, bole buttressed; bark 5-6 mm thick, blackish-grey, mottled with white, brittle; blaze reddish-brown; branchlets densely golden yellow hairy. Leaves simple, alternate, bifarious, estipulate; petiole 2-3 mm, slender, hispid; lamina 1-4.5 x 0.6-2 cm, elliptic-ovate, ovate, ovate-oblong or ovate-lanceolate, base acute or cuneate, apex acute, margin entire, coriaceous, glabrous above except midrib and pubescent beneath; lateral nerves 2-3 pairs, pinnate, faint, intercostae obscure. Flowers unisexual, white; male flowers: 2-3 mm, 1-4 together in subsessile small axillary cymes; calyx densely fulvous-hairy outside; lobes 4, broadly outside; corolla campanulate, tube 0.1-0.15 cm long; lobes 4, orbicular, apiculate with a line of hairs on the back; stamens 16, in pairs, united by their filaments at base; anthers ovate, dehiscence by apical pores; pistillodes minute, hairy; female flowers: 7-8 mm, solitary, subsessile; calyx and corolla as in males; staminodes absent; ovary superior, ovoid, pubescent, 4-celled, ovule 1 in each cell; style short 2 partite. Fruit a berry, 15-18 x 10-12 mm, oblong, pointed, purple, glabrous; seeds 1-2, endosperm equable.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen and semi-evergreen forests, also grown as ornamental tree

*Distribution*

*Kerala:* Idukki, Palakkad, Kollam, Thrissur, Pathanamthitta, Trivandrum

*Geographical:* Indo-Malesia

***Diospyros candolleana*** Wight, Ic. tt. 1221 & 1222. 1848; Hook. f., Fl. Brit. India 3: 566. 1882; Gamble, Fl. Pres. Madras 773(543). 1923; Manilal & Sivar., Fl. Calicut 157. 1982; Mohanan, Fl. Quilon Dist. 243. 1984; Ansari, Fl. Kasaragod Dist. 221. 1985; Antony, Fl. Kottayam Dist. 232. 1989; Vajr., Fl. Palghat Dist. 269. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 382. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 278. 1994; Subram., Fl. Thenmala Division 207. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 192. 1997; Sasidh., Fl. Periyar Tiger Reserve 230. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 181. 2002.

*Diospyros canarica* Bedd., Ic. t.134. 1868-1874.

*Local names:* Kari, Karimaram

Dioecious trees, to 15 m high, bark 5-6 mm thick, greenish-black, smooth; young shoots pubescent. leaves simple, alternate, bifarious, estipulate; petiole 8-14 mm long stout, grooved above, rugose, glabrous; lamina 7-15 x 2.5-5 cm, oblong or elliptic-oblong, base acute, attenuate, cuneate or obtuse, apex obtusely acuminate, margin entire, coriaceous, glabrous when mature, lateral nerves 9-11 pairs, slender, pinnate, faint, intercostae reticulate, obscure. Flowers unisexual, pale yellow; male flowers: 7-8 mm across, sessile, in dense tawny tomentose, axillary fascicles; calyx 5 mm long, tomentose; lobes 5, ovate, acute or subobtuse; corolla urceolate, more than twice as long as the calyx, fulvous-hairy outside; lobes 5, ovate, acute; stamens 10, in unequal pairs; filaments glabrous; anthers lanceolate,

acute; female flowers: 10-12 mm across, sessile, 2-10 in tawny tomentose, axillary fascicles; calyx hairy on both side; lobes 5, ovate, acute, margin reflexed; staminodes 4 or 5; ovary superior, tomentose, 4-celled, ovules 1 in each cell; style 2-5, slender, tomentose; stigma hairy. Fruit a berry, 2.5 cm long, conical, green; calyx flat or shallowly cupuliform, the lobes triangular with reflexed margins; seeds 3-4, usually compressed; endosperm ruminant.

*Flowering & Fruiting:* April-March

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Pathanamthitta, Trivandrum, Kozhikkode, Palakkad, Kottayam, Kollam

*Endemic to:* Western Ghats

***Diospyros cordifolia*** Roxb., Pl. Corom. t. 50. 1795; Gamble, Fl. Pres. Madras 776(545). 1923; Sasidh., Fl. Chinnar Wildlife Sanctuary 180. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 182. 2002.

*Diospyros montana* Roxb. var. *cordifolia* (Roxb.) Clarke in Hook.f., Fl. Brit. India 3: 555. 1882.

*Local name:* Vakkana

Dioecious trees, to 10 m high; bark greyish-brown; blaze sulphur yellow; branchlets tomentose; strong often branched thorns scattered over the trunk and larger branches. Leaves simple, alternate, estipulate; petiole 3-7 mm, slender, tomentose; lamina 2.5-8 x 1.5-4 cm, oblong, oblong-lanceolate or elliptic-oblong, base cordate, round, obtuse or subtruncate, apex obtuse or acute, margin entire, softly pubescent on both sides, chartaceous; lateral nerves 4-9 pairs, pinnate, slender, faint, intercostae reticulate, obscure. Flowers unisexual, white; male flowers: 3-flowered axillary racemes; calyx hairy outside; tube 2 mm, lobes 4, 3 mm long, elliptic, obtuse or subacute, pubescent inside, margin ciliate; corolla urceolate, 6 mm, white, slightly pubescent outside; lobes 4, twisted, ovate, acute; stamens 16, 5-7 mm long, in pairs of unequal size which united at base; anthers linear-oblong, not awned, pubescent; female flowers: solitary, pedicellate; bracteoles oblong, hairy, ciliate; calyx deeply lobed, lobes 4, oblong, obtuse; corolla urceolate white; lobes 4, obtuse; staminodes 12 in a single row, lanceolate; filaments long; ovary superior, globose, glabrous; style 4, erect, bifid. Fruit a berry ca. 2 cm across, yellow, fruiting calyx enlarged to 1.5 cm, ovate, cordate, deflexed.

*Flowering & Fruiting:* February-June

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* Indo-Malesia to Australia

***Diospyros courtallumensis*** Bahadur & Gaur in Purkayastha, Indian Woods 5: 124. 1982.

*Diospyros humilis* Bourd., J. Bomb. Nat. Hist. Soc. 12. 352. t.4. 1899, non (R. Br.) F.v. Muell. 1867; Gamble, Fl. Pres. Madras 773(544). 1923; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 280. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 193. 1997; Gopalan & Henry, End. Pl. India SW Ghats 135. 2000; Mohanan & Sivad., Fl. Agasthyamala 417. 2002.

*Diospyros orixensis* Wight ex Hiern, Trans. Cambridge Philos. Soc. 12. 264. 1873, non Willd. 1805; Hook. f., Fl. Brit. India 3: 571. 1882.

*Local name:* Meruvalan

Dioecious trees; to 12 m high, bark black mottled with green and dark grey; branches terete, woody, glabrous; branchlets terete, brown, hirsute. Leaves simple, alternate, estipulate; petioles 3-5 mm long, stout, hirsute when young, glabrescent when mature; lamina 4-10 x 1.5-4.5 cm, elliptic, elliptic-acuminate, elliptic-lanceolate or ovate-oblong, base cuneate or round, apex acuminate or obtusely acuminate, margin entire, coriaceous, glabrous above, pubescent on midrib; lateral nerves 6-8 pairs, pinnate, obscure, intercostae reticulate, obscure. Flowers unisexual, white; female flowers solitary, axillary; male flowers in 6-8 flowered cymes, axillary; pedicels upto 3 mm; calyx tube short, glabrous; lobes 4, orbicular, glabrous, margin ciliate; petals 4, white, small, lanceolate, sparsely hairy without, glabrous within, entire, obtuse or acute; stamens 12; anthers small; staminodes 4; disc hirsute between sepals and petals; ovary minute, superior, globose, 4-celled, ovule 1-in each cell. Fruit a berry, 2.5 x 2.5 cm, globose-ovoid, hirsute at base; calyx lobes not enlarged; endosperm equable.

*Flowering & Fruiting:* January-July

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Kollam

*Endemic to:* Southern Western Ghats

***Diospyros crumenata*** Thw., Enum. Pl. Zeyl. 179. 1860; Hook. f., Fl. Brit. India 3: 567. 1882; Sasidh. & Sivar., Fl. Pl. Thrissur For. 270. 1996.

*Local name:* Karimaram

Evergreen dioecious trees, to 25 m high, bark 4 mm thick, black, thin scaly with small depression, blaze creamy yellow turning to brown on exposure; branchlets glabrous. Leaves simple, alternate, estipulate; petiole 7-13 mm, stout, grooved above, glabrous; lamina 7.5-15 x 3.5-6.8 cm, ovate-oblong or elliptic-oblong, base obtuse, obtuse or acute, apex bluntly acute or acuminate, margin entire, glabrous, glossy, coriaceous; lateral nerves 7-10 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual, yellow; male flowers; 3-7 flowers in shortly stalked cymes; peduncle 3-10 mm long, pilose; pedicels nodding, short, ultimate ones 1-4 mm; calyx large, cupular, tomentose on outside; lobes 4, obtuse; corolla tubular, 14 mm long, yellow; lobes 4, short, broad, rounded, recurved; stamens about 12, 4-6 mm long, subequal; pistillode small or absent; female flowers: solitary, axillary; pedicel short, stout; calyx large, cupular, tomentose on both surfaces, corolla tubular, 15 mm long, densely tomentose, yellowish-white; lobes 4, broad acute, patent or reflexed; staminodes 8-12, epipetalous, unequal, ovary superior, pilose, 8-celled, ovule 1-in each cell; stigmas 4, fleshy, short. Fruit a berry, subglobose, 3-5 cm across, smooth; calyx much enlarged, nearly flat, woody; seeds 1-8, 2.2 x 1.2 cm, oblong, compressed, glossy black; endosperm ruminant.

*Flowering & Fruiting:* April-February

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Thrissur

*Geographical:* South West India and Sri Lanka

**Diospyros ebenum** Koenig, Physiogr. Salsk. Mag. 1: 176. 1781; Hook. f., Fl. Brit. India 3: 558. 1882; Gamble, Fl. Pres. Madras 775(545). 1923; Mohanan, Fl. Quilon Dist. 243. 1984; Sasidh., Fl. Chinnar Wildlife Sanctuary 181. 1999.

*Local names:* Ebony, Mushtambi, Vayari

Evergreen dioecious trees, to 15 m high, bark black or grey-black, rough, peeling off in small rectangular pieces, fissured, brittle; blaze yellow; branchlets slender, apical part sparsely minutely adpressed pilose or glabrous. Leaves simple, alternate, estipulate; petiole 4-10 mm long, slender, glabrous; lamina 4.5-15 x 4-7 cm, elliptic-oblong, oblong, oblong-lanceolate, obovate or obovate-oblong, base cuneate or acute, apex obtuse, emarginate or subacute, margin entire, glabrous, coriaceous; lateral nerves 5-11 pairs, pinnate, prominent, basal pairs opposite, intercostae reticulate, prominent, pellucid. Flowers unisexual, subsessile, greenish-yellow; male flowers: 3-15 in short, axillary, umbellate clusters; peduncle densely tomentose; pedicel 3 mm; calyx cupular, glabrous; lobes 4, ovate, spreading, margin ciliate; corolla 7 mm long, 1 cm across, tubular to salver-shaped; lobes 4, ovate-oblong, 6 mm long; stamens 6-12, unequal, in uneven groups; filaments 1.5-3.5 mm long; anthers linear, connectives crested, apiculate; pistillode linear to 2 mm; female flowers: solitary, axillary, pedicel to 3 mm; calyx cupular, mouth densely tomentose; lobes 4, ovate, spreading, subacute; corolla 3 mm across, tubular; tube 6 mm; lobes 4, each 6 mm, acute, reflexed; staminodes 8 with double anthers; ovary superior, 4.5 x 4 mm, globose, 8-celled, ovules 1-in each cell; styles 4; stigma capitellate. Fruit a berry, 2 x 1.8 cm, subglobose, with short apical beak; calyx enlarged and forming a shallow wooden cup; reflexed; seeds 3-8, black; endosperm equable.

*Flowering & Fruiting:* February-April

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Kollam, Idukki

*Geographical:* Peninsular India and Sri Lanka

*Status:* Data deficient (IUCN, 2000)

**Diospyros foliosa** Wall. ex A. DC. in DC., Prodr. 8: 234. 1844; Hook. f., Fl. Brit. India 3: 556. 1882; Gamble, Fl. Pres. Madras 774(544). 1923; Subram., Fl. Thenmala Division 205. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 193. 1997; Mohanan & Sivad., Fl. Agasthyamala 416. 2002.

*Diospyros calycina* Bedd., Fl. Sylv. t. 68. 1870, non Spach. 1838.

*Local names:* Kattupanachi, Vellathuvara

Glabrous dioecious trees, to 10 m high; bark dark brown, smooth; branchlets slender. Leaves simple, alternate, estipulate; petiole about 6 mm long, slender, glabrous; lamina 5-12 x 1-3.2 cm, narrowly lanceolate, base attenuate, apex acuminate, margin entire, coriaceous, glabrous, shining above; lateral nerves 4-5 pairs, pinnate, slender, prominent, intercostae reticulate, faint, pellucid. Flowers unisexual, bright yellow; male flowers: 5-9 in lax axillary cymes; calyx 0.2-0.3 cm long, 4-lobed to half way; corolla urceolate, very gibbous at base; tube 0.8-1 cm long; lobes 4, bright yellow; stamens 12-16, in pairs, equal, apex of the anthers inflexed and long acuminate; filaments slightly hairy; pistillode rudimentary; female flowers: solitary, axillary; pedicel 1.5-2 cm long; calyx and corolla as in male flowers; staminodes absent ovary superior, globose, hairy, 4-celled, ovule 1 in each

cell; stigma 4-lobed. Fruit a berry, 2-2.5 cm across, globose, covered with hair like scales; fruiting calyx enlarged, foliaceous, 1.5-2 x 1-1.5 cm, ovate-cordate; seed 1 or 2, ellipsoid, laterally compressed, brownish-black; endosperm equable.

*Flowering & Fruiting:* April-June

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Trivandrum, Kollam

*Endemic to:* Southern Western Ghats

**Diospyros ghatensis** Ramesh & Franceschi, *Blumea* 38: 131. 1993; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 271. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 193. 1997; Sasidh., *Fl. Periyar Tiger Reserve* 230. 1998.

Dioecious trees, to 25 m high, bark surface brownish-black, smooth; blaze dull yellow; young branchlets hirsute and glabrous on maturity; axillary buds covered by imbricate, cauducous scales; young shoots with several scars of fallen scales at base. Leaves simple, alternate, bifarious, estipulate; petiole 3-11 mm long, slender, glabrous; lamina 3-13.5 x 3-6 cm, elliptic or elliptic-lanceolate, base acute or attenuate, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves 3-6 pairs, pinnate, prominent, intercostae reticulate, faint. Flowers unisexual, creamy white; male flowers: sessile, in axillary cymes of 1.8 cm long, brown tomentose; bracts imbricately arranged, persistent, suborbicular, abaxial side tomentose, adaxial side glabrous, margin ciliate; calyx 3 mm long, tomentose outside, glabrous inside; lobes 4, 2 mm long, ovate, acute; corolla creamy white, sparsely hairy outside, glabrous inside; tube 6 mm long; lobes 4, obliquely ovate; stamens 16, in opposite pairs, 2.5-4 mm long; connective slightly hairy; pistillode about 1 mm across, glabrous, 8-grooved, with bifid apex; female flowers unknown. Fruit a berry, to 2.5 cm across, globose, solitary on a peduncle with several bract scars, glabrous, 4-celled; fruiting calyx not very accrescent, about 1 cm across; seeds 1-4, flat, 1.3 cm long, albumen not ruminant.

*Flowering & Fruiting:* April-November

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kollam, Thrissur

*Endemic to:* Southern Western Ghats

**Diospyros hirsuta** L.f., *Suppl. Pl.* 440. 1781; Hook. f., *Fl. Brit. India* 3:565.1882; Nair & Mohanan, *J. Econ. Tax. Bot.* 3: 623. 1982; Mohanan, *Fl. Quilon Dist.* 243. 1984; Antony, *Fl. Kottayam Dist.* 233.1989; Anil Kumar, *Fl. Pathanamthitta Dist.* 382.1994.

Dioecious trees, to 6 m high, bark 3 mm thick, black, finely fissured; branches horizontal; young parts subadpressed densely pubescent. Leaves simple, alternate, estipulate; petiole 8-11 mm long, slender, grooved above, densely pubescent; lamina 7-17 x 3.5-7 cm, ovate-lanceolate, elliptic or oblong, base round, truncate or acute, apex acuminate, caudate-acuminate or acute, margin entire, coriaceous, adpressed pubescent especially beneath when young and glabrous above and adpressed pilose beneath when mature; lateral nerves 5-8 pairs, pinnate, slender, prominent, secondary laterals present, intercostae reticulate, prominent. Flowers unisexual, yellow; male flowers: in axillary, dense, sessile cymes; bracteoles small, pilose; calyx 2.5 mm long, pubescent; lobes 4-5, 1 mm long, acute; corolla 5 m long,

tubular, yellow, throat narrow; lobes 4-5, overlapping in bud, acute; stamens 5, epipetalous, alternate with corolla lobes, glabrous, apiculate, filaments short; pistillode rudimentary; female flowers: 1-3, in sessile axillary clusters; bracteolate; calyx 7-9 mm long; lobes 4-5, silky brown, 3-4 mm long, triangular, reflexed; corolla upto 9 mm long, yellow; lobes 5, acute; staminodes 5, apiculate; filaments glabrous; ovary superior, globose, apiculate, densely pubescent, 8-10-celled, ovule 1-in each cell; styles 2, 2 mm long. Fruit a berry 3 x 2.5 cm, ellipsoid-ovoid to subglobose, densely, coppery-rusty haired, seated on enlarged reflexed calyx; seeds 1-8, brownish-black, endosperm ruminant.

*Flowering & Fruiting:* March-June

*Habitat:* Along banks of rivers

*Distribution*

*Kerala:* Kollam, Kottayam, Pathanamthitta

*Geographical:* Peninsular India and Sri Lanka

**Diospyros melanoxydon** Roxb., Pl. Corom. t. 46. 1795, var. **melanoxydon**; Hook. f., Fl. Brit. India 3: 564. 1882; Gamble, Fl. Pres. Madras 772(543). 1923; Sasidh., Fl. Chinnar Wildlife Sanctuary 181. 1999.

*Diospyros dubia* Wall. ex A. DC. in DC., Prodr. 8: 223. 1844.

*Diospyros exsculpta* Bedd., Fl. Sylv. t. 66. 1870, non Buch.-Ham. 1827.

*Diospyros wightiana* Wall. ex A. DC. in DC., Prodr. 8: 223. 1844.

*Local name:* Beeddiyamaram

Dioecious trees, to 20 m high, bark 10 mm, brown, deeply fissured; ridges black, fissures lighter; young parts rusty-tomentose. Leaves simple, alternate or subopposite, estipulate; petiole 4-10 mm long, slender, tomentose; lamina 3.5-15 x 3-6.5 cm, elliptic, elliptic-oblong or ovate, base acute or obtuse, apex obtuse, round or subacute, often emarginate, margin entire, glabrescent above, thinly pubescent below, coriaceous, lateral nerves 5-9 pairs, pinnate, prominent intercostae subscalariform, slender, faint. Flowers unisexual, white; male flowers: in short densely tawny-tomentose drooping axillary cymes, sometimes at the base of branchlets; peduncle 7 mm, tomentose; calyx yellowish-green, campanulate; lobes 5, ovate, tomentose, acute; corolla tubular, thin-fleshy; tube 1 cm, appressed hairy without; lobes 5, ovate, 3 mm, acute, reflexed; stamens 10-16, in pairs; anthers 2 mm, oblong, acute or apiculate; pistillode reduced, pubescent; female flowers: solitary, axillary; pedicel 4 mm long, stout, tomentose; bracteoles present; calyx green to brown, deeply 5-lobed; lobes ovate, 7 mm, margin folded-crinkled, acute; corolla tubular, thin-fleshy, tube 1 cm, appressed hairy without; lobes 5, ovate, 3 mm, acute, reflexed; staminodes 8-10, 4 mm, lanceolate; ovary superior, 4 mm across, globose, tomentose, 6-celled, ovules 1-in each cell; style 3 mm long, bifid. Fruit a berry, globose, apiculate, rusty-tomentose when young, glabrous later; calyx slightly enlarged, fulvous-tomentose, margin reflexed; seeds 1-4.

*Flowering & Fruiting:* March-July

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* Peninsular India and Sri Lanka

**Diospyros melanoxyton** Roxb. var. **tupru** (Buch.-Ham.) V. Singh, Monogr. Indian Diospyros 159. 2005.

*Diospyros tupru* Buch.-Ham., Trans. Linn. Soc. London 15: 111. 1827; Hook. f., Fl. Brit. India 3: 563. 1882.

*Diospyros tomentosa* Roxb., Fl. Ind. 2: 532. 1832; Hook. f., Fl. Brit. India 3: 564. 1882; Gamble, Fl. Pres. Madras 772(543). 1923; Vajr., Fl. Palghat Dist. 270. 1990.

Dioecious trees, to 15 m high, bark spongy, deeply transversely and longitudinally cracked; branches ferruginous tomentose. Leaves simple, alternate, opposite or subopposite, estipulate; petiole 5-30 mm long, slender, grooved above, pubescent; lamina 3.5-16 x 3-11 cm, elliptic, elliptic-ovate, ovate, obovate-elliptic, oblong, obovate-oblong or orbicular, base round or cuneate, apex obtuse, round or emarginate, margin entire, glabrous above and pubescent beneath, coriaceous; lateral nerves 8-12 pairs, pinnate, prominent, intercostae reticulate. Flowers unisexual; male flowers: in axillary 3-flowered tomentose cymes; peduncle to 1.5 cm long, tomentose; bracts ferruginously downy; calyx campanulate, hairy; lobes 4 or 5, ovate-triangular; corolla tube urceolate, ferruginous out side, glabrous within; lobes 4 or 5, ovate; stamens 12-16-[ 18]; filaments glabrous; connectives fulvous pilose on the back; female flowers: subsessile, axillary, solitary; bracts 3-4, scale-like, cauducous; calyx campanulate, hairy; lobes 4 or 5 rarely[6], triangular, margin reflexed; corolla tube cylindric-urceolate, hairy outside, glabrous within; lobes 4 or 5; staminodes 6-9 or absent; ovary superior, globose, hairy, 4-5-celled, ovule-1 in each cell; styles 2; stigmas 4. Fruit a berry, ovate-globose, smooth, seated on accrescent flat calyx with the lobes spreading with reflexed margins; pulp yellow; seeds 5.

*Fruiting:* November

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Wayanad

*Geographical:* India

**Diospyros montana** Roxb., Pl. Corom. t. 48. 1795; Hook. f., Fl. Brit. India 3: 555. 1882; Gamble, Fl. Pres. Madras 776(545). 1923; Sasidh. & Sivar., Fl. Pl. Thrissur For. 271. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 194. 1997; Sasidh., Fl. Periyar Tiger Reserve 231. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 182. 2002.

*Local names:* Malayakathitholi, Manjakara

Dioecious trees, to 20 m high, bark smooth, grey or yellowish-grey; blaze turmeric yellow; exudation scanty, watery; bole and branches with long hard, stiff, divaricate spines formed from stumps of branches; branchlets slender, glabrous, only those of the flush sparsely minutely pilose. Leaves simple, alternate, estipulate; petiole 5-10 mm, slender, grooved above, glabrous; lamina 4-10 x 2-4 cm, ovate, ovate-oblong, elliptic-oblong, base round, obtuse, subcordate or acute, apex obtuse, subacute or obtusely acuminate, margin entire, chartaceous, more or less softly pubescent when young, glabrous at maturity; lateral nerves 5-10 pairs, pinnate, slender, faint, intercostae reticulate, faint. Flowers unisexual, white; male flowers : 2-6 in axillary umbels; peduncle to 5 mm; calyx 3 mm long; lobes 4, ovate, imbricate, thick, margin ciliate, obtuse; corolla 6-7 mm long, greenish-yellow, urceolate, glabrous;



lobes 4, ovate, imbricate, 2.5 mm long, subacute; stamens 16, roughly in 8 pairs, unequal; anthers lanceolate, awned; pistillode conical, pointed; female flowers: solitary, axillary; pedicel to 4 mm; calyx and corolla as in male flowers; staminodes 4, 5 mm, linear-lanceolate; ovary superior, 0.7 mm across, globose, glabrous, 8-celled, ovule one in each cell; styles 4, 1.5 mm long; stigma capitate; Fruit a berry, 1.5-2 cm across, ovoid to obconical, yellow to orange, glaucous; calyx foliaceous, slightly enlarged, foliaceous, reflexed; seeds 3-6, rough, black; endosperm equable.

*Flowering & Fruiting:* April-February

*Habitat:* Moist deciduous and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Kollam, Thrissur, Palakkad

*Geographical:* Indo-Malesia to Australia

**Diospyros nilagirica** Bedd., Ic. t. 136.1868-1874; Hook. f., Fl. Brit. India 3:566.1882; Gamble, Fl. Pres. Madras 775(545).1923; Manilal, Fl. Silent Valley 168. 1988; Vajr., Fl. Palghat Dist. 269. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 383. 1994; Sivar. & Mathew, Fl. Nilambur 400. 1997; Sasidh., Fl. Periyar Tiger Reserve 231. 1998.

*Local names:* Karimchora, Karu

Evergreen dioecious trees, to 18 m high, bark 10-12 mm thick, black, smooth; blaze yellow; branchlets, young leaves and inflorescence densely rufous tomentose. Leaves simple, alternate, estipulate; petiole 6-12 mm, slender, glabrous; lamina 5-15 x 2-4 cm, elliptic, oblong-lanceolate or ovate, base attenuate, apex acuminate, margin entire, reflexed, coriaceous, densely rufous tomentose when young, glabrous when mature; lateral nerves 6-9 pairs, slender, pinnate, faint, intercostae reticulate, faint Flowers unisexual, yellowish-white; male flowers: 3-6, in axillary cymes, 10-12 mm long; calyx campanulate, deeply 4 lobed; lobes broadly ovate or orbicular, obtuse, densely fulvous hairy, margin strongly reflexed; corolla salver shaped; lobes 4, ovate, obtuse, hairy without, twisted; stamens 16, in pairs of unequal length; filaments of each pairs connate at base, villous; anthers lanceolate, apiculate; pistillode globose, densely hairy; female flowers : solitary, axillary, sessile, calyx and corolla as in male flowers; staminodes 8, longer and shorter alternate with each other; filaments villous; anthers linear; ovary superior, sessile, globose, 8-celled, ovule 1 in each cell, densely hairy; styles 4, much reflexed; stigma dilated. Fruit a berry 2.5 x 2.5 cm, globose, green, glabrous, calyx not enlarged; seeds 12 x 7 mm, compressed; endosperm equable.

*Flowering & Fruiting:* February-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad, Malappuram, Wayanad

*Endemic to:* Southern Western Ghats

**Diospyros oocarpa** Thw., Enum. Pl. Zeyl. 180.1860; Hook. f., Fl. Brit. India 3:560.1882; Gamble, Fl. Pres. Madras 774(544). 1923; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 280. 1994.

*Local name:* Karunkali

Trees, to 20 m high, base of the straight bole sometimes fluted; buttresses small, concave; bark 3-5 mm thick, yellowish to pale brown, peeling off in large irregular

pieces leaving scalloped pits; branchlets slender, softly hirsute. Leaves simple, alternate, estipulate; petiole 5-9 mm long, slender, grooved above, densely hirsute; lamina 4-9 x 2-5 cm, ovate or elliptic-oblong, base round, subcordate or cuneate, apex obtusely acuminate or subacute, margin entire, fulvous hairy on both sides, often glabrescent above except the depressed midrib, chartaceous; lateral nerves 6-10 pairs, pinnate, slender inconspicuous, intercostae reticulate, obscure. Flowers unisexual; male flowers: 3-7 together, subsessile, in axillary fulvous-silky cymes; bracts round, concave, silky hairy; calyx barrel shaped, silky; lobes 4, indistinct; corolla tubular, yellow, pubescent outside, throat narrow; lobes 3-4, about equaling the tube, ovate-oblong, much imbricate in bud; stamens 9-14, unequal, single or in pairs; filaments glabrous; anthers pilose; pistillode none or a hairy disc present; female flowers: 1-3 together, similar to and slightly larger than the male; calyx and corolla as in male flowers; staminodes 3, epipetalous; ovary superior, globose, hairy, 6-8-celled, ovule 1-in each cell; stigmas 1-3, short. Fruit a berry, oblong-ovoid, wider at the top, apiculate, glabrous, black, seated on a slightly enlarged, funnel shaped calyx; seeds oblong with 2 longitudinal groove; endosperm equable.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Idukki

*Geographical:* South India and Sri Lanka

**Diospyros ovalifolia** Wight, Ic. t. 1227. 1848; Hook. f., Fl. Brit. India 3: 559. 1882; Gamble, Fl. Pres. Madras 777(546). 1923; Mohanan, Fl. Quilon Dist. 244. 1984; Ramach. & Nair, Fl. Cannanore Dist. 265. 1988; Sasidh., Fl. Periyar Tiger Reserve 231. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 181. 1999; Mohanan & Sivad., Fl. Agasthyamala 417. 2002.

*Local names:* Karimaram, Karimbala

Dioecious trees, to 20 m high, bark dark brown with superficial ridges; blaze dull yellow; branchlets slender, sparsely, minutely adpressed-pilose apically. Leaves simple, alternate, estipulate; petiole 7-15 mm long, stout, grooved above, glabrous; lamina 6.5-15 x 2-7 cm, elliptic, oblanceolate, obovate or obovate-oblong, base cuneate or acute, apex subacute, obtuse or round, margin entire, glabrous, coriaceous; lateral nerves 5-8 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers unisexual, yellowish-white, in short fascicles, usually in the axils of fallen leaves; male flowers: calyx broadly campanulate, lobes 4-5, ovate, 3 mm, thick, appressed-hairy, margin ciliate, acute; corolla tubular-campanulate, thin fleshy; tube 4 mm long; lobes 4, ovate, acute, 1.5 mm long, twisted, spreading; stamens 14-20, paired, unequal; female flowers: subsessile, 1 cm across; calyx broadly campanulate; lobes 4-5, 4 mm long, ovate, appressed hairy without, acute, margin ciliate; corolla tubular-campanulate, 4 mm long, thin fleshy; lobes 5, 3 mm long, ovate, subacute, strongly reflexed; staminodes 4, spatulate, 4 mm long, sometimes lacking; ovary superior, 3 mm long, globose, appressed pubescent, 4-celled, ovule 1-in each cell; stigma 4-lobed, subsessile. Fruit a berry, 1-2 cm across, pubescent when young, glabrous later; calyx strongly reflexed, tawny-pubescent; endosperm equable.

*Flowering & Fruiting:* March-August

*Habitat:* Semi-evergreen and deciduous forests

*Distribution*

*Kerala:* Kollam, Idukki, Kannur, Trivandrum

*Geographical:* Peninsular India and Sri Lanka

**Diospyros paniculata** Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 4: 109. 1852; Hook. f., Fl. Brit. India 3: 570. 1882; Gamble, Fl. Pres. Madras 775(544). 1923; Mohanan, Fl. Quilon Dist. 244. 1984; Ramach. & Nair, Fl. Cannanore Dist. 265. 1988; Vajr., Fl. Palghat Dist. 269. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 383. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 280.1994; Subram., Fl. Thenmala Division 208. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 271. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 194. 1997; Sivar. & Mathew, Fl. Nilambur 400. 1997; Sasidh., Fl. Periyar Tiger Reserve 231. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 182. 2002; Mohanan & Sivad., Fl. Agasthyamala 418. 2002.

*Local names:* Karivella, Ilakkatta

Dioecious trees, to 15 m high, bark 7-8 mm thick, smooth, black often with grey blotches; blaze dull red; branchlets angular, pubescent. Leaves simple, alternate, estipulate; petiole 7-10 mm long, stout, wrinkled, puberulent when young; lamina 12-20 x 4-7 cm, oblong or oblong-lanceolate, base acute, round or cuneate, apex acute, acuminate or obtusely acuminate, margin entire, reflexed near the base, glabrous, coriaceous; lateral nerves 6-9 pairs, pinnate, prominent, intercostae reticulate, surface finely reticulate. Flowers unisexual greenish-yellow; male flowers: in 3-5 together in short paniced cymes with a pair of ovate-cordate bracts; bracts 1 x 0.8 cm, pubescent; calyx 10 x 12 mm, globose, 5-angled, minutely hispid, deeply lobed; lobes-5, ovate-obtuse, margin reflexed, prominently veined, pubescent; corolla dull or creamy white, tube 12 mm long, pentagonal, narrowed above, hispid; lobes 5, 8 x 4 mm, oblong; stamens 16-20 in pairs, equal; anthers linear, acute; pistillode absent; female flowers; solitary, axillary; pedicel to 2 cm long; bracts larger than those of the male flowers; calyx glabrescent; staminodes 10; ovary superior, 4-celled, ovule 1 in each cell, tomentose; stigma 4, unequal. Fruit a berry, 3-4 x 2-3 cm, ovoid to obovoid, obtuse, obtusely 5-angled, yellowish-brown, puberulous; calyx 1.5 x 3 cm, saccate; seeds few, 2 x 0.8 cm.

*Flowering & Fruiting:* January-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Palakkad, Pathanamthitta, Malappuram, Kannur, Idukki, Trivandrum, Thrissur

*Endemic to:* Western Ghats

**Diospyros peregrina** (Gaertn.) Engl. & Prantl, Nat. Pflanzenf. 4(1): 164. 1891; Gamble, Fl. Pres. Madras 777(546). 1921; Manilal & Sivar., Fl. Calicut 157. 1982.

*Embryopteris peregrina* Gaertn., Fruct. 145. 1788.

*Diospyros malabarica* (Desr.) Kostel., Allg. Med. Pharm. Fl. 3: 1099. 1834; Mohanan, Fl. Quilon Dist. 243. 1984; Antony, Fl. Kottayam Dist. 233. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 382. 1994; Sasidh., Fl. Periyar Tiger Reserve 231. 1998; Sunil, Fl. Pl. Alappuzha Dist. 499. 2000.

*Garcinia malabarica* Desr. in Lam., Encycl. 3: 701. 1792.

*Diospyros embryopteris* Pers., Syn. 2: 624. 1807; Hook. f., Fl. Brit. India 3: 556. 1882.

*Local names:* Panachi, Vananji

Dioecious trees, bark black with greenish tinge flaking off in thick scales; branchlets glabrous. Leaves simple, alternate, distichous, estipulate; petiole 8-12 mm long, stout, grooved above; lamina 13-25 x 4-7 cm, oblong or oblong-lanceolate, base round, obtuse or acute, apex acute or obtuse, margin entire, glabrous and shining, coriaceous; lateral nerves 6-8 pairs, pinnate, prominent, intercostae reticulate, prominent, pellucid. Flowers unisexual, pale yellow; male flowers: 2-7 in axillary, drooping cymes, peduncle short; calyx 6.35 mm long, lobes 4, broadly ovate, pubescent inside, margin ciliate; corolla 1 cm long, campanulate; lobes 4, ovate, round at apex, with a pubescent patch on the back of each lobe, imbricate; stamens usually 40, in pairs, inserted at the base of the corolla tube or on the receptacle beneath it; filaments hairy; anthers nearly equal, linear with a line of hairs up the middle; pistillode fleshy; female flowers: 2.5 cm across, usually solitary, axillary, drooping; pedicels very short; calyx deeply divided; lobes 4, appressed-pubescent, ovate, acute, thick; corolla 12.5 mm long, campanulate, deeply divided; lobes 4, ovate, obtuse, thick-fleshy, appressed hairy on the back, recurved; staminodes 4-12, hairy, inserted at the base of corolla tube; ovary superior, globose, 8-celled, ovule 1-in each cell, subsessile, glandular-hairy without; style 4; stigma lobed, undulate. Fruit a berry, 5-6 cm across, subglobose, yellow, covered with a rusty easily detachable scruffiness; calyx much enlarged, green, woody, spreading reflexed, covered with rusty tomentum; pericarp thin, pulp viscid and glutinous; seeds 4-8, flattened, reddish-brown.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen forests and sacred groves

*Distribution*

*Kerala:* Kozhikkode, Kottayam, Kollam, Idukki, Pathanamthitta, Alappuzha, Wayanad

*Geographical:* Indo-Malesia

***Diospyros pruriens*** Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 4: 110. 1852; Hook. f., Fl. Brit. India 3: 553. 1882; Gamble, Fl. Pres. Madras 774(544). 1923; Ansari, Fl. Kasaragod Dist. 222. 1985; Ramach. & Nair, Fl. Cannanore Dist. 265. 1988; Manilal, Fl. Silent Valley 168. 1988; Sivar. & Mathew, Fl. Nilambur 400. 1997; Sasidh., Fl. Periyar Tiger Reserve 232. 1998.

*Local names:* Ilakkatta, Paikkettu

Dioecious trees, to 10 m high, bark black, scurfy scaly; blaze pale red; branchlets densely hirsute-pubescent. Leaves simple, alternate, estipulate; petiole 3-5 mm long, stout, hirsute; lamina 6-16 x 2-5 cm, elliptic or elliptic-oblong or oblong-lanceolate, base round or subcordate, apex acute or obtusely acuminate, margin entire, fulvous-hirsute, often glabrescent above except midrib, membranous, lateral nerves 7-12 pairs, pinnate, slender, prominent, secondary laterals present, intercostae reticulate, prominent. Flowers unisexual, yellowish-white; male flowers: 1-2 flowered axillary cymes, close together in the upper axils; pedicels articulated at base; bracts small, ovate, cauducous, glabrous inside; calyx 6.35 mm long, divided nearly to the base, fulvous hairy, lobes 4, linear-oblong; corolla 12.7-19.05 mm long, silky hairy outside; lobes 4, ovate-oblong, obtuse, about as long as the tube; stamens 12-14, unequal, glabrous, connate at the base, shorter than the corolla

tube; anthers as long as the filaments; pistillode densely hairy; female flowers: solitary, crowded in the upper axils; calyx 6.35 mm long, 4 partite; lobes oblong, spreading, hairy; corolla 9.52-12.7 mm long, 4-lobed, constricted about the middle; staminodes 4, small; ovary superior, fulvous-hairy, 4-celled, ovule 1 in each cell; style 2, short, almost concealed by the hairs on the ovary, bifid at the apex. Fruit a berry 2.5 cm long, ovoid-conical, clothed with yellow stinging hairs, supported by the persistent, deflexed, slightly enlarged calyx lobes; endosperm equable.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Malappuram, Kannur, Palakkad

*Endemic to:* Western Ghats

***Diospyros pyrrocarpoides*** Ramesh & Franceschi, *Blumea* 38: 133. 1993; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 271. 1996.

Dioecious trees, to 15 m high, bark brown, mottled with green, blaze yellow; branchlets slender, glabrous except in inflorescence parts. Leaves simple, alternate, bifarious, estipulate; petiole 6-20 mm long, slender, grooved above, glabrous; lamina 2.5-7 x 3-13 cm, oblong, elliptic-oblong or oblong-lanceolate, base round or truncate and slightly decurrent, apex obtusely acute, margin entire, glabrous, coriaceous; lateral nerves 8-11 pairs, pinnate, slender, prominent, intercostae reticulate, slender, prominent, pellucid. Flowers unisexual, creamy white; male flowers: 3-4 flowers in short subsessile cymes located near the base of new shoots; calyx 5.5 mm long, tomentose on either side; lobes 5, 2.5 mm long, triangular, acute, margin slightly reflexed; corolla tube 6 mm long, 3 mm long, tomentose outside, glabrous inside; lobes 5, broadly ovate, acute, spreading recurved, tomentose on both side; stamens about 20, 2.5 to 3 mm long; filaments 0-0.4 mm long; glabrous; pistillode about 1 mm across, hairy; female flowers: solitary, sessile, near the base of young shoots; calyx 7 mm long, densely tomentose on either side; lobes 5, 4 mm long, ovate, acute, longitudinally folded outside and slightly reflexed; corolla tomentose except for the tube inside; tube 3 mm long; lobes ovate, bluntly acute at apex; staminodes 5 adnate to the base of corolla; ovary superior, 3 mm across, orbicular, tomentose, 4-celled, ovule one in each cell; stigma subsessile, bilobed. Fruit a berry, 3 cm across, globose, subsessile, densely brown tomentose; fruiting calyx accrescent, strongly reflexed with thin wavy margin.

*Flowering & Fruiting:* May-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Palakkad, Thrissur

*Geographical:* Western Ghats and Andamans

***Diospyros racemosa*** Roxb., *Fl. Ind.* 2: 536. 1824; Vajr., *Fl. Palghat Dist.* 270. 1990.

*Diospyros toposia* Buch.-Ham., *Trans. Linn. Soc. London* 15: 115. 1827; Hook. f., *Fl. Brit. India* 3: 556. 1882; Gamble, *Fl. Pres. Madras* 778(547). 1923; Sasidh., *Fl. Periyar Tiger Reserve* 232. 1998.

Dioecious trees, to 20 m high, bark 5 m thick, greyish-brown, rather smooth, hardly peeling off; branchlets slender, glossy, drying pale brown, glabrous. Leaves simple, alternate, estipulate; petiole 5-12 mm long, slender, flat above, glabrous; lamina 10-

30 x 2-10 cm, elliptic, ovate or oblong-lanceolate, base acute or round, apex acuminate, glabrous, coriaceous, surfaces areolate-reticulate; lateral nerves 8-9 pairs, pinnate, slender, prominent, intercostae reticulate, pellucid. Flowers unisexual, pale yellow; male flowers; 3-12 flowers in cymes, in the axils of cauducous bract or leaf; peduncle 8-12 mm long, slender, brown hairy; pedicel upto 5 mm long, slender, pilose, pilose; bract 2 mm long, hood-shaped; bracteole 1.5 mm, pilose; calyx rough but not hairy, quite entire when young at length, splitting irregularly at base; lobes acute, unequal; corolla yellow urceolate, with a very narrow throat; lobes 4, middle line pilose inside; stamens 20-30, in pairs of unequal length; filaments glabrous; pistillode none or a small disc; female flowers: usually solitary, axillary pedicel 6-10 mm, slender, with minute adpressed hairs, slightly enlarged towards apex; calyx deeply cut in to 4 tapered acute lobes, both sides sericeous; corolla yellowish-white, urceolate to urceolate-tubular; lobes 4, triangular, acute; staminodes 12-16 in an epipetalous ring, short; ovary densely pubescent, 4-6-celled, ovules 1-in each cell; stigma short. Fruit a berry, ovoid-ellipsoid, top flattened, yellow covered with very short brown hairs, 2.5 x 2-4 cm; calyx 1.5-2.5 cm across, lobes triangular-ovate, 5-10 mm long, glabrescent.

*Flowering:* February

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India and Sri Lanka

**Diospyros sulcata** Bourd., For. Trees Travancore 225. 1908; Gamble, Fl. Pres. Madras 777(546). 1923.

Dioecious trees, bark blackish-grey, smooth. Leaves simple, alternate, estipulate; petiole 12-19 mm long, glabrous; lamina 15.2 x 5.5 cm, oblong or oblong-lanceolate, base cuneate, apex acuminate, margin entire, glabrous, pellucid, coriaceous. Flowers unisexual; male flowers not known; female flower; solitary or 2-5 together, sessile axillary or on the old wood, 5-merous; staminodes 5, ovary superior, 10-celled, ovule 1 in each cell, covered with rusty tomentum; stigma 5. Fruit a berry 3 x 2.5 cm, a truncate cone, apex at first covered with rusty tomentum, at length glabrous, marked with 8-10 deep longitudinal grooves; calyx green, coriaceous, some what enlarged; endosperm equable.

*Flowering & Fruiting:* January-July

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Pathanamthitta

*Endemic to:* Southern Western Ghats

*Status:* Possibly extinct (Nayar, 1997)

*Note:* We did not come across this species during the study.

**Diospyros sylvatica** Roxb., Pl. Corom. t. 47. 1795; Hook. f., Fl. Brit. India 3: 559.

1882; Gamble, Fl. Pres. Madras 773(543). 1923; Vajr., Fl. Palghat Dist. 270. 1990;

Sasidh. & Sivar., Fl. Pl. Thrissur For. 271. 1996; Sasidh., Fl. Shenduruny Wildlife

Sanctuary 194. 1997; Sivar. & Mathew, Fl. Nilambur 401. 1997; Sasidh., Fl. Periyar

Tiger Reserve 232. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 182. 2002.

*Local name:* Karimaram

Dioecious trees, to 18 m high, bark 3 mm thick, dull grey to black, thin; blaze yellow; branchlets puberulous. Leaves simple, alternate, estipulate; petiole 5-10 mm long, slender, glabrous; lamina 5-15 x 2-5 cm, elliptic, ovate, elliptic-oblong or elliptic-obovate, base acute or cuneate, apex acute, acuminate or obtusely acuminate, margin entire, glabrous, shining, membranous; lateral nerves 5-8 pairs, pinnate, obscure, intercostae reticulate, obscure. Flowers unisexual, white; male flowers: 6-10 in axillary cymes, 6 mm across; peduncle 5 mm long, puberulous; calyx 3 mm long, campanulate; lobes 4, ovate, acute, pubescent outside; corolla 6 mm long, campanulate, lobes 4, triangular, obtuse; stamens about 24; filaments in unequal pairs, ciliate at apex; female flowers; solitary or 3 together, 8-10 mm across; calyx much longer than in male, lobes ovate-oblong, acute; corolla campanulate; lobes triangular, obtuse; staminodes 4, inserted on the corolla and alternate with its lobes; ovary superior, globose, pubescent, 6-8-celled, 1-ovule in each cell; style 3-4, free, glabrous, bilobed with fringed margins. Fruit a berry, 16-18 mm across, globose, dark green, fruiting calyx enlarged, flat, foliaceous, spreading; seeds 2-8, oblong, rugose, shining, albumen ruminant.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kollam, Thrissur, Malappuram

*Geographical:* Indo-Malesia

#### SYMPLOCACEAE

- |     |   |  |
|-----|---|--|
| 1.  | Flowers solitary, axillary .....                                      | 2  |
| 1.  | Flowers 2-many in inflorescence, racemose or spicate .....            | 3  |
| 2.  | Leaves glabrous; drupe glabrous.....                                  | <b>Symplocos anamallayana</b>                        |
| 2.  | Leaves fulvous tomentose; drupe villous .....                         | <b>Symplocos pulchra</b> var. <b>villosa</b>         |
| 3.  | Drupe ampulliform; inflorescence branched.....                        | <b>Symplocos cochinchinensis</b> ssp <b>laurina</b>  |
| 3.  | Drupe ovoid-oblong; inflorescence unbranched.....                     | 4  |
| 4.  | Drupe 2-2.5 x 1-1.5 cm oblong .....                                   | 5  |
| 4.  | Drupe 1-1.5 x 0.5-1 cm cylindric .....                                | 6  |
| 5.  | Branchlets rusty pubescent; endocarp of drupe thickly coriaceous..... | <b>Symplocos macrocarpa</b> ssp. <b>macrocarpa</b>   |
| 5.  | Branchlets glabrous; endocarp of drupe leathery .....                 | <b>Symplocos macrocarpa</b> ssp <b>kanarana</b>      |
| 6.  | Drupe densely hairy.....  | <b>Symplocos macrophylla</b> ssp. <b>macrophylla</b> |
| 6.  | Drupe glabrous or glabrescent .....                                   | 7  |
| 7.  | Branchlets glabrous; mature leaves glabrous.....                      | 8  |
| 7.  | Branchlets hairy; mature leaves hairy or at least on nerves .....     | 9  |
| 8.  | Petiole 20-30 mm long; inflorescence 2-3 cm long.....                 | <b>Symplocos obtusa</b>                              |
| 8.  | Petiole 6-15 mm long; inflorescence 6-12 cm long.....                 | <b>Symplocos racemosa</b>                            |
| 9.  | Leaves submembranous; flowers pink .....                              | <b>Symplocos macrophylla</b> ssp. <b>rosea</b>       |
| 9.  | Leaves thickly coriaceous; flowers white.....                         | 10   |
| 10. | Leaf margin spinous denticulate; stamens 50-98.....                   | <b>Symplocos kurgensis</b>                           |
| 10. | Leaf margin serrate; stamens 30-40.....                               | <b>Symplocos foliosa</b>                             |

**Symplocos anamallayana** Bedd., For. Man. Bot. 150. 1872 & Ic. t. 116. 1868-1874; Hook. f., Fl. Brit. India 3: 581. 1882; Gamble, Fl. Pres. Madras 784(551). 1921.

Trees, Leaves simple, alternate, stipulate; petiole 3-6 mm, glabrous, slender, slightly grooved above; lamina 2.5-5 cm x 1-3 cm, ovate, elliptic, obovate or elliptic-obovate, base rounded, obtuse or acute, apex obtuse, acute, margin serrulate, revolute, glabrous, coriaceous; lateral nerves 4-6 pairs, slender, glabrous; intercostae reticulate, prominent. Flowers bisexual, white, axillary, solitary, peduncle slender, recurved, 1 cm long; bracteoles early cauducous; calyx tube adnate to the ovary, lobes 5, puberulous; corolla 5-lobed, lobes 4 x 2.5 mm, obovate; stamens numerous, unequal, many seriate, adnate to the corolla tube; anthers short, ovary inferior, 3-celled; style filiform, stigma capitate, ovules pendulous from the inner angle. Fruit a drupe, narrow, oblong, 1-1.5 cm; seeds 1-3, oblong.

*Flowering & Fruiting:* May-August

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Symplocos cochinchinensis** (Lour.) Moore ssp. **laurina** (Retz.) Nooteb., Rev. Symplocac. 156. 1975 & in Dassan & Fosb., Rev. Handb. Fl. Ceylon 3: 458. 1981; Manilal, Fl. Silent Valley 169. 1988; Ramach. & Nair, Fl. Cannanore Dist. 266. 1988; Antony, Fl. Kottayam Dist. 234. 1989; Vajr., Fl. Palghat Dist. 271. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 385. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 281. 1994; Subram., Fl. Thenmala Division 209. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 272. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 195. 1997; Sasidh., Fl. Periyar Tiger Reserve 233. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 183. 1999; Sunil, Fl. Pl. Alappuzha Dist. 501. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 183. 2002; Mohanan & Sivad., Fl. Agasthyamala 419

*Drupatris cochinchinensis* Lour., Fl. Cochinch. 314. 1790.

*Symplocos spicata* Roxb., Fl. Ind. 2: 542. 1832; Hook. f., Fl. Brit. India 3: 573. 1882.

*Symplocos spicata* Roxb. var. *laurina* (Retz.) Clarke in Hook.f., Fl. Brit. India 3: 573. 1882; Gamble, Fl. Pres. Madras 782(549). 1921.

*Symplocos spicata* Roxb. var. *malasica* Clarke in Hook.f., Fl. Brit. India 3: 573. 1882.

*Symplocos spicata* Roxb. var. *attenuata* (A.DC.) Clarke in Hook.f., Fl. Brit. India 3: 573. 1882.

*Symplocos laurina* (Retz.) Wall. ex G. Don, Gen. Hist. 4: 3. 1837-1838.

*Local names:* Kamblivetti, Pachotti, Parala

Evergreen trees, to 15 m high, bark light grey, thin, smooth; blaze creamy white.

Leaves simple, alternate, stipulate; petiole 6-15 mm, slender, glabrous, grooved above; lamina 5.5-15 x 2.5-6 cm, elliptic, elliptic-lanceolate or elliptic-oblong, base acute to attenuate, apex acute or acuminate, margin crenate-serrate, revolute, glabrous, yellow when dry, coriaceous or chartaceous; lateral nerves 7-8 pairs, pinnate, slender, glabrous; intercostae reticulate, faint. Flowers bisexual, white, in axillary simple or branched spikes, 7 cm long, pubescent; bracts solitary at the base of each pedicel; bracteoles early cauducous; calyx tube adnate to the ovary, lobes 5, minute, lobes 1 mm, triangular; corolla 1 cm across, lobes 5, ovate, 3 mm, recurved; stamens many, equal, arranged in 5 group; ovary 1 mm, inferior, globose



2-3-celled, ovules 2 in each cell, pendulous from the inner angle; style 5 mm, simple; stigma capitate. Fruit a drupe, 8 mm across, glabrous, ampulliform, globose ribbed, purple crowned by calyx lobes; seeds 1-3, oblong.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen, semi-evergreen and shola forests, also in the sacred groves

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and China

**Symplocos foliosa** Wight, Ic. t. 1234. 1848; Hook. f., Fl. Brit. India 3: 582. 1882; Gamble, Fl. Pres. Madras 783(550). 1921; Ramach. & Nair, Fl. Cannanore Dist. 267. 1988; Vajr., Fl. Palghat Dist. 271. 1990; Sasidh., Fl. Periyar Tiger Reserve 233. 1998; Mohanan & Sivad., Fl. Agasthyamala 420. 2002.

*Symplocos nervosa* Wight, Ic. t. 1235. 1848, non DC. 1844.

Trees, to 6 m high; branchlets fulvous tomentose, glabrous when mature. Leaves simple, alternate, estipulate; petiole 5-20 mm, long, stout, tomentose, grooved above; lamina 6-12 x 2-5 cm, elliptic or oblong, base acute, apex acuminate, margin serrate, glabrous, coriaceous; lateral nerves 8-12 pairs, pinnate, glabrous, prominent, midrib beneath hispid; intercostae reticulate, prominent. Flowers bisexual, white; spikes unbranched, densely fulvous tomentose; bracts 4-6 x 2-2.5 mm, cauducous, brown tomentose; bracteoles early cauducous; calyx tube adnate to the ovary, lobes 5, lobes 2-3 mm long, ovate, pubescent, tube 2-2.5 mm; corolla lobes 5, 3.5-4 mm long, orbicular, ciliate; stamens 30-40, unequal, many seriate, adnate to the corolla tube; anthers short; ovary 2-2.5 mm long, inferior, ovules 2-3 in each cell, pendulous from the inner angle; style filiform; stigma capitate. Fruit a drupe, 10 x 5 mm, ovoid, yellow.

*Flowering:* November

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Palakkad, Kannur, Trivandrum, Idukki

*Endemic to:* Southern Western Ghats

**Symplocos kurgensis** Clarke in Hook.f., Fl. Brit. India 3: 576. 1882; Subba *et al.*, J. Bomb. Nat. Hist. Soc. 78:191.1981.

*Symplocos hohenackeri* Clarke in Hook.f., Fl. Brit. India 3: 582. 1882.

*Symplocos hebantha* Thw. *ex* Clarke in Hook.f., Fl. Brit. India 3: 580. 1882.

*Symplocos macrophylla* Wall *ex* A. DC. var. *kurgensis* (Clarke) Nooteb., Rev. Symplocac. 229. 1975; Ramach. & Nair, Fl. Cannanore Dist. 268. 1988; Vajr., Fl. Palghat Dist. 272. 1990.

Trees, to 10 m high; twigs sericeous. Leaves simple, alternate, estipulate; petiole 9-20 mm long, slender, sericeous; lamina 3-12.8 x 0.8-5 cm, elliptic or oblong, base round or cuneate, apex acuminate, margin minutely spinous denticulate, sparsely pubescent on both sides when young, glabrous except the midrib on lower surface when mature, chartaceous; lateral nerves 7-11 pairs, pinnate, slender, slightly prominent beneath, arched, intercostae reticulate, obscure. Flowers bisexual, white, scented, in axillary spikes of about 5-9.1 cm long; peduncle densely tawny tomentose; bracts 3 x 1.5 mm, at the base of each pedicel; bracteoles early cauducous; calyx tube adnate to the ovary, lobes 5, deltoid, acute, densely tawny

tomentose on both sides, cauducous; bracteoles small, cauducous; calyx tube 1 mm long, glabrous, lobes 5, 2-3 x 1-2 mm, ovate, valvate, spatulate, tomentose without, except scarious margin; corolla 5-lobed, lobes 5-6 x 3 mm, oblong, obtuse, glabrous; stamens 50-98, 3-5 mm long, adnate to the corolla tube; anthers basifixed, 2-lobed; disc 5, glandular; ovary inferior, 6 mm, 2-5-celled, ovules 2-3 in each cell, pendulous from the inner angle; style cylindric, base broad and hirsute; stigma capitate; Fruit a drupe, 13-20 x 6-8 mm, ovoid-cylindrical, stone with shallow length were grooves, depressed at one side towards base; seeds 1-3, oblong.

*Flowering & Fruiting:* March-December

*Distribution*

*Kerala:* Kannur

*Geographical:* South India and Sri Lanka

**Symplocos macrocarpa** Wight *ex* Clarke in Hook.f., Fl. Brit. India 3: 582. 1882, ssp. **macrocarpa**; Gamble, Fl. Pres. Madras 782(549). 1923; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 281. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 195. 1997; Mohanan & Sivad., Fl. Agasthyamala 420. 2002.

*Local name:* Malamparala

Trees, to 8 m high, bark smooth; blaze yellowish. Leaves simple, alternate, estipulate; petiole 5-8 mm, stout, rusty pubescent, grooved above; lamina 6-15 x 3-4.5 cm, elliptic-oblong; base acute or obtuse, apex acuminate, margin serrate, gland dotted, glabrous above, shiny, coriaceous; lateral nerves 8-10 pairs, regular, pinnate; intercostae reticulate. Flowers bisexual, white, 8.5 mm across, in 1-4 flowered axillary or terminal short spikes; bracts solitary at the base of each pedicel; bracteoles early cauducous; calyx tube adnate to the ovary, lobes 5, 3-3.5 mm long, campanulate; corolla lobes 5, 3-3.5 mm long, connate at the base; stamens many, unequal, many seriate, adnate to the corolla tube; anthers short, filaments unite at the base; ovary inferior, ovules 2-3 in each cell, pendulous from the inner angle; style filiform; stigma capitate. Fruit a drupe, 1.5-2 x 0.8-1 cm, ovoid, creamy white, smooth, glabrous.

*Flowering & Fruiting:* March-October

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (Nayar, 1997)

**Symplocos macrocarpa** Wight *ex* Clarke ssp. **kanarana** (Talbot) Nooteb., Rev. Symplocac. 22. 1975; Ramach. & Nair, Fl. Cannanore Dist. 267. 1988; Vajr., Fl. Palghat Dist. 272. 1990; Chandra., J. Econ. Tax. Bot. 19: 446. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 196. 1997.

*Symplocos kanarana* Talbot, J. Bomb. Nat. Hist. Soc. 11: 238. t.9. 1897-1898; Gamble, Fl. Pres. Madras 782(550). 1923.

*Local name:* Malamparala

Trees, to 7 m high, bark smooth; branchlets glabrous Leaves simple, alternate, estipulate; petiole 6-8 mm, stout, glabrous, grooved above; lamina 7-15 x 3-5 cm, elliptic, elliptic-ovate, elliptic-oblong, base acute, apex acuminate or caudate-acuminate, margin crenulate-serrate, glabrous, glossy, coriaceous; lateral nerves 5-

8 pairs, pinnate, slender; intercostae reticulate, slender. Flowers bisexual, white, in short axillary spikes; bracts solitary at the base of each pedicel; bracteoles early cauducous; calyx tube adnate to the ovary, lobes 5; corolla rotate, lobes 5, 3-3.5 mm; stamens numerous; stamens numerous, unequal, many seriate, adnate to the corolla tube; anthers short, ovary inferior, ovules 2-3 in each cell, pendulous from the inner angle. Fruit a drupe, 3 x 1.5 cm, smooth, glabrous, yellow becomes obtusely 5-6 furrowed; seeds 1-3, oblong.

*Flowering & Fruiting:* February-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Palakkad, Kannur, Kollam, Kozhikkode

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Symplocos macrophylla** Wall. ex A. DC in DC., Prodr. 8: 257. 1844, ssp. **macrophylla**; Hook. f., Fl. Brit. India 3: 578. 1882; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 281. 1994; Sasidh., Fl. Periyar Tiger Reserve 233. 1998; Mohanan & Sivad., Fl. Agasthyamala 421. 2002.

*Symplocos gardneriana* Wight, Ic. t. 1213. 1848; Hook. f., Fl. Brit. India 3: 582. 1882; Gamble, Fl. Pres. Madras 782(550). 1921.

*Local name:* Malankuruvi

Trees, to 7 m high; young branches rusty tomentose. Leaves simple, alternate, estipulate; petiole 10-20 mm, stout, tomentose; lamina 7.5-15 x 3.5-7.5 cm, elliptic, elliptic-ovate, base acute or rounded, apex acute to acuminate, margin crenulate, recurved when old, glabrous above, rusty villous beneath, coriaceous, yellow when dry; lateral nerves 10-12 pairs, prominent, pinnate, villous, midrib raised beneath; intercostae reticulate, prominent. Flowers bisexual, white, 0.85 cm across, sessile, in axillary spike, 5 cm, densely rusty villous; bracts small; calyx tube adnate to the ovary, lobes 5, ovate, acute villous; petals 5, shortly connate at base; stamens numerous, many seriate, adnate to the corolla tube; anthers short; ovary inferior, carpels 3, ovules 2 in each cells, pendulous; stigma slightly lobed. Fruit a drupe, 1.2 cm long, cylindrical densely hairy, purple.

*Flowering & Fruiting:* February-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Kannur, Trivandrum

*Endemic to:* Southern Western Ghats

**Symplocos macrophylla** Wall. ex A. DC ssp. **rosea** (Bedd.) Nooteb., Rev. Symplocac. 229. 1975; Ramach. & Nair, Fl. Cannanore Dist. 268. 1988; Vajr., Fl. Palghat Dist. 272. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 386. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 282. 1994; Subram., Fl. Thenmala Division 209. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 272. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 196. 1997; Sasidh., Fl. Periyar Tiger Reserve 233. 1998; Gopalan & Henry, End. Pl. India SW Ghats 374. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 183. 2002; Mohanan & Sivad., Fl. Agasthyamala 423. 2002.

*Symplocos rosea* Bedd., Trans. Linn. Soc. London 25: 219. 1866; Hook. f., Fl. Brit. India 3: 583. 1882; Gamble, Fl. Pres. Madras 783(550). 1921; Mohanan, Fl. Quilon Dist. 246. 1984.

*Symplocos barberi* Gamble, Bull. Misc. Inform. Kew 1921: 219. 1921 & Fl. Pres. Madras 783(550). 1921.

Trees, to 5 m high; young parts pubescent. Leaves simple, alternate, estipulate; petiole 7-13 mm, slender, sparsely haired, grooved above; lamina 7.5-17.5 x 3.5-7.5 cm, oblanceolate, elliptic-oblong or elliptic obovate, base cuneate, apex acuminate, obtusely acuminate, margin serrate, sparsely haired, coriaceous; lateral nerves 6-7 pairs, slender, pinnate, prominent; intercostae reticulate, faint. Flowers bisexual, pink, in axillary spikes, unbranched, 4 cm long, pubescent; bracts solitary at the base of each pedicel; bracteoles early cauducous; calyx tube adnate to the ovary, lobes 5, 1.2 cm, ovate acute, tomentose; corolla 10 mm across, glabrous, petals 5, 2.5 mm long, oblong, obtuse; stamens numerous, unequal, many seriate, adnate to the corolla tube; anthers short; disc hairy; ovary inferior, ovules 2-3 in each cell, pendulous from the inner angle. Fruit a drupe, 1.5 x 0.5 cm, oblong, blue, glabrous, crowned by the calyx lobes; seeds 1-3, oblong.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Palakkad, Kannur, Idukki, Trivandrum, Thrissur, Kozhikkode

*Endemic to:* Southern Western Ghats

***Symplocos obtusa*** Wall. ex G. Don, Gen. Hist. 4: 3. 1837-1838; Gamble, Fl. Pres. Madras 783(550). 1923; Sasidh. & Anto in Manoharan et al., Silent Valley-Whispers of Reason 144. 1999.

*Symplocos laeta* var. *pedicellata* Clarke in Hook.f., Fl. Brit. India 3: 583. 1882.

*Symplocos obtusa* Wall. ex G. Don var. *pedicellata* (Clarke) Nooteb., Rev. Symplocac. 244. 1975 & Rev. Handb. Fl. Ceylon 3: 467. 1981; Sasidh., Fl. Periyar Tiger Reserve 235. 1998.

Trees, to 10 m high; young parts glabrous. Leaves simple, alternate, estipulate; petiole 20-30 mm long, slender, glabrous, grooved above; lamina 6-11 x 4-6.5 cm, obovate, base cuneate, apex obtuse, margin entire or serrate, glabrous, coriaceous; lateral nerves 5-8 pairs, glabrous, pinnate, prominent; intercostae reticulate, prominent. Flowers bisexual, in unbranched 2-3 cm long racemes, axis hispid; bracts ovate, cauducous; bracteoles early cauducous; pedicels 1 mm long, slender; calyx tube adnate to the ovary, lobes 5, 1.5 x 1 mm, obtuse, hairy; corolla lobes 5; stamens numerous, unequal, many seriate, adnate to the corolla tube; anthers short, ovary inferior, ovules 2-3 in each cell, pendulous from the inner angle. Fruit a drupe, 12 x 5 mm, terete, yellowish-green, minutely hispid towards apex; seeds 1-3, oblong.

*Flowering & Fruiting:* April-May

*Habitat:* Shola forests

*Distribution*

*Kerala:* Palakkad, Idukki, Kozhikkode

*Geographical:* South India and Sri Lanka

**Symplocos pulchra** Wight ssp. **villosa** (Brand.) Nooteb., Rev. Symploca. 266. 1975; Sasidh., Fl. Periyar Tiger Reserve 235. 1998.

*Symplocos villosa* Brand. in Engl., Pflanzenr. IV 242(6): 63. 1901; Gamble, Fl. Pres. Madras 784(551). 1921.

Trees, to 6 m high; branchlets villous. Leaves simple, alternate, estipulate; petiole 5-20 mm long, slender, hirsute; lamina 9-19 x 3-5 cm, lanceolate, elliptic-lanceolate or elliptic-oblong, base cuneate, apex acuminate, margin serrate, adpressed hairy below, green when dry, membranous; lateral nerves 6-13 pairs, pinnate, prominent, pale brown, hirsute; intercostae reticulate, faint. Flowers bisexual, white, shortly peduncled; bracts many; calyx tube adnate to the ovary, lobes 5, sepals acute, hairy; corolla 7 mm across; corolla 5 lobed; stamens many seriate, adnate to the corolla tube; anthers short, ovary inferior, ovules 2-3 in each cell, pendulous from the inner angle, seeds 1-3, oblong. Fruit a drupe, 12 mm long, white-villous.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

**Symplocos racemosa** Roxb., Fl. Ind. 2: 539. 1832; Hook. f., Fl. Brit. India 3: 576. 1882; Ramach. & Nair, Fl. Cannanore Dist. 269. 1988; Manilal, Fl. Silent Valley 170. 1988; Anil Kumar, Fl. Pathanamthitta Dist. 386. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 282. 1994; Subram., Fl. Thenmala Division 210. 1995; Sasidh., Fl. Periyar Tiger Reserve 235. 1998.

*Symplocos beddomei* Clarke in Hook.f., Fl. Brit. India 3: 582. 1882; Gamble, Fl. Pres. Madras 783(551). 1921.

*Symplocos candolleana* Brand. in Engl., Pflanzenr. IV 242(6): 49. 1901; Gamble, Fl. Pres. Madras 782(549). 1921.

*Local name:* Pachotti, Podipari

Trees, to 10 m high, bark 1 cm thick, greyish, smooth; blaze creamy yellow; branchlets glabrous. Leaves simple, alternate, estipulate; petiole 6-15 mm long, slender, glabrous, grooved above; lamina 7-15 x 3-6 cm, elliptic or elliptic-obovate, base acute, apex acute to acuminate, margin crenate-serrate, recurved, glabrous, shiny, coriaceous; lateral nerves 6-12 pairs, glabrous, pinnate, slender; intercostae reticulate, prominent. Flowers bisexual, in spikes, to 12 cm long, fulvous tomentose, many flowered; bracts ovate, cauducous; bracteoles early cauducous; calyx tube adnate to the ovary, lobes 5, sepals triangular, acute, glabrous; petals 5; stamens numerous, unequal, many seriate, adnate to the corolla tube; anthers short, ovary inferior, ovules 2-3 in each cell, pendulous from the inner angle; style filiform. Fruit a drupe 15 x 5 mm, ovoid, glabrous, shallowly furrowed, yellow, stone woody; seeds 1-2, oblong.

*Flowering & Fruiting:* December-February

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Kannur, Palakkad, Kollam, Trivandrum, Wayanad

*Geographical:* India to Indo-China

## OLEACEAE

1. Leaves pinnate; seeds winged.....**Schrebra swietenioides**
1. Leaves simple; seeds not winged ..... 2
2. Corolla deeply divided, connate in pairs ..... 3
2. Corolla united for about one fourth the length ..... 6
3. Flowers in elongated panicles; drupe 1.5-3 cm long..... **Chionanthus ramiflorus**
3. Flowers crowded in peduncled heads; drupe to 1.5 cm long..... 4
4. Inflorescence without distinct peduncles; leaves obovate .....  
..... **Chionanthus zeylanicus**
4. Inflorescence with distinct peduncles (1-1.5 cm long); leaves elliptic or elliptic-oblong..... 5
5. Calyx lobe ovate, grey-pubescent, leaf apex obtuse, rounded or abruptly acuminate; ovary pubescent ..... **Chionanthus mala-elengi** ssp. **mala-elengi**
5. Calyx lobe rounded, clearly glabrous, leaf apex caudate-acuminate; ovary glabrous..... **Chionanthus mala-elengi** ssp. **linocieroides**
6. Leaves coriaceous, margin entire, nerve axils with glandular domatia .....  
..... **Olea paniculata**
6. Leaves chartaceous, margin distantly serrate or subentire, nerve axils without domatia..... **Olea dioica**

**Chionanthus mala-elengi** (Dennst.) P. S. Green, Bull. Bot. Surv. India 26. 124. 1984, ssp. **mala-elengi**; Mohanan, Fl. Quilon Dist. 247. 1984; Ramach. & Nair, Fl. Cannanore Dist. 269. 1988; Vajr., Fl. Palghat Dist. 273. 1990; Srivastava & Kapoor, J. Econ. Tax. Bot. 15: 133. 1991; Anil Kumar, Fl. Pathanamthitta Dist. 388. 1994; Subram., Fl. Thenmala Division 211. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 273. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 198. 1997; Sivar. & Mathew, Fl. Nilambur 402. 1997; Sasidh., Fl. Periyar Tiger Reserve 236. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 183. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 183. 2002.

*Forsythia mala-elengi* Dennst., Schluss. Hort. Malab. 12,21, 31. 1818.

*Linociera malabarica* Wall. ex G. Don, Gen. Hist. 4: 53. 1837-1838; Hook. f., Fl. Brit. India 3: 607. 1882; Gamble, Fl. Pres. Madras 794(558). 1923; Manilal & Sivar., Fl. Calicut 158. 1982; Ansari, Fl. Kasaragod Dist. 223. 1985.

*Chionanthus malabaricus* (Wall. ex G. Don) Bedd., Fl. Sylv. t. 239. 1872; Mohanan, Fl. Quilon Dist. 247. 1984; Antony, Fl. Kottayam Dist. 235. 1989.

*Local names:* Mala-elengi, Perumbal

Trees, to 12 m high, bark greyish-brown, covered with warty lenticels; blaze dull yellow; branchlets thinly tomentose. Leaves simple, opposite, estipulate; petiole 4-10 mm, stout, glabrous, grooved above; lamina 5-10 x 2.5-5.5 cm, obovate or elliptic-oblong, base cuneate, apex obtuse or suddenly narrowed to a small blunt acumen, margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 9-13 pairs, slender, pinnate; intercostae reticulate, faint. Flowers bisexual, yellowish-white, sessile, 6 mm long, in axillary clusters; peduncle 1.5 cm long; calyx lobes 1.5 mm, ovate, obtuse, grey-pubescent; corolla 7 mm long, lobes attached in pairs,

linear acuminate, glabrous; stamens 2, anthers sessile; ovary densely hairy, stigma shortly bifid. Fruit a drupe, 10 x 5 mm, ellipsoid, slightly curved, acute, ridged.

*Flowering & Fruiting:* December-April

*Habitat:* Moist deciduous and semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Kottayam, Kozhikkode, Idukki, Thrissur, Palakkad, Malappuram, Kannur, Pathanamthitta, Wayanad, Kollam

*Endemic to:* Peninsular India

**Chionanthus mala-elengi** (Dennst.) P. S. Green ssp. **linocieroides** (Wight) P. S. Green, Kew Bull. 51: 767. 1996 & Kew Bull. 58: 264. 2003.

*Chionanthus linocieroides* (Wight) Bennet & Raizada, Indian J. For. 4: 68. 1981; Srivastava & Kapoor, J. Econ. Tax. Bot. 15: 133. 1991; Anil Kumar, Fl. Pathanamthitta Dist. 388. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 197. 1997; Mohanan & Sivad., Fl. Agasthyamala 427. 2002.

*Olea linocieroides* Wight, Ic. t. 1241. 1850.

*Linociera wightii* Clarke in Hook.f., Fl. Brit. India 3: 608. 1882; Gamble, Fl. Pres. Madras 794(558). 1923.

Trees, to 7 m high. Leaves simple, opposite, estipulate; petiole 3-8 mm, stout, glabrous, grooved above; lamina 7-12 x 2.5-6 cm, oblong, elliptic, elliptic-oblong, oblong-lanceolate or elliptic-obovate, base acute to attenuate, apex caudate-acuminate, margin entire, glabrous, coriaceous; lateral nerves 6-8 pairs, glabrous, slender, pinnate, looped near the margin; intercostae obscure. Flowers bisexual, white, in axillary panicles, 2-4 cm long; calyx glabrous, lobes 4, rounded, margins ciliate; corolla lobes 4, 6-7 long, white with purple shades; stamens 2, attached at the base of the corolla lobes; filaments short; ovary 2-celled, superior, glabrous ovules 2 in each cell, pendulous from its apex; style short. Fruit a drupe, 1.3 cm long, ovoid, smooth.

*Flowering & Fruiting:* January-May

*Habitat:* Semi-evergreen, evergreen and shola forests

*Distribution*

*Kerala:* Pathanamthitta, Idukki, Trivandrum, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Chionanthus ramiflorus** Roxb., Fl. Ind. 1: 106. 1820; Srivastava & Kapoor, J. Econ. Tax. Bot. 15: 133. 1991; Anil Kumar, Fl. Pathanamthitta Dist. 388. 1994; Sasidh., Fl. Periyar Tiger Reserve 236. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 184. 1999; P. S. Green, Kew Bull. 58: 260. 2003.

*Linociera ramiflora* (Roxb.) G. Don, Gen. Hist. 4. 54. 1837-1838; Manilal, Fl. Silent Valley 172. 1988.

*Linociera macrophylla* Wall. ex D. Don, Gen. Hist. 4:53.1837-1838; Hook. f., Fl. Brit. India 3:610.1882; Gamble, Fl. Pres. Madras 795 (558).1923.

*Chionanthus roxburghii* (Spreng.) Srivastava & Kapoor, Geophytology 11: 262. 1981 & J. Econ. Tax. Bot. 15: 139. 1991; Sasidh., Fl. Periyar Tiger Reserve 237. 1998.

*Olea roxburghii* Spreng., Neue Entdeck 5:78. 1822.

*Olea paniculata* Roxb., Fl. Ind. 1:104. 1820, non R. Br. 1810.

*Linociera intermedia* var. *roxburghii* (Spreng.) Clarke in Hook.f., Fl. Brit. India 3: 609.1882.

*Chionanthus ramiflorus* Roxb. var. *peninsularis* Ravikum. & Lakshm., Bull. Bot. Surv. India 31: 163. 1989; Sasidh., Fl. Periyar Tiger Reserve 237. 1998.

Trees, to 20 m high, bark 1.3 cm, light greyish-brown, minutely warty tubercled; blaze creamy-yellow; branchlets glabrous. Leaves simple, opposite, estipulate; petiole 20-30 mm long,, slender, glabrous; lamina 7-15 x 2.5-5 cm, elliptic to obovate, base cuneate, apex acuminate, margin entire, glabrous, chartaceous; lateral nerves 6-8 pairs, pinnate, prominent, glabrous, intercostae reticulate. Flowers bisexual, white, in axillary or terminal panicles; pedicel 1 cm long; calyx lobes 4, acute, glabrous; corolla 3 mm long, lobes 4, connate in pairs, narrowly oblong; stamens 2, attached at the base of corolla lobes; filaments short; anthers dehiscing on margin; connective broad; ovary 2-celled, superior, glabrous, ovules 2 in each cell, pendulous from the apex; style short. Fruit a drupe, oblong, 1.2-2 cm long, black, glabrous; seed solitary.

*Flowering & Fruiting:* February-April

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad, Wayanad

*Geographical:* Indo-Malesia

**Chionanthus zeylanicus** L., Sp. Pl. 8. 1753; Srivastava & Kapoor, J. Econ. Tax. Bot. 15: 140. 1991; Sasidh., Fl. Periyar Tiger Reserve 237. 1998.

*Linociera purpurea* Vahl, Enum. Pl. 1: 47. 1804; Hook. f., Fl. Brit. India 3: 608. 1882.

*Linociera zeylanica* (L.) Gamble, Fl. Pres. Madras 794(558). 1923.

*Chionanthus zeylanicus* L. var. *dichotomous* (Roxb.) Bahadur & Gaur, Indian J. For. 4: 77. 1981; Srivastava & Kapoor, JETB 15: 140. 1991.

Trees, to 10 m high, bark greyish-black, smooth; branchlets minutely hairy. Leaves simple, opposite, estipulate; petiole 5-10 mm, stout, glabrous, grooved above; lamina 4.5-12 x 3-5.5 cm, obovate or elliptic, base cuneate or attenuate, apex obtusely acute or emarginate, margin entire, recurved, glabrous, coriaceous; lateral nerves 8-13 pairs, pinnate, slender, faint, looped near the margin; intercostae reticulate, faint. Flowers bisexual, cream, in axillary panicles, 5 cm long, bracts cauducous; bracteoles 1 mm; calyx lobes small, 4 toothed, 1.6 mm, ciliate, tawny-pubescent with out, acute; corolla lobes 4, 3 mm across, lanceolate; stamens 2, filaments short, attached at the base of corolla; anthers lanceolate, 1.5 mm; ovary 1 mm, 2-celled, superior, glabrous, ovules 2 in each cell, pendulous from its apex; style 0.5 mm. Fruit a drupe, 6 x 4 mm, obovoid.

*Flowering & Fruiting:* January-July

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Idukki

*Geographical:* South India and Sri Lanka

**Olea dioica** Roxb., Fl. Ind. 1: 105. 1820; Hook. f., Fl. Brit. India 3: 612. 1882; Gamble, Fl. Pres. Madras 796(559). 1923; Manilal & Sivar., Fl. Calicut 158. 1982; Mohanan, Fl. Quilon Dist. 249. 1984; Ansari, Fl. Kasaragod Dist. 224. 1985; Manilal, Fl. Silent Valley 173. 1988; Ramach. & Nair, Fl. Cannanore Dist. 273.



1988; Antony, Fl. Kottayam Dist. 237. 1989; Vajr., Fl. Palghat Dist. 276. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 393. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 286. 1994; Subram., Fl. Thenmala Division 210,18,24,32; Sasidh. & Sivar., Fl. Pl. Thrissur For. 275. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 199. 1997; Sivar. & Mathew, Fl. Nilambur 405. 1997; Sasidh., Fl. Periyar Tiger Reserve 240. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 186. 1999; Sunil, Fl. Pl. Alappuzha Dist. 507. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 185. 2002; P.S. Green, Kew. Bull. 57: 121. 2002; Mohanan & Sivad., Fl. Agasthyamala 432. 2002; P. S. Green, Kew Bull. 58: 259. 2003.

*Olea laevis* Stokes, Bot. Comm. 1: 30. 1830

*Local names:* Edala, Vayala, Palarana

Trees, to 15 m high, bark grey or brown, rough, shallowly vertically grooved; blaze yellowish-brown. Leaves simple, opposite, estipulate; petiole 7-10 mm, slender, glabrous, grooved above; lamina 6-14.5 x 3-6 cm, elliptic, elliptic-oblong or elliptic lanceolate, base acute, apex acute to acuminate, margin serrate or entire, glabrous, punctate, pink when young, coriaceous; lateral nerves 8-12 pairs, pinnate, slender, glabrous; intercostae obscure. Flowers in polygamo-dioecious, creamy-white, small, in panicles axillary or from leafless nodes, pedicellate, 4 mm long, male panicles larger and denser than hermaphrodite; calyx 1 mm, 4 toothed, campanulate, obtuse, ciliate; corolla 2.5 mm long, lobes 4, shorter than the tube, triangular, obtuse, hairy within; stamens 2, included, anthers sessile, 1 mm; ovary 1.2 mm, 2-celled, superior, 4 ovuled; style 0.7 mm, short; stigma capitate. Fruit a drupe, 8 x 6 mm, ellipsoid, blue; seeds 6 x 4 mm, minutely muriculate.

*Flowering & Fruiting:* November-April

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* India

***Olea paniculata*** R. Br., Prodr. 523. 1810; Matthew, Kew Bull. 46: 545. 1991; P. S. Green, Kew. Bull. 57: 129. 2002; P. S. Green, Kew Bull. 58: 259. 2003.

*Olea glandulifera* Desf., Cat. Pl. Hort. Paris (ed. 3) 88, 391. 1829.

*Olea glandulifera* Wall. ex G. Don, Gen. Hist. 4: 49. 1837-1838; Hook. f., Fl. Brit. India 3: 612. 1882; Gamble, Fl. Pres. Madras 796(559). 1923; Manilal, Fl. Silent Valley 173. 1988; Sasidh., Fl. Periyar Tiger Reserve 240. 1998.

*Olea bournei* Fyson, Bull. Misc. Inform. Kew 1914: 186. 1914.

Trees, to 15 m high, bark 1 cm, greyish-brown, exfoliating in brittle scales; blaze dull yellow. Leaves simple, opposite, estipulate; petiole 10-35 mm, slender, glabrous, grooved above; lamina 7-13 x 2.5-5 cm, elliptic, elliptic-obovate or elliptic lanceolate, base attenuate, apex acuminate, margin entire, glabrous, chartaceous; lateral nerves 4-7 pairs, glabrous, pinnate, prominent; intercostae reticulate; domatia present. Flowers bisexual, creamy, 4 mm across, in terminal or lateral compound, trichotomous cymes; calyx 1 mm, glabrous, lobes triangular, gland-dotted; corolla deeply lobed; lobes 4, spreading, 2 mm long, tube 1 mm long; stamens 2, exserted; anther oblong; ovary 1 mm long, 2-celled, ovules 2 in each

cell; style short; stigma capitate. Fruit a drupe, 1.5 x 0.8 cm, ovoid, brownish-black; seed one.

*Flowering & Fruiting:* March-December

*Habitat:* Shola forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India, Himalaya and Nepal

**Schrebera swietenoides** Roxb., Pl. Corom. t. 101.1798; Hook. f., Fl. Brit. India 3:604.1882; Gamble, Fl. Pres. Madras 792(557). 1923; Ramach. *et al.*, J. Econ. Tax. Bot. 5: 141.1984; Ramach. & Nair, Fl. Cannanore Dist. 273. 1988; Sasidh., Fl. Parambikulam Wildlife Sanctuary 186. 2002; P. S. Green, Kew Bull. 58: 271. 2003.

*Local names:* Malaplasu, Manimaram

Deciduous trees, to 15 m high, bark 0.5 cm, greyish-black, exfoliating in thin irregular scales; blaze pink-red. Leaves compound, imparipinnate, opposite, estipulate; rachis 5-10 cm, slender, pubescent, grooved above; leaflets 7-9, opposite; petiolule 3-30 mm, grooved above, angular, tomentose; lamina 6.5-14 x 3.5-6.5 cm, elliptic-lanceolate, ovate, elliptic-obovate, base attenuate or oblique, apex acute, margin entire, glabrous above, villous beneath, coriaceous; lateral nerves 5-7 pairs, pinnate, prominent, pubescent beneath, slender; intercostae reticulate. Flowers bisexual, yellowish-brown, fragrant, 1 cm, nocturnal, in terminal, trichotomous cymes; calyx obscurely 4-7 toothed, puberulent, accrescent; corolla 4 mm across, salver shaped, lobes 4-7, rounded, glandular; stamens 2, attached near the top of corolla tube; filaments short; ovary 2-celled, superior, ovules 3-4 in each cell; style 6 mm long, cylindrical; stigma shortly bifid. Fruit a capsule, 5 x 2.5 cm, obovoid, loculicidally 2 valved; seeds pendulous, winged.

*Flowering & Fruiting:* May-June

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Palakkad, Wayanad

*Geographical:* India and Myanmar

#### APOCYNACEAE

1. Leaves alternate or whorled.....2
1. Leaves opposite ..... 4
2. Leaves 4-7 in a whorl, apex obtuse; flowers *ca.* 1 cm long..... **Alstonia scholaris**
2. Leaves alternate, apex acuminate; flowers over 4 cm long..... 3
3. Twigs *ca.* 5-6 mm thick; corolla funnel shaped; fruit indehiscent, globose or ovoid, 4-5 cm long, fibrous inside..... **Cerbera manghas**
3. Twigs *ca.* 2 cm or more thick; corolla salver form; fruit of 2 linear follicles ..... 5
4. Flowers white with yellow centre or reddish with yellow centre ... **Plumeria rubra**
4. Flowers pure white..... **Plumeria alba**
5. Seeds few, without tuft of hairs at the end ..... 6
5. Seeds many, with a tuft of hairs at the ends ..... 7
6. Seeds without aril, 2 or 1 in a fruit; corolla tube less than 1 cm long.....  
.....**Hunteria zeylanica**

6. Seeds arillate, 5 or more in a fruit; corolla tube over 1.5 cm long ..... **Tabernaemontana alternifolia**
7. Corolla without coronal scales; anthers included ..... **Holarrhena pubescens**
7. Corolla with several coronal scales at mouth; anthers exerted..... 8
8. Leaves tomentose on both sides; follicles fused ..... **Wrightia arborea**
8. Leaves glabrous on both sides; follicles fused at the tip or free. **Wrightia tinctoria**

**Alstonia scholaris** (L.) R. Br., Mem. Wern. Nat. Hist. Soc. 1: 76. 1811; Hook. f., Fl. Brit. India 3: 642. 1882; Gamble, Fl. Pres. Madras 810(569). 1923; Manilal & Sivar., Fl. Calicut 164. 1982; Mohanan, Fl. Quilon Dist. 250. 1984; Ansari, Fl. Kasaragod Dist. 226. 1985; Ramach. & Nair, Fl. Cannanore Dist. 274. 1988; Antony, Fl. Kottayam Dist. 238. 1989; Vajr., Fl. Palghat Dist. 278. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 394. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 288. 1994; Subram., Fl. Thenmala Division 218. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 277. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 201. 1997; Sivar. & Mathew, Fl. Nilambur 407. 1997; Sasidh., Fl. Periyar Tiger Reserve 241. 1998; Sunil, Fl. Pl. Alappuzha Dist. 512. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 187. 2002; Mohanan & Sivad., Fl. Agasthyamala 434. 2002.

*Echites scholaris* L., Mant. Pl. 53.1767

*Local names:* Ezhilamppala, Mangalappala, Pala, Yekshippala

Large trees; height to 30 m; bark 10-15 mm thick, surface grey-brown, irregularly cracked and shallowly fissured, subverrucose, lenticellate; blaze creamy yellow, outer layer thin, corky, inner layer brittle; latex milky white; branchlets whorled. Leaves simple, whorled, estipulate; petiole 5-12 mm long, stout, glabrous; lamina 5-20 x 3-7 cm, obovate, oblanceolate or obovate-oblong; base cuneate or attenuate; apex obtuse or emarginate; margin entire, glabrous, subcoriaceous; lateral nerves many, slender, prominent, glabrous, parallel, looped near the margin forming intramarginal nerves; intercostae reticulate, obscure. Flower bisexual, 10-12 mm long, greenish-white in terminal umbellate cymes; calyx cupular, lobes 5, ovate, unequal, obtuse, puberulous, eglandular; corolla salver shaped, 4 mm across, lobes 5, obovate to orbicular, creamy yellow, spreading; stamens 5, included; anthers narrowly cordate; disc obscure; carpels 2, free, ovules many; style filiform; stigma obconic. Fruit of two linear, narrow, pendulous follicular mericarps, green, 30-40 cm long; seeds 5-6 mm long, flat, commate at both ends.

*Flowering & Fruiting:* October-February

*Habitat:* Moist deciduous forests and sacred groves, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* South and South East Asia to Australia

**Cerbera odollam** Gaertn., Fruct. 2: 193. 1791; Hook. f., Fl. Brit. India 3. 638. 1882; Mohanan, Fl. Quilon Dist. 252. 1984; Ansari, Fl. Kasaragod Dist. 227. 1985; Ramach. & Nair, Fl. Cannanore Dist. 276. 1988; Antony, Fl. Kottayam Dist. 240. 1989; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 290. 1994; Sunil, Fl. Pl. Alappuzha Dist. 518. 2000.

*Cerbera manghas* L., Sp. Pl. 208. 1753, p.p; Gamble, Fl. Pres. Madras 806(566). 1923; Manilal & Sivar., Fl. Calicut 163. 1982.

*Local names:* Chathankai, Othallam

Small evergreen trees, to 6 m high; bark greenish-brown; blaze creamy yellow; branchlets stout with prominent leaf scars, latex milky. Leaves simple, alternate, crowned at the end of branches, estipulate; petiole 8-35 mm long, slender, glabrous; lamina 10-25 x 2.5-6.5 cm, lanceolate or oblanceolate; base cuneate or attenuate; apex acuminate or acute; margin entire, glabrous, fleshy, bright green and shiny, membranous on drying; lateral nerves many, close, slender, parallel, looped near the margin forming intramarginal nerve; intercostae reticulate. Flowers bisexual, 5 cm across, white, in pseudoterminal cymes; calyx lobes 5, linear, recurved, eglandular; corolla lobes 5, tube funnel-shaped above the throat with 5 villous scales; stamens 5, small, included, anthers lanceolate, apiculate; disc absent; carpels 2, free, ovules 4 in each cell on both sides of thick placenta. Fruit a drupe, globose or ellipsoid, pericarp green turning rose; seeds 1 or 2 compressed.

*Flowering & Fruiting:* July-November

*Habitat:* Along the sides of water courses, ponds, in coastal areas as well as mangroves

*Distribution*

*Kerala:* Kannur, Trivandrum, Malappuram, Kozhikkode, Kollam, Kottayam, Kasaragode, Alappuzha, Thrissur

*Geographical:* Indo-Malesia

**Holarrhena pubescens** (Buch.-Ham.) Wall. ex G. Don, Gen. Hist. 4: 78. 1837-1838; Ansari, Fl. Kasaragod Dist. 227. 1985; Ramach. & Nair, Fl. Cannanore Dist. 277. 1988; Vajr., Fl. Palghat Dist. 280. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 399. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 291. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 280. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 202. 1997; Sivar. & Mathew, Fl. Nilambur 413. 1997; Sasidh., Fl. Periyar Tiger Reserve 243. 1998; Sunil, Fl. Pl. Alappuzha Dist. 519. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 188. 2002; Mohanan & Sivad., Fl. Agasthyamala 438. 2002.

*Echites pubescens* Buch.-Ham., Trans. Linn. Soc. London 13: 521. 1821.

*Echites antidysenterica* Roth in Roem. & Schult., Syst. Veg. 4: 394. 1819, non (L.) Roxb. ex Flem. 1810.

*Holarrhena antidysenterica* (Roth) A. DC. in DC., Prodr. 8: 413. 1844; Hook. f., Fl. Brit. India 3: 644. 1882; Gamble, Fl. Pres. Madras 811(570). 1923; Manilal & Sivar., Fl. Calicut 165. 1982; Mohanan, Fl. Quilon Dist. 253. 1984; Antony, Fl. Kottayam Dist. 241. 1989; Subram., Fl. Thenmala Division 220. 1995.

*Holarrhena malaccensis* Wight, Ic. t. 1298. 1848.

*Local names:* Kadalapala, Kudagapala

Small deciduous trees; to 8 m high; bark rough, pale brown, to 8 mm, exfoliates in small flakes; blaze creamy yellow; latex milky white. Leaves simple, opposite, estipulate; petiole 4-6 mm, pubescent, stout; lamina 7-18 x 3-12 cm, broadly ovate, ovate-oblong or ovate-lanceolate; base obtuse, apex acute or acuminate, margin entire, glabrous or puberulent beneath, membranous; lateral nerves 10-14 pairs, prominent, arched, puberulous; intercostae reticulate. Flowers bisexual, creamy-white, slightly fragrant, in terminal and axillary corymbose cymes, appear along with new leaves; calyx lobes 5, 2.5 mm long, oblong-lanceolate, ciliate, glandular

within at base; corolla salver shaped, lobes 5, oblong, obtuse, as long as the tube, tube 1.3 cm long, puberulous, mouth with a ring of hairs; stamens 5, included, attached towards the base of the corolla tube, anthers sagitate; disc absent; ovaries 2, apocarpous; ovules many in each carpel, style 2 mm long; stigma fusiform, bifid. Fruit of 2 terete elongated follicular mericarps connected at the tip and then free, 25 x 1 cm; seeds 8 mm, oblong, with tuft of silky brown hairs at the apex.

*Flowering & Fruiting:* April-October

*Habitat:* Moist deciduous and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Hunteria zeylanica** (Retz.) Gard. ex Thw., Enum. Pl. Zeyl. 191. 1860; Mohanan, Fl. Quilon Dist. 253. 1984; Pandura. *et al.*, J. Econ. Tax. Bot. 6: 271. 1985; Manilal, Fl. Silent Valley 174. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 291. 1994; Subram., Fl. Thenmala Division 219. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 280. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 203. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 189. 2002.

*Cameraria zeylanica* Retz., Obs. Bot. 4: 24. 1786.

*Hunteria corymbosa* Roxb., Fl. Ind. 1: 695. 1832; Hook. f., Fl. Brit. India 3: 637. 1882; Gamble, Fl. Pres. Madras 808(568). 1923; Vajr., Fl. Palghat Dist. 281. 1990.

*Hunteria roxburghiana* Wight, Ic. t. 1294. 1848.

Small evergreen trees 8-12 m high; bark 8-13 mm thick, yellowish-grey, with lenticular tubercles; latex milky white, scanty; young shoots, glabrous. Leaves simple, opposite, estipulate; petiole 10-17 mm, glabrous, slender, grooved above; lamina 8-15 x 2-6, elliptic, elliptic-oblong or oblong-lanceolate; base acute, obtuse or rounded; apex acuminate; margin entire, glabrous, coriaceous, shining above; lateral nerves many, slender, glabrous, looped near the margin forming intramarginal nerve, intercostae reticulate, obscure. Flowers bisexual, pale yellow, in terminal or axillary cymes; calyx lobes 5, small, 1.5 mm long, eglandular; corolla salver shaped, lobes creamy white, acuminate, tube 0.8 mm long; stamens 5, inserted at the dilation of the tube, anthers lanceolate, apiculate; disc absent; carpels 2, free, ovules 2-4 in each cell. Fruit of 2 fleshy berries, 3 cm long, yellow; seed 1 or 2, ovoid.

*Flowering & Fruiting:* February-June

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Trivandrum, Palakkad, Thrissur, Palakkad

*Geographical:* Indo-Malesia

**Plumeria alba** L., Sp. Pl. 210. 1753; Vajr., Fl. Palghat Dist. 284. 1990; Sunil, Fl. Pl. Alappuzha Dist. 523. 2000.

Deciduous trees, to 10 m high, branchlets terete, 2-25. cm thick, with prominent leafscars. Leaves simple, alternate spiral, clustered; latex milky, estipulate; petiole 6-10 cm long, stout, glabrous; lamina 20-50 x 8-12 cm, obovate-spathulate, base cuneate, apex acuminate or acute, margin entire, glabrous, subcoriaceous; lateral nerves to 50 pairs, parallel, prominent,

intercostae scalariform. Flowers bisexual, white, in terminal corymbose stout cymes; calyx cupular, 5 mm; lobes 5, subequal, round, obtuse; corolla 6 cm across; tube 4 cm, expanded from above the middle; lobes 5, obovate, overlapping to the left, obtuse; stamens 5, attached at the base of the tube, included; ovary half inferior, globose, ovules many; stigma 2-lobed, subsessile. Fruit an aggregate of 2 follicle, pustulate; seeds winged.

*Flowering & Fruiting:* March-September

*Habitat:* Grown as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Central America, from Mexico to Panama

**Plumeria rubra** L., Sp. Pl. 209. 1753; Manilal & Sivar., Fl. Calicut 164. 1982; Mohanan, Fl. Quilon Dist. 255. 1984; Ansari, Fl. Kasaragod Dist. 229. 1985; Anil Kumar, Fl. Pathanamthitta Dist. 405. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 296. 1994; Sasidh., Fl. Chinnar Wildlife Sanctuary 189. 1999.

*Plumeria rubra* L. forma *acutifolia* (Poir.) Woods. in Poir., Encycl. Suppl. 2: 667. 1812; Hook. f., Fl. Brit. India 3: 641. 1882; Vajr., Fl. Palghat Dist. 284. 1990.

*Local names:* Eezhachempakam, Arali, Chempakappala

Deciduous trees, to 10 m high. Leaves simple, alternate spiral, clustered; latex milky, estipulate; petiole 6-8 cm long, stout, glabrous; lamina 20-43 x 7-10 cm, obovate-spathulate, base cuneate, apex acuminate or acute, margin entire, glabrous, subcoriaceous; lateral nerves to 40 pairs, parallel, prominent, intercostae scalariform. Flowers bisexual, in terminal corymbose stout cymes; calyx cupular, 3 mm; lobes 5, subequal, round, obtuse; corolla 4-5 cm across, pink or cream with yellow centre; tube 2 cm, expanded from above the middle; lobes 5, obovate, overlapping to the left, obtuse; stamens 5, attached at the base of the tube, included; ovary 2 mm, globose; ovules many; stigma 2-lobed, subsessile. Fruit an aggregate of 2 follicle, to 25 x 4 cm, pustulate; seeds winged.

*Flowering & Fruiting:* November-April

*Habitat:* Grown as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Tropical America; widely naturalised elsewhere in the tropics

**Tabernaemontana alternifolia** L., Sp. Pl. 211.1753; Anil Kumar, Fl. Pathanamthitta Dist. 403. 1994; Sivar. & Mathew, Fl. Nilambur 418. 1997; Sunil, Fl. Pl. Alappuzha Dist. 526. 2000; Mohanan & Sivad., Fl. Agasthyamala 445. 2002.

*Tabernaemontana heyneana* Wall. in Edward's Bot. Reg. 15: t. 1273. 1829; Hook. f., Fl. Brit. India 3: 646. 1882; Manilal & Sivar., Fl. Calicut 166. 1982; Mohanan, Fl. Quilon Dist. 255. 1984; Ansari, Fl. Kasaragod Dist. 230. 1985; Antony, Fl. Kottayam Dist. 243. 1989; Vajr., Fl. Palghat Dist. 283. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 295. 1994; Subram., Fl. Thenmala Division 217. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 283. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 205. 1997; Sasidh., Fl. Periyar Tiger Reserve 245. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 191. 2002.

*Ervatamia heyneana* (Wall.) Cooke, Fl. Pres. Bombay 2:134.1904; Gamble, Fl. Pres. Madras 813(572).1923; Ramach. & Nair, Fl. Cannanore Dist. 277.

*Local names:* Kundalappala, Kunninpala, Kuruttupala, Koonam pala

Small trees, to 8 m high; bark corky with shallow fissures, latex milky. Leaves 13-18 x 4-7 cm, elliptic-oblong, apex acuminate, base acute, lateral nerves 12-15 pairs, intercostae reticulate; petiole 2 cm long. Cymes terminal or axillary; peduncles to 4 cm long. Flowers pedicellate; calyx 4 mm long, lobes short, oblong, obtuse; corolla white, tube 25 mm long; lobes 15 mm long, oblong, obtuse, apex crisped. Capsule yellow, 5 x 1.5 cm, beak acuminate; aril red.

*Flowering & Fruiting:* April-October

*Habitat:* Moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Endemic to:* Southern Western Ghats

*Status:* Lower risk: near threatened (IUCN, 2000)

**Wrightia arborea** (Dennst.) Mabb., Taxon 26: 533. 1977; Ramach. & Nair, Fl. Cannanore Dist. 280. 1988; Anil Kumar, Fl. Pathanamthitta Dist. 404. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 295. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 283. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 205. 1997; Sasidh., Fl. Periyar Tiger Reserve 245. 1998; Sunil, Fl. Pl. Alappuzha Dist. 535. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 191. 2002.

*Periploca arborea* Dennst., Schluss. Hort. Malab. 23, 25. 1818.

*Wrightia tomentosa* Roem. & Schult., Syst. Veg. 4: 414. 1819; Hook. f., Fl. Brit. India 3: 653. 1882; Gamble, Fl. Pres. Madras 816(573). 1923.

*Local names:* Ayyappala, Mylampala

Small deciduous trees; to 12 m high; bark 8.5 mm, pale grey, corky; blaze greenish-yellow, latex yellow; branchlets tomentose. Leaves simple, opposite, estipulate; petiole 3-7 mm, stout, tomentose; lamina 6-15 x 3-6.5 cm, elliptic, elliptic-ovate, ovate or obovate; base acute; apex acuminate; margin entire, tomentose on both sides, chartaceous; lateral nerves 9-13 pairs, tomentose, prominent, pinnate; intercostae reticulate. Flowers bisexual, greenish-yellow, in terminal or pseudoaxillary dense shortly peduncled tomentose cymes; pedicel 1 cm long, stout, tomentose; calyx short, lobes 5, 4 mm long, broadly ovate, obtuse, pubescent without, glandular inside; corolla salver shaped, lobes 15 x 10 mm, obovate, puberulous, throat with 1-2 series of erect, entire or lobed orange corona scales, tube 5 mm long, shorter than the lobes; stamens 5, inserted on the mouth of the tube, anthers 8 mm long, exserted, sagitate, spurred at base, hairy; disc absent; carpels 2, 2 mm, connate; ovules many; style 3 mm, filiform; stigma ovoid with a basal ring usually toothed. Fruit of 2 connate follicular mericarps, ca. 16 x 2 cm, cylindrical, subterete, green, sparsely white tubercled, rough, apically beaked; seeds linear, comose at one end.

*Flowering & Fruiting:* April-December

*Habitat:* Moist and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Kannur, Trivandrum, Kollam, Thrissur, Alappuzha, Palakkad

*Geographical:* Indo-Malesia

**Wrightia tinctoria** (Roxb.) R. Br., Mem. Wern. Nat. Hist. Soc. 1: 47. 1811; Hook. f., Fl. Brit. India 3: 653. 1882; Gamble, Fl. Pres. Madras 815(573). 1923; Mohanan, Fl. Quilon Dist. 255. 1984; Ansari, Fl. Kasaragod Dist. 230. 1985; Manilal, Fl. Silent Valley 175. 1988; Ramach. & Nair, Fl. Cannanore Dist. 281. 1988; Antony, Fl. Kottayam Dist. 244. 1989; Vajr., Fl. Palghat Dist. 283. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 405. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 295. 1994; Subram., Fl. Thenmala Division 219. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 283. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 206. 1997; Sivar. & Mathew, Fl. Nilambur 420. 1997; Sasidh., Fl. Periyar Tiger Reserve 245. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 189. 1999; Sunil, Fl. Pl. Alappuzha Dist. 536. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 191. 2002; Mohanan & Sivad., Fl. Agasthyamala 446. 2002.

*Nerium tinctorium* Roxb., Orient. Repert. 1: 39. 1791.

*Local names:* Dhanthapala, Kambipala, Thattan-chavana, Vettupala, Thondapala, Thinnambala

Deciduous trees; upto 15 m; bark 8-10 mm thick, grey, smooth; outer layer thin, inner layer thick, brittle, creamy; blaze greenish-yellow; latex milky white. Leaves simple, opposite, distichous, estipulate; petiole 2-5 mm long, stout, glabrous; lamina 3.5-11 x 2-4 cm, oblong-lanceolate or elliptic-ovate; base acute; apex acuminate or caudate acuminate; margin entire, glabrous, glaucous beneath, chartaceous; lateral nerves 5-10 pairs, slender, arched, pinnate, prominent, intercostae reticulate. Flower bisexual, white, scented, in terminal cymes appearing along with new leaves; pedicel 1.5 mm long, bracts 2, minute; calyx lobes 5, with membranous margin, 2 mm, ovate, obtuse, ciliate, glandular inside; corolla salver shaped, lobes 5, broad lobes 12 x 5 mm, oblong, obtuse, throat with 1-2 series of erect, fimbriate corona scales, tube 1.5-2 mm; stamens 5, inserted on the mouth of the tube, anthers sagitate, spurred at base, conniving and adhering to the stigma; disc absent; carpels 2, free, many ovuled, style filiform, stigma ovoid, usually with a toothed basal ring. Fruit of 2 follicular mericarps, 15-45 cm long, slender, smooth, green, cylindric, cohering at the tip; seed 16 mm long, black, commate at one end.

*Flowering & Fruiting:* February-November

*Habitat:* Moist and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* India, Myanmar and Timor

#### LOGANIACEAE

1. Corolla tube equal to the tube; berry less than 2 cm across, seeds discoid, 7-8 mm in diameter ..... **Strychnos potatorum**
1. Corolla lobes shorter than the tube; berry 3.5-5 cm across, seeds compressed ca. 2 cm in diameter ..... **Strychnos nux-vomica**

**Strychnos nux-vomica** L., Sp. Pl. 189. 1753; Hook. f., Fl. Brit. India 4: 90. 1883; Gamble, Fl. Pres. Madras 868(610). 1923; Manilal & Sivar., Fl. Calicut 171. 1982;



Mohanan, Fl. Quilon Dist. 262. 1984; Ansari, Fl. Kasaragod Dist. 234. 1985; Ramach. & Nair, Fl. Cannanore Dist. 289. 1988; Antony, Fl. Kottayam Dist. 250. 1989; Vajr., Fl. Palghat Dist. 296. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 419. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 303. 1994; Subram., Fl. Thenmala Division 228. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 297. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 212. 1997; Sivar. & Mathew, Fl. Nilambur 430. 1997; Sasidh., Fl. Periyar Tiger Reserve 256. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 201. 1999; Sunil, Fl. Pl. Alappuzha Dist. 555. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 199. 2002.

*Local names:* Kangnalam, Kanjiram

Trees, to 20 m high, bark thin, yellowish or blackish-grey, smooth or scurfy with lenticels; blaze creamy yellow. Leaves simple, opposite, estipulate; petiole 5-13 mm, slender, glabrous; lamina 5-14 x 2-9 cm, elliptic, broadly elliptic or elliptic-ovate, base acute to attenuate, apex acute or obtuse, margin entire, glabrous, shiny, coriaceous; 3-5 nerved from base, prominent, glabrous; intercostae reticulate. Flowers bisexual, greenish-white, in terminal sessile cymes, sessile, tomentose, bract 5 mm; bracteole 1.5 mm; calyx lobes 4, 1 mm long, triangular, acute, pubescent; corolla greenish-yellow, tube 10 mm long, longer than lobes, slightly hairy near the base within, lobes 4, 4 x 1.5 mm, oblong, acute; stamens 4, anthers sessile inserted at the throat of corolla tube; ovary 2-celled, ovules many in each cell. Fruit a berry, 3-5 cm across, globose, yellowish-red or orange, glabrous; seeds 3 or 4, orbicular, flat, shiny, greenish-white, coin like, 2-2.5 cm diameter.

*Flowering & Fruiting:* March-December

*Habitat:* Moist and dry deciduous forests, also in sacred groves

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

***Strychnos potatorum*** L.f., Suppl. Pl. 148. 1781; Hook. f., Fl. Brit. India 4: 90. 1883; Gamble, Fl. Pres. Madras 868(610). 1923; Vajr., Fl. Palghat Dist. 296. 1990; Sasidh., Fl. Chinnar Wildlife Sanctuary 201. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 199. 2002.

*Local names:* Chillam, Thettamparel

Trees, to 12 m high, bark 10-12 mm thick, brownish-black, rough, corky with deep and narrow vertical cracks; blaze creamy yellow. Leaves simple, opposite, estipulate; petiole 2-8 mm, glabrous; lamina 5-15 x 3.5-7.5 cm, elliptic, ovate, elliptic-ovate, base obtuse or round, apex acute, margin entire, glabrous, shiny, chartaceous; nerves 3-5 from the base, lateral nerves from the midrib 4 pairs, glabrous; intercostae reticulate, prominent. Flowers bisexual, white, 0.85 cm long, in short axillary cymes, 6-8 mm long; pedicel 2 mm; calyx lobes 5, small; corolla 3.5 mm across, salver shaped, hairy within, tube cylindric, lobes 5, longer than tube; stamens 5, inserted on the corolla tube; anthers 2-celled, introrse; ovary 1 mm, superior, glabrous, ovules one in each cell; style glabrous; stigma obscurely 2 lobed. Fruit a berry, 16-18 mm across, globose, black, pericarp hard; seeds 1-2, 10-12 mm across, turgid, round, compressed, yellowish.

*Flowering & Fruiting:* March-May

*Habitat:* Dry deciduous forests

*Distribution*

Kerala: Idukki, Palakkad

Geographical: Peninsular India and Sri Lanka

#### BORAGINACEAE

1. Style 2 branched ..... **Ehretia pubescens**
1. Style 4 branched ..... 2
2. Fruiting calyx ribbed ..... 3
2. Fruiting calyx not ribbed ..... 4
3. Leaves ovate to orbicular, fulvous tomentose below ..... **Cordia wallichii**
3. Leaves ovate to suborbicular, margin repand, crenate glabrous below, except the nerve axils ..... **Cordia obliqua**
4. Corolla tube longer than the calyx; berry 2.5-3 x 2-2.5 cm, ovoid **Cordia octandra**
4. Corolla tube as long as the calyx; berry to 1.5 cm long ..... 5
5. Leaves oblong to oblanceolate, basal pair of nerves alternate ..... **Cordia gharaf**
5. Leaves ovate, basal pair of nerves opposite ..... **Cordia monoica**

**Cordia gharaf** (Forssk.) Ehrenb. ex Asch., Sitzungsber. Ges. Naturf. Freunde Berlin 46. 1879; Sasidh., Fl. Chinnar Wildlife Sanctuary 204. 1999.

*Cornus gharaf* Forssk., Fl. Aeg.-Arab. 95. 1775.

*Cordia rothii* Roem. & Schult., Syst. Veg. 4: 798. 1819; Hook. f., Fl. Brit. India 4: 138. 1883; Gamble, Fl. Pres. Madras 888(624). 1923.

Local name: Neeroli

Small trees, to 10 m high, bark grey or brownish-grey with deep longitudinal furrows, smooth, peeling off in thin linear strips; young branches brown tomentose. Leaves simple, subopposite or alternate, estipulate; petiole 7-20 mm, slender, tomentose; lamina 4-10 x 2.5-5 cm, oblanceolate, orbicular or ovate, base acute or obtuse, apex obtuse or rounded; margin entire, scabrous with white cystoliths above and tomentose beneath, chartaceous; nerves 3-5 from base, palmate, lateral nerves 3-4 pairs, pinnate, puberulent beneath, slender, prominent, intercostae scalariform, faint. Flowers polygamous, creamy white, in axillary or terminal cymes to 7 cm long; calyx tube 7 mm, tomentose, lobes 5; corolla 8 mm across, lobes 5, recurved; stamens 5; filaments 5 mm, hairy at the base, anthers 2 mm; ovary superior, 1.5 mm, ovoid, 4-celled, ovules one in each cell; style 6 mm. Fruit a drupe, 1-1.2 cm long, ovoid, acute; seed one.

Flowering & Fruiting: November-March

Habitat: Dry deciduous forests

Distribution

Kerala: Idukki

Geographical: India, Sri Lanka, Arabia, North Africa and Pakistan

**Cordia monoica** Roxb., Pl. Corom. t. 58. 1796; Hook. f., Fl. Brit. India 4: 137. 1883; Gamble, Fl. Pres. Madras 888(624). 1923; Sasidh., Fl. Chinnar Wildlife Sanctuary 204. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 202. 2002.

Local names: Pasakaimaram, Mookalapazham

Trees, to 10 m high; branchlets lenticellate, tomentose. Leaves simple, alternate, estipulate; petiole 5-20 mm, slender, tomentose when young, glabrous at maturity; lamina 4-10 x 1.5-7 cm, ovate, elliptic, elliptic-ovate, base round, truncate or acute,

apex acute or obtuse; upper surface scabrous with prominent whitish points, villous or tomentose beneath, coriaceous; 3-5 nerves from base, palmate, lateral nerves 4-5 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers polygamous, white, subsessile, in small dense tomentose paniculate cymes; calyx tube 8 mm, obconic, densely tomentose outside, glabrous inside, unevenly 3-4 lobed, lobes 5 mm, triangular, accrescent; corolla funnel shaped, lobes [4]-5, longer than the tube, oblong, stamens 4-[5]; filaments attached to the mouth of corolla tube, 3 mm, glabrous; anthers 1.5 mm; ovary superior, 4-celled, hairy, ovule one in each cell; stigma clavate. Fruit a drupe, 2.5 x 1.5 cm, yellow, ovoid with a mucronate tip, fulvous-pubescent; stone 4-celled; seed one.

*Flowering & Fruiting:* December-April

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Geographical:* Peninsular India and Sri Lanka

**Cordia obliqua** Willd., *Phytogr.* 1:t.4. f.1. 1794; Hook. f., *Fl. Brit. India* 4: 137. 1883; Gamble, *Fl. Pres. Madras* 887(623). 1923; Manilal & Sivar., *Fl. Calicut* 178. 1982; Ansari, *Fl. Kasaragod Dist.* 239. 1985; Antony, *Fl. Kottayam Dist.* 255.1989; Sasidh., *Fl. Chinnar Wildlife Sanctuary* 205. 1999; Sunil, *Fl. Pl. Alappuzha Dist.* 574. 2000.

*Cordia latifolia* Roxb., *Fl. Ind.* 2: 330. 1824, in part.

*Cordia myxa* Wight, *Illustr. t.* 169. 1850, non L.

*Local names:* Pasakaimaram, Viri

Trees, to 10 m high, bark 13-18 mm thick, surface yellowish-grey, rough, lenticellate, shallowly furrowed; blaze white. Leaves simple, alternate, estipulate; petiole 25-50 mm long, slender, pubescent, grooved above; lamina 6-19 x 4-11 cm, elliptic, ovate or orbicular; base acute, truncate, subcordate or rounded, apex acute or obtuse; margin entire or crenate, chartaceous, glabrous above, tomentose beneath; nerves 3-5 from the base, palmate, lateral nerves 4-7 pairs, prominent, pinnate, tomentose beneath especially on the axils of nerve; intercostae scalariform, prominent. Flowers polygamous, in axillary and terminal cymes, white, calyx tube campanulate, 5 mm long, granular-puberulent on the upper half, densely white strigose on the inner surface, unevenly 4-5 lobed, 2 mm, ovate; corolla 7 mm across, tube 5 mm, lobes 5, oblong, obtuse, recurved, spreading; stamens 5, filaments 4 mm, hairy at base; anthers 3 mm, oblong; ovary superior, 2.5 mm, 4-celled, globose, ovule one in each cell, style 6 mm, coiled; stigma lobes fan shaped. Fruit a drupe, 1 cm long, ovoid, pink, minutely rugose.

*Flowering & Fruiting:* March-August

*Habitat:* Dry deciduous forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Kottayam, Idukki, Malappuram, Kozhikkode, Alappuzha, Thrissur

*Geographical:* Pakistan, India, Sri Lanka and North Africa

**Cordia octandra** A. DC. in DC., *Prodr.* 9: 477. 1845; Hook. f., *Fl. Brit. India* 4: 140. 1883; Gamble, *Fl. Pres. Madras* 889(624). 1923; Anil Kumar, *Fl. Pathanamthitta Dist.* 431. 1994; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 301. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 214.1997; Sasidh., *Fl. Periyar Tiger Reserve* 260.1998. *Cordia serrata* sensu Wall. in Roxb., *Fl. Ind.* 2: 333. 1824, non A. Juss. 1830.

Small trees, to 10 m high; bark 8.5 mm, pale brown or dark grey, stringy; branchlets sparsely hairy. Leaves simple, subopposite and alternate, estipulate; petiole 20-50 mm long, slender, glabrous; lamina 5-13 x 3-8 cm, ovate, base acute or rounded, apex acuminate; margin entire or serrate, scabrous, membranous; 3 nerved from base, lateral nerves 3 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers polygamous, white, 8.5 mm across, in terminal dichotomous, long peduncled corymbose cymes; pedicel pilose; calyx 14 mm long, cupular, densely woolly within, sparsely hairy outside, accrescent; corolla 20 mm long, campanulate, lobes 7-9, oblong, obtuse; stamens 8, alternately long and short; filaments shorter than corolla lobes, hairy at base; ovary superior, obovoid, 4-celled, ovule one in each cell; style short or absent; stigma sessile, 2 lobed. Fruit a drupe, 3 x 1.5 cm, ellipsoid, glabrous, acute; seed one.

*Flowering & Fruiting:* August-December

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Thrissur, Kollam, Kozhikkode

*Endemic to:* Southern Western Ghats

*Status:* Endangered

***Cordia wallichii*** G. Don, Gen. Hist. 4: 379. 1837-1838; Gamble, Fl. Pres. Madras 887(623).1923; Manilal, Fl. Silent Valley 185. 1988; Ramach. & Nair, Fl. Cannanore Dist. 294. 1988; Vajr., Fl. Palghat Dist. 302. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 301. 1996; Sivar. & Mathew, Fl. Nilambur 438. 1997; Sasidh., Fl. Periyar Tiger Reserve 261. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 202. 2002.

*Cordia obliqua* Willd. var. *wallichii* (G. Don) Clarke in Hook.f., Fl. Brit. India 4:137.1883.

*Cordia obliqua* Willd. var. *tomentosa* Kazmi, J. Arnold. Arbor. 51. 143. 1970.

*Local names:* Periyaviri, Virimaram

Deciduous trees, to 15 m high, bark brown to brownish-black, corky; branchlets densely pubescent. Leaves simple, alternate, estipulate; petiole 30-50 mm long, slender, glabrous; lamina 6-17 x 5-15 cm, ovate or orbicular, base cordate or truncate, apex subacute, acute or obtuse; margin entire, glabrescent above and woolly beneath, membranous; nerves 3-5 from base, palmate, prominent, lateral nerves 3-5 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers polygamous, creamy white in lax terminal corymbose cymes, 8 x 8 cm; calyx 9 mm long, irregularly splitting into 5 lobes; lobes ovate, acute, hairy; corolla 15 mm long, lobes 6, oblong, acute; stamens 6; filaments villous at base; ovary superior, 2.5 mm; style 7 mm, 4-branched. Fruit a drupe, 2 x 2 cm, depressed-globose, yellow, shining.

*Flowering & Fruiting:* December-May

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kannur, Thrissur, Malappuram

*Endemic to:* South West India

***Ehretia pubescens*** Benth. in Royle, Illustr. 1: 306. 1836; Gamble, Fl. Pres. Madras 891(626). 1923; Sasidh., Fl. Chinnar Wildlife Sanctuary 206. 1999.

*Ehretia laevis* Roxb. var. *pubescens* (Benth.) Clarke in Hook.f., Fl. Brit. India 4:142.1883.

*Local name:* Karukamaram

Small trees, to 10 m high; bark grey; branchlets stout, lenticellate, pale brown, younger parts softy hairy. Leaves simple, alternate; petiole 6-15 mm long, slender, glabrous; lamina 5.5-9 x 2-3.5 cm, elliptic-oblong, oblanceolate or obovate; base cuneate; apex obtuse; margin entire, coriaceous, scabrous; lateral nerves 5-7 pairs, pinnate, prominent, slender; intercostae reticulate. Flowers in terminal or axillary corymbose, 1 cm, white; calyx tube 1.5 mm, lobes 1 mm; stamens 5, filaments 1 m long; ovary 4-celled; style bifid, short; stigma minute. Fruit a drupe, globose, 6.5 mm across, black when ripe.

*Flowering & Fruiting:* January-February

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Geographical:* India

### BIGNONIACEAE

1. Leaves bi or tri pinnate ..... 2
1. Leaves simple pinnate ..... 5
2. Leaflets less than 1 x 0.3 cm, more than 50 pairs per pinnae; flowers blue.....  
..... **Jacaranda mimosifolia**
2. Leaflets over 3 x 2.5 cm and less than 10 pairs; flowers never blue..... 3
3. Leaf margins mostly dentate, flowers white ..... **Millingtonia hortensis**
3. Leaf margins entire ..... 4
4. Leaves ovate to suborbicular, fruit flattened, smooth 6-8 cm broad .....  
..... **Oroxylum indicum**
4. Leaves lanceolate, fruit terete with warty tubercles, 1.5-2.2 cm broad.....  
..... **Radermachera xylocarpa**
5. Fruit oblong, 20-30 x 7-10 cm, seeds embedded in pulp..... **Kigelia Africana**
5. Fruit otherwise, seeds not embedded in pulp ..... 6
6. Fruit winged on either side; leaflets more than 19, base very unequal .....  
..... **Pajanelia longifolia**
6. Fruit not winged; leaflets less than 15..... 7
7. Calyx spathaceous, splitting along one side ..... 8
7. Calyx not spathaceous ..... 10
8. Corolla red, tube barely exceeding the calyx..... **Spathodea campanulata**
8. Corolla white, tube longer than the calyx ..... 9
9. Corolla 10-15 cm long; leaflets glabrous, base very unequal, fruit straight .....  
..... **Dolichandrone spathacea**
9. Corolla less than 7 cm long; leaflets densely tomentose, base equal, fruit curved  
..... **Dolichandrone arcuata**
10. Fruit flattened, dissepiment 4-winged, corolla ventricose .....  
..... **Heterophragma quadriloculare**
10. Fruit terete or angled, dissepiment terete, corolla not ventricose ..... 11
11. Capsule terete, thick walled; inflorescence and leaves pubescent  
..... **Stereospermum suaveolens**

11. Capsule angular, thin walled; inflorescence and leaves glabrous or glabrescent ..... 12
12. Corolla 2.5-3 cm across, lobes yellow, crisped **Stereospermum colais** var. **colais**
12. Corolla 5 cm across, lobes pink, not crisped .....  
 .....**Stereospermum colais** var. nov.

**Dolichandrone arcuata** (Wight) Clarke in Hook.f., Fl. Brit. India 4: 380. 1884; Gamble, Fl. Pres. Madras 996(700). 1924; Vajr., Fl. Palghat Dist. 334. 1990; Sasidh., Fl. Chinnar Wildlife Sanctuary 227. 1999.

*Spathodea arcuata* Wight, Ic. t. 1340. 1848.

*Local name:* Pambukaimaram

Medium sized trees; to 15 m high; bark brown, peeling off in thin flakes, blaze dull yellow. Leaves compound, imparipinnate, opposite, estipulate; rachis 7-20 cm long, slender, tomentose; leaflets 5-11, opposite; petiolule to 5-30 mm, slender, tomentose; lamina 4-7.5 x 2-4 cm, oblong, ovate, orbicular or elliptic-ovate; base oblique or acute; apex acute or obtuse; margin entire, pubescent, coriaceous; lateral nerves 5-6 pairs, pinnate, slender, prominent; intercostae reticulate, faint. Flowers bisexual, white, few in terminal corymbs or panicles; calyx spathaceous, split on one side and recurved to 2.5 cm, pubescent; corolla 4 cm across, tubular, widened at mouth, tube 6 cm, lobes 5, fringed; stamens 4, didydynamic, divaricate, included, filaments 5 and 7 mm long; disc annular; ovary 5 mm, sessile; ovules numerous, style 2 mm; stigma 2 lobed. Fruit a capsule, 2 valved, upto 45 x 1.5 cm, linear, terete, pubescent, speckled with white dots, curved; seeds 0.6 mm, winged.

*Flowering & Fruiting:* December-March

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* Peninsular India

**Dolichandrone spathacea** (L. f.) K. Schum., Fl. Kais. Wilh. Land. 123. 1889; Gamble, Fl. Pres. Madras 996(700). 1924; Manilal & Sivar., Fl. Calicut 210. 1982; Ansari, Fl. Kasaragod Dist. 269. 1985; Sunil, Fl. Pl. Alappuzha Dist. 664. 2000.

*Bignonia spathacea* L.f., Suppl. Pl. 283. 1781.

*Dolichandrone rheedei* (Spreng.) Seem., J. Bot. 8: 380. 1870; Hook. f., Fl. Brit. India 4: 379. 1884.

*Spathodea rheedei* Spreng., Syst. Veg. 2: 835. 1825.

*Local names:* Neerpongilium

Moderate sized deciduous trees, to 18 m high; bark greyish-brown; bole smooth. Leaves compound, imparipinnate opposite, estipulate; rachis 23-30 cm long, stout, glabrous; leaflets 5-9, opposite; petiolule upto 6 mm, stout, glabrous; lamina 7.5-15.2 x 2.5-7.5, rhomboid or ovate-lanceolate; base oblique; apex acuminate; margin entire, glabrous and shiny. Flowers bisexual, white, 3-4 together on terminal short erect corymbs; calyx spathaceous, cleft to the base on one side, spathe acuminate at tip; corolla 10-18 cm long, tube long, slender below, widening half way to a funnel; lobes 5, 10 cm, spreading, crisped; stamens 4, didydynamic, included; disc annular; ovary sessile; ovules many; style long; stigma 2 lobed. Fruit a capsule, to 45 x 2.5 cm, purplish-brown; seeds winged, flat, rectangular, 1.6 cm across.

*Flowering & Fruiting:* December-August

*Habitat:* Along banks of rivers or mangrove swamps in the coastal areas

*Distribution*

*Kerala:* Kasaragode, Kollam, Kozhikkode, Alappuzha

*Geographical:* South and South East Asia

**Heterophragma quadriloculare** K. Schum. in Engl. & Prantl, Nat. Pflanzenf. 4(3b): 243. 1895.

*Heterophragma roxburghii* DC., Prodr. 9: 210. 1845; Hook. f., Fl. Brit. India 4: 381. 1884; Gamble, Fl. Pres. Madras 997(701). 1924; Sasidh., Fl. Parambikulam Wildlife Sanctuary 223. 2002.

Medium sized trees; to 15 m high; bark 1.3 cm thick, brown or grey, exfoliating in small angular scales; bole rough. Leaves compound, imparipinnate, opposite, clustered at apex, estipulate; rachis 14-23 cm, slender, pulvinate, puberulent; leaflets 7-11 opposite or subopposite; petiolule 3-15 mm, slender, puberulent; lamina 4-5 x 1.8-2.5 cm, elliptic, elliptic-oblong; base acute or oblique; apex obtuse or acute; margin entire or crenate, puberulent, coriaceous; lateral nerves, 4-6 pairs, pinnate, prominent, slender, puberulent; intercostae reticulate. Flowers bisexual, rose coloured, in terminal woolly tomentose panicle; pedicels to 5 mm, stout; calyx to 2 cm, tubular, irregularly 5 lobed, densely tomentose; corolla to 3.5 cm, floccose, lobes 5, subequal, rounded, crisped; stamens 4, didynamous, included, anthers divaricate disc cushion shaped; ovary sessile, ovate; ovule many; style to 3 cm; stigma 2 lobed. Fruit a capsule, 25-28 x 5-6.5 cm, oblong, 2 valved, compressed, dissepiments spongy; seeds 2 x 6 cm, membranous, winged at one end.

*Flowering & Fruiting:* December-February

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Palakkad

*Endemic to:* Peninsular India

**Jacaranda mimosifolia** D. Don, Bot. Reg. 8: t.631. 1822; Antony, Fl. Kottayam Dist. 294. 1989; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 339. 1994.

Deciduous trees, to 12 m high. Leaves bipinnate, opposite, decussate, estipulate; rachis 24-30 cm long, stout, swollen at base, glabrous; pinnae 15-18 pairs, 4.5-7 cm, opposite or subopposite, slender, shortly winged between each leaflet; leaflets 21-50, opposite, sessile; lamina 0.6-1.5 x 0.2-0.3 cm, elliptic or elliptic-lanceolate, base acute, apex acute or acuminate and apiculate, margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 5-8 pairs, pinnate, slender, faint, intercostae reticulate, faint. Flowers bisexual, blue, in lax pyramidal panicles terminal or axillary; pedicels 4 mm; calyx truncate, lobes 5; corolla 5 x 3 cm; tube narrow and curved below, inflated above; limb 2-lipped; lobes 5, round; stamens 4, didynamous; filaments 2 cm, converging apically, basally hairy; anthers 4 mm; staminodes 3 cm, apically hairy; ovary superior, 2-celled; ovules many; style 2.5 cm, apically 2-fid, bluish. Fruit a capsule, 5 cm across, orbicular, apically mucronate, woody; seeds many, 8 x 5 mm, winged around.

*Flowering & Fruiting:* March-December

*Habitat:* Planted as ornamental tree

*Distribution*

*Kerala*: All districts

*Geographical*: Native of South America

**Kigelia africana** (Lam.) Benth. in Hook., Niger Fl. 463. 1849; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 339. 1994.

*Bignonia africana* Lam., Encycl. 1: 424. 1785.

*Kigelia pinnata* (Jacq.) DC., Prodr. 9: 247. 1845; Gamble, Fl. Pres. Madras 1000(703). 1924.

*Crescentia pinnata* Jacq., Coll. Bot. 203. t. 18. 1789.

Trees, to 15 m high. Leaves imparipinnate, clustered towards the apex of branchlets, spiral, estipulate; rachis 14-30 cm long, stout, swollen at the base, glabrous; leaflets 5-9, opposite; petiolule of lateral leaflets 1-2 mm those of terminal leaflet 1-1.5 cm, stout, glabrous; lamina 6-16 × 3-7 cm, elliptic-oblong or obovate-oblong, base obliquely acute, round or cordate, apex obtuse and mucronate, margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 7-11 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, in 20-40 cm long axillary pendulous panicles; calyx 3 × 1.5 cm, campanulate, 2-lipped; corolla 6 cm across, dark purple with yellow stripes, campanulate; tube 3.5 cm; lobes 5, 4 cm, broadly triangular-ovate; stamens 4; filaments *ca.* 4 cm long; anthers sagittate, 1 cm; ovary superior, 1 cm, 1-celled; style 10 cm long; stigma broadly ovate. Fruit 30-45 × 8-15 cm, muddy brown, scurfy flakes present, indehiscent.

*Flowering & Fruiting*: March-January

*Habitat*: Grown as ornamental tree

*Distribution*

*Kerala*: All districts

*Geographical*: Africa; introduced in the tropics as ornamental tree

**Millingtonia hortensis** L.f., Suppl. Pl. 291. 1781; Hook. f., Fl. Brit. India 4: 377. 1884; Gamble, Fl. Pres. Madras 994(699). 1924; Mohanan, Fl. Quilon Dist. 294. 1984; Antony, Fl. Kottayam Dist. 292. 1989; Vajr., Fl. Palghat Dist. 336. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 339. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 333. 1996; Sunil, Fl. Pl. Alappuzha Dist. 664. 2000.

*Bignonia suberosa* Roxb., Pl. Corom. t. 214. 1811 & Fl. Ind. 3: 111. 1832.

*Local names*: Maramalli, Corckumaram

Trees, to 15 m high; bark pale brown, corky. Leaves 2-3 pinnate, opposite, estipulate; rachis 45-70 cm long, stout, glabrous, swollen at base, grooved above; pinnae 11-17 pairs, 6-16 cm, slender, grooved above, opposite, imparipinnate; leaflets 1-5, opposite; petiolule 5-10 mm long, slender, grooved above, glabrous; lamina 2.5-8 × 1.5-5 cm, ovate or elliptic-ovate, base oblique, truncate or acute, apex acuminate, margin entire or coarsely dentate-crenate, glabrous except midrib and lateral nerves beneath, membranous; lateral nerves 3-5 pairs, pinnate, slender, prominent, intercostae reticulate, faint. Flowers bisexual, white, in terminal corymbose panicles; calyx 4 mm, cupular, puberulous; lobes 5, 1 mm, obtuse; corolla 2.5 cm across; tube narrow, cylindrical, 7 cm, throat wide; lobes 5, subequal; stamens 4, didynamous, filaments 1 and 1.5 cm long; anthers oblong, 1-cell fertile, other reduced to an appendage; disc annular; ovary superior, subsessile, conical, ovules many; style slender; stigma 2-lobed. Fruit an elongated capsule, 30×2 cm, 2-valved; seeds many, winged.

*Flowering*: March-June



*Habitat:* Grown as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* South East Asia and Malesia

**Oroxylum indicum** (L.) Benth. ex Kurz, For. Fl. Burma 2: 238. 1877; Hook. f., Fl. Brit. India 4: 378. 1884; Gamble, Fl. Pres. Madras 994(698). 1924; Manilal & Sivar., Fl. Calicut 210. 1982; Mohanan, Fl. Quilon Dist. 294. 1984; Ansari, Fl. Kasaragod Dist. 269. 1985; Antony, Fl. Kottayam Dist. 292. 1989; Ramach. & Nair, Fl. Cannanore Dist. 327. 1988; Vajr., Fl. Palghat Dist. 335. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 488. 1994; Subram., Fl. Thenmala Division 259. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 331. 1996; Sivar. & Mathew, Fl. Nilambur 483. 1997; Sunil, Fl. Pl. Alappuzha Dist. 665. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 223. 2002.

*Bignonia indica* L., Sp. Pl. 625. 1753.

*Local names:* Palakapayyani, Payyazhantha, Valpathiri, Aralu

Medium sized trees; to 12 m high; bark 5-6 mm thick, surface brownish-grey; blaze yellowish-green; bole smooth. Leaves compound, 2-3 pinnate, pinnae 5-9; imparipinnate, opposite; rachis 60-100 cm, stout, glabrous; leaflets 3-5 in each pinnae, opposite; petiolule 3-20 mm, glabrous, slender; lamina 7.5-15 x 4-9 cm, ovate; base cordate, oblique or truncate; apex acuminate, margin entire, glabrous, chartaceous; lateral nerves, 4-6 pairs, pinnate, prominent, puberulent beneath; intercostae reticulate. Flowers bisexual, in lax terminal racemes, reddish-purple outside, pinkish-yellow within, racemes to 30-50 cm long; pedicels 1-2 cm long; calyx 2.5 cm long, campanulate, coriaceous, glabrous, limb truncate or obscurely toothed; corolla 10 cm long, large, fleshy, campanulate, lobes 3 cm long, 5; stamens 5, perfect, the posterior one shortest, filaments inserted below the base of the tube, filaments hairy at base; connective with a short mucrone; ovary subsessile, contracted at the base; ovule many; style slender; stigma 2-lobed. Fruit a capsule 40-75 x 5-8 cm, 2 valved, compressed, tapering at both end; seeds 5-6 cm long, winged all around except at base.

*Flowering & Fruiting:* July-December

*Habitat:* Moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* South India and Sri Lanka

**Pajanelia longifolia** (Willd.) K. Schum. in Engl. & Prantl, Nat. Pflanzenf. 4(3b): 244. 1895; Manilal & Sivar., Fl. Calicut 210. 1982; Mohanan, Fl. Quilon Dist. 294. 1984; Ansari, Fl. Kasaragod Dist. 270. 1985; Ramach. & Nair, Fl. Cannanore Dist. 327. 1988; Antony, Fl. Kottayam Dist. 293. 1989; Vajr., Fl. Palghat Dist. 335. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 488. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 339. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 332. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 229. 1997; Sivar. & Mathew, Fl. Nilambur 484. 1997; Sasidh., Fl. Periyar Tiger Reserve 289. 1998; Sunil, Fl. Pl. Alappuzha Dist. 666. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 223. 2002; Mohanan & Sivad., Fl. Agasthyamala 498. 2002.

*Bignonia longifolia* Willd., Sp. Pl. 3: 306. 1800.

*Pajanelia rheedei* Wight, Ic. tt. 1343,1344. 1848; Hook. f., Fl. Brit. India 4: 384. 1884; Gamble, Fl. Pres. Madras 1000(702). 1924.

*Local names:* Azhantha, Pajaneli, Payyani

Deciduous trees, to 22 m high, bole unbranched to a considerable height; bark 2-3 cm thick, pale grey, shining, pustular lenticels in vertical rows; blaze dull yellow with darker streaks. Leaves compound, imparipinnate, estipulate; rachis to 100 cm, glabrous, stout; leaflets 7-17, opposite; petiolule 3-7 mm, channelled above, glabrous; lamina 17-25 x 7-12 cm, ovate; base oblique; apex acuminate; margin entire, glabrous, chartaceous; lateral nerves 6-10 pairs, pinnate, prominent; intercostae reticulate. Flowers bisexual, crimson-purple, white within, in large terminal racemose panicles; calyx 4.5 cm long, campanulate, lobes 5, rusty tomentose; corolla 9 cm long and 8 cm broad, tube 6-8 cm long, base narrow, broadly ventricose, lobes 5, subequal, crisped; stamens 4, free, didynamous with a rudimentary fifth, filaments arching, slender; anthers equal, oblong; ovary 0.5-1 cm long, 2-celled, oblong; ovules many; placenta thin at centre; style 6 cm long; stigma 2 lobed. Fruit a capsule, 2 valved, 30-45 x 5-7.5 cm, brown, winged on both margins, compressed, smooth; seeds 2.5 x 1.5 cm, flat, papery, winged on both sides.

*Flowering & Fruiting:* January-June

*Habitat:* Moist deciduous and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* India and Myanmar

**Radermachera xylocarpa** (Roxb.) K. Schum. in Engl. & Prantl, Nat. Pflanzenf. 4(3b): 243. 1895; Gamble, Fl. Pres. Madras 999(701). 1924; Mohanan, Fl. Quilon Dist. 295. 1984; Vajr., Fl. Palghat Dist. 335. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 487. 1994; Subram., Fl. Thenmala Division 259. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 332. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 229. 1997; Sivar. & Mathew, Fl. Nilambur 485. 1997; Sasidh., Fl. Periyar Tiger Reserve 289. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 228. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 223. 2002; Mohanan & Sivad., Fl. Agasthyamala 499. 2002.

*Bignonia xylocarpa* Roxb., Fl. Ind. 3: 108. 1832.

*Stereospermum xylocarpum* (Roxb.) Benth. in Benth. & Hook.f., Gen. Pl. 2: 1047. 1876; Hook. f., Fl. Brit. India 4: 383. 1884.

*Local names:* Pannimuringa, Vedangkonnai, Vedinkorana

Deciduous trees; to 20 m high; bark 2.5 cm, light greyish-brown, rough, corky, flaking off in thin irregular scales; blaze brown and cream. Leaves compound, bipinnate or tripinnate, opposite, estipulate; rachis 24-50 cm long, stout, swollen at base and each nodes; pinnae 7-9, leaflets 3-9 in each pinnae, opposite; petiolule 1.5-5 mm; lamina 3.5-15 x 2-7 cm, elliptic-lanceolate, ovate-lanceolate or ovate; base oblique or acute; apex acute or acuminate; margin entire, membranous, glabrous; lateral nerves 4-7 pairs, glabrous, raised beneath, prominent, slender; intercostae reticulate. Flowers bisexual, white, tinged with yellow, fragrant, in terminal paniced cymes, calyx 1 cm long, campanulate, irregularly 5 lobed; corolla 4.5 cm long, 4 cm across, campanulate, bilabiate, lobes subequal, obtuse, crisped, glabrous; stamens 4, didynamous, included, anthers divaricate, 4 mm; staminodes filiform; ovary oblong, glabrous, superior; ovules many, multiseriate; style slender;

stigma spoon shaped. Fruit a capsule, elongate, 30-75 x 1.5-3.7 cm, warty tubercled, woody, bivalved, dissepiments spongy, slightly curved; seeds winged, 1.5 cm long, with membranous wings at both ends.

*Flowering & Fruiting:* March-April

*Habitat:* Dry and moist deciduous forests

*Distribution*

*Kerala:* Idukki, Thrissur, Pathanamthitta, Malappuram, Palakkad, Trivandrum, Kollam

*Endemic to:* Peninsular India

**Spathodea campanulata** P. Beauv., Fl. Owar. 1: 47. tt. 27-28. 1805; Gamble, Fl. Pres. Madras 1000(703). 1924; Mohanan, Fl. Quilon Dist. 295. 1984; Sasidh., Fl. Shenduruny Wildlife Sanctuary 230. 1997; Manilal & Sivar., Fl. Calicut 210. 1982; Anil Kumar, Fl. Pathanamthitta Dist. 488. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 339. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 333. 1996; Sivar. & Mathew, Fl. Nilambur 486. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 228. 1999; Sunil, Fl. Pl. Alappuzha Dist. 667. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 224. 2002.

Trees, to 18 m high; bark smooth, light brownish-grey; branchlets tomentose. Leaves imparipinnate, opposite, decussate, estipulate; rachis 9-40 cm long, stout, pubescent, grooved above, swollen at base; leaflets 9-19, opposite; petiolule 3-5 mm long, stout, pubescent; lamina 5-12.5 x 3-7 cm, elliptic-oblong, obovate-oblong or obovate, base round, acute or oblique, apex acuminate, margin entire, glabrous above, puberulent beneath, coriaceous, a prominent gland at the base of the lamina on the upper side; lateral nerves 5-10 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, 8 cm long, bright red, in terminal racemes; pedicels 3-4 cm long, glabrous; bracts *ca.* 2 cm long; bracteoles 2, 7-10 mm long, oblong-lanceolate; calyx 5-6 x 2-2.5 cm, spathaceous, golden velutinous, recurved; corolla tube 7.5-9 x 5-6 cm, bright reddish-orange without, yellowish within, glandular; lobes 5, 3-4.5 x 3-4 cm, subequal erect, deltoid; stamens e, subequal, unequally inserted at the base of swollen portion of the tube; filaments 4-6 cm long, glabrous; anthers large, locules divergent; staminodium small; disc 4 x 8 mm, annular, shallowly lobed; ovary superior, ovate-oblong, pubescent, papillose; style slender *ca.* 6 cm long; stigma 2-lipped, lips flattened. Fruit a capsule, 15-23 x 3-5 cm, lanceolate-oblong, brownish-black, woody, 2-valved; seeds many, 1.7-2.4 cm across, winged.

*Flowering & Fruiting:* November-May

*Habitat:* Planted as an avenue tree, also as shade tree in coffee plantations

*Distribution*

*Kerala:* All districts

*Geographical:* Native in Tropical Africa

**Stereospermum colais** (Buch.-Ham. ex Dillw.) Mabb., Taxon 27: 553. 1979, var. **colais**; Mohanan, Fl. Quilon Dist. 295. 1984; Ansari, Fl. Kasaragod Dist. 270. 1985; Manilal, Fl. Silent Valley 201. 1988; Ramach. & Nair, Fl. Cannanore Dist. 327. 1988; Antony, Fl. Kottayam Dist. 294. 1989; Vajr., Fl. Palghat Dist. 336. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 488. 1994; Subram., Fl. Thenmala Division 258. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 332. 1996; Sasidh., Fl. Shenduruny

Wildlife Sanctuary 230. 1997; Sivar. & Mathew, Fl. Nilambur 485. 1997; Sasidh., Fl. Periyar Tiger Reserve 290. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 228. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 224. 2002; Mohanan & Sivad., Fl. Agasthyamala 499. 2002.

*Bignonia colais* Buch.-Ham. ex Dillw., Rev. Hort. Malab. 28. 1839.

*Stereospermum tetragonum* DC., Prodr. 9: 210. 1845; Gamble, Fl. Pres. Madras 998(701). 1924.

*Stereospermum chelonoides* sensu Wight, Ic. t. 1341. 1845, non (L. f.) DC. 1838; Hook. f., Fl. Brit. India 4: 383. 1884.

*Local names:* Pathiri, Poopathiri, Karingazha

Large trees, to 30 m high; bole rough; bark 1.2 cm thick, pale greyish-brown, transversely rugose, exfoliations irregular; blaze creamy yellow. Leaves compound, imparipinnate, opposite, estipulate; rachis 10-21 cm long, slender, puberulent, swollen at base; leaflets 7-13, opposite; petiolule 7-12 mm, slender, puberulent, grooved above; lamina 4.5-13 x 2-4.5 cm, elliptic-lanceolate, elliptic-oblong, ovate or obovate; base oblique, acute or obtuse; apex acuminate or caudate acuminate; margin entire or serrate, glabrous above and puberulent beneath, chartaceous; lateral nerves 6-10 pairs, pinnate, puberulent beneath, prominent; intercostae reticulate. Flowers bisexual, yellow veined with red, 2 cm long, in terminal drooping panicles; calyx 6 mm long, campanulate, shallowly lobed, lobes 3-5, dorsal lobe much larger than the others, puberulent, tube 1.2-1.5 cm, obtuse; corolla 2 x 1.5 cm across, infundibuliform, pubescent inside, base glandular hairy, lobes 5, subequal, crisped; stamens 4, didymous, divaricate; filaments unequal, smaller ones 1-1.2 cm, larger to 2.2-2.5 cm, simple and hairy below; anthers divergent, ca. 5 mm, oblong, included, staminodes present; ovary sessile, oblong, superior, 2-celled, syncarpous; many ovuled, 1 seriate; style slender; stigma 2, spoon shaped. Fruit a capsule, to 35 x 0.7 cm, subtetragonus, tapering at apex and base, epicarp thin, spirally splitting; seeds 8 mm long, wings obtuse at both ends.

*Flowering & Fruiting:* February-October

*Habitat:* Moist deciduous and semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Pathanamthitta, Malappuram, Palakkad, Kannur, Thrissur, Trivandrum, Kottayam, Kollam

*Geographical:* Indo-China and Malesia

***Stereospermum colais*** (Buch.-Ham. ex Dillw.) Mabber. var. nov.

Tall trees. Leaves imparipinnate, opposite, rarely subopposite, estipulate; rachis 10-30 cm long, pubescent when young, stout, swollen at base, grooved above; leaflets 7-9, opposite or subopposite, petiolule 5-20 mm, stout, pubescent when young, grooved above; lamina 8-18 x 3-7 cm, elliptic-lanceolate, ovate, ovate-oblong to obovate; base obliquely acute or rounded, apex acuminate or caudate-acuminate, midrib pubescent above, margin entire, chartaceous, lateral nerves 5-12 pairs, pinnate, regular, arched towards the margin, raised below, intercostae reticulate. Panicle terminal, erect, peduncle stout, to 30 cm long; flowers ca. 5 cm across, bisexual, pedicel slender, puberulent, calyx 5-lobed, lobes unequal, dorsal lobe much larger than the others, puberulent, tube 1.2-1.5 cm; corolla regular, infundibuliform, 5-lobed, three dorsal lobes with three red lines, two ventral lobes partially united, a purple blotch at the mouth of the corolla tube, throat yellowish inside, tube dark pink outside, pubescent inside, base glandular hairy; stamens 4,

didymous; filaments unequal, smaller ones 1-1.2 cm, larger to 2.2-2.5 cm, simple and glandular hairy below; anthers divergent, ca. 5 mm, oblong, basifixed; ovary, ca. 5 x 5 mm, oblong, glabrous, style terminal, ca. 2 cm long, stigma bilobed, clavate. Fruit a capsule, 20-80 cm long, pendulous, 4-angled, smooth, lenticellate, 2-valved, tapering at both ends, epicarp thick and woody; seeds 2.5-3 x 0.3-0.6 cm, many, fixed on the cylindrical central suture, 2-winged, greyish-white or yellowish-white, wings lacerate at apex.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen forests, along the banks of streams

*Distribution*

*Kerala:* Kollam

*Endemic to:* Southern Western Ghats (Kerala)

**Stereospermum suaveolens** (G. Don) DC., Prodr. 9: 211. 1845; Hook. f., Fl. Brit.

India 4: 382. 1884; Gamble, Fl. Pres. Madras 998(701). 1924.

*Tecoma suaveolens* G. Don, Syst. 4: 244. 1837.

*Local name:* Poopathiri

Deciduous trees, to 25 m high; bark grey, exfoliating in flat scales; blaze dull yellow.

Leaves compound, imparipinnate, opposite, estipulate; rachis 150-450 mm long, pubescent, slender, swollen at base; leaflets 5-11, opposite; petiolules 10-20 mm, slender, pubescent; lamina 7.5-16 x 5-7.5 cm, elliptic or ovate; base oblique, acute or unequally rounded; apex acuminate; margin entire or serrulate on young trees, shiny and glabrous above and pubescent beneath, coriaceous; lateral nerves 6-8 pairs, pinnate, prominent, puberulent beneath; intercostae reticulate. Flowers bisexual, dull crimson, in drooping panicles, pubescent, 18 mm long; calyx campanulate, hairy, lobes 3-5, short, broad; corolla 3-4 cm long, funnel shaped, pubescent outside, lobes 5 unequal, rounded, crisped; stamens 4; didynamous, included, staminodes present, anther divaricate; disc cupular, fleshy; ovary sessile, superior, 2-celled, syncarpous; ovules many; style slender; stigma 2. Fruit a capsule, 30-60 x 0.5 cm, nearly terete, grey, lenticellate; seeds 3 cm long, trigonus, with a transverse groove without and a prominent ridge within, wedge shaped, with a membranous wing with obtuse ends.

*Flowering & Fruiting:* February-October

*Distribution*

*Kerala:* Wayanad

*Geographical:* India and Sri Lanka

#### VERBENACEAE

- |    |  |                      |
|----|--|----------------------|
| 1. | Leaves digitately 3-5 foliate .....  | 2                    |
| 1. | Leaves simple.....   | 4                    |
| 2. | Flowers in axillary corymbose glabrous dichasial cymes, white.....   |                      |
|    | ..... <b>Vitex leucoxydon</b>  |                      |
| 2. | Flowers in terminal puberulous panicles, pale blue or purple .....   | 3                    |
| 3. | Petiole winged, leaves puberulous below; bracts small; corolla 0.5 cm long .....                           |                      |
|    | ..... <b>Vitex altissima</b>   |                      |
| 3. | Petiole not winged, leaves fulvous tomentose below; bracts foliaceous, persistent; corolla 1 cm long ..... | <b>Vitex pinnata</b> |
| 4. | Corolla actinomorphic, lobes 4 or 6-8 .....  | 5                    |

4.	Corolla zygomorphic, lobes 5.....	6
5.	Corolla white, lobes 6-8; calyx inflated in fruit, pyrene 1.....	<b>Tectona grandis</b>
5.	Corolla purple, lobes 4; calyx not inflated in fruit, pyrenes 4.....	<b>Callicarpa tomentosa</b>
6.	Corolla over 2.5 cm long, brownish-yellow .....	<b>Gmelina arborea</b>
6.	Corolla white or greenish-yellow, less than 5 mm across .....	7
7.	Flowers in elongated racemes (cultivated) .....	<b>Citharexylum fruticosum</b> forma <b>subserratum</b>
7.	Flowers in corymbose cymes (native).....	8
8.	Leaves and young shoots densely yellow tomentose; leaves entire.....	<b>Premna tomentosa</b>
8.	Leaves and young shots glabrous or sparsely tomentose; leaves serrate or crenate towards apex, some times entire.....	9
9.	Cymes in terminal panicles; calyx obscurely 2-lipped .....	<b>Premna wightiana</b>
9.	Cymes in terminal corymbs; calyx distinctly 2-lipped.....	10

10. Leaves broadly elliptic-ovate, apex obtuse; petiole 1 cm long.. **Premna serratifolia**  
 10. Leaves ovate, acute or shortly acuminate; petiole 1.5-3.5 cm long .....  
 ..... **Premna latifolia**

**Callicarpa tomentosa** (L.) Murr., Syst. Veg. (ed. 13) 130. 1774; Manilal & Sivar., Fl. Calicut 227. 1982; Mohanan, Fl. Quilon Dist. 311. 1984; Ansari, Fl. Kasaragod Dist. 291. 1985; Antony, Fl. Kottayam Dist. 314. 1989; Manilal, Fl. Silent Valley 213. 1988; Ramach. & Nair, Fl. Cannanore Dist. 353. 1988; Vajr., Fl. Palghat Dist. 364. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 517. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 357. 1994; Subram., Fl. Thenmala Division 279. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 351. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 241. 1997; Sivar. & Mathew, Fl. Nilambur 529. 1997; Sasidh., Fl. Periyar Tiger Reserve 309. 1998; Sunil, Fl. Pl. Alappuzha Dist. 709. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 240. 2002; Mohanan & Sivad., Fl. Agasthyamala 521. 2002; Rajendran & Daniel, The Indian Verbenaceae 53. 2002.

*Tomex tomentosa* L., Sp. Pl. 118. 1753.

*Callicarpa lanata* L., Mant. Pl. 2: 331. 1771, *nom. illeg.*; FPM 1092(764). 1924.

*Callicarpa arborea* Miq. *ex* Clarke in Hook. f., FBI 4:507.1885, non Roxb. 1832.

*Local names:* Cheruthekku, Thinperivelam, Naikumbil

Trees, to 10 m high, bark 5-8 mm thick, brown, rough; blaze creamy-white with yellow streaks, becoming darker on exposure; branchlets fulvous tomentose. Leaves simple, opposite, estipulate; petiole 25-60 mm long, stout, tomentose; lamina 13-30 x 8-20 cm, ovate or elliptic, base truncate, acute or rounded, apex acuminate, margin entire or dentate, glabrous above except midrib, densely white stellate tomentose beneath, glaucous, chartaceous; lateral nerves 6-8 pairs, pinnate, arched, prominent, raised beneath; intercostae scalariform, prominent. Flowers bisexual, pinkish-purple, in axillary corymbose cymes, densely tomentose; calyx 2 mm long, campanulate, lobes 5; corolla 4 mm long, 5 mm across, tube short, lobes 4, spreading; stamens 4, exserted; filaments 6.5 mm, glandular; anthers sagitate; ovary globose, superior, pubescent, 2 locular, ovules 2 in each cell; style slender; stigma capitate. Fruit a drupe, globose, 3 mm across, glabrous, black; seeds 3-4, oblong, angular.

*Flowering & Fruiting:* November-April

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Peninsular India and Sri Lanka

**Citharexylum fruticosum** L. forma **subserratum** (Sw.) Moldenke, Phytologia 1: 17. 1933; Ramach. & Nair, Fl. Cannanore Dist. 360. 1988; Vajr., Fl. Palghat Dist. 370. 1990; Rajendran & Daniel, The Indian Verbenaceae 77. 2002.

*Citharexylum subserratum* Sw., Nov. Gen. Pl. 91. 1788; Antony, Fl. Kottayam Dist. 321. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 518. 1994.

*Citharexylum spinosum* auct. non L. 1753; Manilal & Sivar., Fl. Calicut 229. 1982; Sivar. & Manilal, J. Econ. Tax. Bot. 3: 813. 1982; Ansari, Fl. Kasaragod Dist. 292. 1985; Babu, Fl. Malappuram Dist. 605. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 355. 1996; Sunil, Fl. Pl. Alappuzha Dist. 710. 2000.

*Local name:* Parijatham

Trees, to 10 m high. Leaves simple, opposite, decussate, estipulate; petiole 12-25 cm long, slender, grooved above, glabrous; lamina 10-18 x 4.5-7 cm, elliptic, elliptic-ob lanceolate, elliptic-lanceolate or ovate, base acute or attenuate, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 6-9 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, white, in pendulous racemes to 20 cm long; bracts linear, 1.5 mm, cauducous; pedicel to 3 mm; calyx cupular, 5 mm, 4-toothed, ciliate; corolla tube 5 mm, campanulate, obscurely bilabiate, sericeous within; lobes 5, unequal spreading, oblong, 4.5 mm, obtuse, sparsely ciliate; stamens 4, included; filaments to 2.5 mm; ovary superior, globose; style to 3 mm; stigma dilated. Fruit a drupe, to 8 x 6 mm, oblong, fleshy, reddish-black, often apiculate.

*Flowering & Fruiting:* April-September

*Habitat:* Grown as ornamental plant

*Distribution*

*Kerala:* All districts

*Geographical:* Native of West Indies; introduced and naturalised elsewhere

**Gmelina arborea** Roxb., Pl. Corom. t. 246. 1815; Hook. f., Fl. Brit. India 4: 581. 1885; Gamble, Fl. Pres. Madras 1097(768). 1924; Mohanan, Fl. Quilon Dist. 313. 1984; Ansari, Fl. Kasaragod Dist. 295. 1985; Ramach. & Nair, Fl. Cannanore Dist. 355. 1988; Antony, Fl. Kottayam Dist. 317. 1989; Vajr., Fl. Palghat Dist. 365. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 521. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 359. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 352. 1996; Sivar. & Mathew, Fl. Nilambur 535. 1997; Sasidh., Fl. Periyar Tiger Reserve 310. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 240. 1999; Sunil, Fl. Pl. Alappuzha Dist. 717. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 241. 2002; Mohanan & Sivad., Fl. Agasthyamala 523. 2002; Rajendran & Daniel, The Indian Verbenaceae 155. 2002.

*Local names:* Kumizhu, Kumbil

Deciduous trees, to 18 m high, bark 8-10 mm thick, white or whitish-grey, smooth, lenticellate, scurfy, exfoliating in thin flakes; blaze yellow, with triangular rays; branchlets stout, tomentose. Leaves simple, opposite, estipulate; petiole 5-12.5 cm long, slender, tomentose; lamina 7.5-25 x 6-20 cm, broadly ovate or ovate, base cordate truncate or rounded, apex acute or acuminate, margin entire, glabrous above and tomentose beneath, glaucous beneath, coriaceous; nerves 3-5 from base, lateral nerves 3-6, pinnate, prominent, puberulent beneath; intercostae scalariform, prominent; 2 glands above on either side of the midrib. Flowers bisexual, yellow with orange-pink shade, in terminal panicles 3-3.7 cm long; calyx 6 mm long, campanulate, 5 toothed, tomentose; corolla 3 cm across, bilabiate, tube ventricose, lobes 5, subequal, obovate, obtuse, densely hairy; stamens 4, didynamous; anthers 2 mm, divaricate; ovary 4 mm, superior, syncarpous, glabrous, ovules 4; style 2 cm, slender, glabrous, unequally bifid. Fruit a drupe 2.5-3.5 x 1-1.5 cm, ovoid, pulpy, pyrene bonny, ovoid with a deep depression, yellow; seeds 2-4, elliptic.

*Flowering & Fruiting:* January-April

*Habitat:* Moist and dry deciduous forests, also in the plains

*Distribution*



*Kerala:* All districts

*Geographical:* Indo-Malesia

**Premna latifolia** Roxb., Fl. Ind. 3: 76. 1832; Fl. Brit India 4: 577. 1885; Gamble, Fl. Pres. Madras 1096(767). 1924; Mohanan, Fl. Quilon Dist. 315. 1984; Sasidh., Fl. Chinnar Wildlife Sanctuary 241. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 242. 2002; Rajendran & Daniel, The Indian Verbenaceae 253. 2002.

*Local name:* Knappa

Trees, to 8 m high, bark greyish-white. Leaves simple, opposite, estipulate; petiole 20-35 mm, slender, pubescent; lamina 4-10 x 2-5 cm, ovate or elliptic ovate, base rounded, truncate or cordate, apex acuminate, margin entire or serrate, puberulent above and glabrous below, membranous; lateral nerves 4-6 pairs, slender, pinnate, prominent, raised beneath; intercostae scalariform, obscure. Flowers bisexual, greenish-white, in terminal corymbose cymes to 7 cm long; calyx 1.5 mm, obscurely 2 lipped, upper lip 2 and lower lip 3 lobed cupular; corolla 4 mm across, tube 2 mm, densely villous inside, lobes ovate, obtuse; stamens 4, inserted in the middle of the tube, exerted, didynamous; filaments 2 and 3 mm; anthers 0.5 mm; ovary 1 mm, superior, 4 ovuled; style 4.5 mm, linear; stigma shortly bifid. Fruit a drupe, 4 mm across, globose, black; seeds oblong.

*Flowering & Fruiting:* November-February

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Kannur

*Geographical:* India and Bangladesh

**Premna serratifolia** L., Mant. Pl. 2: 253. 1771; Gamble, Fl. Pres. Madras 1096(767). 1924; Ramach. & Nair, Fl. Cannanore Dist. 357. 1988; Antony, Fl. Kottayam Dist. 318. 1989; Rajendran & Daniel, The Indian Verbenaceae 284. 2002.

*Premna integrifolia* L., Mant. Pl. 2: 252. 1771, nom. illeg.; Hook. f., Fl. Brit. India 4: 574. 1885.

*Premna obtusifolia* R. Br., Prodr. 512. 1810; Manilal & Sivar., Fl. Calicut 230. 1982; Ansari, Fl. Kasaragod Dist. 296. 1985.

Trees, to 7 m high. Leaves simple, opposite, estipulate; petiole 4-14 mm, slender, pubescent, grooved above; lamina 2.5-8.5 x 2-7.2 cm, elliptic, elliptic-oblong, base acute, obtuse, subcordate or rounded, apex acuminate, mucronate, obtuse, margin entire or subserrate, glabrous above except along the appressed midrib, chartaceous; lateral nerves 3-5 pair, pinnate, prominent, puberulous beneath; intercostae reticulate, obscure. Flowers bisexual, greenish-white, in terminal corymbose paniced cymes; bracts small; calyx small campanulate, 2 lipped, 5 lobed; corolla tube short, villous inside, lobes 5; stamens 4, didynamous, inserted below the throat of the corolla tube; anther ovate; ovary superior, 2-4-celled, ovules 4; style linear; stigma shortly bifid. Fruit a drupe, seated on the calyx, globose, purple; seeds oblong.

*Flowering & Fruiting:* March-November

*Habitat:* Semi-evergreen and moist deciduous forests

*Distribution*

*Kerala:* Kasaragode, Kozhikkode

*Geographical:* India

**Premna tomentosa** Willd., Sp. Pl. 3: 314. 1800; Hook. f., Fl. Brit. India 4: 576. 1885; Gamble, Fl. Pres. Madras 1095(767).1924; Vajr., Fl. Palghat Dist. 368.1990; Sasidh., Fl. Chinnar Wildlife Sanctuary 243. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 242. 2002; Rajendran & Daniel, The Indian Verbenaceae 289. 2002.

*Cornutia corymbosa* Lam., Encycl. 1: 54. 1783, non Burm.f. 1768.

*Local names:* Kozhukkattathekku, Naithekku, Pincha

Trees, to 15 m high, bark greyish-brown, smooth; young parts with stellate tomentum. Leaves simple, opposite, estipulate; petiole 20-50 mm long, slender, tomentose; lamina 6-25 x 5-15 cm, broadly ovate, base obtuse or cordate, apex acuminate, margin entire, densely tawny yellow stellately tomentose, yellowish, chartaceous; lateral nerves 5-7 pairs, densely tomentose beneath, intercostae scalariform. Flowers bisexual, yellow, small, in terminal and axillary corymbs, 7 cm long; calyx tubular, 5-ribbed, lobes 5, stellate pubescent; corolla 7.5 mm across, 4 mm long, tube cylindrical, hairy, lobes 5, orbicular; stamens 4, didynamous, 1.5 and 2 mm long; anthers rounded, 0.5 mm; ovary truncate, superior, puberulus; style 3 mm; stigma unequally 2 fid. Fruit a drupe, ovoid, 5-6 mm long, 4 mm across, black, hairy; seeds 4.

*Flowering & Fruiting:* February-April

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* Peninsular India and Sri Lanka

**Premna wightiana** Schauer in DC., Prodr. 11: 635.1847; Hook. f., Fl. Brit. India 4: 578. 1885; Gamble, Fl. Pres. Madras 1096(767). 1924; Sasidh., Fl. Chinnar Wildlife Sanctuary 243. 1999; Rajendran & Daniel, The Indian Verbenaceae 291. 2002.

*Premna thyrsoides* Wight, Ic. t. 1485. 1849.

*Local name:* Pincha

Trees, to 8 m high, bark greyish-brown; branchlets pubescent. Leaves simple, opposite, estipulate; petiole 10-30 mm long, slender, pubescent, grooved above; lamina 6.5-10 x 3.5-5 cm, ovate or ovate-elliptic, base obtuse, apex acuminate, margin entire or serrate in the upper half, glabrous or slightly pubescent; lateral nerves 4-5, pinnate, prominent, pubescent beneath, slender; intercostae scalariform. Flowers bisexual, yellowish-white, inflorescence terminal thyrsoid panicles; calyx obscurely 2 lipped, 2 mm, upper lip 2, lower lip 3 lobed, acute, hairy; corolla 3.5 mm long, lobes 4, unequal, 2-lipped, hairy inside; stamens 4, didynamous, inserted below the throat of corolla tube; ovary globose, superior, hairy at apex, 4-celled, one ovule in each cell; style slender; stigma bifid. Fruit a small drupe, 5 x 5 mm obovoid, tubercled; seeds oblong.

*Flowering & Fruiting:* February-April

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

**Tectona grandis** L. f., Suppl. Pl. 151. 1781; Hook. f., Fl. Brit. India 4: 570. 1885; Gamble, Fl. Pres. Madras 1092(765). 1924; Manilal & Sivar., Fl. Calicut 231. 1982;

Mohanan, Fl. Quilon Dist. 317. 1984; Ansari, Fl. Kasaragod Dist. 298. 1985; Ramach. & Nair, Fl. Cannanore Dist. 358. 1988; Vajr., Fl. Palghat Dist. 369. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 525. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 361. 1994; Subram., Fl. Thenmala Division 280. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 354. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 244. 1997; Sivar. & Mathew, Fl. Nilambur 537. 1997; Sasidh., Fl. Periyar Tiger Reserve 312. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 244. 1999; Sunil, Fl. Pl. Alappuzha Dist. 723. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 243.2002; Rajendran & Daniel, The Indian Verbenaceae 320. 2002.

*Local name:* Thekku

Deciduous trees, to 30 m high, bark 10-20 mm thick, yellowish-brown, rough, shallowly vertically fissured, fibrous; blaze pale yellowish concentrically lamellate; bole often fluted at base; branchlets 5-10 mm thick, 4-angled, puberulous. Leaves simple, opposite, estipulate; petiole 10-50 mm long, stout, tomentose; lamina 30-60 x 15-30 cm, ovate, obovate, base attenuate, apex acute or obtuse, margin entire, wavy, glabrous above and pubescent below with minute red glands, coriaceous; lateral nerves 8-10 pairs, pinnate, prominent, raised beneath, puberulent beneath; intercostae scalariform, prominent. Flowers bisexual, white, 7 mm across, in terminal cymose panicles, 10-30 cm across, puberulus; calyx 5 mm long, campanulate, lobes 5-6, subequal, ovate, tomentose; corolla 6 mm long, lobes 5-6, oblong, spreading; stamens 5-6, equal, erect, inserted at the throat, exerted; filaments 3 mm; anthers oblong; ovary globose, superior, densely hairy, 4-celled, 1 ovule in each cell; style slender, 4 mm; stigma linearly bifid. Fruit a drupe, 1.5-2 cm across, globose, brown, densely floccose hairy, covered by the inflated calyx, epicarp spongy, endocarp stony; seeds 1-4, oblong.

*Flowering & Fruiting:* May-January

*Habitat:* Moist deciduous forests, also raised in plantations

*Distribution*

*Kerala:* All districts

*Geographical:* South and South East Asia

**Vitex altissima** L. f., Suppl. Pl. 294. 1781; Hook. f., Fl. Brit. India 4: 584. 1885; Gamble, Fl. Pres. Madras 1102(772). 1924; Mohanan, Fl. Quilon Dist. 317. 1984; Ansari, Fl. Kasaragod Dist. 299. 1985; Ramach. & Nair, Fl. Cannanore Dist. 359. 1988; Antony, Fl. Kottayam Dist. 319. 1989; Vajr., Fl. Palghat Dist. 370. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 526. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 361. 1994; Subram., Fl. Thenmala Division 277. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 355. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 244. 1997; Sivar. & Mathew, Fl. Nilambur 539. 1997; Sasidh., Fl. Periyar Tiger Reserve 312. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 245. 1999; Sunil, Fl. Pl. Alappuzha Dist. 724. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 244. 2002; Mohanan & Sivad., Fl. Agasthyamala 526. 2002; Rajendran & Daniel, The Indian Verbenaceae 344. 2002.

*Vitex alata* Willd., Gen. Naturf. Fr. New Schr. 4: 203. 1803, non Heyne ex Roth 1821; Hook. f., Fl. Brit. India 4: 584. 1885; Sivar. & Mathew, Fl. Nilambur 539. 1997.

*Vitex altissima* L.f. var. *alata* (Willd.) Trimen, Handb. Fl. Ceylon 3: 358. 1895; Manilal & Sivar., Fl. Calicut 228. 1982.

*Local names:* Myila, Mylellu

Trees, to 30 m high, bark 10-13 mm thick, greyish-yellow, scaly; blaze yellow; branchlets lenticellate, minutely tomentose. Leaves compound, trifoliate, opposite, estipulate; rachis 35-60 mm long, slender, pubescent, winged in sapling leaves, wings auriculate at base; leaflets sessile; lamina 6-18 x 2-5 cm, lanceolate, elliptic-lanceolate, or oblanceolate, base cuneate or acute, apex acuminate, margin entire, glabrous above and pubescent or glabrescent along the nerves below, chartaceous; lateral nerves 10-16 pairs, pinnate, puberulent beneath, slender, prominent; intercostae reticulate, prominent. Flowers bisexual, white, tinged with blue, in terminal panicles, 5-8 m long; bracts lanceolate, 3 mm long, cauducous; calyx densely tomentose, shortly 5 lobed, ovate; corolla 5 mm long, 2 lipped, upper lip of 2 and lower lip of 3 lobes, obtuse, throat villous; stamens 4, didynamous, exserted; filaments hairy at base; ovary globose, 1 mm, superior, densely hairy, 2-4-celled, 4 ovuled; style filiform; stigmas bifid. Fruit a drupe, 5 x 5 mm, smooth, globose, glabrous, blue, supported by enlarged calyx; seeds 4, obovate.

*Flowering & Fruiting:* March-July

*Habitat:* Moist deciduous and semi-evergreen forests, also in sacred groves

*Distribution*

*Kerala:* All districts

*Geographical:* India, Indo-China, Malesia and Sri Lanka

**Vitex leucoxydon** L. f., Suppl. Pl. 293. 1781; Hook. f., Fl. Brit. India 3: 587. 1885; Gamble, Fl. Pres. Madras 1103(772). 1923; Manilal & Sivar., Fl. Calicut 228. 1982; Mohanan, Fl. Quilon Dist. 318. 1984; Antony, Fl. Kottayam Dist. 320. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 526. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 355. 1996; Sivar. & Mathew, Fl. Nilambur 540. 1997; Sasidh., Fl. Periyar Tiger Reserve 314. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 245. 1999; Rajendran & Daniel, The Indian Verbenaceae 356. 2002.

*Wallrothia leucoxydon* (L. f.) Roth, Nov. Pl. Sp. 391. 1821.

*Local names:* Attunochi, Neernocho

Deciduous trees, to 20 m high, bark yellowish-grey or greyish-brown, rough; blaze dull-yellow. Leaves digitately compound, opposite, decussate; rachis 5.5-8.5 cm, slender, swollen at the base, glabrous; leaflets 3-5, whorled; petiolule 3-20 mm long, slender, glabrate; lamina 2.5-16 x 1.5-4 cm, elliptic, elliptic-oblong or lanceolate, base acute or attenuate, apex acute or obtusely acuminate, margin entire, glabrous above, puberulent beneath, coriaceous; lateral nerves 5-14 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, in axillary corymbose cymes, to 17 cm long; pedicels to 2 mm; calyx cupular, sparsely appressed puberulent; tube 2 mm long, 5-toothed; corolla white, bilipped, purplish-pubescent in the throat; lobes 5; stamens 4, didynamous, inserted below the throat of the corolla tube, slightly exserted; filaments thickened and villous towards the base; anthers purple; ovary superior, globose; style filiform; stigma bifid. Fruit a drupe, 1.2-2 cm long, obovoid, purple-black, fleshy.

*Flowering & Fruiting:* March-July

*Habitat:* Along river banks in evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kottayam, Idukki, Pathanamthitta, Malappuram, Kozhikkode, Thrissur, Kollam

*Geographical:* Peninsular India and Sri Lanka

**Vitex pinnata** L., Sp. Pl. 638. 1753; Mohanan, Fl. Quilon Dist. 318. 1984; Antony, Fl. Kottayam Dist. 320. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 527. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 362. 1994; Sunil, Fl. Pl. Alappuzha Dist. 725. 2000; Mohanan & Sivad., Fl. Agasthyamala 527. 2002; Rajendran & Daniel, The Indian Verbenaceae 370. 2002.

*Vitex pubescens* Vahl, Symb. Bot. 3: 85. 1794, non Heyne 1829; Hook. f., Fl. Brit. India 4: 585. 1885; Gamble, Fl. Pres. Madras 1103(772). 1924.

*Local name:* Aattumayila, Kattumayila

Trees, to 15 m high, bark thick, grey; young shoot grey pubescent; branchlets 4-angled, lenticellate. Leaves 3-foliolate, sometimes 5-foliolate, opposite, estipulate; rachis 35-70 mm, slender, glabrous, grooved above, winged in coppice shoot, flattened; petiolule 7-10 mm, subsessile; lamina 7-16 x 1.8-4.9 cm, elliptic, lanceolate or oblanceolate, base acute, apex acuminate, margin entire or subentire, chartaceous; lateral nerves 8-22, pinnate, prominent, slender; intercostae scalariform-reticulate, prominent. Flowers bisexual, pale blue or purple, in lax axillary panicles of dichasia to 20 cm; calyx 4 mm long, yellow spotted without, 5 toothed; corolla 8 mm across, creamy, throat yellow, pubescent outside, 2-lipped, upper 2 and lower 3 lobed, upper lip 2 mm, acute, lower lip 4 mm, ovate, lateral lobes broadly oblong, subacute, puberulous and glandular; stamens 4, didynamous, exserted; anthers 0.7 mm; ovary 1 mm, superior; style 3 mm, filiform; stigma bifid. Fruit a dupe, 1.3 cm long, obovoid, supported by enlarged calyx; seeds 4.

*Flowering & Fruiting:* March-May

*Habitat:* Banks of streams in moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Kottayam, Alappuzha, Kollam, Pathanamthitta, Trivandrum

*Geographical:* Peninsular India and Sri Lanka

#### AVICENNIACEAE

1. Leaves obtuse at apex; anthers exserted from corolla..... **Avicennia officinalis**
1. Leaves acute at apex; anthers included within corolla..... **Avicennia marina**

**Avicennia marina** (Forssk.) Vierh. in Denkschr., Akad. 71: 435. 1907; Gamble, Fl. Pres. Madras 1106(774). 1924; Manilal & Sivar., Fl. Calicut 234. 1982; Mohanan, Fl. Quilon Dist. 311. 1984; Sunil, Fl. Pl. Alappuzha Dist. 727. 2000.

*Secura marina* Forssk., Fl. Aeg.-Arab. 137. 1775.

*Local names:* Chakkapoo, Orei

Much branched evergreen trees to 7 m high, pneumatophores, straight, pencil like, brown; bark grey, yellowish-grey or brown, smooth, occasionally flaky; branchlets more or less 4-angled, swollen at nodes. Leaves simple, opposite, decussate, estipulate; petiole 2-8 mm long, stout, yellowish-green with a basal groove having dark or black marginal hairs continuous in a line across the node; lamina 1.8-10.2 x 1-5 cm, ovate, lanceolate, narrowly elliptic-oblong or elliptic-ovate; base cuneate; apex acute; margin entire, glabrous above, silvery white tomentose beneath, coriaceous; lateral nerves 4-7 pairs, parallel, obscure; intercostae reticulate, faint. Flowers bisexual, yellow, 5 mm long, in axillary or terminal compound spikes; peduncle to 8 cm long; flowers arranged in dense capitate units; bracts 2 x 1.5 mm, small, triangular, brownish-green, glabrous within, densely pubescent, bracteoles

2, similar to bracts, both persistent in the fruit; calyx brownish-green, sepals 5, slightly united at base, 3 x 2 mm, unequal, triangular, acute, glabrous within, densely pubescent outside, persistent; corolla yellow, glabrous within, fleshy, silvery pubescent outside, corolla tube upto 1.5 mm long, lobes 4, 2.5 x 2.5 mm, subequal, elliptic, reflexed and blackens on maturity; stamens as many as corolla lobes, filaments very short; anthers bilobed; ovary 2.5 mm long, imperfectly unilocular; ovules 4, pendulous, attached to the tip of the central 4-winged axis; style short, solid; stigma 2-lobed. Fruit a capsule, greenish, 2.5 x 1.8 cm, more or less rounded, apex acute, pericarp thick, coriaceous, silvery tomentose; seed one.

*Flowering & Fruiting:* March-June

*Habitat:* Along backwaters and mangrove forests

*Distribution*

*Kerala:* Kollam, Kozhikkode, Malappuram, Alappuzha, Thrissur, Kannur, Kasaragode

*Geographical:* Paleotropics

**Avicennia officinalis** L., Sp. Pl. 110. 1753; Hook. f., Fl. Brit. India 4: 604. 1885; Gamble, Fl. Pres. Madras 1105(774). 1924; Manilal & Sivar., Fl. Calicut 234. 1982; Mohanan, Fl. Quilon Dist. 311. 1984; Ansari, Fl. Kasaragod Dist. 291. 1985; Antony, Fl. Kottayam Dist. 321. 1989; Ramach. & Nair, Fl. Cannanore Dist. 360. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 363. 1994; Sunil, Fl. Pl. Alappuzha Dist. 727. 2000.

*Avicennia tomentosa* Jacq., Enum. Syst. Pl. 25. 1760.

*Local names:* Madaipattai, Orei, Uppatti

Evergreen trees, to 8 m high; much branched with occasional stilt roots; pneumatophores numerous, straight, cylindrical, often forked with blunt tips; bark smooth, brownish-grey; branchlets terete, glabrous, pale brown, nodes swollen. Leaves simple, opposite, decussate, estipulate; petiole 10-18 mm long, stout, with a basal groove; lamina 3-10 x 2.5-5 cm, ovate, elliptic-obovate; base cuneate; apex obtuse; margin entire, glabrous above, silvery white tomentose beneath, coriaceous; lateral nerves 7-10 pairs, parallel, obscure; intercostae reticulate, obscure. Flowers bisexual, yellow, 1 x 1.5 cm, sessile, in terminal or axillary compound spikes, arranged in dense capitate units; peduncle upto 25 cm long, terete, silvery tomentose; bracts 3 x 3 mm, triangular, convex, green, black tipped with fringed margin, pubescent; bracteoles 2, similar to the bract, slightly smaller, bracts and bracteoles persistent; calyx brownish-green, sepals slightly united at base; lobes 5, to 5 x 4 mm, triangular, tip acute, pubescent, persistent; corolla yellow, glabrous within, densely pubescent side, thick, fleshy; tube to 4 mm long, lobes 4, to 6 x 5 mm, elliptic, unequal; stamens 4, filaments 3 mm long, flask shaped, slightly oblique, pubescent; ovary superior, imperfectly unilocular; ovules 4, pendulous, attached to the tip of central 4-winged axis; style 3 mm long, solid, gradually tapering; stigma unequally 2-lobed. Fruit a capsule 5 x 3.5 cm, mango-shaped, yellowish-green, flattened, apex acute with persistent stylar beak, pericarp thick, coriaceous, silvery tomentose; seed one.

*Flowering & Fruiting:* April-November

*Habitat:* Along banks of backwaters and mangrove forests

*Distribution*

*Kerala:* Kasaragode, Kottayam, Kozhikkode, Trivandrum, Malappuram, Kollam, Kannur, Alappuzha, Thrissur  
*Geographical:* Indo-Malesia to Pacific Oceans

#### MYRISTICACEAE

1. Stamens in male flowers with anthers stellately spreading from a peltate disc or column..... **Knema attenuata**
1. Stamens in male flowers with anthers arranged around the column..... 2
2. Anther column sessile, anthers free at the apex..... **Gymnacranthera canarica**
2. Anther column stipitate, prolonged above the anthers ..... 3
3. Corolla urceolate, flowers in paniced cymes, peduncle slender..... 4
3. Corolla ovoid, flowers fascicled at the apex of short stout tomentose peduncles. 5
4. Leaves elliptic lanceolate; fruit pyriform, aril red (cultivated) .. **Myristica fragrans**
4. Leaves elliptic-oblong; fruit oblong, aril yellow (wild) ..... **Myristica malabarica**
5. Leaves reddish-brown below; fruit oblong, rusty tomentose .....  
 ..... **Myristica. fatua** var. **magnifica**
5. Leaves green below; fruit globose, glabrous ..... **Myristica beddomei**

**Gymnacranthera farquhariana** (Hook.f. & Thoms.) Warb., Monogr. Myris. 365. 1897; Mohanan, Fl. Quilon Dist. 340. 1984; Ramach. & Nair, Fl. Cannanore Dist. 390. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 385. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 377. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 260. 1997; Sasidh., Fl. Periyar Tiger Reserve 340. 1998.

*Myristica farquhariana* Hook. f. & Thoms., Fl. Ind. 162. 1855, non Hook. f. 1886.

*Myristica canarica* Bedd. ex King, Ann. Roy. Bot. Gard. (Calcutta) 3: 306. t.138. 1891.

*Gymnacranthera canarica* (Bedd. ex King) Warb., Monogr. Myris. 368. 1897; Gamble, Fl. Pres. Madras 1212(849). 1925; Manilal & Sivar., Fl. Calicut 249. 1982; Mohanan & Sivad., Fl. Agasthyamala 558. 2002.

*Gymnacranthera eugeniifolia* (A.DC.) Sinclair, Gard. Bull. Singapore 16: 447. 1958; Anil Kumar, Fl. Pathanamthitta Dist. 563. 1994.

*Local names:* Udaipanu, Undappayin

Evergreen dioecious trees, to 30 m high, bark 6-8 mm thick surface dark-brown, smooth; blaze red, exudation red; branchlets densely brown, pubescent. Leaves simple, alternate, estipulate; petiole 10-15 mm long, stout, grooved above, glabrous when mature; lamina 14.5-25 x 5-10 cm, oblong or elliptic-lanceolate, base obtuse, round or alternate, apex acuminate, margin entire, coriaceous, glabrous, glaucous beneath; lateral nerves 8-17 pairs, pinnate, prominent, intercostae obscure. Flowers unisexual, yellow; males in axillary and lateral, rusty pubescent, panicles; females 6-10 in axillary racemes; perianth tubular; lobes [3]-4, pubescent; stamens 6-12, united into a sessile column; connectives attached behind and from the base to about the middle only, anthers free at apex; ovary superior, ovoid, 1-celled, ovule 1; stigma sessile, capitate or slightly bilobed, fleshy. Fruit a capsule, 2.5-3 cm across, glabrous, rind thick; seed one, 16-18 mm across, globose, pale brown; aril laciniate as long as seeds.

*Flowering & Fruiting:* March-April

*Habitat:* Along banks of rivers in evergreen forests

*Distribution*

*Kerala:* Pathanamthitta, Kollam, Idukki, Kannur, Kozhikkode, Trivandrum, Thrissur  
*Geographical:* Indo-Malaya

**Knema attenuata** (Hook. f. & Thoms.) Warb., Monogr. Myris. 590. 1897; Gamble, Fl. Pres. Madras 1215(851). 1925; Mohanan, Fl. Quilon Dist. 340. 1984; Ansari, Fl. Kasaragod Dist. 322. 1985; Ramach. & Nair, Fl. Cannanore Dist. 390. 1988; Antony, Fl. Kottayam Dist. 345. 1989; Vajr., Fl. Palghat Dist. 400. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 564. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 386. 1994; Subram., Fl. Thenmala Division 308. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 377. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 260. 1997; Sivar. & Mathew, Fl. Nilambur 579. 1997; Sasidh., Fl. Periyar Tiger Reserve 340. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 265. 2002; Mohanan & Sivad., Fl. Agasthyamala 558. 2002.

*Myristica attenuata* Wall. ex Hook. f. & Thoms., Fl. Ind. 157. 1855; Hook. f., Fl. Brit. India 5: 110. 1886.

*Myristica corticosa* Bedd., Fl. Sylv. t. 278. 1872.

*Local names:* Chorappathiri, Chorappayin

Deciduous trees, to 18 m high, bark 6-8 mm thick, surface greenish-black to greenish-brown, mottled with green and white, smooth, exfoliations irregular, blaze pink-red; exudation watery, red; branchlets horizontal; branchlets rusty tomentose. Leaves simple, alternate, distichous, estipulate; petiole 10-15 mm long, stout, grooved above, rusty pubescent when young and glabrous when mature; lamina 8-20 x 2.5-7.5 cm, oblong-lanceolate, oblong or ovate, base round, or acute, apex acuminate, margin entire, glabrous, glossy above and glaucous beneath or rusty pubescent along costae beneath, coriaceous; lateral nerves 12-16 pairs, parallel, slender, prominent beneath, intercostae scalariform, slender, prominent. Flowers unisexual, in rusty pubescent fascicles on thick peduncle from the axils of leaves or of the scars of fallen leaves; male 1-6 flowered, female 1-3 flowered; pedicel 7-8 mm long; perianth larger in female, rusty tomentose; lobes 3-[4]; androecium usually stalked; filaments and connectives connate in a peltate disc; anthers 8-20, free, attached stellately to the margin of the disc, dehiscing down words; ovary superior, ovoid, 1-celled, hairy, ovule-1; style short, thick, hairy; stigma 2, laciniate on the margin. Fruit a capsule 2-valved, 3-3.7 cm long, ovoid, apiculate, rusty tomentose; seed one; aril brilliant crimson, laciniate at apex only.

*Flowering & Fruiting:* December-June

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kottayam, Idukki, Pathanamthitta, Malappuram, Kasaragode, Kollam, Palakkad, Kannur, Trivandrum, Thrissur, Kozhikkode, Wayanad

*Endemic to:* Western Ghats

**Myristica beddomei** King, Ann. Roy. Bot. Gard. (Calcutta) 3: 291, t. 118. f.1-8, 1891: de Wilde, Blumea 42: 151. 1997; Gamble, Fl. Pres. Madras 1214(850). 1915.

*Myristica dactyloides* auct. non Gaertn. 1788; Sinclair, Gard. Bull. Singapore 23: 445. 1968; Mohanan, Fl. Quilon Dist. 341. 1984; Manilal, Fl. Silent Valley 233. 1988; Ramach. & Nair, Fl. Cannanore Dist. 390. 1988; Vajr., Fl. Palghat Dist. 400. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 564. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 387. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 378.



1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 261. 1997; Sivar. & Mathew, Fl. Nilambur 580. 1997; Sasidh., Fl. Periyar Tiger Reserve 340. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 265. 2002; Mohanan & Sivad., Fl. Agasthyamala 559. 2002.

*Myristica laurifolia* auct. non Hook. f. & Thoms. 1855; Hook. f., Fl. Brit. India 5: 103. 1886.

*Myristica laurifolia* var. *lanceolata* Hook.f., Fl. Brit. India 5: 103. 1886.

*Myristica contorta* Warb., Monogr. Myris. 5-7. 1897; Gamble, Fl. Pres. Madras 1214(850). 1925.

*Local names:* Chithirapoovu, Pasupathi, Pathiri-poovu

Evergreen dioecious trees, to 25 m high, bark 10-14 mm thick, surface blackish-green, smooth, exfoliations small, outer bark 1-2 mm thick, dead, inner bark 10-12 mm thick, fibrous, striate, deep red; exudation watery, red; branchlets glabrous except for terminal bud and inflorescence; leaves simple, alternate, distichous, estipulate; petiole 10-25 mm long, grooved above, glabrous; lamina 12-25 x 4-10 cm, oblong or elliptic-ovate, base acute, round or rarely cuneate, apex acute, margin entire, glabrous, shining above and glaucous beneath, coriaceous; lateral nerves 10-25 pairs, pinnate, prominent, intercostae reticulate, faint. Flowers unisexual, white; male flowers 10-20 together in short axillary dense clusters; peduncle mostly 2-cleft and woody, prominently marked with cicatrices of the bracts; pedicels slender, ferruginous tomentose; perianth thin, fleshy, rusty tomentose, connate into an urceolate tube, constricted above, suddenly expanded, breaking into 3 ovate, spreading acute lobes; staminal column narrow to oblong, ferruginous, included, produced beyond the anther; anthers 7-15, linear-oblong; female flowers as in male, only few generally 3-4 in the heads; ovary superior, sessile, ovoid-globose, appressed pubescent, 1-celled, ovule 1; stigma oblique, 2-lobed. Fruit a capsule, 5-7.5 x 3.7-6 cm, ovoid, apiculate, grooved on one side along the suture, pericarp rufous pubescent when young, thick, succulent; seed one, ovoid; aril orange red, encircling the seed, deeply cut down into many lobes, each of which is more or less lanceolate at the apex into filiform segments.

*Flowering & Fruiting:* December-May

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Pathanamthitta, Malappuram, Palakkad, Trivandrum, Thrissur, Kannur, Kollam, Idukki

*Geographical:* South India and Sri Lanka

***Myristica fatua*** Houtt. var. ***magnifica*** (Bedd.) Sinclair, Gard. Bull. Singapore 23:282. 1968; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 387. 1994; Subram., Fl. Thenmala Division 310.1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 261.1997.

*Myristica magnifica* Bedd., Fl. Sylv. t. 268. 1872; Hook. f., Fl. Brit. India 5: 104. 1886; Gamble, Fl. Pres. Madras 1214(850). 1925; Manilal & Sivar., Fl. Calicut 249. 1982; Mohanan, Fl. Quilon Dist. 341. 1984.

*Local name:* Kotthapanu

Lofty deciduous trees; height 30 m high, bole often buttressed, with large aerial roots and pneumatophores; bark surface purplish-black, smooth; blaze pale chocolate; young parts clothed with golden brown tomentum. Leaves simple, alternate,

bifarious, estipulate; petiole 16-30 mm long, stout, grooved above, clothed with golden tomentum when young, glabrous on maturity, lamina 30-60 x 10-15 cm, oblong or elliptic-oblong, base round, apex acute or acuminate, glabrous above, reddish tomentose beneath, coriaceous; lateral nerves 20-26 pairs, prominent, parallel, intercostae obscure. Flowers unisexual, urceolate, rusty tomentose; male flowers 5-6 mm long, 10-20 fascicled on woody tubercles in the axils of leaves; female 6-8 mm long, 2 or 3 in axillary fascicles; perianth ovoid-globose, silky tomentose outside, glabrous inside; lobes 3-[4] acute; staminal column much shorter than the perianth, with a short hairy stalk; stalk ovoid-cylindric, bluntly apiculate; anthers about 15, narrow, slightly unequal in length, covering almost the column. Fruit a capsule 8-10 x 6-7.5 cm, oblong-ovoid, covered with tomentum; seed one cylindrical, brown; aril orange red deeply cleft into a few broad divisions with these again much lacerated and covering the apex of the seed.

*Flowering & Fruiting:* December-February

*Distribution*

*Kerala:* Kollam, Kozhikkode, Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Myristica fragrans** Houtt., Hist. Nat. 3: 333. 1774; Hook. f., Fl. Brit. India 5: 102. 1886; Gamble, Fl. Pres. Madras 1214(850). 1925; Manilal & Sivar., Fl. Calicut 249. 1982; Mohanan, Fl. Quilon Dist. 342. 1984; Antony, Fl. Kottayam Dist. 345. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 565. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 388. 1994; Subram., Fl. Thenmala Division 311. 1995; Sivar. & Mathew, Fl. Nilambur 582. 1997.

*Local name:* Jathikka, Nutmeg

Evergreen dioecious trees, to 8 m high; bark black; branches horizontal. Leaves simple, alternate, estipulate; petiole 9-15 mm long, slender, grooved above, glabrous; lamina 9-18 x 2.5-6 cm, elliptic, elliptic-lanceolate, elliptic-oblongate or elliptic-obovate, base acute or attenuate, margin entire, glabrous, shiny above and glaucous beneath, coriaceous; lateral nerves 10-14 pairs, pinnate, prominent, intercostae reticulate. Flowers unisexual, yellow; male flowers: 3-5 in axillary cymes, urceolate; pedicels drooping; bracts deciduous; bracteoles persistent; perianth 3-lobed, tawny villous; stamens 9-12, connate in to a central stipitate column; female flowers: urceolate, larger than the male, few in axillary cymes; pedicels drooping; bracts deciduous; bracteoles persistent; perianth 3-lobed, tawny villous; ovary superior, ovoid, 1-celled, 1-ovuled; stigmas connate, 2-lobed. Fruit a capsule, yellow to 5 cm long; aril red, lacinate; seed brown.

*Flowering & Fruiting:* December-June

*Habitat:* Cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* Native of East Moluccas

**Myristica malabarica** Lam., Acad. Roy. Sci. Mem. Math. Phys. (Paris) 162. 1791; Hook. f., Fl. Brit. India 5: 103. 1886; Gamble, Fl. Pres. Madras 1213(850). 1925; Manilal & Sivar., Fl. Calicut 249. 1982; Mohanan, Fl. Quilon Dist. 342. 1984;

Manilal, Fl. Silent Valley 233. 1988; Vajr., Fl. Palghat Dist. 401. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 565. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 387. 1994; Subram., Fl. Thenmala Division 311. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 378. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 261. 1997; Sivar. & Mathew, Fl. Nilambur 581. 1997; Sasidh., Fl. Periyar Tiger Reserve 341. 1998; Sunil, Fl. Pl. Alappuzha Dist. 779. 2000; Mohanan & Sivad., Fl. Agasthyamala 559. 2002.

*Local names:* Panampalaka, Ponnampoovu, Pathiripoovu, Ponnampayin

Dioecious trees, height 15 m, girth 45 cm; bark 8-10 mm thick, greenish-black, smooth, tuberculate-lenticellate, semi fibrous, blaze reddish, exudation deep red; branchlets glabrous. Leaves simple, alternate, distichous, estipulate; petiole 10-15 mm long, stout, grooved above, glabrous, lamina 7-20 x 3-10 cm, elliptic or elliptic-oblong, base acute or attenuate, apex acute, or subacute, margin entire, glabrous and glossy above and glaucous beneath, coriaceous; lateral nerves 8-14 pairs, pinnate, slender, obscure, inter costae obscure. Flowers unisexual, white; male in cymes, axillary or from the old axils below the leaves, generally cymosely branched, rarely simple. Male flowers: more numerous than in female and smaller, umbelled at the apex of branchlets; perianth urceolate, minutely puberulous outside, glabrous inside, 3-4 cleft at apex; staminal column stalked, slightly produces above the anthers, pubescent; anthers 10-15, linear; female flowers: slightly larger than male peduncle generally simple with 3 umbelled pedicels at the apex, rarely once branched and bearing 5-6 flowers; bracteole forming a narrow linear cup round the base of the perianth; ovary superior, sessile, globose, hairy, stigma 2 clefted, glabrous. Fruit a capsule 5-7.5 x 1.8-3.5, oblong, pubescent, seed one, oblong, obtuse, slightly flattened on one side, aril yellow, irregularly lobed, laciniate, extending to the apex of the seed.

*Flowering & Fruiting:* December-April

*Habitat:* Evergreen and swamp forests

*Distribution*

*Kerala:* Kollam, Palakkad, Pathanamthitta, Malappuram, Idukki, Kozhikkode, Thrissur, Alappuzha, Trivandrum

*Endemic to:* Western Ghats

*Status:* Vulnerable (IUCN, 2000)

## LAURACEAE

- |    |   |                                |
|----|---|--------------------------------|
| 1. | Anthers 2-celled .....  | 2                              |
| 1. | Anthers 4-celled .....  | 10                             |
| 2. | Fruit surrounded by the enlarged perianth tube .....                                    | 3                              |
| 2. | Fruit not surrounded by the enlarged perianth tube .....                                | 8                              |
| 3. | Flowers in axillary cymes; bracts and bracteoles prominent, apparently persistent ..... | <b>Cryptocarya anamalayana</b> |
| 3. | Flowers in axillary or terminal panicles; bracts and bracteoles cauducous .....         | 4                              |
| 4. | Flowers in spreading panicles .....   | 5                              |
| 4. | Flowers in congested panicles .....   | 7                              |
| 5. | Leaves reddish-glaucous beneath; reticulations not dotted-areolate.....                 |                                |
|    | .....   | <b>Cryptocarya beddomei</b>    |
| 5. | Leaves not reddish-glaucous beneath; reticulations dotted-areolate.....                 | 6                              |

6. Leaves acute or acuminate at apex; white-glaucous beneath; drupe smooth ..... **Cryptocarya wightiana**
6. Leaves obtuse, emarginate or somewhat acute at apex; purple-glaucous beneath; drupe longitudinally ribbed ..... **Cryptocarya lawsonii**
7. Leaves drupe round, truncate, emarginate or apiculate at apex; ferruginous tomentose beneath..... **Cryptocarya stocksii**
7. Leaves acuminate at apex; pubescent and glaucous beneath..... **Cryptocarya neilgherrensis**
8. Fruiting perianth persistent; glands at the base of the stamens ..... **Apollonias arnottii**
8. Fruiting perianth deciduous; glands between the 2 rows of stamens ..... 9
9. Leaf bud small, pubescent; bracts prominent, concave, silky and cauducous; ovary hairy ..... **Beilschmiedia bourdillonii**
9. Leaf bud elongate, perulate, the scales lanceolate; bracts absent; ovary glabrous ..... **Beilschmiedia wightii**
10. Flowers bisexual ..... 11
10. Flowers unisexual ..... 26
11. Leaves opposite or subopposite, rarely alternate; 3-ribbed from the base..... 12
11. Leaves alternate; penninerved ..... 21
12. Leaves glabrous at maturity ..... 13
12. Leaves hairy at any rate on maturity ..... 17
13. Side ribs reaching the tip ..... **Cinnamomum nicolsianum**
13. Side ribs not reaching the tip ..... 14
14. Panicles short and compact, fulvous tomentose; reticulation areolate ..... **Cinnamomum wightii**
14. Panicles long and lax, not fulvous tomentose; reticulations not areolate ..... 15
15. Fruit with conspicuously ribbed calyx tube ..... **Cinnamomum verum**
15. Fruit with out conspicuously ribbed calyx tube ..... 16
16. Fruit cup 5-6 mm high; bark odour less ..... **Cinnamomum keralaense**
16. Fruit cup upto 15 mm high; bark and leaves with clove-aniseed smell ..... **Cinnamomum macrocarpum**
17. Side ribs reaching the tip ..... 18
17. Side ribs not reaching the tip ..... 19
18. Leaves cuneate or acute at base; inflorescence densely tomentose and flowers congested ..... **Cinnamomum travancoricum**
18. Leaves round at base; inflorescence glabrous and flowers loose ..... **Cinnamomum chemungianum**
19. Leaves golden-brown tomentose beneath ..... **Cinnamomum sulphuratum**
19. Leaves not golden-brown tomentose beneath ..... 20
20. Panicles few flowered and flowers compactly arranged .. **Cinnamomum perrottetii**
20. Panicles many flowered and flowers loosely arranged..... **Cinnamomum malabatum**
21. Fruiting perianth lobes deciduous; but perianth tube enlarged and pedicels thick and warty ..... 22
21. Fruiting perianth lobes persistent; perianth tube and pedicels hardly enlarged.. 23
22. Leaves 5.5-15 x 1.8-7 cm, obovate or oblanceolate; panicles shorter, upto the size of leaves only ..... **Alseodaphne semecarpifolia** var. **parvifolia**

22. Leaves 14-17 x 8-11 cm, obovate, elliptic-obovate or oblong; surface areolate; panicles longer than the leaves **Alseodaphne semecarpifolia** var. **semecarpifolia**
23. Perianth lobes reflexed ..... 24
23. Perianth lobes erect ..... 25
24. Leaves glaucous below; berry globose, 1.5-2.5 cm across ..... **Persea macrantha**
24. Leaves green below; berry ovoid or obovoid, 8-12 cm long..... **Persea americana**
25. Branchlets, leaves beneath and inflorescence rusty tomentose; lamina 7.5-15 cm..... **Phoebe wightii**
25. Branchlets, leaves and inflorescence glabrous; lamina 8-25 cm..... **Phoebe lanceolata**
26. Fertile stamens 6 ..... 27
26. Fertile stamens 9 or 12 ..... 29
27. Leaf buds tawny perulate; young leaves and shoots golden fulvous tomentose; flowers in lateral umbellules ..... **Neolitsea fischeri**
27. Leaf buds not tawny perulate; young leaves and shoots glabrous; flowers not in lateral umbellules ..... 28
28. Leaves densely scrobiculate beneath; flowers in axillary umbellules; fruiting perianth larger compared to the drupe, cup-shaped, entire.. **Neolitsea scrobiculata**
28. Leaves areolate beneath; flowers in umbellules on extremely short branchlets at internodes; fruiting perianth very small compared to the drupe, crenate ..... **Neolitsea cassia**
29. Leaves in whorls or pseudo whorls..... 30
29. Leaves alternate ..... 35
30. Leaves glaucous and glabrous or nearly so beneath; comparatively small, usually less than 15 cm long ..... 31
30. Leaves tomentose or villous beneath; comparatively large, usually more than 15 cm long ..... 32
31. Young stem and leaves densely brown tomentose; leaves obovate or elliptic-obovate ..... **Actinodaphne campanulata** var. **campanulata**
31. Young stem and leaves glabrous or sparsely hairy; leaves elliptic, elliptic-oblong or elliptic-lanceolate..... **Actinodaphne campanulata** var. **obtusata**
32. Leaves obtuse or obtusely acute at apex; densely rufous tomentose beneath..... **Actinodaphne lawsonii**
32. Leaves acuminate at apex; not densely rufous tomentose beneath..... 33
33. Leaves softly grey or cinnamomeous tomentose beneath. **Actinodaphne bourdillonii**
33. Leaves fulvous villous beneath ..... 34
34. Nerves and nervules not prominent; inflorescence silky brown tomentose; female fruiting perianth tube platelliform, shallow ..... **Actinodaphne malabarica**
34. Nerves and nervules prominent; inflorescence rusty tomentose; female fruiting perianth tube cup-shaped..... **Actinodaphne tadulingamii**
35. Perianth lobes absent..... 36
35. Perianth lobes present ..... 37
36. Umbellules solitary, many flowered; bracts very large; berry black..... **Litsea deccanensis**
36. Umbellules in pedunculate umbels or corymbs; bracts medium sized; berry purple ..... **Litsea glutinosa**
37. Umbellules in racemes ..... 38

37. Umbellules in subsessile or sessile, axillary or lateral clusters ..... 45
38. Leaves white-glaucous beneath when dry ..... **Litsea beddomei**
38. Leaves not white-glaucous beneath when dry ..... 39
39. Leaves not glabrous beneath..... 41
39. Leaves glabrous beneath or nearly so..... 40
40. Berry ovoid, seated on cup-shaped perianth tube; leaves 7-15 cm long .....  
..... **Litsea wightiana**
40. Berry oblong, seated on the turbinate perianth tube; leaves 7.5-28 cm long .....  
..... **Litsea floribunda**
41. Leaves black when dry ..... 42
41. Leaves reddish-brown beneath when dry ..... 43
42. Peduncle longer than the petiole; intercostae obscure ..... **Litsea nigrescens**
42. Peduncle shorter than the petiole; intercostae prominent **Litsea myristicaefolia**
43. Berry depressed globose; perianth tube flattened and undulate; lateral nerves  
not prominent ..... **Litsea oleoides**
43. Berry not depressed globose; perianth tube not flattened and undulate; lateral  
nerves prominent ..... 44
44. Leaf apex acute or acuminate; berry ellipsoid, seated on the cup shaped  
perianth tube ..... **Litsea stocksii**
44. Leaf apex acute; berry ovoid, seated on the obconic perianth tube. **Litsea glabrata**
45. Leaves glabrous beneath or nearly so..... 46
45. Leaves pubescent or tomentose beneath ..... 48
46. Lateral nerves more than 9 pairs; leaf apex acuminate ..... **Litsea laevigata**
46. Lateral nerves less than 9 pairs; leaf apex acute or acuminate..... 47
47. Leaf apex shortly acute; very minutely puberulus beneath ..... **Litsea coriacea**
47. Leaf apex acuminate; glabrous and reticulate beneath ..... **Litsea mysorensis**
48. Leaves usually opposite at the end of the branchlets, alternate lower down;  
membranous; nerves 8-12 pairs; berry globose..... **Litsea travancorica**
48. Leaves alternate; coriaceous; nerves 10-18 pairs; berry not globose..... 49
49. Leaf base acute; nerves 10-12 pairs; berry ellipsoid, seated on a deep obconic  
warted perianth tube ..... **Litsea insignis**
49. Leaf base cuneate; nerves 12-18 pairs; berry oblong, seated on 2-4 cleft  
glabrous cup-shaped perianth tube ..... **Litsea bourdillonii**

**Actinodaphne bourdillonii** Gamble, Bull. Misc. Inform. Kew 1925: 129. 1925 & Fl. Pres. Madras 1231(862). 1925; Manilal, Fl. Silent Valley 234. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 389. 1994; Sasidh., Fl. Periyar Tiger Reserve 341. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 268. 1999; Mohanan & Sivad., Fl. Agasthyamala 562. 2002.

*Local names:* Eeyoli, Malavirinji

Trees, to 10 m high, bark greyish-brown; blaze dull-yellow; branchlets densely tomentose. Leaves simple, opposite or subopposite, estipulate, in whorls of 7-10; petiole 10-20 mm long, stout, tomentose; lamina 11.5-26 x 3-8.3 cm, elliptic-lanceolate, oblong-lanceolate or oblanceolate, base acute or attenuate, apex acuminate, margin entire, glabrous above and softly grey or cinnamomeous-tomentose beneath, coriaceous; lateral nerves 7-9 pairs, pinnate, ascending about 20-300 from midrib, prominent, intercostae scalariform, prominent. Flowers

unisexual, yellowish-green, small; male flowers: 8-10 together on peduncled umbels; pedicels to 6 mm long; bracts 12 x 8 mm orbicular; tepals 6, oblong, subequal; stamens 9, in 3 rows; filaments 2-glandular, densely hispid; anthers oblong, introrse; female flowers: 5-10 together in peduncled umbels on lateral tubercles; pedicels to 1.5 cm long, bracts imbricate, cauducous; tepals 6, subequal; staminodes 9, in 3 rows, those of the row 3 with 2-glands; ovary half inferior, ovoid, attenuate into the style; stigma dilated. Fruit a berry, 5 mm across, globose, black, smooth.

*Flowering & Fruiting:* April-March

*Habitat:* Shola and evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Trivandrum

*Endemic to:* Southern Western Ghats

**Actinodaphne campanulata** Hook.f., Fl. Brit. India 5: 148. 1886, var. **campanulata**; Gamble, Fl. Pres. Madras 1230(861). 1925; Mohanan, Fl. Quilon Dist. 343. 1984; Manilal, Fl. Silent Valley 234. 1988; Sasidh., Fl. Shenduruny Wildlife Sanctuary 262. 1997; Mohanan & Sivad., Fl. Agasthyamala 562. 2002.

*Actinodaphne salicina* sensu Bedd., Fl. Sylv. t. 295. 1873, non Meisner 1864.

Young shoots densely brown tomentose. Leaves simple, in whorls of 3-8 or opposite or subopposite; petiole 5-13 mm long, stout, tomentose; lamina 4-6 x 1.5-3 cm long, obovate or elliptic-obovate, base acute or cuneate, apex obtuse, margin entire, pubescent above, glabrous and glaucous beneath, coriaceous, reticulate; lateral nerves 5-8 pairs, pinnate, slender, prominent, ascending at an angle of 20°-30° from midrib; intercostae scalariform, faint. Flowers small, unisexual, yellowish-green, in lateral and axillary umbellate fascicles; bracts scaly, 2 mm long, ovate; perianth campanulate in female flowers, tube 0.1 cm long; lobes 6 in male flowers; ovate, silky brown hairy without; stamens 9 in 3 rows; filaments villous, 2 glandular; anthers introrse; staminodes 9, in 3 rows, those of the third row linear with 2 glands; ovary half inferior, 0.05 cm across, attenuate into the style; stigma dilated. Fruit a berry 0.4-0.6 cm across, with persistent perianth lobes.

*Flowering & Fruiting:* January-October

*Distribution*

*Kerala:* Kollam, Trivandrum, Palakkad

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Actinodaphne campanulata** Hook.f. var. **obtusa** Gamble, Fl. Pres. Madras 1230(861). 1925; Anil Kumar, Fl. Pathanamthitta Dist. 567. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 389. 1994; Sasidh., Fl. Periyar Tiger Reserve 342. 1998; Gopalan & Henry, End. Pl. India SW Ghats 41. 2000; Mohanan & Sivad., Fl. Agasthyamala 563. 2002.

Trees, to 8 m high; bark greyish-brown; blaze dull-yellow; young shoots glabrous or sparsely hairy. Leaves simple, 4-8 in a whorl, opposite or subopposite, estipulate; petiole 8-10 mm long, stout, glabrous; lamina 5.5-10 x 1.5-3 cm, elliptic, elliptic-oblong or elliptic-lanceolate, base acute or cuneate, apex acute or obtuse, margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 5-11 pairs, pinnate,

prominent, ascending at an angle of 30<sup>0</sup>-40<sup>0</sup> from midrib; intercostae scalariform, faint. Flowers unisexual, yellowish-green, in lateral and axillary umbellate fascicles; pedicels 0.5-0.6 cm long; bracts 1 mm long; perianth; campanulate in female flowers; lobes 6 in male flowers; stamens 9, in 3 rows, filaments slender, 2-glandular; staminodes 9, in 3 rows, those of third row linear with 2-glands; ovary half inferior, minute, globose, attenuate into the style; stigma dilated. Fruit a berry, 0.5 cm across.

*Flowering & Fruiting:* February-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Trivandrum

*Endemic to:* Western Ghats

*Status:* Endangered (IUCN, 2000)

**Actinodaphne lawsonii** Gamble, Bull. Misc. Inform. Kew 1925: 129. 1925 & Fl. Pres. Madras 1231(862). 1925.

Trees, to 6 m high. Leaves simple, opposite or subopposite, whorled, estipulate; petiole 15-23 mm, stout, pubescent, grooved above; lamina 12-18 x 4-7.5 cm, obovate or elliptic obovate, base cuneate to attenuate, apex obtuse or obtusely acute; margin entire, glabrous above except at nerves, densely rufous tomentose beneath, coriaceous; lateral nerves 8-10, rufous tomentose, pinnate, intercostae scalariform, faint. Flowers unisexual, greenish, in 6-8 flowered clusters, rufous tomentose; pedicels 1 cm long; perianth tube short; lobes 6, subequal; stamens 9, in 3 rows; filaments 2-glandular; anthers 4-celled, introrse; staminodes 9, in 3 rows, those of row 3 linear and 2-glandular; ovary half inferior, ovoid; stigma dilated. Fruit a berry, resting on the enlarged perianth tube.

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Wayanad

*Endemic to:* South India

*Status:* Vulnerable (IUCN, 2000)

*Note:* This species is known only by the type collection

**Actinodaphne malabarica** Balakr., J. Bomb. Nat. Hist. Soc. 63: 329. 1967; Mohanan, Fl. Quilon Dist. 343. 1984; Ramach. & Nair, Fl. Cannanore Dist. 392. 1988; Antony, Fl. Kottayam Dist. 346. 1989; Vajr., Fl. Palghat Dist. 402. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 567. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 389. 1994; Subram., Fl. Thenmala Division 315. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 379. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 264. 1997; Sasidh., Fl. Periyar Tiger Reserve 342. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 266. 2002.

*Actinodaphne hirsuta* Hook.f., Fl. Brit. India 5: 152. 1886, non Blume 1851; Gamble, Fl. Pres. Madras 1231(862). 1925.

*Local names:* Kambilivirinji, Malavirinji, Neyaram

Trees, to 18 m high, bark dark grey, smooth, lenticellate; blaze dull yellow with brownish streaks; young shoots densely fulvous tomentose. Leaves simple, subverticillate, opposite or subopposite, estipulate; petiole 7-20 mm long, stout,



tomentose; lamina 7-25 x 2.5-6 cm, elliptic or elliptic-lanceolate, base acute or attenuate, apex acuminate, margin entire, glabrous above, villous beneath, chartaceous; lateral nerves 8-12 pairs, pinnate, slender, prominent, ascending about 40°-50° from midrib, indistinct towards the margin; intercostae scalariform, obscure. Flowers unisexual, yellowish; male flowers: in densely tomentose racemes of 2.5 cm long; bracts 10 x 7 mm, orbicular, densely silky brown tomentose; tepals 6, subequal, oblong, obtuse, silky brown tomentose; stamens 9, in 3 rows; filaments 2-glandular, densely hispid; anthers 4-celled, oblong, introrse; female flowers: staminodes 9, in 3 rows, those of row 3 with 2-glands; ovary half inferior, ovoid, attenuate into the style; stigma dilated. Fruit a berry 7-10 mm across, globose, seated in a perianth cup, red.

*Flowering & Fruiting:* August-January

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Kottayam, Pathanamthitta, Palakkad, Kannur, Trivandrum, Thrissur, Wayanad, Idukki

*Endemic to:* Southern Western Ghats

*Status:* Rare (Nayar, 1997)

**Actinodaphne tadulingamii** Gamble, Bull. Misc. Inform. Kew 1925: 130. 1925 & Fl. Pres. Madras 1231(862). 1925; Ramach. & Nair, Fl. Cannanore Dist. 392. 1988; Vajr., Fl. Palghat Dist. 402. 1990; Pandura., & Nair, J. Econ. Tax. Bot. 17: 173. 1993; Sivar. & Mathew, Fl. Nilambur 582. 1997; Sasidh., Fl. Periyar Tiger Reserve 342. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 266. 2002; Mohanan & Sivad., Fl. Agasthyamala 564. 2002.

Trees, to 7 m high, bark grey mottled with green, lenticellate; blaze creamy yellow with sclerotic streaks; branches rusty tomentose. Leaves simple, 3-5 in a whorl, opposite or subopposite, estipulate; petiole 10-20 mm long, stout, tomentose; lamina 8-24 x 2.5-7.5 cm, elliptic-lanceolate, base cuneate-attenuate, apex acuminate, margin entire, glabrate above and fulvous villous beneath, subcoriaceous; lateral nerves 10-15 pairs, pinnate, prominent, ascending at an angle of 30°-40° from midrib, intercostae scalariform, prominent. Flowers unisexual, in lateral umbels or short subracemes; peduncle 4-5 mm long, pubescent; pedicels 0.5-0.6 cm long, pubescent; bracts orbicular, fulvous villous; perianth tubular, campanulate and about *ca.* 5 mm across in males, cupular and about 5-7 mm across in females, lobes 6; stamens 9, in 3 rows, filaments 2-glandular; staminodes 9, in 3 rows, fulvous, first and third row linear and 2-glandular; ovary half inferior, globose, sunk in perianth, 0.1-0.15 cm across, fulvous-villous, stigma dilated. Fruit a berry 8-10 mm across, ovoid, black; perianth tube cup shaped; pedicel 1 cm long.

*Flowering & Fruiting:* August-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Malappuram, Palakkad, Kannur, Trivandrum, Thrissur

*Endemic to:* Western Ghats

**Alseodaphne semecarpifolia** Nees in Wall., Pl. Asiat. Rar. 2: 72. 1831, var. **semecarpifolia**; Hook. f., Fl. Brit. India 5: 144. 1886; Gamble, Fl. Pres. Madras 1226(858). 1925; Ansari, Fl. Kasaragod Dist. 322. 1985; Anil Kumar, Fl. Pathanamthitta Dist. 567. 1994.

*Local name:* Mulakunari

Trees, to 25 m high, bark 5 mm thick, yellowish-brown, lenticellate, vertically furrowed; blaze yellow; branchlets slender, smooth, glabrous, lenticellate. Apical bud partly minutely sericeous. Leaves simple, alternate, crowded near the tips of branchlets, estipulate; petiole 6-25 mm long, stout, glabrous; lamina 14-17 × 8-11 cm, obovate, elliptic-obovate or oblong, base acute or cuneate, apex round, obtuse or emarginate or subacute, margin entire, coriaceous, glabrous, shining above, glaucous beneath, surface areolate; lateral nerves 6-10 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers bisexual, small, yellowish-green, in slender lax axillary panicles longer than leaves; pedicels filiform; perianth tube shallow; lobes 6, 3 + 3, subequal, ovate, concave, pubescent within, margin ciliate; stamens 9 fertile, in 3 rows, those of first and second row opposite the perianth lobes, introrse, those of the third row opposite the first row, extrorse, with 2 large glands on the inner bases of the filaments, ovate, subsessile; anthers 4-celled, staminodes 3, of the fourth row opposite the second row, 1.5 mm long, cordate, stipitate; ovary half inferior, globose; style 1 mm; stigma peltate. Fruit a berry, 20-25 mm long, ellipsoid, dark red; seed oblong-globular.

*Flowering & Fruiting:* February-April

*Habitat:* Semi-evergreen and moist deciduous forests

*Distribution*

*Kerala:* Kasaragode, Pathanamthitta, Kozhikkode, Malappuram

*Geographical:* Peninsular India and Sri Lanka

**Alseodaphne semecarpifolia** Nees var. **parvifolia** Hook.f., Fl. Brit. India 5: 144. 1886; Gamble, Fl. Pres. Madras 1226(858). 1925; Mohanan, Fl. Quilon Dist. 343. 1984; Sasidh. & Sivar., Fl. Pl. Thrissur For. 379. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 264. 1997; Sasidh., Fl. Periyar Tiger Reserve 342. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 267. 2002.

*Local name:* Mulakunari

Evergreen trees, to 20 m high, bark yellowish-brown, flaking off in thin rectangular flakes; blaze dull yellow, with aromatic smell; young shoots puberulent. Leaves simple, alternate, often fascicled at the apex of branchlets, estipulate; petiole 5-15 mm long, stout, glabrous; lamina 5.5-15 x 1.8-7 cm, obovate or oblanceolate, base cuneate, acute or attenuate, apex obtuse, margin entire, glabrous, shining above and glaucous beneath, coriaceous; lateral nerves 5-10 pairs, slender, pinnate, prominent, intercostae reticulate, faint. Flowers bisexual, 3-4 mm across, greenish-yellow, in axillary or subterminal panicles of 6-12 cm long; pedicel 5-6 mm long, slender, pubescent; perianth tube short, lobes 6, in 2 rows, 4-5 mm long, oblong, pubescent, valvate; stamens 9 perfect, those of first and second rows opposite the perianth lobes, introrse, those of the third row opposite the first row, extrorse with 2 large glands on the inner base of the filaments; filaments hairy; anthers 4-celled; staminodes 3, of the fourth row opposite the second row, cordate, stipitate, base hairy; ovary half inferior, ovoid, glabrous, 1-celled, ovule 1, pendulous; style

slender; stigma trilobed. Fruit a drupe 2-3 x 18 mm, ellipsoid to globose, seated on the top of enlarged, thick, warty peduncle; seed one.

*Flowering & Fruiting:* July-December

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Thrissur, Palakkad

*Endemic to:* Southern Western Ghats

**Apollonias arnottii** Nees, Syst. Laurin. 670. 1836; Hook. f., Fl. Brit. India 5: 121. 1886; Gamble, Fl. Pres. Madras 1219(854). 1925; Manilal, Fl. Silent Valley 234. 1988; Ramach. & Nair, Fl. Cannanore Dist. 392. 1988; Sasidh., Fl. Shenduruny Wildlife Sanctuary 265. 1997; Sivar. & Mathew, Fl. Nilambur 583. 1997; Mohanan & Sivad., Fl. Agasthyamala 564. 2002.

*Local names:* Chenthanam, Karamavu

Trees, to 12 m high; young shoots glabrescent. Leaves simple, scattered near the end of branchlets or alternate spiral, estipulate; petiole 5-18 mm long, slender, grooved above, glabrous; lamina 5-16 x 1.4-4 cm, elliptic, elliptic-lanceolate or narrowly lanceolate, base attenuate or acute, apex acuminate or caudate-acuminate, margin entire, pubescent on both sides when young, glabrous on ageing, coriaceous; lateral nerves 5-13 pairs, pinnate, ascending, prominent, intercostae reticulate, prominent. Flowers bisexual, yellowish, small, 3-4 mm long, in axillary or subterminal racemose panicles of 2.5-5 cm long; peduncle and the pedicels slender; bracts and bracteoles minute; perianth tube short; lobes 6, subequal, in 2 rows; stamens 9 perfect, those of the first and second rows introrse, opposite the perianth lobes, those of the third row opposite the first and extrorse with a pair of stalked glands at the base; ovary half inferior, sessile, 1-celled; ovule 1, pendulous; style curved; stigma depressed capitate. Fruit a drupe, 10-12 mm long, ovoid, pale green, seated on enlarged perianth lobes.

*Flowering & Fruiting:* November-December

*Habitat:* Shola and evergreen forests

*Distribution*

*Kerala:* Malappuram, Kannur, Trivandrum, Palakkad, Kollam, Wayanad

*Endemic to:* Southern Western Ghats

**Beilschmiedia bourdillonii** Brandis, Indian Trees 528. 1906; Gamble, Fl. Pres. Madras 1221(855). 1925; Mohanan, Fl. Quilon Dist. 344. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 568. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 380. 1996; Sasidh., Fl. Periyar Tiger Reserve 344. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 267. 2002.

*Beilschmiedia fagifolia* Bedd., Fl. Sylv. t. 263. 1872, non Nees 1831.

*Local name:* Morakutthi

Trees, to 25 m high, bark 6-8 mm thick, surface greyish-brown, smooth; blaze pale yellow; branchlets glabrous. Leaf-buds small, pubescent. Leaves simple, opposite or alternate, estipulate; petiole 8-25 mm, stout, glabrous; lamina 7.5-15.5 x 2.5-4.5 cm, elliptic-ovate or ovate-lanceolate, base acute or attenuate, apex acute or acuminate, margin entire, glabrous, shining above, coriaceous; lateral nerves 5-8 pairs, pinnate, irregular, prominent, intercostae reticulate, prominent. Flowers

bisexual, 6-8 mm across, greenish-yellow, in axillary and terminal tomentose racemes; peduncle and pedicel short; perianth tube short; lobes 6, 3+3 subequal, pubescent without; stamens 9 perfect, in 3 rows, those of the 2 outer series with eglandular filaments and introrse anthers, those of the third series with 2 glandular filaments and extrorse anthers; staminodes 3, of the fourth series cordate or ovoid, stipitate; glands 6, stipitate, as large as staminodes, between the second and third row of stamens; ovary half inferior, ovoid, pubescent; style slender; stigma subcapitate. Fruit a berry, 2.5-3.7 x 1.5-1.8 cm, cylindrical, purple, pubescent; the peduncle red.

*Flowering & Fruiting:* January-February

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Thrissur, Palakkad

*Endemic to:* Peninsular India

**Beilschmiedia wightii** (Nees) Benth. ex Hook.f., Fl. Brit. India 5: 124. 1886; Gamble, Fl. Pres. Madras 1221(855). 1925; Sasidh. & Sivar., Fl. Pl. Thrissur For. 380. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 265. 1997; Sasidh., Fl. Periyar Tiger Reserve 344. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 268. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 267. 2002.

*Haasia wightii* Nees, Syst. Laurin. 676. 1836.

*Local name:* Nagaramaram

Trees, to 25 m high, bark 14-16 mm thick, surface brown, smooth; blaze dull yellow with white streak, branchlets glabrous. Leaf-buds elongate, perulate with lanceolate scales. Leaves simple, alternate and opposite, estipulate; petiole 10-25 mm, stout, glabrous; lamina 7.5-15 x 2-6.2 cm, elliptic, elliptic-ovate, elliptic-oblong or elliptic-lanceolate, base acute or alternate, apex obtusely acuminate, margin entire, glabrous, shining, coriaceous; lateral nerves 8-10 pairs, pinnate, prominent, intercostae reticulate, prominent; surface areolate. Flowers bisexual, greenish-yellow, in axillary and terminal, glabrous panicles, small, ebracteate; peduncle and pedicel slender; perianth tube short, lobes 6, 3+3 subequal; stamens 9 perfect, in 3 rows, those of the 2 outer series with eglandular filaments and introrse anthers, those of the third series with 2 glandular filaments and extrorse anthers; staminodes 3, of fourth series cordate or ovoid, stipitate; glands 6, stipitate, as large as staminodes, between the second and third row of stamens; ovary half inferior, ovoid, glabrous; style slender, stigma subcapitate or obtuse. Fruit a berry 17-18 mm long, ovoid, smooth, purple.

*Flowering & Fruiting:* January-February

*Habitat:* Evergreen, semi-evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Kollam, Thrissur, Palakkad, Wayanad

*Endemic to:* Southern Western Ghats

*Status:* Rare & Threatened (Ahmedullah & Nayar, 1987)

**Cinnamomum chemungianum** Mohanan & Henry, J. Bomb. Nat. Hist. Soc. 88: 97. 1991; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 391. 1994; Gopalan & Henry, End. Pl. India SW Ghats 78. 2000; Mohanan & Sivad., Fl. Agasthyamala 565. 2002.

Trees, to 6 m high. Leaves simple, opposite, estipulate; petiole 10-20 mm long, slender, pubescent; lamina 3-7 x 2-4 cm, ovate, base acute, obtuse or round, apex caudate-acuminate, margin entire, coriaceous, glabrous above, sparsely appressed hairy beneath; 3-ribbed from the base, prominent, intercostae scalariform, prominent. Flowers unisexual, ca. 11 mm long; perianth tube ca. 3 mm long; lobes 1.5 mm long, red, ovate, acute; stamens many in 3 rows, ca. 1.5 mm long, anthers truncate, glandular, 4-loculed; filaments villous; staminodes ca. 0.5 mm long, ovate, acute; ovary inferior, ca. 2 x 1.5 mm, globular, 1-ovuled; styles ca. 1 mm long; stigma faintly 3-lobed. Fruit a berry, ca. 1.4 x 1 cm, ellipsoid.

*Flowering & Fruiting:* February-May

*Distribution*

*Kerala:* Trivandrum

*Endemic to:* Western Ghats

*Status:* Endangered (IUCN, 2000)

**Cinnamomum keralaense** Kosterm., Bull. Bot. Surv. India 25: 98. 1983; Sasidh., Fl. Periyar Tiger Reserve 344. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 267. 2002.

*Cinnamomum litseaefolium* sensu Hook.f., Fl. Brit. India 5: 133. 1886, non Thw. 1861.

*Local name:* Karuva

Trees, to 25 m high, bole buttressed; bark 15 mm thick, grey, thin, brittle, smooth with pustular lenticels, often hoop-ringed, odourless and tasteless or with very faint smell; branchlets glabrous, smooth. Apical bud small, conical, glabrous. Leaves simple, opposite and subopposite, estipulate; petiole 15-25 mm long, stout, glabrous; lamina 6.5-12.5 x 3-6.5 cm, ovate, elliptic-ovate or elliptic-lanceolate, base acute or some times cuneately decurrent into the petiole, apex obtuse or obtusely acuminate, margin entire, glabrous, smooth and glossy above, pale beneath, coriaceous; 3-ribbed from a little above the base, side ribs reaches 2/3<sup>rd</sup> of the lamina, prominent; intercostae scalariform, faint. Flowers bisexual, 6 mm across, in axillary and pseudo terminal, 5-10 cm long slender, lax pubescent panicles; pedicels 4 mm long, slender, pubescent; tepals 6, ovate, obtuse, densely tomentose; stamens 9 perfect, those of first and second rows opposite the perianth lobes, introrse and eglandular, those of third row opposite the first row, lateral, bearing 2 large glands at the base; staminodes 3, of the fourth row opposite the second row, cordate and stipitate. Fruit a berry, upto 8 x 20 mm, narrow ellipsoid; cupular, subconical, slightly fleshy, rather thin, upto 5-6 mm height and upto 8 mm diameter at the rim, which bears 0.5 mm high sericeous bases of tepals.

*Flowering & Fruiting:* December-January

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* Southern Western Ghats

**Cinnamomum macrocarpum** Hook.f., Fl. Brit. India 5: 133. 1886; Gamble, Fl. Pres. Madras 1225(857). 1925; Mohanan, Fl. Quilon Dist. 344. 1984; Vajr., Fl. Palghat Dist. 402. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 392. 1994;

Subram., Fl. Thenmala Division 312. 1995; Sasidh., Fl. Periyar Tiger Reserve 344. 1998; Mohanan & Sivad., Fl. Agasthyamala 566. 2002.

*Local name:* Karuva

Trees, to 15 m high; bole thinly buttressed; bark 5 mm thick, greyish, smooth, with faint aniseed and clove smell, blaze dull red; branchlets thick, angular, glabrous or with a few, microscopically, appressed hairs. Apical bud small, densely and very minutely sericeous. Leaves simple, opposite and subopposite, estipulate; petiole 10-28 mm long, stout, glabrous; lamina 7-25 x 2-12 cm, ovate, elliptic-ovate or elliptic-lanceolate, base cuneate or decurrent into petiole, apex obtuse, margin entire, glabrous, shiny above, pale, minutely, smoothly and densely reticulate beneath, coriaceous; 3-5-ribbed from base, of which 2 middle arise from a little above the base, side ribs slender, fainting 2-3 cm below the leaf tip; intercostae scalariform, faint. Flowers bisexual, upto 7 mm long, white, sparsely to more densely minutely sericeous, in axillary few flowered stout, almost glabrous panicle upto 7 cm long; peduncle flattened, branchlets few, 1-2.5 cm long; pedicel upto 1 cm long, stout, obconic, microscopically sparsely appressed pilose; perianth tube 1-2 mm long, funnel shaped; tepals 6, 3-4 mm long, ovate-oblong, acute, sericeous inside; stamens 9 perfect, in 3 rows, 2-2.5 mm long, those of first and second row opposite the perianth lobes; introrse and eglandular, those of third row opposite the first row, smaller, lateral, bearing rather large glands attached 1/3 from the filament base; filaments pilose; anthers oblong, 4-celled, longer than the broad; staminodes fourth row opposite the second row, slightly shorter than the stamens with hastate-sagittate small apical part and long pilose stipe; ovary half inferior, ellipsoid; style 1.5-2 mm long, thick; stigma minute, peltate. Fruit a berry, upto 2 x 2.5 cm, ellipsoid, subtended by thick fleshy cup of 15 mm long, obconical thick basal part flaring upwards into the actual shallow cup of 1-1.5 cm diameter bearing remnants of non-enlarged tepals.

*Flowering & Fruiting:* February-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Trivandrum

*Endemic to:* Southern Western Ghats

**Cinnamomum malabatum** (Burm. f.) Blume, Bijdr. 568. 1826; Manilal, Fl. Silent Valley 234. 1988; Vajr., Fl. Palghat Dist. 403. 1990; Ansari, Fl. Kasaragod Dist. 324. 1985; Antony, Fl. Kottayam Dist. 346. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 568. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 392,23,31; Sasidh. & Sivar., Fl. Pl. Thrissur For. 380. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 267. 1997; Sivar. & Mathew, Fl. Nilambur 583. 1997; Sasidh., Fl. Periyar Tiger Reserve 345. 1998; Sunil, Fl. Pl. Alappuzha Dist. 781. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 268. 2002.

*Laurus malabatum* Burm. f., Fl. Ind. 92. 1768.

*Cinnamomum iners* sensu Gamble, Fl. Pres. Madras 1224(857). 1925, non Reinw. ex Blume 1826.

*Local names:* Illavangam, Karappa, Vayana

Trees, to 20 m high, bark 5-10 mm thick, reddish-brown, smooth or slightly, longitudinally cracked; blaze dull-red, aromatic. Apical bud small, densely,

subadpressed pilose. Leaves simple, opposite or subopposite, estipulate; petiole 10-20 mm long, stout, glabrous; lamina 10-30 x 3-9 cm, elliptic-oblong, oblong or oblong-lanceolate, base acute, apex acute or acuminate, margin entire, glabrous above, highly aromatic when bruised, coriaceous; 3-ribbed from at or a little above the base, the side ribs running almost to the apex, prominent with sparse crisp fine hairs, intercostae scalariform, glabrescent, slender, prominulous. Flowers bisexual, in axillary and pseudo terminal paniculate cymes upto 25 cm long, with densely minute subadpressed pilose hairs; pedicels 3-4 mm long, slender, slightly thickened upwards; perianth tube shallow, 1 mm broad; tepals 6, 3-3.5 mm long, fleshy, ovate, acute, with dense subadpressed pilose hairs; stamens 9 perfect, in 3 rows, 2-2.5 mm long, those of first and second row opposite the perianth lobes, introrse and eglandular, those of the third row opposite the first row, extrorse, bearing large glands on short stipes, the basal part of which adnate to the filaments; filaments pilose, slender, slightly longer than the anthers; anthers oblong to subovate-oblong, 4-celled; staminodes of fourth row 1.5 mm long, hastate, cordate, on as long stipes, opposite the second row; ovary half inferior, 2 mm, ellipsoid; style thick, cylindrical; stigma small, peltate. Fruit a berry, to 8 x 10 mm, subtended by shallow fleshy cup; the rim with the persistent thickened, basal part of tepals rounded, pilose.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Endemic to:* Southern Western Ghats

**Cinnamomum nicolsonianum** Manilal & Shylaja, Bull. Bot. Surv. India 28: 111. 1986.

Trees, 15 m high. Leaves simple, opposite, estipulate; petiole lamina 19-20 x 7-9 cm, elliptic, base cuneate, apex obtuse, margin entire, sparsely hairy above, moderately hairy beneath, chartaceous, 3-ribbed from base, reaching the tip, intercostae scalariform, prominent. Flowers bisexual, 15-30, in axillary panicles, 10 cm long; pedicels short; perianth tube short, tepals 6, 2-3 mm long, tomentose, stamens 9 perfect, those of first and second rows opposite the perianth lobes, introrse and eglandular, those of third row opposite the first row, lateral, bearing 2 large glands at the base; staminodes 3, of the fourth row opposite the second row, cordate and stipitate; ovary half inferior, sessile. Fruit a berry, upto 8 x 10 mm, subtended by shallow fleshy deep cup, the base conical; the rim with the persistent, thickened tepals, of which apical part drops off, the basal part rounded, pilose.

*Flowering:* February-March

*Habitat:* Plains and foot hills

*Distribution*

*Kerala:* Kozhikkode

*Endemic to:* Southern Western Ghats

**Cinnamomum perrottetii** Meisner in DC., Prodr. 15: 504. 1864; Hook. f., Fl. Brit. India 5: 134. 1886; Gamble, Fl. Pres. Madras 1225(857). 1925; Sasidh., Fl. Periyar Tiger Reserve 345. 1998.

Trees, to 8 m high, bark 10 mm thick, smooth, brown, tasteless and odorless; blaze chochlate-red; branchlets stiff densely minutely tomentose. Apical bud small,

tomentose. Leaves simple, opposite or subopposite, estipulate; petiole 10-15 mm long, stout, grooved above, tomentose; lamina 3.5-6 x 2.5-4 cm, ovate or ovate-elliptic, base acute, subtruncate or round, apex obtuse or acute, margin entire, coriaceous, tomentose on both sides when young, glabrous above, subglaucous and minutely tomentellous beneath; 3-5-ribbed from near the base, prominent, side ribs reaching near the leaf tip; intercostae scalariform, faint. Flowers bisexual, large, upto 7 mm long, in axillary, few-flowered, minutely tomentose 2-10 cm long panicles, peduncle stout; pedicels 2-3 m long, thick, obconic; perianth tube 1.5-2 mm long, funnel shaped; tepals 6, 5 mm long, oblong-ovate, fleshy, densely appressed pilose inside; stamens 9 perfect, those of first and second row opposite the perianth lobes, introrse and eglandular, those of third row opposite the first row, extrorse, bearing 2 large glands attached to the middle of the filament; staminodes of the fourth row opposite the second row, 1.5 mm long, narrowly sagitate, pilose; ovary half inferior, ellipsoid, as long as style; stigma small, peltate. Fruit a berry, ellipsoid, subtended by densely woolly tepals, base of cup fleshy, obconical.

*Flowering:* March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Cinnamomum sulphuratum** Nees in Wall., Pl. Asiat. Rar. 2: 74. 1831; Hook. f., Fl. Brit. India 5: 132. 1886; Gamble, Fl. Pres. Madras 1225(857). 1925; Mohanan, Fl. Quilon Dist. 345. 1984; Manilal, Fl. Silent Valley 235. 1988; Vajr., Fl. Palghat Dist. 403. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 569. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 392. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 381. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 267. 1997; Sasidh., Fl. Periyar Tiger Reserve 345. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 268. 2002; Mohanan & Sivad., Fl. Agasthyamala 567. 2002.

*Local name:* Kattu karuva

Trees, to 10 m high, bark smooth, reddish-brown; blaze dull red; branchlets slender, angular, densely, minute subappressed, yellow, fulvous, pilose. Apical bud small, densely yellow appressed fulvous pilose. Leaves simple, opposite or subopposite, estipulate; petiole 8-15 mm long, stout, yellow pilose when young; lamina 4-21 x 2-9 cm, elliptic, elliptic-ovate, elliptic-lanceolate or elliptic-oblong, base acute obtuse or shortly cuneate, apex acute or obtusely acuminate or acuminate, margin entire, glabrous and glossy above, glaucous and yellowish pubescent beneath, glabrous afterwards, coriaceous; 3-ribbed from at or a little above the base; side ribs reaching nearly to the apex, prominent beneath; intercostae scalariform, faint. Flowers bisexual, in axillary or terminal lax, yellow fulvous pilose panicles, branchlets few slender; perianth tube 1-1.5 mm long, densely yellow pilose on both sides; tepals 6, 2-4 mm long, ovate, acute, yellow pilose; stamens 9 perfect, those of first and second rows opposite the perianth lobes, introrse and eglandular, those of third row opposite the first row, lateral, bearing 2 large glands at the base; staminodes 3, of the fourth row opposite the second row, narrowly sagitate, stipitate, pilose; ovary half inferior, ellipsoid, as long as the style, stigma minute, peltate. Fruit a berry, 1 x 1.5 cm, subtended by the perianth tube and lobes, appressed-pilose; base of the cup fleshy, obconic, slightly merging into slender pedicel.



*Flowering & Fruiting:* March-April

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Kollam, Thrissur, Pathanamthitta, Palakkad, Trivandrum, Idukki, Wayanad

*Endemic to:* Western Ghats

**Cinnamomum travancoricum** Gamble, Bull. Misc. Inform. Kew 1925: 128. 1925 & Fl. Pres. Madras 1224(857). 1925; Ramach. & Nair, Fl. Cannanore Dist. 393. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 392. 1994; Mohanan & Sivad., Fl. Agasthyamala 568. 2002.

Trees, to 8 m high; branchlets slender, angular, minutely densely subappressed or appressed pilose; branches smooth, glabrous, striate. Leaves simple, opposite, estipulate; petiole 5-15 mm long, slender, appressed pilose; lamina 5-9 x 1.5-4 cm, elliptic, elliptic-oblong or elliptic ovate, base acute, apex acute or acuminate, margin entire, appressed pilose when young, glabrous above when mature; glabrescent beneath, coriaceous; 3-ribbed from a little above the base, prominent beneath, side ribs ends 1-2 cm below the leaf tip, connected to the midrib at their ending point by a prominent transverse nerve; intercostae scalariform, faint. Flowers bisexual, in axillary and pseudo terminal, 1-3 cm long, light brown, subappressed pubescent racemes; peduncle slender; pedicel 1-3 mm long, funnel shaped; tepals 6, 4 mm long, oblong, acute, densely subappressed light brown pilose, subequal; stamens 9 perfect, 2.5-3 mm long, those of first and second rows opposite the perianth lobes, introrse and eglandular, those of third row opposite the first row, lateral, bearing 2 large glands at the base; staminodes 3, of the forth row opposite the second row, cordate and stipitate, staminodes 3, in row 4, 1-1.5 mm long, sagittate, stipe pilose; ovary half inferior, sessile, glabrous, at the bottom of the perianth tube, narrowed into thick style, stigma peltate.

*Flowering & Fruiting:* January-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kannur, Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (Nayar, 1997)

**Cinnamomum verum** Presl, Prir. Rostl. 2: 36. t. 7. 1825; Manilal & Sivar., Fl. Calicut 250.1982; Mohanan, Fl. Quilon Dist. 346.1984; Ansari, Fl. Kasaragod Dist. 324.1985; Ramach. & Nair, Fl. Cannanore Dist. 393. 1988; Antony, Fl. Kottayam Dist. 347. 1989; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 392. 1994; Sivar. & Mathew, Fl. Nilambur 585. 1997; Sasidh., Fl. Periyar Tiger Reserve 345. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 269. 1999; Sunil, Fl. Pl. Alappuzha Dist. 782. 2000.

*Cinnamomum zeylanicum* Blume, Bijdr. 568. 1826; Hook. f., Fl. Brit. India 5: 131. 1886; Gamble, Fl. Pres. Madras 1224(857). 1925.

*Local names:* Ilavargam, Karukapatta, Karuva, Vayana

Trees, to 20 m high, bark 8-10 mm thick, brown, rough, cracks vertical; blaze creamy pink; bole buttressed; branchlets glabrous. Leaves simple, opposite or subopposite, estipulate; petiole 8-20 mm, stout, glabrous, slightly grooved above; lamina 9.5-14 x 3.5-5.5 cm, ovate, elliptic ovate or elliptic-lanceolate, base acute, apex acute to acuminate, margin entire, glabrous, coriaceous, 3-ribbed from base, prominent, glabrous; lateral nerves 3-6 pairs, obscure, pinnate; intercostae reticulate. Flowers

bisexual, in terminal and axillary, pedicel 7 mm long, pale yellow, 5 mm long, 6 mm across; perianth 8 mm, silky, tube campanulate, lobes 6, 3 mm long, oblong-lanceolate; stamens 9 perfect, those of first and second rows opposite the perianth lobes, introrse and eglandular, those of third row opposite the first row, lateral, bearing 2 large glands at the base; staminodes 3, of the fourth row opposite the second row, cordate and stipitate; ovary half inferior, sessile. Fruit a berry, 1-2 cm, ellipsoid to oblong-ovoid, dark purple, surrounded by the enlarged perianth.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen and riparian forests, also cultivated

*Distribution*

*Kerala:* All districts

*Geographical:* South West India and Sri Lanka

**Cinnamomum wightii** Meisner in DC., Prodr. 15: 11. 1864; Hook. f., Fl. Brit. India 5: 132. 1886; Gamble, Fl. Pres. Madras 1224(857). 1925; Vajr., Fl. Palghat Dist. 403. 1990; Sasidh., Fl. Periyar Tiger Reserve 345. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 269. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 268. 2002.

*Local name:* Kattukaruva

Trees, to 8 m high, bark 5-10 mm, grey, smooth, thin, pustular, without taste or smell; blaze pale reddish-brown; branchlets stiff, smooth, glabrous. Apical bud small, densely minutely sericeous. Leaves simple, opposite or spirally arranged, estipulate; petiole 10-20 mm long, stout, flattened above, lamina 3.5-20 x 2.5-7.5 cm, elliptic, ovate, elliptic-ovate or elliptic-oblong, base cuneate, slightly decurrent, apex obtusely acute or obtusely shortly acuminate, margin entire, glabrous, glossy above, pale, subglaucous, smooth or obscurely, minutely pitted beneath, coriaceous, 3-5 or sometimes 7-ribbed from at or a little above the base, very slender, slightly prominulous, the side ribs reaching half to two third the lamina length, becomes obscure; intercostae scalariform, very faint; reticulation areolate. Flowers bisexual, 5-6 mm long, densely fulvous-sericeous, in axillary and pseudo-terminal, short and compact but long peduncled panicle of 10-14 cm long; peduncle stout; branchlets few upto 1 cm, densely, minutely adpressed fulvous pilose; pedicel 5 mm long, thick, obconic; perianth tube 1 m long, funnel shaped; tepals 6, 3-5 mm long, thick, ovate to oblong-ovate, acute; stamens 9 perfect, in 3 rows, upto 2 mm long, those of first and second row opposite the perianth lobes, introrse and eglandular, those of third row opposite the first row, extrorse bearing large stipitate glands as long as filaments; filaments pilose, anthers 4-celled, broadly ovate; staminodes of fourth row opposite the second row, narrowly sagittate, pilose, stipitate, almost as long as the stamens; ovary ellipsoid, half inferior; style as long with minute, peltate stigma. Fruit a berry, upto 1 x 1.5 cm, ellipsoid, subtended by fleshy obconical pedicel, margin 1 cm across bearing 0.5 mm long basal remnants of the tepals.

*Flowering & Fruiting:* April-June

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* Southern Western Ghats

**Cryptocarya anamalayana** Gamble, Bull. Misc. Inform. Kew 1925: 126. 1925 & Fl. Pres. Madras 1218(853). 1925; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 393. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 267. 1997.

Evergreen trees, to 8 m high; bark greyish-brown, smooth; young shoots fulvous-tomentose. Leaves simple, alternate, estipulate; petiole 5-10 mm long, stout, tomentose; lamina 8.5-20 x 3.5-9 cm, elliptic-oblong or elliptic-obovate, base obtuse, acute or cuneate, apex obtusely acuminate, margin entire, glabrous except nerves, shiny above, glaucous beneath, coriaceous; lateral nerves 6-10 pairs, pinnate, intercostae scalariform, prominent; nerves and nervules fulvous tomentose beneath; reticulation areolate. Flowers bisexual, in short axillary fulvous-tomentose cymose panicles upto 3 cm long; pedicels scarcely any; bracts and bracteoles oblong, conspicuous, apparently persistent; perianth 2-5 mm long, tube ultimately narrowed at the top; lobes 6, in 2 rows, subequal, tomentose; stamens 9 perfect, in 3 rows, those of the 2 outer series with eglandular filaments and introrse anthers, those of the third series with 2 glandular filaments and extrorse anthers; those of the fourth series replaced by 3 stipitate staminodes; anthers 2-celled; connective often produced; ovary sessile, half inferior, enclosed in the tube; style short exerted. Fruit a drupe, enclosed in accrescent perianth-tube; pericarp more or less free from the perianth tube.

*Flowering & Fruiting:* December-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum, Kollam, Thrissur

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Cryptocarya beddomei** Gamble, Bull. Misc. Inform. Kew 1925: 127. 1925 & Fl. Pres. Madras 1218(853). 1925; Ramach. & Nair, Fl. Cannanore Dist. 394. 1988; Sasidh., Fl. Shenduruny Wildlife Sanctuary 269. 1997; Sivar. & Mathew, Fl. Nilambur 585. 1997; Sasidh., Fl. Periyar Tiger Reserve 346. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 268. 2002.

Evergreen trees, to 8 m high; bark pale reddish-brown, smooth; branchlets fulvous pubescent. Leaves simple, alternate, estipulate; petiole upto 10 mm long, stout, pubescent; lamina 9.5-14 x 4-6.5 cm, elliptic, ovate or oblong-ovate, base round or truncate, apex obtuse or shortly obtusely acute, margin entire, glabrous except sometimes midrib and nerves, shining above, reddish glaucous beneath, coriaceous; lateral nerves 5-9 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers bisexual, minute, in axillary or lateral fulvous pubescent panicles of 9 cm long; peduncle upto 3 cm long; pedicels short; bracts oblong, upto 3 mm long, deciduous; bracteoles minute, deciduous; perianth tube narrowed at the top; lobes 6, subequal, in 2 rows, pubescent; stamens 9 perfect, in 3 rows, those of the 2 outer series with eglandular filaments and introrse anthers, connective produced into acute tip; those of the third series with 2 glandular filaments and extrorse anthers with obtuse connective tip; filaments villous; anthers 2-celled; those of the fourth series replaced by 3 stipitate staminodes; ovary sessile, half inferior, enclosed in the perianth tube; style short, exerted. Fruit a drupe 10 x 6 mm enclosed in accrescent perianth tube, puberulous, perianth more or less free from pericarp.

*Flowering & Fruiting:* March-April

*Habitat:* Shola and evergreen forests

*Distribution*

*Kerala:* Idukki, Kannur, Kollam, Palakkad, Malappuram

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Cryptocarya lawsonii** Gamble, Bull. Misc. Inform. Kew 1925: 127. 1925 & Fl. Pres. Madras 1218(853). 1925; Manilal, Fl. Silent Valley 235. 1988; Biju in Manoharan et al., Silent Valley-Whispers of Reason 160.

Lofty trees; branchlets glabrous lenticellate, black. Leaves simple, alternate, estipulate; petiole 10-12 mm long, stout, glabrous; lamina 7-12.5 x 2.5-5 cm, elliptic, elliptic-oblong, oblong or oblong-lanceolate, base acute, apex obtuse, emarginate or somewhat acute, margin entire, glabrous, purple-glaucous beneath, coriaceous; lateral nerves 6-8 pairs, pinnate, prominent, intercostae scalariform, faint; reticulations areolate. Flowers bisexual, minute, in terminal and axillary panicles of 9 cm long; peduncle and pedicel slender, slightly fulvous-pubescent; bract and bracteoles small, soon deciduous; perianth tube ultimately narrowed at the top; lobes 6 in 2 rows, subequal; stamens 9 perfect, in 3 rows, those of the 2 outer series with eglandular filaments and introrse anthers, those of the third series with 2 glandular filaments and extrorse anthers; those of the fourth series replaced by 3 stipitate staminodes; connective often produced, of second and third series obtuse; anthers 2-celled; ovary half inferior, sessile, enclosed in the tube; style short, exserted. Fruit a drupe 30-37 x 15-18 mm, ovoid, black, longitudinally ribbed.

*Flowering & Fruiting:* September-April

*Distribution*

*Kerala:* Palakkad

*Endemic to:* Southern Western Ghats

**Cryptocarya neilgherrensis** Meisner in DC., Prodr. 15:71.1864; Gamble, Fl. Pres. Madras 1219(853). 1925; Sasidh., Fl. Chinnar Wildlife Sanctuary 269. 1999.

Evergreen trees, to 10 m high; bark greyish-brown, smooth; blaze dull yellow; branchlets fulvous-tomentose and lenticellate. Leaves simple, alternate, estipulate; petiole 7-15 mm long, stout, pubescent; lamina 6-10.5 x 2.5-5.5 cm, elliptic-obovate, elliptic or ovate-oblong, base acute, apex acuminate, acute, margin entire, recurved, glabrous above, pubescent and glaucous beneath, coriaceous; lateral nerves 5-10 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers bisexual, in short congested axillary or terminal fulvous tomentose panicles of 5-10 cm wide; pedicels to 0.5 cm; perianth pubescent, tube ultimately narrowed at the top; lobes 6 4 mm, ovate, pubescent, subequal, in 2 rows; stamens 9 perfect, in 3 rows, those of the 2 outer series with eglandular filaments and introrse anthers, those of the third series with 2 glandular filaments and extrorse anthers; those of the fourth series replaced by 3 stipitate staminodes; filaments hairy; anthers 2-celled; connective often produced; ovary half inferior, globose, 2 mm across, glaucous, sessile, enclosed in the tube; style short, exserted. Fruit a berry, ovoid, black.

*Flowering & Fruiting:* October-April

*Distribution*

*Kerala:* Idukki

*Endemic to:* Peninsular India

**Cryptocarya stocksii** Gmable, Gamble, Fl. Pres. Madras 1219(853).1925; Sasidh., Fl. Periyar Tiger Reserve 346. 1998.

Evergreen trees, to 18 m high; branchlets black, thick, prominently lenticellate, rough, glabrous. Leaves simple, alternate, estipulate; petiole 6-10 mm long, stout, grooved above, ferruginous tomentose; lamina 5-10 × 2-6 cm, suborbicular, obovate-oblong or ovate, base round or subacute, apex round, truncate, emarginate or apiculate, margin entire, scattered pilose on midrib above, ferruginous tomentose to pilose on major nerves beneath, glaucous beneath, coriaceous; lateral nerves 5-7 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers bisexual, 5-6 mm long, yellow, in axillary and terminal, ferruginous-tomentose, congested, few flowered, stout, panicles, usually shorter than the leaves; perianth tube ultimately narrowed at the top; lobes 6, subequal; stamens 9 perfect, those of the 2 outer series with eglandular filaments and introrse anthers, those of the third series with 2 glandular filaments and extrorse anthers; those of the fourth series replaced by stipitate staminodes; anthers 2-celled; connective often produced; ovary sessile, enclosed in the tube; style short, exserted. Fruit a drupe, 3 × 1.1 cm, cylindrical-oblong, woody, smooth, with short obtuse beak, black; pedicels stout, upto 3.5 × 3 mm.

*Flowering:* December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Thrissur

*Endemic to:* Southern Western Ghats

**Cryptocarya wightiana** Thw., Enum. Pl. Zeyl. 254. 1861; Hook. f., Fl. Brit. India 5: 120. 1886; Gangop. & Chakrab., J. Econ. Tax. Bot. 26: 475. 2002.

*Cryptocarya bourdillonii* Gamble, Bull. Misc. Inform. Kew 1925: 125. 1925 & Fl. Pres. Madras 1218(853). 1925; Mohanan, Fl. Quilon Dist. 346. 1984; Manilal, Fl. Silent Valley 235. 1988; Vajr., Fl. Palghat Dist. 404. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 381. 1996; Sasidh., Fl. Periyar Tiger Reserve 346. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 269. 2002.

*Local name:* Kadamanpara

Evergreen trees, to 18 m high; bark 10-12 mm thick, reddish-brown, lenticellate; blaze dull yellow; branchlets rusty-pubescent. Leaves simple, alternate, estipulate; petiole 10-25 mm long, stout, glabrous; lamina 6.5-20 × 2.5-10 cm, elliptic or elliptic-oblong, base subacute, obtuse, round or truncate, apex acute or acuminate, margin entire, glabrous except sometimes the midrib and nerves, whitish, glaucous beneath, coriaceous; lateral nerves 7-12 pairs, pinnate, prominent; intercostae scalariform, faint; reticulation areolate. Flowers bisexual, 3-4 mm across, yellowish, in spreading axillary brown tomentose panicles usually shorter than the leaves upto 15 cm long; pedicels short; bracts and bracteoles cauducous; perianth cupular at base, ultimately narrowed at the top; lobes 6, subequal, in 2 rows, ovate, tomentose; stamens 9 perfect, those of the 2 outer series with eglandular filaments and introrse anthers, those of the third series with 2 glandular filaments and extrorse anthers; those of the fourth series replaced by 3 stipitate staminodes; filaments pubescent; anthers 2-celled; connective often produced; ovary sessile, half

inferior, glabrous, enclosed in the tube; style short, exserted; stigma truncate. Fruit a drupe 10-15 mm across, globose with an obtuse beak, glabrous, black, enclosed in accrescent perianth-tube; pericarp more or less free from the perianth tube, smooth.

*Flowering & Fruiting:* March-August

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Thrissur

*Geographical:* South Asia

**Litsea beddomei** Hook.f., Fl. Brit. India 5: 177. 1886; Gamble, Fl. Pres. Madras 1237(866). 1925; Ramach. & Nair, Fl. Cannanore Dist. 395. 1988; Sasidh., Fl. Shenduruny Wildlife Sanctuary 269. 1997; Sasidh., Fl. Periyar Tiger Reserve 349. 1998.

Dioecious trees, to 7 m high; branchlets ferruginous tomentose. Leaves simple, alternate, estipulate; petiole to 15 mm long; lamina to 8.5 x 1.2-2 cm, linear-oblong or lanceolate, base attenuate, apex acute or obtuse, margin entire, silvery glaucous beneath; lateral nerves 8-10 pairs, pinnate, slender, very faint, intercostae reticulate, obscure. Flowers unisexual; male flowers; 4 in umbellules, bracts silvery, 4-fid, coriaceous; perianth tube pubescent, lobes 6, 2 mm long, obovate, hairy, membranous; stamens 8, filaments short, glabrous, glandular; female flowers: 5-7 in umbellules; staminodes in 2 rows, biglobular with short cusp at centre. Fruit a berry.

*Flowering & Fruiting:* September-November

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Kannur, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Litsea bourdillonii** Gamble, Bull. Misc. Inform. Kew 1925: 131. 1925 & Fl. Pres. Madras 1237(866). 1925; Mohanan, Fl. Quilon Dist. 347. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 570. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 394. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 382. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 271. 1997; Sasidh., Fl. Periyar Tiger Reserve 349. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 269. 2002.

Dioecious trees, to 8 m high; branchlets brownish-black tomentose. Leaves simple, alternate, estipulate; petiole 10-17 mm long, stout, dark-brown tomentose; lamina 15-21 x 6-12 cm, obovate or obovate-oblong, base cuneate or acute, apex obtusely acute; margin entire, glabrous above except midrib, fulvous pubescent, punctate and glaucous beneath, coriaceous; lateral nerves 12-18 pairs, pinnate, prominent beneath, more or less close, intercostae scalariform, prominent. Flowers unisexual, in umbellule which may be sessile or subsessile, in axillary or lateral clusters of 2-5; flowers 4-6 in an umbellule; bracts 4, 5 mm long, orbicular, concave, densely white-tomentose; perianth tube short, lobes 6, densely white-tomentose, stamens 12, in 4 rows; filaments glabrous, those of rows 1 and 2 usually eglandular, those of rows 3 and row 4 with 2-glands; anthers 4-celled, introrse; staminodes in female flowers as the stamens of males but those of the outer rows clavate or linear, those of the inner rows subulate and 2-glandular; ovary half inferior, ovoid; style thick;

stigma dilated. Fruit a berry, 10-12 mm long, oblong, seated on a cup-shaped perianth tube.

*Flowering & Fruiting:* December-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Trivandrum, Thrissur, Palakkad, Wayanad

*Endemic to:* Southern Western Ghats

**Litsea coriacea** (Heyne ex Meisner) Hook.f., Fl. Brit. India 5: 166. 1886; Gamble, Fl. Pres. Madras 1236(865). 1925; Manilal & Sivar., Fl. Calicut 251. 1982; Mohanan, Fl. Quilon Dist. 347. 1984; Ansari, Fl. Kasaragod Dist. 325. 1985; Manilal, Fl. Silent Valley 236. 1988; Ramach. & Nair, Fl. Cannanore Dist. 395. 1988; Antony, Fl. Kottayam Dist. 347. 1989; Vajr., Fl. Palghat Dist. 404. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 570. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 394. 1994; Subram., Fl. Thenmala Division 313. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 382. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 271. 1997; Sivar. & Mathew, Fl. Nilambur 586. 1997; Sasidh., Fl. Periyar Tiger Reserve 349. 1998; Sunil, Fl. Pl. Alappuzha Dist. 783. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 269. 2002; Mohanan & Sivad., Fl. Agasthyamala 569. 2002.

*Tetranthera coriacea* Heyne ex Meisner in DC., Prodr. 15: 186. 1864.

Dioecious trees, to 12 m high, bark pale brown, thinly scaly; branchlets puberulous, rather slender. Leaves simple, alternate, estipulate; petiole 5-10 mm long, slender, pubescent; lamina 8.5-17.5 x 2.5-7.5 cm, elliptic-lanceolate or elliptic-ovate, base acute or cuneate, apex acute or acuminate, margin entire, coriaceous, glabrous above, minutely puberulous beneath; lateral nerves 6-9 pairs, pinnate, slender, prominent, intercostae reticulate, obscure. Flowers unisexual, white, in 4-flowered axillary, subsessile, crowded, umbels; bracts 4, silky; perianth tube funnel shaped, finely silky, lobes 6; stamens 12, in 4 rows; those of rows 1 and 2 usually eglandular, glands of those opposite to tepals very large; staminodes in female flowers as the stamens of males, but those of inner rows subulate and 2-glandular; ovary half inferior, ovoid; style slender; stigma small, erect. Fruit a berry, 10-12 mm long, ovoid, greenish-white, seated on a thickened perianth tube.

*Flowering & Fruiting:* December-January

*Local names:* Maravettithali, Pannithali, Vettithali

*Habitat:* Semi-evergreen forests and sacred groves

*Distribution*

*Kerala:* All districts

*Endemic to:* Peninsular India

**Litsea deccanensis** Gamble, Fl. Pres. Madras 1235(864). 1925; Manilal & Sivar., Fl. Calicut 251. 1982; Ansari, Fl. Kasaragod Dist. 325. 1985; Ramach. & Nair, Fl. Cannanore Dist. 395. 1988; Sivar. & Mathew, Fl. Nilambur 586. 1997; Sasidh., Fl. Periyar Tiger Reserve 349. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 269. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 269. 2002.

*Litsea tomentosa* Heyne ex Nees in Wall., Pl. Asiat. Rar. 2: 65. 1831, non Blume 1826; Hook. f., Fl. Brit. India 5: 157. 1886.

*Tetranthera tomentosa* Roxb. ex Wight, Ic. t. 1834. 1852.

Dioecious trees, to 10 m high, bark somewhat rough, very dark, pustular, branchlets stout, densely pale brown-tomentellous; terminal bud with large densely pilose bud scales. Leaves simple, alternate, estipulate, crowded at the end of branchlets; petiole 9-40 mm long, stout, tomentose; lamina 7.5-24 x 4-9 cm, elliptic, obovate or elliptic-oblong, base acute or round, apex acute or acuminate, margin entire, glabrous above except on veins, glossy, finely tomentose and yellowish-white beneath, chartaceous; lateral nerves 7-15 pairs, pinnate, prominent beneath, intercostae subscalariform, faint. Flowers unisexual, pale yellow, small, in axillary, pedunculate, solitary or in many flowered umbellate heads; peduncle 10-17 mm long, drooping, tomentose; involucre bracts 4, orbicular, concave, tomentose without; pedicel upto 3 mm long, pubescent; perianth tube short, hairy outside, segments 0, stamens 18-20 in male flowers; in 4 rows, filaments long, slender, densely villous, those of 1 and 2 row usually eglandular, the rows 3 and 4 with 2 glands; anthers 4-celled, all introrse; staminodes in female flowers as the stamens of male but those of the outer rows clavate or linear, those of the inner rows subulate and 2-glandular; ovary half inferior, enclosed in the perianth tube, glabrous; style 2-3 mm long; stigma dilated, irregularly lobed. Fruit a berry, 10-12.5 mm across, globose, black, seated on flat, thickened cup.

*Flowering & Fruiting:* November-December

*Habitat:* Evergreen, semi-evergreen and moist deciduous forests

*Distribution*

*Kerala:* Kasaragode, Idukki, Malappuram, Kannur, Kozhikkode, Palakkad, Wayanad

*Geographical:* South India and Sri Lanka

**Litsea floribunda** (Blume) Gamble, Fl. Pres. Madras 1238(867). 1925; Mohanan, Fl. Quilon Dist. 347. 1984; Manilal, Fl. Silent Valley 236. 1988; Ramach. & Nair, Fl. Cannanore Dist. 395. 1988; Vajr., Fl. Palghat Dist. 405. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 571. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 394. 1994; Subram., Fl. Thenmala Division 314. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 382. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 271. 1997; Sivar. & Mathew, Fl. Nilambur 587. 1997; Sasidh., Fl. Periyar Tiger Reserve 351. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 270. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 270. 2002; Mohanan & Sivad., Fl. Agasthyamala 569. 2002.

*Cylicodaphne floribunda* Blume, Mus. Bot. Lugd.-Bat. 1: 387. 1851.

*Litsea wightiana* Hook.f., Fl. Brit. India 5: 177. 1886, quoad descr.

*Local name:* Pattuthali

Dioecious trees, to 15 high, bark 8-10 mm thick, light brown, smooth, brittle, lenticellate; lenticels horizontal; blaze dull yellow; branchlets brown to black pubescent. Leaves simple, alternate, estipulate; petiole 10-15 mm long, stout, pubescent; lamina 7.5-28 x 3.7-10.5 cm, elliptic, obovate-oblong, elliptic-oblong or ovate-oblong, base acute, apex acute, or acuminate, margin entire, glabrous above except midrib above and rusty tomentose beneath, coriaceous; lateral nerves 10-15 pairs, pinnate, prominent; intercostae subscalariform, prominent. Flowers unisexual, in axillary racemose umbellule; peduncle upto 1 mm long, silky pubescent; bracts 4, orbicular, silky tomentose; flowers 6-8 in an umbellule; perianth tube turbinate, silky tomentose, lobes 6; stamens 12, in 4 rows; filaments hairy, those of rows 1 and 2 usually eglandular, those of rows 3 and 4 with 2-



glands; anthers 4-celled, introrse; staminodes in female flowers as the stamens of males but those of the outer rows clavate or linear, those of the inner rows subulate and 2 glandular; ovary half inferior, stigma capitate. Fruit a berry, 12-18 mm long, oblong, seated on a turbinate perianth tube.

*Flowering & Fruiting:* December-April

*Habitat:* Evergreen, semi-evergreen and shola forests

*Distribution*

*Kerala:* Kollam, Palakkad, Pathanamthitta, Malappuram, Kannur, Idukki, Thrissur, Trivandrum

*Endemic to:* Western Ghats

**Litsea glabrata** (Wall. ex Nees) Hook.f., Fl. Brit. India 5: 174. 1886; Gamble, Fl. Pres. Madras 1237(866). 1925; Vajr., Fl. Palghat Dist. 405. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 395. 1994; Sasidh., Fl. Periyar Tiger Reserve 351. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 270. 2002.

*Tetranthera glabrata* Wall. ex Nees in Wall., Pl. Asiat. Rar. 2: 67. 1831.

*Local name:* Ungakanni

Dioecious trees, to 12 m high; bark pale brown smooth; branchlets glabrous. Leaves simple, alternate, estipulate; petiole 15-30 mm long, stout, grooved above, glabrous; lamina 9.5-18 x 3-5 cm, linear-oblong or elliptic-lanceolate, base acute or cuneate, apex acute, margin entire, glabrous, reddish-brown beneath when dry, coriaceous; lateral nerves 9-12 pairs, pinnate, slender, obscure; intercostae reticulate, obscure. Flowers unisexual, umbellules in axillary racemes of 2-6 cm long, perianth tube short; lobes 6, ovate, hispid outside; stamens 12, in 4 rows filaments glandular hairy; staminodes in females as the stamens in males, but those of inner rows subulate and 2-glandular. Fruit a berry, bright-red, glabrous, ovoid; fruiting perianth obconic.

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Trivandrum

*Endemic to:* Southern Western Ghats

**Litsea glutinosa** (Lour.) Robins., Philipp. J. Sci. 6: 321. 1911; Manilal & Sivar., Fl. Calicut 251.1982; Ansari, Fl. Kasaragod Dist. 325.1985; Ramach. & Nair, Fl. Cannanore Dist. 396.1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 395.1994. *Sebifera glutinosa* Lour., Fl. Cochinch. 638. 1790.

*Litsea chinensis* Lam., Encycl. 3:574.1792; Gamble, Fl. Pres. Madras 1235(864).1925.

*Litsea sebifera* (Willd.) Pers., Syn. 2: 4. 1806; Hook. f., Fl. Brit. India 5: 157. 1886.

*Tomex sebifera* Willd., Sp. Pl. 2: 840. 1799.

*Tetranthera apetala* Roxb., Pl. Corom. t. 147. 1800.

Dioecious trees, to 10 m high, bark 2-2.5 cm thick, surface brown; branchlets rather slender, stiff, minutely tomentellous towards apex. Leaves simple, pilose when young; lamina 6-23.5 x 3-10 cm, elliptic, elliptic-oblong or obovate, base acute, apex acute, obtuse or acuminate, margin entire, glabrous above, grey-pubescent beneath, chartaceous; lateral nerves 7-12 pairs, pinnate, prominent, intercostae reticulate. Flowers unisexual, 5-6 mm across, yellow, in many flowered umbels; peduncles upto 5 mm long, slender, densely pilose; perianth short; tube silky, funnel shaped, segments 0; stamens 9-12, all fertile, in 4 rows; filaments to 2 mm,

very hairy; fourth series glandular, glands sessile, orbicular; ovary half inferior, 1 mm long; style 1.5 mm, stigma dilated, irregularly lobed; staminodes 9-12, to 2.5 mm. Fruit a berry, 5-6 mm across, depressed, globose, purple, on flat disc.

*Habitat:* Deciduous and semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Kannur, Trivandrum, Malappuram, Kozhikkode

*Geographical:* Indo-Malesia and China

**Litsea insignis** Gamble, Bull. Misc. Inform. Kew 1925: 130. 1925 & Fl. Pres. Madras 1237(866). 1925; Mohanan, Fl. Quilon Dist. 347. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 571. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 382. 1996; Sasidh., Fl. Periyar Tiger Reserve 351. 1998; Mohanan & Sivad., Fl. Agasthyamala 570. 2002.

Dioecious trees, to 20 m high; bark greyish-brown, lenticellate, blaze dull yellow; branchlets ferruginous tomentose. Leaves simple, alternate, estipulate; petiole 10-25 mm long, stout, ferruginous; lamina 10-25 x 3.5-14 cm, broadly, elliptic-oblong or obovate, base slightly acute, obtuse or truncate, apex obtuse, margin entire, glabrous above and roughly fulvous-pubescent beneath, coriaceous; lateral nerves 7-12 pairs, pinnate, prominent beneath, intercostae scalariform, prominent. Flowers unisexual, yellowish, in axillary, lateral or cauliflorous umbellules 10-20 together; peduncle 7-10 mm long; bracts orbicular, densely hairy; flowers 6-8 in an umbellule, sessile; perianth lobes 5, oblong, densely hairy; stamens 12, in 4 rows; filaments hairy, of rows 1 and 2 eglandular, those of rows 3 and 4 with 2-glands filaments; anthers 4-celled, introrse; staminodes as the stamens of male but those of inner rows subulate and 2-glandular; ovary enclosed irregularly lobed perianth cup, half inferior; style thick; stigma dilated. Fruit a berry 2.5-3 x 1.5-2 cm, ellipsoid, obtuse, reddish-brown, glabrous, seated on the enlarged obconic perianth tube of 1.5 cm across and 1 cm height.

*Flowering & Fruiting:* September-May

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Palakkad, Trivandrum, Thrissur

*Endemic to:* Western Ghats

**Litsea laevigata** (Nees) Gamble, Fl. Pres. Madras 1236(865). 1925; Ramach. & Nair, Fl. Cannanore Dist. 396. 1988; Manilal, Fl. Silent Valley 237. 1988; Sasidh., Fl. Periyar Tiger Reserve 351. 1998.

*Tetranthera attenuata* Nees var. *laevigata* Nees, Syst. Laurin. 677. 1836.

*Litsea salicifolia* (Roxb. ex Nees) Hook.f., Fl. Brit. India 5: 167. 1886.

*Tetranthera salicifolia* Roxb. ex Nees in Wall., Pl. Asiat. Rar. 2: 66. 1830.

Dioecious trees, to 10 m high; branchlets puberulus. Leaves simple, alternate, estipulate; petiole 8-15 mm long, stout, puberulent; lamina 6.5-18 x 2.5-5 cm, oblong-lanceolate or elliptic-lanceolate, base slightly obliquely acute or obtuse, apex acuminate or acute, margin entire, glabrous above and puberulent beneath, coriaceous; lateral nerves 6-8 pairs, pinnate, prominent beneath fainting towards the margin, intercostae reticulate, faint. Flowers unisexual, yellowish, 10-12 in axillary or lateral subsessile umbellules; pedicelled; bracts orbicular, persistent; perianth short, lobes 6, 2 mm long, densely hairy; stamens 12, in 4 rows; filaments hairy, of 1 and 2 eglandular, those of row 3 and 4 with 2-glands; anthers 4-celled,

introrse; staminodes as the stamens but those of inner rows subululate and 2-glandular; ovary half inferior, enclosed in perianth tube; style thick; stigma irregularly lobed. Fruit a berry, 1.5 cm long, ellipsoid, glabrous, yellow.

*Flowering & Fruiting:* March-April

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Kannur, Palakkad, Wayanad

*Endemic to:* Southern Western Ghats

**Litsea myristicaefolia** (Wall. ex Nees) Hook.f., Fl. Brit. India 5: 172. 1886; Mohanan & Sivad., Fl. Agasthyamala 570. 2002.

*Cylicodaphne myristicaefolia* (Wall. ex Nees) Meisner in DC., Prodr. 15: 208. 1864.

*Lepidadenia griffithii* Wight, Ic. t. 1846. 1852.

Dioecious trees. Leaves simple, alternate, estipulate; petiole 10-15 mm long, stout, glabrous; lamina 8-12 × 2-4.5 cm, elliptic-oblong or lanceolate, base attenuate, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 11-12, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual, yellowish, in globose umbellules clustered in axillary and subterminal subracemes; peduncles 1-2 mm long; pedicels 5-6 mm long; bracts 4-6, concave, glabrous; perianth lobes 6; stamens 12, in 4 rows; filaments of rows 1 and 2 eglandular, those of rows 3 and 4 with 2 glands; staminodes in female as the stamens of male, but those of inner rows subulate and 2-glandular; ovary half inferior, globose. Fruit a berry.

*Flowering & Fruiting:* May-August

*Distribution*

*Kerala:* Trivandrum

*Geographical:* Indo-Malesia

**Litsea mysorensis** Gamble, Bull. Misc. Inform. Kew 1925: 130. 1925 & Fl. Pres. Madras 1236(865). 1925.

Dioecious trees; branchlets slender, terete. Leaves simple, alternate; petiole upto 5 mm long, stout, pubescent; lamina 5-12 x 1-2.5 cm, linear-lanceolate or elliptic-oblong, base acute, apex acute or acuminate, margin entire, glabrous, chartaceous; lateral nerves 6-8 pairs, pinnate, slender, prominent, intercostae reticulate, obscure. Flowers unisexual, yellowish, in subsessile umbellules; bracts orbicular, 3 mm long, sericeous out and glabrous within; 5 flowers in each umbellule; perianth lobes 6, oblong, sericeous out; stamens 9 perfect, in 3 rows, those of row 1 and 2 eglandular, those of 3 row glandular; filaments glabrous; staminodes 9, those of outer row subulate, those of inner row possess 2 glands at base; ovary half inferior, ovate, glabrous; style thick; stigma capitate. Fruit a berry.

*Flowering:* March-April

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Wayanad

*Endemic to:* South India

*Status:* Rare & Threatened (Ahmedullah & Nayar, 1987)

**Litsea nigrescens** Gamble, Fl. Pres. Madras 1236(865). 1925.

*Tetranthera panamanja* sensu Wight, Ic. t. 1836. 1852, non Buch.-Ham. 1830.

Dioecious trees. Leaves simple, alternate, estipulate; petiole stout, glabrous; lamina 12.5 x 5 cm, elliptic or oblong, base cuneate, apex obtusely acute or acuminate, margin entire, glabrous, coriaceous; nerves 9-12 pairs, pinnate, obscure, intercostae obscure. Flowers unisexual, yellowish, in axillary and lateral racemes longer than petiole, perianth 6-clefted. Fruit a berry.

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Southern Kerala

*Endemic to:* Western Ghats

*Status:* Endangered (IUCN, 2000)

*Note:* There is no record of recent collection, is known only by type specimen

**Litsea oleoides** (Meisner) Hook.f., Fl. Brit. India 5: 175. 1886; Gamble, Fl. Pres. Madras 1236(865). 1925; Ramach. & Nair, Fl. Cannanore Dist. 397. 1988; Vajr., Fl. Palghat Dist. 405. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 571. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 395.1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 383. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 273. 1997; Sivar. & Mathew, Fl. Nilambur 587. 1997; Sasidh., Fl. Periyar Tiger Reserve 352. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 270. 2002; Mohanan & Sivad., Fl. Agasthyamala 571. 2002.

*Tetranthera oleoides* Meisner in DC., Prodr. 15: 195.1864.

*Local name:* Matthi

Dioecious trees, to 25 m high, bark 8-10 mm thick; brown, smooth, slightly rugose; blaze yellowish-brown. Leaves simple, alternate, estipulate; petiole 10-30 mm long, stout, grooved above, glabrous; lamina 6.5-17 x 3-7.5 cm, oblong, elliptic-oblong or elliptic-lanceolate, base acute, apex acute or obtuse, margin entire, glabrous, reddish-brown beneath when dry, coriaceous; lateral nerves 8-12 pairs, pinnate, obscure, intercostae obscure. Flowers unisexual, yellowish, in umbellules, in axillary racemes upto 6 cm long; peduncles to 6 mm long; bracts orbicular, pubescent; perianth short; lobes 6, 2.5 x 3 mm, ovate, obtuse, pubescent; stamens 9, in 3 rows, all filaments with sessile glands at the base, filaments hairy; staminodes 9, in 3-series, glandular at base; ovary half inferior, papillose. Fruit a berry, 2-2.5 cm across, subtended by the cupular perianth, red with white spots.

*Flowering & Fruiting:* October-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Malappuram, Palakkad, Kannur, Trivandrum, Kollam, Thrissur, Pathanamthitta, Wayanad

*Endemic to:* Southern Western Ghats

**Litsea stocksii** (Meisner) Hook.f., Fl. Brit. India 5: 176. 1886; Gamble, Fl. Pres. Madras 1236(865). 1925; Manilal, Fl. Silent Valley 237. 1988; Vajr., Fl. Palghat Dist. 406. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 395. 1994; Sasidh., Fl. Periyar Tiger Reserve 352. 1998.

*Tetranthera oblonga* Nees var. *stocksii* Meisner in DC., Prodr. 15: 205. 1864.

*Local name:* Varikkeera

Dioecious trees, to 20 m high, bark 8-10 mm thick; brown, smooth, slightly rugose; blaze yellowish-brown. Leaves simple, alternate, estipulate; petiole 10-30 mm long, stout, grooved above, glabrous; lamina 6.5-17 x 3-7.5 cm, oblong, elliptic-oblong or elliptic-lanceolate, base acute, apex acute or obtuse, margin entire, glabrous, reddish-brown beneath when dry, coriaceous; lateral nerves 8-12 pairs, pinnate, obscure, intercostae obscure. Flowers unisexual, yellowish, in umbellules, in axillary racemes upto 6 cm long; peduncles to 6 mm long; bracts orbicular, pubescent; perianth short; lobes 6, 2.5 x 3 mm, ovate, obtuse, pubescent; stamens 9, in 3 rows, all filaments with sessile glands at the base, filaments hairy; staminodes 9, in 3-series, glandular at base; ovary half inferior, papillose. Fruit a berry, 2-2.5 cm across, subtended by the cupular perianth, red with white spots.

*Flowering & Fruiting:* April-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Trivandrum, Wayanad

*Endemic to:* Southern Western Ghats

**Litsea travancorica** Gamble, Bull. Misc. Inform. Kew 1925: 132. 1925 & Fl. Pres. Madras 1237(866). 1925; Nair & Mohanan, J. Econ. Tax. Bot. 3: 576. 1982; Mohanan, Fl. Quilon Dist. 348. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 572. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 396. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 273. 1997.

Dioecious trees, to 5 m high, bark greyish-brown, smooth; blaze dull yellow; branches somewhat pale; young shoots ferruginous tomentose. Leaves usually opposite or subopposite at the end of branchlets, alternate lower down, simple, estipulate; petiole 5-10 mm long, stout, ferruginous tomentose; lamina 10.5-18 x 3-6 cm, oblong or obovate, base obtuse or acute, apex acuminate, margin entire, glabrous above, fulvous-pubescent especially on nerves beneath, chartaceous; lateral nerves 8-12 pairs, pinnate, prominent intercostae subscalariform, faint. Flowers unisexual, yellowish, in axillary crowded sessile umbellules; bracts orbicular, ferruginous; perianth tube short, lobes 6, ovate, sericeous; stamens 12, in 4 rows, filaments of rows 1 and 2 eglandular, those of rows 3 and 4 with 2-glands; anthers 4-celled; staminodes in female flowers as the stamens in male, but those of inner rows subulate and 2-glandular, inner rows linear; ovary half inferior, ovoid, glabrous; style stout; stigma capitate. Fruit a berry, globose 1 cm across, glabrous, seated on enlarged perianth tube; perianth tube cupular, dentate, villous inside.

*Flowering & Fruiting:* February-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Endangered (IUCN, 2000)

**Litsea wightiana** (Nees) Hook. f. in Benth. & Hook. f., Gen. Pl. 3: 162. 1880,p.p; Gamble, Fl. Pres. Madras 1238(866). 1925; Antony, Fl. Kottayam Dist. 347. 1989; Sasidh., Fl. Chinnar Wildlife Sanctuary 270. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 271. 2002; Mohanan & Sivad., Fl. Agasthyamala 572. 2002.

*Cylicodaphne wightiana* Nees in Wall., Pl. Asiat. Rar. 2: 68. 1831.

*Local names:* Pattuthali, Manjakudala

Evergreen dioecious trees, to 15 m high, bark surface brown, smooth, lenticellate; lenticels horizontal; branchlets brown pubescent. Leaves simple, alternate, estipulate; petiole 10-20 mm long, stout, brown pubescent; lamina 7-15 x 3-9 cm, obovate or oblong, base acute or rarely obtuse, apex obtuse, margin entire, often recurved, glabrous above, rusty brown pubescent beneath, coriaceous; lateral nerves 4-8 pairs, pinnate, prominent, intercostae scalariform, faint. Flowers unisexual, in axillary racemose umbellules, the whole inflorescence brown pubescent; bracts 5-8, obovate, concave, densely hairy outside, perianth short; lobes 5, oblong, densely fulvous hairy; stamens 12, in 4 rows; filaments hairy, of rows 1 and 2 usually eglandular, those of 3 and 4 with 2-glands; anthers 4-celled, introrse; staminodes in female as the of stamens of males, those of outer rows linear, those of inner rows subulate and 2-glandular; ovary half inferior, enclosed in perianth tube, globose, 1 mm across, 1-celled, ovule 1, pendulous; style thick, stigma dilated, irregularly lobed. Fruit a berry ovoid, seated on the cup shaped perianth tube.

*Flowering & Fruiting:* March-July

*Distribution*

*Kerala:* Idukki, Kottayam, Trivandrum, Palakkad

*Endemic to:* Southern Western Ghats

**Neolitsea cassia** (L.) Kosterm., J. Sci. Res.(Jakarta) 1: 85. 1952; Mohanan, Fl. Quilon Dist. 348. 1984; Ramach. & Nair, Fl. Cannanore Dist. 397. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 396.1994; Subram., Fl. Thenmala Division 312. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 383.1996; Sasidh., Fl. Periyar Tiger Reserve 352. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 270. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 271. 2002; Mohanan & Sivad., Fl. Agasthyamala 573. 2002.

*Laurus cassia* L., Sp. Pl. 369. 1753.

*Neolitsea zeylanica* (Nees) Merr., Philipp. J. Sci. Suppl. 1: 57. 1906; Gamble, Fl. Pres. Madras 1239(867). 1925; Vajr., Fl. Palghat Dist. 406. 1990.

*Litsea zeylanica* Nees, Amoen. Bot. Benn. Fasc. 1: 58. t.5. 1823; Hook. f., Fl. Brit. India 5: 178. 1886.

*Local names:* Keezhambazham, Venkana

Deciduous trees, to 18, bark 8-10 mm thick, grey, rough, brittle; blaze creamy yellow turning to yellowish-brown, inner surface slimy to touch. Leaves simple, alternate, opposite or in whorls; petiole 10-15 mm, elliptic, elliptic-lanceolate or oblong-lanceolate, base acute or attenuate, apex acute, margin entire, glabrous above and glaucous beneath; reticulation areolate, coriaceous; 3-ribbed near the base, faint; lateral nerves 1-4 pairs, pinnate, very faint; intercostae scalariform, faint. Flowers unisexual, yellowish-green, densely sericeous, in sessile umbels on extremely short branchlets at internodes; bracts 5 mm long, orbicular, concave, sericeous, rather thin; tepals 4, 2-3 mm long, narrowly ovate or oblong, acute; stamens 6, in 3 rows; those of 2 outer rows eglandular, those of the inner row biglandular opposite the first row; filaments 4-5 mm long, greenish-yellow, thread-like, glabrous; anthers 0.5 mm long, introrse; ovary half inferior, ovoid; style long; stigma large peltate;

staminodes 6, in 3 rows. Fruit a drupe 10-12 mm across, globose, seated on disc like, crenate perianth cup of 5 mm diameter; pedicel slender.

*Flowering & Fruiting:* March-April

*Habitat:* Shola and evergreen forests

*Distribution*

*Kerala:* Kollam, Palakkad, Kannur, Idukki, Trivandrum, Thrissur

*Geographical:* Indo-Malesia

**Neolitsea fischeri** Gamble, Bull. Misc. Inform. Kew 1925: 132. 1925 & Fl. Pres. Madras 1239(868). 1925; Sasidh., Fl. Periyar Tiger Reserve 352. 1998.

Evergreen trees, to 10 m high; bark greyish-brown, smooth; blaze dull red or yellow; young parts golden fulvous. Leaves buds tawny perulate. Leaves simple, alternate, subopposite or in whorls, estipulate; petiole 15-30 mm long, stout, fulvous tomentose; lamina 7-16 x 2-9 cm, elliptic or elliptic obovate, base acute or cuneate, apex obtuse, margin entire, glabrous and shining above, glaucous and white beneath, coriaceous; nerves 3-ribbed from base, lateral nerves 3-4, pinnate, prominent, intercostae scalariform, prominent; thick fulvous-villous when young on the ribs and nerves beneath. Flowers unisexual, in sessile lateral umbellules; bracts 4, covered with scales; perianth lobes 4, triangular, villous; stamens usually 6, in 3 rows, those of 2 outer rows eglandular, those of 2 inner biglandular; sometimes 9 or 12 stamens in middle flowers; filaments villous; rudimentary pistil ovoid; staminodes 6, arranged as the stamens; ovary half inferior, ovoid; style thick; stigma peltate. Fruit a drupe, 10-15 x 10 mm, globose or obovoid, glabrous, seated on perianth tube of 10 mm diameter; pedicel short and thick.

*Flowering & Fruiting:* February-August

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Neolitsea scrobiculata** (Meisner) Gamble, Fl. Pres. Madras 1240(868). 1925; Mohanan, Fl. Quilon Dist. 348. 1984; Manilal, Fl. Silent Valley 237. 1988; Vajr., Fl. Palghat Dist. 406. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 572. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 397. 1994; Sasidh., Fl. Periyar Tiger Reserve 353. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 271. 2002.

*Litsea scrobiculata* Meisner in DC., Prodr. 15: 223. 1864.

*Litsea zeylanica* sensu Hook.f., Fl. Brit. India 5: 178. 1886, p.p., non Nees 1823.

*Local name:* Mulakunari

Evergreen trees, to 15 m high; bark grey, smooth; blaze dull yellow; branchlets glabrous, black. Leaves simple, alternate subopposite or in whorls, estipulate; petiole 15-25 mm long, slender, glabrous; lamina 5-11 x 2.5-6 cm, elliptic-ovate or ovate, base acute or attenuate, apex obtusely acute or acuminate, margin entire, glabrous above, glaucous beneath, densely scrobiculate, coriaceous; 3-ribbed from base; lateral nerves 2-3 pairs, pinnate, faint, intercostae scalariform, faint. Flowers unisexual, 3-8 in axillary, subsessile umbellules; involucre bracts 4, concave, naviculate, deciduous; male flowers: 5 mm across, tepals 4, stamens 6 in 3 whorls

of 2 each, those of the 2 outer rows eglandular, those of the inner row biglandular opposite the first row; filaments to 0.5 mm; anthers 4-celled, 1 m, upper cells introrse, lower lateral; pistillode linear, to 1.5 mm; female flowers: 6 m across; tepals 4, free, lanceolate, 3 mm, acute; ovary 7 x 5 mm, half inferior, globose; style 2 mm; stigma discoid; staminodes 6, in 3 series, first and second whorl linear, third whorl of stalked staminodes with 2-lobed sterile anthers. Fruit a drupe 8 mm across, globose, with a basal rim of perianth tube; epicarp fleshy, crinkled, brownish-black when dry; seed 6 m across, globose.

*Flowering & Fruiting:* May-August

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Idukki, Palakkad, Trivandrum, Wayanad

*Endemic to:* Western Ghats

***Persea americana*** Mill., Gard. Dict. (ed.8).1768; Anil Kumar, Fl. Pathanamthitta Dist. 573. 1994.

*Persea gratissima* Gaertn., Suppl. Carp. Leipzig. 222, t. 221. 1807; Gamble, Fl. Pres. Madras 1241(869). 1925.

Trees, to 15 m high. Leaf buds perulate with imbricate scales. Leaves simple, alternate, estipulate; petiole to 20 mm long, slender, glabrous; lamina 8-18 x 4-6 cm, elliptic, elliptic-ovate or elliptic-oblong, base attenuate, apex obtuse, margin entire, glabrous, coriaceous; lateral nerves 5-8 pairs, pinnate, prominent, intercostae reticulate. Flowers bisexual, subsessile, greenish, in compact terminal panicles on branchlets; perianth tomentose, tube turbinate, lobes 3+3; stamens 9, perfect, those of the first and second row opposite the perianth lobes, introrse, those of third row opposite the first row, extrorse with slender filaments and a pair of stipitate glands at their base; staminodes of fourth row opposite the second row, cordate, stipitate; ovary superior, sessile, hairy; style slender; stigma simple. Fruit a berry, 10 x 8 cm, with copious mesocarp; seed 5 x 1.5 cm.

*Flowering & Fruiting:* March-July

*Habitat:* Grown in homesteads

*Distribution*

*Kerala:* Pathanamthitta, Idukki, Thrissur

*Geographical:* Native of Tropical America; extensively cultivated in the tropics

***Persea macrantha*** (Nees) Kosterm., Reinwardtia 6: 193. 1962; Mohanan, Fl. Quilon Dist. 348. 1984; Ramach. & Nair, Fl. Cannanore Dist. 397. 1988; Vajr., Fl. Palghat Dist. 407.1990; Anil Kumar, Fl. Pathanamthitta Dist. 573. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 397. 1994; Subram., Fl. Thenmala Division 315. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 383. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 273. 1997; Sivar. & Mathew, Fl. Nilambur 588.1997; Sasidh., Fl. Periyar Tiger Reserve 353.1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 271. 1999; Sunil, Fl. Pl. Alappuzha Dist. 784. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 271. 2002; Mohanan & Sivad., Fl. Agasthyamala 573. 2002.

*Machilus macrantha* Nees in Wall., Pl. Asiat. Rar. 2: 70. 1831; Hook. f., Fl. Brit. India 5:140.1886; Gamble, Fl. Pres. Madras 1227(859).1925.

*Local names:* Kulamavu, Kulirmavu, Uramavu, Ooravu

Evergreen trees, to 30 m high, bark 20-25 mm thick, surface pale brown, mottled with dark blotches, scurfy and thinly scaly, rough, exfoliations small, brittle; blaze pinkish; branchlets glabrous. Leaves simple, alternate, clustered at the tip of



branchlets, estipulate; petiole 15-40 mm long, stout, grooved above, glabrous; lamina 6.5-20 x 3.7-10 cm, oblong, elliptic-oblong or ovate-oblong, base oblique or acute, apex obtuse or obtusely acute, margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 6-12 pairs, pinnate, prominent, intercostae reticulate, obscure. Flowers bisexual, 10-12 mm across, pale yellow, in panicles from upper axils and terminal; perianth tube very short, tepals 6, subequal, in 2 series, 4-5 mm, obovate, puberulous; persistent, spreading or reflexed in fruit; stamens 9 perfect, those of first and second row opposite the perianth lobes, introrse, with long filaments, those of third row opposite the first row, extrorse with slender filaments and a pair of stipitate glands at their base, filaments pubescent 2.5 mm; anthers 4-celled; staminodes 3, in row 4 and opposite the row 2, 4 mm long, stalked, arrow shaped, pubescent; ovary half inferior, sessile, 1-celled; ovule 1, pendulous; style, slender, 2 mm; stigma discoid. Fruit a berry 15-18 mm across, globose, green with white specks, aromatic, with a basal persistent rim of perianth; lobes reflexed in young fruits, deciduous later; epicarp red when ripe; seed one, globose.

*Flowering & Fruiting:* December-May

*Habitat:* Evergreen, semi-evergreen and moist deciduous forests, also in sacred groves

*Distribution*

*Kerala:* All districts

*Geographical:* Peninsular India and Sri Lanka

**Phoebe lanceolata** Nees, Syst. Laurin. 109. 1836; Hook. f., Fl. Brit. India 5: 141. 1886; Gamble, Fl. Pres. Madras 1228(860). 1925; Ramach. & Nair, Fl. Cannanore Dist. 398. 1988; Vajr., Fl. Palghat Dist. 407. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 384. 1996; Sasidh., Fl. Periyar Tiger Reserve 353. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 272. 2002.

Evergreen trees, to 12 m high, bark greyish-brown, smooth, bark yellowish-white or grey, smooth with shallow fissures, exfoliating in thick flakes, fibrous; blaze brown. Leaves simple, alternate, estipulate, clustered at the tip of branchlets; petiole 5-20 mm long, slender, grooved above, glabrous; lamina 8-25 x 2.5-6.5 cm, elliptic-obovate or elliptic-oblancheolate, base cuneate, apex long acuminate, margin entire, glabrous, coriaceous; lateral nerves 6-13 pairs, pinnate, prominent, intercostae scalariform, faint. Flowers bisexual, 2-5 mm across, yellowish-green, in axillary, slender panicles; perianth tube short; lobes 6, ovate, tomentose, unequal, accrescent; stamens 9 perfect, in 3 rows, those of first and second row introrse, eglandular, those of third row extrorse with 2 large stipitate glands at base; staminodes of row 4 stipitate, cordate; anthers 4-celled; ovary half inferior, sessile, globose, pubescent; style slender; stigma discoid. Fruit a drupe, 10-12 mm long, ovoid or ellipsoid, glabrous, black; supported by erect perianth lobes.

*Flowering & Fruiting:* January-March

*Habitat:* Semi-evergreen and evergreen forests, also in secondary forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kannur, Thrissur

*Geographical:* India and Myanmar

**Phoebe wightii** Meisner in DC., Prodr. 15: 38. 1864; Gamble, Fl. Pres. Madras 1228(860). 1925; Sasidh. & Anto in Manoharan et al., Silent Valley-Whispers of Reason 139. 1999; Sasidh., Fl. Periyar Tiger Reserve 353. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 272. 2002.

*Phoebe paniculata* Hook.f., Fl. Brit. India 5: 142. 1886, non Nees 1836.

Evergreen trees, to 10 m high; bark brown, smooth; young parts rusty, pubescent.

Leaves simple, alternate, estipulate, crowded at the tips of branchlets; petiole 7-15 mm long, stout, rusty pubescent when young; lamina 7.5-15 x 3-6 cm, elliptic, obovate or elliptic-obovate, base cuneate, apex acuminate, margin entire, glabrous above, rusty tomentose beneath, coriaceous; lateral nerves 6-7 pairs, pinnate, prominent, intercostae scalariform, faint. Flowers bisexual, yellowish-green, in axillary and lateral lax pubescent panicles; pedicel 5 mm; perianth tube short; lobes 6, 3-4.5 mm, subequal, ovate, tomentose; stamens 9 perfect, in 3 rows, those of first and second row introrse eglandular, those of third row extrorse with 2 large stipitate glands at their base; staminodes of the fourth row cordate, stipitate; anthers 4-celled; ovary half inferior, sessile, 1 mm, globose, pubescent, style 2 mm, stigma simple. Fruit a drupe, globose, 1 cm across; perianth lobes persistent, cupular, erect; epicarp fleshy; seed confirm to the fruit.

*Flowering & Fruiting:* April-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India and Myanmar

#### HERNANDIACEAE

**Gyrocarpus asiaticus** Willd., Sp. Pl. 4: 982. 1806; Sasidh., Fl. Chinnar Wildlife Sanctuary 271. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 272. 2002.

*Gyrocarpus jacquinii* Roxb., Pl. Corom. t. 1. 1795 p.p.; Hook. f., Fl. Brit. India 5: 461. 1878.

*Gyrocarpus americanus* sensu Gamble, Fl. Pres. Madras 1242(869).1925, non Jacq. 1763.

*Local name:* Thanukku

Deciduous trees, to 20 m high, bark silvery grey or greyish-yellow, smooth; blaze dull-yellow; leafscars prominent, shining; tender parts pubescent. Leaves simple, alternate, crowded at apex, estipulate; petiole 10-15 cm long, slender, puberulus; lamina 10-18 x 9-15 cm, broadly ovate, base truncate or subcordate, apex acute or acuminate; margin entire or some times 3-lobed, glabrous above and appressed pubescent below, chartaceous; 3-ribbed from base, palmate, lateral nerves 3-5 pairs, forked, intercostae scalariform, slender, faint. Flowers unisexual, greenish-yellow, in subterminal paniced cymes to 4 cm, tomentose; male flowers 5 mm across; tepals 4-7, to 1.5 mm, unequal, ovate, concave, pubescent; stamens 4-7, inserted at the bottom of the perianth, alternating with as many staminodes; filaments 2 mm; staminodes glandular, obtuse, flat; female flowers : 3 mm across; tepals 4-7, basally adnate to the ovary, pubescent; ovary inferior, 1-celled, ovule 1, pendulous; stigma inferior. Fruit a drupe, 1 x 0.8 cm, ovoid, pubescent, wings 2, oblanceolate; seed one.

*Flowering & Fruiting:* December-April

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* Tropical Africa, Tropical Asia, Polynesia and South America

#### PROTEACEAE

1. Leaves simple; flowers pale lilac ..... ***Helicia nilagirica***

1. Leaves pinnately dissected; flowers yellow.....**Grevillea robusta**

**Grevillea robusta** Cunn. in R. Br., Prot. Nov. 24. 1810; Mohanan, Fl. Quilon Dist. 349. 1984; Ramach. & Nair, Fl. Cannanore Dist. 398. 1988; Vajr., Fl. Palghat Dist. 408. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 398. 1994.

*Local name:* Silver oak

Lofty trees, to 30 m high, bark brownish, irregularly and deeply fissured. Leaves imparipinnate, alternate, estipulate; rachis 19-34 cm long, slender, pubescent, swollen at base, narrowly winged; leaflets 11-21, opposite or subopposite; petiolule 3-5 mm long, slender, winged; lamina 3.5-9×5-1.5 cm, lanceolate or falcate, dissected, base attenuate, apex acute or acuminate and apiculate, margin entire, recurved, glabrous above, brown tomentose below, coriaceous; lateral nerves 4-8 pairs, pinnate, slender, prominent, intercostae reticulate, obscure. Flowers bisexual, yellow or orange, in 15 cm long racemes on leafless wood with several lateral branches; pedicel to 1 cm; perianth tube 6-10 mm long; lobes 4, recurved below the limb, glabrous, expanding distally into a limb enclosing the stamens; stamens 4, sessile; attached to the base of perianth lobes; ovary staked, glabrous, 1-celled, ovules 2 on parietal placenta; style 1.5 cm long; stigma dilated. Fruit a follicle, 1.5 cm long, woody; seeds 2, winged.

*Flowering & Fruiting:* October-August

*Habitat:* Grown as shade tree

*Distribution*

*Kerala:* All districts

*Geographical:* Native of East Australia; now common in tropics and subtropics

**Helicia nilagirica** Bedd., Madras J. Lit. Sci. ser. 3, 1: 50. t.11. 1864; Hook. f., Fl. Brit. India 5: 190. 1886; Gamble, Fl. Pres. Madras 1243(870). 1925. Manilal, Fl. Silent Valley 237. 1988; Ramach. & Nair, Fl. Cannanore Dist. 398. 1988; Vajr., Fl. Palghat Dist. 407. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 397. 1994; Sasidh., Fl. Periyar Tiger Reserve 354. 1998.

Trees, to 7 m high; branchlets stout; young buds pubescent with out. Leaves simple, alternate, estipulate; petiole 5-15 mm long, stout, swollen at base, glabrous; lamina 5-16 x 3-7 cm, elliptic-oblongate or elliptic-obovate; base acute to cuneate; apex acute or acuminate, margin entire or coarsely dentate, coriaceous, sparsely hairy above, glabrous beneath; lateral nerves 6-8 pairs, pinnate, slender, faint, nerves ending in thickened glands at dentations, intercostae reticulate, faint. Flowers bisexual, white with purple tinge, in ca. 3.5 cm long racemes from below the leaves, 2 or more from each bract; pedicels stout; bracts cauducous; bracteoles minute; perianth tube slender, 1-1.3 cm long splitting into 4 lobes in full length and recurved; stamens 4, epitepalous, antitepalous, connective produced in to a filiform appendages; anthers oblong; ovary superior, sessile, 1-celled, ovules 2, basal; style terminal, slender as long as perianth tube; stigma linear, thick. Fruit a drupe, globose, 10-15 mm across, green; seeds 1 or 2, rugose.

*Flowering & Fruiting:* February-May

*Habitat:* Along riverbanks in semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kannur, Trivandrum

*Endemic to:* Southern Western Ghats

#### THYMELEACEAE

1. Flowers ebracteate, in small umbels; stamens 5 ..... **Gyrinops walla**
1. Flowers bracteate, in dense terminal silky heads; stamens 10 ..... **Gnidia glauca**

**Gnidia glauca** (Fresen.) Gilg in Engl., Bot. Jahrb. Syst. 19: 265. 1894; Manilal, Fl. Silent Valley 238. 1988; Sivar. & Mathew, Fl. Nilambur 589. 1997; Sasidh., Fl. Periyar Tiger Reserve 354. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 271. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 273. 2002. *Lasiosiphon glaucus* Fresen., Flora 21: 603. 1838. *Gnidia eriocephala* Meisner in Denkschr., Koenigl.-Baier. Bot. Ges. Regensburg 3: 292. 1841. *Lasiosiphon eriocephalus* (Meisner) Decne. in Jacq., Voy. Bot. 148. 1844; Hook. f., Fl. Brit. India 5: 197. 1886; Gamble, Fl. Pres. Madras 1244(871). 1925.

*Local name:* Nanjinar, Nanju

Trees, to 7 m high; branchlets angular and pubescent, becoming terete, glabrous and brown with age; leafscars prominent. Leaves simple, alternate, crowded towards the apex of branchlets, stipulate; petiole 2-3 mm long, slender, pubescent; lamina 7-11 x 2-2.5 cm, linear-oblong, base attenuate, apex acute, margin entire, glabrous above, puberulent beneath, coriaceous; lateral nerves 6-10 pairs pinnate, slender, faint, intercostae reticulate, faint. Flowers bisexual, bright yellow, in terminal white silky compact heads surrounded by an involucre of silky bracts; pedicels 2 mm, densely pilose; calyx tube to 1.5 cm, densely long pilose without; lobes 5, 3 mm, oblong, pilose without; petaloid appendages 8, yellow, terete, fleshy; stamens 8-10, in 2 rows; ovary superior, sessile, oblong, 1-celled; style filiform, stigma capitate. Fruit a berry, 4 mm long, ellipsoid, densely pilose, enclosed in the calyx; seed brown, ridged laterally.

*Flowering & Fruiting:* February-August

*Habitat:* Evergreen, dry deciduous and shola forests

*Distribution*

*Kerala:* Idukki, Malappuram, Palakkad, Wayanad

*Geographical:* India, Sri Lanka and Africa

**Gyrinops walla** Gaertn., Fruct. 2: 276, t. 140. f.6.1791; Hook. f., Fl. Brit. India 5:199.1886; Gamble, Fl. Pres. Madras 1245(871). 1925; Joseph *et al.*, Indian J. Bot. 5: 143. 1982; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 398. 1994; Mohanan & Sivad., Fl. Agasthyamala 576. 2002.

Trees, to 15 m high, bole straight; bark brownish-grey, thin, smooth, fibrous; branchlets slender, wiry, rather shining, appressed white hairy when young, glabrescent and greyish when mature. Leaves simple, alternate; stipules lateral, silky pubescent; petiole 1-6 mm long, slender, grooved above, pubescent when young; lamina 3-10 x 1.5-4 cm, elliptic, elliptic-oblong, or oblong-lanceolate, base acute or attenuate, apex obtusely acuminate, margin entire, densely appressed pubescent when young, glabrous when mature, shining, chartaceous; lateral nerves many, parallel, close. Flowers bisexual, yellowish-white, in 3-5 flowered umbel like terminal heads; bracts lanceolate, membranous, cauducous; pedicels 3-4 mm long, thinly pilose; perianth tube 4-10 mm long, slender, thinly appressed pilose; lobes 5, oblong, spreading, increasingly pilose upwards on dorsal surface, tomentose within;

stamens 5, inserted at the throat and alternating with thick lanate, petalloid appendages; ovary stipitate, densely hairy, 2-celled, ovule one in each cell; style 1.5 cm long; stigma ovoid. Fruit a 2-valved capsule, reddish-brown, compressed, acute; seed solitary, planoconvex, covered with dense yellow hairs.

*Flowering & Fruiting:* September-November

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Trivandrum

*Geographical:* Peninsular India and Sri Lanka

#### SANTALACEAE

**Santalum album** L., Sp. Pl. 349. 1753; Hook. f., Fl. Brit. India 5: 231. 1886; Gamble, Fl. Pres. Madras 1261(883). 1925; Manilal & Sivar., Fl. Calicut 254. 1982; Mohanan, Fl. Quilon Dist. 351. 1984; Ansari, Fl. Kasaragod Dist. 328. 1985; Antony, Fl. Kottayam Dist. 350. 1989; Ramach. & Nair, Fl. Cannanore Dist. 402. 1988; Vajr., Fl. Palghat Dist. 414.1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 401. 1994; Subram., Fl. Thenmala Division 321. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 388. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 277. 1997; Sivar. & Mathew, Fl. Nilambur 598. 1997; Sasidh., Fl. Periyar Tiger Reserve 360. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 276. 1999; Sunil, Fl. Pl. Alappuzha Dist. 786. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 277. 2002.

*Local name:* Chandanam, Sandal

Evergreen trees, to 10 m high, bark surface dark grey to nearly black, rough with short vertical cracks. Leaves simple, opposite, estipulate; petiole 12-18 mm long, slender, glabrous, grooved above; lamina 3.7-12 x 2-4 cm, elliptic, elliptic-ovate or ovate-lanceolate, base acute or round, apex acute, margin entire, glabrous, shiny above and glaucous beneath, coriaceous; lateral nerves 8-13 pairs, pinnate, faint, intercostae reticulate, obscure. Flowers bisexual, 5-6 mm across, reddish-purple, in axillary and terminal paniculate cymes, much shorter than leaves; tepals 5, basally connate into a campanulate tube of 2 mm long, shortly connate to the basal part of the ovary; lobes 2.5 x 1.5 mm, ovate, thin, fleshy, glaucescent without, minutely ciliate; disc concave, adhering to the bottom of perianth, its lobes alternates with tepals; stamens 5, alternates with disc; filaments 1 mm; anthers 0.7 mm, ovoid, 2-celled; ovary superior later half inferior at the time of flowering, globose, 1 mm, 1-celled, ovules 2-3, pendulous from below the long, acuminate, central column; style 1.5 mm, stigma 3 lobed. Fruit a drupe, 8-12 mm across, globose, blackish-purple, annulate above, beaked with the basal part of the style; seed one.

*Flowering & Fruiting:* November-December

*Habitat:* Dry deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Peninsular India and Malesia

*Status:* Vulnerable (IUCN, 2000)

#### EUPHORBIACEAE

- |    |  |                           |
|----|--|---------------------------|
| 1. | Leaves 3-foliolate .....   | 2                         |
| 1. | Leaves simple .....  | 3                         |
| 2. | Leaflets serrate; filaments free; fruit indehiscent .....        | <b>Bischofia javanica</b> |
| 2. | Leaflets entire; filaments united at base; fruit dehiscent ..... | <b>Hevea brasiliensis</b> |

3.	Cells of ovary 2-ovuled .....	4
3.	Cells of ovary 1-ovuled .....	30
4.	Perianth uniseriate .....	5
4.	Perianth biseriate.....	29
5.	Branchlets phyllanthoid, leaves below 2 x 0.5 cm .....	6
5.	Branchlets not phyllanthoid, leaves over 3 x 1 cm .....	7
6.	Leaves 5 – 3 mm broad; fruit globose or depressed globose..	<b>Phyllanthus emblica</b>
6.	Leaves 4-6 mm broad; fruit ovoid.....	<b>Phyllanthus indofischeri</b>
7.	Flowers in axillary fascicles or solitary .....	8
7.	Male flowers in elongated spikes or racemes, female in cymes .....	22
8.	Fruit indehiscent.....	9
8.	Fruit dehiscent.....	16
9.	Ovary 1-celled .....	10
9.	Ovary 2-4-celled.....	29
10.	Leaf margin entire.....	11
10.	Leaf margin crenate or serrate .....	12
11.	Pedicel of female flower 1.5-4 cm long, glabrous .....	<b>Drypetes venusta</b>
11.	Pedicel of female flower 0.5-1 cm long, tomentose.....	<b>Drypetes wightii</b>
12.	Leaves obtuse, margin distantly crenate, base rounded or subcordate; pedicel glabrous.....	<b>Drypetes sepiaria</b>
12.	Leaves ovate-lanceolate, acuminate, margin crenate-serrate, base unequal; pedicel tomentose .....	<b>Drypetes gardneri</b>
13.	Stamens 2-4; leaves less than 3.5 cm broad .....	<b>Drypetes roxburghii</b>
13.	Stamens many ( 8 or more ) .....	14
14.	Fruiting pedicel 1 cm or more long.....	<b>Drypetes malabarica</b>
14.	Fruit sessile or subsessile .....	15
15.	Fruit densely fulvous villous, brown; calyx lobes villous....	<b>Drypetes oblongifolia</b>
15.	Mature fruit glabrous, yellow; calyx lobes glabrous except the ciliate margin.....	<b>Drypetes confertiflora</b>
16.	Calyx lobes 4; female flowers distinctly pedicelled; stamens free .....	<b>Margaritaria indica</b>
16.	Calyx lobes 6 (3+ 3); female flowers sessile or subsessile; stamens united by their connectives .....	17
17.	Leaves cordate at base; anthers 4 or more .....	18
17.	Leaves acute at base; anthers 3 .....	19
18.	Leaves densely tomentose below .....	<b>Glochidion zeylanicum</b> var. <b>tomentosum</b>
18.	Leaves glabrous below.....	<b>Glochidion zeylanicum</b> var. <b>zeylanicum</b>
19.	Branchlets and leaves glabrous.....	20
19.	Branchlets and leaves densely tomentose .....	21
20.	Inflorescence axillary; style conical.....	<b>Glochidion ellipticum</b>
20.	Inflorescence supra-axillary; style columnar .....	<b>Glochidion bourdillonii</b>
21.	Terminal leaves to 9 x 3 cm.....	<b>Glochidion heyneanum</b>
21.	Terminal leaves to 15 x 6 cm.....	<b>Glochidion hohenackeri</b> var. <b>johnstonei</b>
22.	Fruit indehiscent.....	23
22.	Fruit dehiscent.....	27
23.	Ovary 1-celled, disc annular; anther dehiscence transverse .....	24
23.	Ovary 2-celled; disc absent; anther dehiscence lateral .....	<b>Daphniphyllum neilgherrensis</b>

24.	Stamens inserted within the disc .....	25
24.	Stamens inserted in the hollows of the disc .....	26
25.	Leaves densely pubescent beneath; inflorescence villous ..	<b>Antidesma ghaesembilla</b>
25.	Leaves glabrous; inflorescence glabrous.....	<b>Antidesma bunius</b>
26.	Female spikes short, clusters close .....	<b>Antidesma alexiteria</b>
26.	Female racemes long, clusters distant .....	<b>Antidesma montanum</b>
27.	Male flowers in catkins, female in short cymes.....	28
27.	Male and female flowers in elongated racemes .....	<b>Baccaurea courtallensis</b>
28.	Leaves elliptic-oblong, acuminate; fruit globose, 8-10 mm across .....	<b>Aporusa lindleyana</b>
28.	Leaves obovate or orbicular, obtuse; fruit fusiform, to 2 cm long .....	<b>Aporusa fusiformis</b>
29.	Ovary 2-celled, fruit a drupe with 2 pyrenes .....	<b>Briedelia retusa</b>
29.	Ovary 3-celled, fruit a capsule.....	<b>Cleistanthus collinus</b>
30.	Perianth in male flowers 2-seriate .....	31
30.	Perianth in male flowers uniseriate .....	37
31.	Leaves with stalked or sessile glands at base; stamens inflexed in buds .....	32
31.	Leaves without stalked or sessile glands at base; stamens erect in buds.....	33
32.	Leaves broadly ovate, under surface silvery white .....	<b>Croton malabaricus</b>
32.	Leaves oblong or elliptic-oblong, under surface glabrous .....	<b>Croton roxburghii</b>
33.	Fruiting perianth accrescent and enlarged.....	<b>Dimorphocalyx glabellus</b> var. <b>lawianus</b>
33.	Fruiting perianth scarcely enlarged.....	34
34.	Calyx lobes in male flowers valvate, petals shorter than calyx.....	<b>Agrostistachys borneensis</b>
34.	Calyx lobes in male flowers imbricate, petals longer than calyx.....	35
35.	Leaves broadly ovate, cordate at base, densely white tomentose below; male flowers in paniculate cymes .....	<b>Givotia molucanna</b>
35.	Leaves oblong or broadly elliptic, acute at base, glabrous below; male flowers in racemes .....	36
36.	Leaves and racemes to 15 cm long; erect or suberect.....	<b>Paracroton integrifolia</b>
36.	Leaves and racemes to 20 cm long; pendulous.....	<b>Paracroton pendulous</b> var. <b>zeylanicus</b>
37.	Plants monoecious, female flowers at the base of racemes or spikes .....	<b>Epiprinus mallotiformis</b>
37.	Plants dioecious .....	38
38.	Leaves orbicular, peltate; anthers 4-celled .....	39
38.	Leaves otherwise; anthers 2-celled .....	40
39.	Leaves with 2 large glands near the petiole; inflorescens branches zig-zag .....	<b>Macaranga indica</b>
39.	Leaves without glands near the petiole; inflorescens branches straight .....	<b>Macaranga peltata</b>
40.	Stamens numerous.....	41
40.	Stamens 3 or 5.....	46
41.	Fruit a drupe .....	42
41.	Fruit capsular .....	43
42.	Fruit 2-3 cm across, pericarp thick.....	<b>Trewia nudiflora</b> var. <b>nudiflora</b>
42.	Fruit 1-1.5 cm across, pericarp thin.....	<b>Trewia nudiflora</b> var. <b>polycarpa</b>

43. Female flowers several on peduncle ..... 44  
 43. Female flowers solitary, pedicels 3-5 cm long ..... **Cleidion javanicum**  
 44. Leaves broadly ovate to suborbicular densely white fulvous tomentose below; fruit with soft echinate process ..... **Mallotus tetracoccus**  
 44. Leaves ovate, oblong or obovate, with minute red or yellow glands below; fruit with red or yellow glands ..... 45  
 45. Fruit with prominent red glands ..... **Mallotus philippensis**  
 45. Fruit with yellow glands ..... **Mallotus atrovirens**  
 46. Calyx 2-3 lobed; fruit fleshy ..... **Falconeria insignis**  
 46. Calyx deeply 5-partite; fruit crustaceous ..... 47  
 47. Leaves alternate ..... 48  
 47. Leaves opposite, lanceolate or oblanceolate **Excoecaria oppositifolia** var. **crenulata**  
 48. Leaves ovate-elliptic to suborbicular; fruit ca. 8 mm across **Excoecaria agallocha**  
 48. Leaves lanceolate, acuminate; fruit 2.5-3 cm across ..... **Excoecaria indica**

**Agrostistachys borneensis** Becc., Nelle For. Borneo 331. 1902; Manilal, Fl. Silent Valley 244. 1988; Ramach. & Nair, Fl. Cannanore Dist. 407. 1988; Vajr., Fl. Palghat Dist. 419. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 406. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 391. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 279. 1997; Sasidh., Fl. Periyar Tiger Reserve 363. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 280. 2002; Mohanan & Sivad., Fl. Agasthyamala 592. 2002.

*Agrostistachys longifolia* (Wight) Trimen, Syst. Cat. Fl. Pl. Ceylon 81. 1885, nom. illeg.; FBI 5: 407. 1887.

*Sarcoclinium longifolium* Wight, Ic. tt. 1887, 1888. 1852.

*Agrostistachys meeboldii* Pax & Hoffm. in Engl., Pflanzenr. IV 147 VI(57): 100. 1912; Gamble, Fl. Pres. Madras 1318(922). 1925; Mohanan, Fl. Quilon Dist. 356. 1984.

*Local names:* Kozhivalan, Mulimpala

Dioecious evergreen trees to 15 m; bark 8-10 mm thick, blackish-grey mottled with white, smooth, brittle; blaze reddish-brown; branchlets stout, marked with the scales of petioles and stipules; exudation white, milky; young parts glabrous. Leaves simple, alternate, clustered at the tips of branchlets, stipulate; stipules lateral, short, broad, acute, cauducous; petiole 5-10 mm long, stout, glabrous; lamina 10-25 x 5-7.5 cm, oblanceolate or obovate-spathulate, base long attenuate, apex acuminate, margin entire, recurved, glabrous, coriaceous; lateral nerves 10-18 pairs, pinnate, prominent, intercostae very obscure. Flowers unisexual, yellow; male flowers: in axillary lax spiciform racemes, much shorter than the leaves, few flowers per bract; bracts broadly ovate, ciliate; tepals 8-10, biseriate, outer tepals connate, cupular, splitting into 2-5 valvate segments; inner tepals petaloid, alternating with outer, ovate, obtuse fleshy, fimbriate, shorter than outer petals; disc glands 5, large, alternating with inner tepals; stamens 10, exerted; outer 5 alternating with disc; inner 5 shortly connate, around pistillode; anthers versatile, the cells pendulous from the thickened connective; pistillode 2-3 clefted; female flowers: in axillary lax spiciform racemes much shorter than the leaves, solitary in each bract; bracts broadly ovate, ciliate; tepals 8-10, biseriate, outer tepals ovate, stiff, spreading; inner tepals petaloid, longer than the outer tepals, alternating with outer, cauducous; entire; disc glands 5, partly connate; ovary superior, pubescent, 3-celled, ovules 1 in each cell, laterally pendulous; styles thick, short, spreading. Fruit



a capsule 7-15 mm across, 3-lobed, cocci globose, reddish, crustaceous, smooth; seeds globose, smooth, shining.

*Flowering & Fruiting:* December-March

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Kannur, Trivandrum, Thrissur

*Geographical:* Indo-Malaya

**Antidesma alexiteria** L., Sp. Pl. 1027. 1753; Hook. f., Fl. Brit. India 5:359.1887; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 428. 1994; Subram., Fl. Thenmala Division 346. 1995; Sasidh., Fl. Periyar Tiger Reserve 364. 1998; Chakrab. & Gangop., J. Econ. Tax. Bot. 24:11.2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 281. 2002.

*Antidesma zeylanicum* Lam., Tabl. Encycl. 1: 207. 1792; Gamble, Fl. Pres. Madras 1297(908). 1925; Mohanan, Fl. Quilon Dist. 357. 1984; Ramach. & Nair, Fl. Cannanore Dist. 409. 1988; Antony, Fl. Kottayam Dist. 355. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 587. 1994; Mohanan & Sivad., Fl. Agasthyamala 597. 2002.

*Local name:* Thathalamaram

Trees, to 8 m high, bark pale brown, thin, smooth; branchlets pale to dark brown, glabrous, sparsely ferruginous-puberulous when young. Leaves simple, alternate, stipulate; stipules lateral, 2-2.5 mm long, subulate or triangular-acuminate, caudaceous; petiole 1.5-5 mm long, slender, grooved above, glabrous; lamina 3.5-15 x 1.5-4.5 cm, elliptic, elliptic-lanceolate, elliptic-oblong or elliptic-obovate; base acute or rarely round, apex acuminate to chartaceous lateral nerves 5-12 pairs, pinnate, slender, prominent, intercostae reticulate, faint. Flowers unisexual, green; male flowers: 2-3 together in terminal and axillary, lax flowered, scattered ferruginous, rufous or yellow puberulous or pilose spike, perianth 0.5-x 1.5 mm, cupular, scattered pilose outside, lobes 4-5, orbicular to deltoid; disc thick, button like; stamens 3, inserted in the excavation of the disc; anther cells orbicular; female flowers: 1-2 together in terminal and axillary scattered brown or ferruginous puberulous spike; perianth cupular, 0.7 x 1 mm, sparsely puberulous; lobes 4, shallow, triangular or deltoid; ovary superior, ovoid, 1 mm long, glabrous, 1-[2] loculed, ovule 2 in each cell; style stout, bifid, terminal. Fruit a drupe, 4-6 x 3-5 mm, flattened, suborbicular or lenticellate or broadly obliquely ellipsoid, irregularly or alveolate, glabrous, often with white pustules, red when ripe.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Kottayam, Pathanamthitta, Kannur, Trivandrum, Palakkad, Kollam

*Geographical:* South India and Sri Lanka

**Antidesma bunius** (L.) Spreng., Syst. Veg. 1: 826.1825; Hook. f., Fl. Brit. India 5:358.1887; Gamble, Fl. Pres. Madras 1298(908). 1925; Manilal & Sivar., Fl. Calicut 272. 1982; Manilal, Fl. Silent Valley 245. 1988; Ansari, Fl. Kasaragod Dist. 332. 1985; Ramach. & Nair, Fl. Cannanore Dist. 408. 1988; Sivar. & Mathew, Fl. Nilambur 604. 1997; Chakrab. & Gangop., J. Econ. Tax. Bot. 24: 12. 2000; Mohanan & Sivad., Fl. Agasthyamala 595. 2002.

*Stilago bunius* L., Mant. Pl. 1: 122. 1767.

*Local names:* Aryaporiyan, Mayilkombi, Neelathali

Trees, to 10 m high; bark dark brown; branchlets greyish-brown, lenticellate, initially rufous or brown-tomentellous or sparsely white pilose, soon glabrous. Leaves simple, alternate, stipulate; stipules lateral, 4-5 x 1 mm, subulate or linear-lanceolate; petiole 3-10 mm long, slender, puberulous or pilose, finally glabrous; lamina 7-19 x 3-8 cm, elliptic, elliptic-oblong or elliptic-obovate, oblong, oblong-lanceolate or oblanceolate, base cuneate, round, acute or subacute, apex acuminate, apiculate or cuspidate, margin entire or irregularly and obscurely repand, glossy above, glabrous or often sparsely puberulous or pilose on midrib above towards base, glabrous beneath except for the bearded lower axils of the lateral nerves, coriaceous; lateral nerves 5-10 pairs, pinnate, prominent; intercostae reticulate, prominent; domatia present. Flowers unisexual, reddish; male flowers: in spikes, terminal or often axillary or terminating the lateral shoots, solitary or 2-3 together; peduncle scattered tawny puberulous or thinly tomentellous; bracts 1-1.5 mm long, ovate-lanceolate; perianth cupular, 1 x 1-2 mm, sparsely puberulous to glabrous; lobes 4, shallow, suborbicular, ciliate; disc subglobose, lobed above; stamens 3, inserted into the cavities of the disc; anthers orbicular; pistillode capitate; female flowers: terminal and axillary, solitary or in pair ovule 2; peduncle scattered puberulous; bracts deltoid, conduplicate, deciduous; pedicel 0.5-2 mm long, puberulous, glabrous; perianth 0.5 x 1.5 mm, glabrous, 4-lobed upto midway; lobes deltoid, ciliate at margin; ovary superior, ovoid, 1-1.8 mm long, glabrous, 1-[ 2 ] locular, ovule 2 in each cell; styles 3, terminal, erect. Fruit a drupe, 5-6 x 4-6 mm, suborbicular to ovoid or wide ellipsoid, slightly compressed, glabrous, red when ripe.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kasaragode, Malappuram, Kannur, Trivandrum, Kozhikkode, Palakkad

*Geographical:* Indo-Malesia to Australia and South China

***Antidesma ghaesembilla*** Gaertn., Fruct. 1: 189. 1788; Hook. f., Fl. Brit. India 5: 357. 1887; Gamble, Fl. Pres. Madras 1298(908). 1925; Manilal & Sivar., Fl. Calicut 272. 1982; Manilal, Fl. Silent Valley 245. 1988; Ansari, Fl. Kasaragod Dist. 332. 1985; Antony, Fl. Kottayam Dist. 354. 1989; Sivar. & Mathew, Fl. Nilambur 604. 1997; Chakrab. & Gangop., J. Econ. Tax. Bot. 24: 17. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 281. 2002; Mohanan & Sivad., Fl. Agasthyamala 595. 2002.

*Antidesma pubescens* Roxb., Pl. Corom. 2: 35, t.167. 1802; Anil Kumar, Fl. Pathanamthitta Dist. 587. 1994.

*Antidesma paniculatum* Roxb. ex Willd., Sp. Pl. 4: 764. 1806.

Trees, to 12 m high, bark grey; branchlets brown or greyish, lenticellate, greyish, fulvous, brown or ferruginous-tomentellous, glabrescent in age. Leaves simple, alternate, stipulate; stipules lateral, 3-8 mm long, linear or lanceolate, deciduous; petiole 3-25 mm, slender, tomentose, lamina 2.5-14 x 1.5-10 cm, oblong, oblong-elliptic, obovate, suborbicular or ovate; base round, cordate, truncate, subacute or obtuse, apex round, obtuse, retuse or apiculate, margin entire, chartaceous to

thinly coriaceous or sometimes membranous, glabrous or sparsely pilose on midrib and lateral nerves above grey or fulvous tomentellous to thinly pilose beneath, lateral nerves 3-7 pairs, parallel, slender, prominent intercostae reticulate, prominent. Flowers unisexual, reddish-yellow; male flowers: in terminal and axillary much branched spikes; peduncle densely brown or fulvous tomentose; bracts 1-5 mm long, linear or narrowly ovate, densely pilose; perianth *ca.* 1.2 x 1-2 mm, cupular, densely pilose or tomentellous outside, lobes 5, ovate, acute; disc glands free, inter staminal, pilose towards apex; stamens 4-5, 1-2 mm long; anther cells orbicular; pistillode obconic; female flowers: in terminal and axillary branched or simple racemes; peduncle densely brown or fulvous tomentose; pedicel 0.8-1.5 mm, densely pilose; perianth cupular, 1-1.5 x 1.5-2 mm, densely pilose outside, lobes 5, elliptic, ovate or linear-oblong, almost free, acute; disc annular; ovary superior, 1-1.5 mm long, 1-[2 ] locular, ovules 2 in each cell, ellipsoid to oblong-ellipsoid, often oblique, tomentose; styles terminal. Fruit a drupe 4-6 x 3-5 mm, compressed-orbicular, glabrous, reddish-brown or black, alveolate.

*Flowering & Fruiting:* January-December

*Habitat:* Moist deciduous forests

*Distribution*

*Kerala:* Kozhikkode, Kottayam, Kasaragode, Palakkad, Pathanamthitta, Malappuram, Trivandrum

*Geographical:* Indo-Malesia to Australia

***Antidesma montanum*** Blume, Bijdr. 1124. 1826; Chakrab. & Gangop., J. Econ. Tax. Bot. 24: 26. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 281. 2002.

*Antidesma pubescens* Roxb. var. *menasu* Tul., Ann. Sci. Nat. Bot. ser. 3, 15: 215. 1851.

*Antidesma acuminatum* Wight, Ic. t. 1991. 1853; Hook. f., Fl. Brit. India 5: 363. 1887.

*Antidesma moritzii* (Tul.) Muell.-Arg., Linnaea 34: 67. 1865 & in DC., Prodr. 15: 252. 1866; Hook. f., Fl. Brit. India 5: 362. 1887.

*Antidesma refractum* Muell.-Arg. in DC., Prodr. 15: 257. 1866.

*Antidesma smile* Muell.-Arg. in DC., Prodr. 15: 259. 1866.

*Antidesma menasu* (Tul.) Miq. ex Muell.-Arg. in DC., Prodr. 15:257. 1866p.p., Hook. f., Fl. Brit. India 5: 364. 1887p.p; Gamble, Fl. Pres. Madras 1297(908). 1925; Manilal & Sivar., Fl. Calicut 272. 1982; Mohanan, Fl. Quilon Dist. 357. 1984; Ansari, Fl. Kasaragod Dist. 332. 1985; Manilal, Fl. Silent Valley 245. 1988; Ramach. & Nair, Fl. Cannanore Dist. 408. 1988; Antony, Fl. Kottayam Dist. 355. 1989; Vajr., Fl. Palghat Dist. 420. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 586. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 428. 1994; Subram., Fl. Thenmala Division 347. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 280. 1997; Sivar. & Mathew, Fl. Nilambur 605. 1997; Sasidh., Fl. Periyar Tiger Reserve 364. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 279. 1999; Sunil, Fl. Pl. Alappuzha Dist. 798. 2000; Mohanan & Sivad., Fl. Agasthyamala 596. 2002.

*Antidesma menasu* (Tul.) Miq. ex Muell.-Arg. var. *linearifolia* Hook.f., Fl. Brit. India 5: 364. 1887.

*Antidesma montanum* Blume var. *microcarpum* Airy Shaw, Kew Bull. 36: 263. 1981.

*Local name:* Putharaval

Trees, to 18 m high, bark brown, vertically shallowly grooved; blaze pink; branchlets yellow, brown, greyish-white tomentose to sparsely pubescent, becoming glabrous in age. Leaves simple, alternate, stipulate; stipules lateral, 3-12 x 0.5-3 mm, linear, lanceolate or subulate, puberulous or glabrous, deciduous; petiole 3-10 mm, slender, tomentose to glabrous; lamina 6-30 x 2-10 cm, oblong, elliptic-oblong, ovate-oblong or elliptic-lanceolate, base acute, obtuse to round or often oblique, apex acuminate or caudate-acuminate, margin entire, often glossy above and or beneath, glabrous or puberulous or pilose on midrib above, glabrous or tomentose to sparsely puberulous on midrib beneath, chartaceous to thinly coriaceous; lateral nerves 4-12 pairs, pinnate, slender, prominent, intercostae reticulate, faint. Flowers unisexual, yellow; male flowers: in axillary and terminal simple or paniculate racemes; peduncle brown-puberulous; bracts linear, lanceolate, triangular or oblong; pedicels 0.5-2 mm long, slender, glabrous; perianth cupular 0.6 x 1-1.5 mm, glabrescent; lobes 3-4, triangular, deltoid or ovate, deep; disc 3-4 lobed; stamens 3-4; filaments inserted on the excavations of the disc; pistillode knob like or capitate; female flowers: in terminal and axillary, simple or one to few branched racemes; peduncle whitish, yellow or tawny tomentose to glabrous; bracts linear, lanceolate or deltoid; pedicel 0.5-3 mm long, tomentolous to glabrous; perianth cupular, ca. 1 x 1-2 mm, sparsely puberulous to glabrous; lobes 4-5, deep, triangular, deltoid or suborbicular; ovary superior, 1-1.8 mm long, ovoid or subglobose, glabrous, 1-[2] locular, ovules 2 in each cell; styles terminal. Fruit a drupe 3-6 x 2.5-4 mm, ellipsoid to ovoid or sometimes rhomboid-ellipsoid or rarely ovoid-pyriform, not compressed, glabrous, alveolate or ribbed.

*Flowering & Fruiting:* January-December

*Habitat:* Evergreen and shola forests, also in sacred groves

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and East Himalayas

**Aporosa fusiformis** Thw., Enum. Pl. Zeyl. 288. 1861; Hook. f., Fl. Brit. India 5: 351. 1887; Gamble, Fl. Pres. Madras 1309(916). 1925; Chakrab. & Gangop., J. Econ. Tax. Bot. 17: 160. 1993; Sasidh., Fl. Periyar Tiger Reserve 365. 1998.

Trees, to 8 m high; bark brown, smooth, blaze dull red; branchlets terete, brown to greyish glabrous. Leaves simple alternate, stipulate; stipule 6 mm long, lateral, falcate; petiole 5-25 mm long, slender, grooved above, glabrous; lamina 3-18 x 1.5-8 cm, obovate, suborbicular or broadly elliptic, base cuneate, acute, round or obtuse, apex apiculate or obtuse, round or retuse, entire and often minutely glandular-notched along margins, glabrous, often glossy above, coriaceous; lateral nerves 4-7 pairs, pinnate, slender, prominent, intercostae reticulate, faint. Flowers unisexual, yellowish; male flowers: in 1-3 cm long axillary, dense flowered, catkin-like spikes; bracts 0.3-2 x 0.5-3.5 mm, broadly ovate, ciliate; tepals 4-5, 1-1.2 x 0.4-0.6 mm, triangular to oblong, acute, shortly connate; stamens 2-3, 2.5-3 mm long; filaments free; anthers suborbicular, didymous; male flowers: in axillary few flowered fascicles of 3 cm long; tepals 4, ca. 1.5 x 1.5 mm, suborbicular, ciliate, deciduous; ovary superior, ovoid-ellipsoid, densely tawny-puberulous, soon glabrous, 2-locular; ovules 2 in each cell; style 2, 3-3.5 mm long; column 1-1.5 mm long; stigma 2-lobed, coarsely plumose. Fruit a capsule 15-20 x 8-10 mm, ellipsoid or fusiform,

glabrous, thin walled or sometimes slightly fleshy, often tardily dehiscent; seeds 1-2.

*Flowering & Fruiting:* January-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Wayanad

*Geographical:* India and Sri Lanka

**Aporosa lindleyana** (Wight) Baill., *Etud. Gen. Euphorb.* 645. 1858; Hook. f., *Fl. Brit. India* 5: 349. 1887; Gamble, *Fl. Pres. Madras* 1309(916). 1925; Manilal & Sivar., *Fl. Calicut* 260. 1982; Mohanan, *Fl. Quilon Dist.* 358. 1984; Ansari, *Fl. Kasaragod Dist.* 333. 1985; Ramach. & Nair, *Fl. Cannanore Dist.* 409. 1988; Antony, *Fl. Kottayam Dist.* 355. 1989; Vajr., *Fl. Palghat Dist.* 421. 1990; Chakrab. & Gangop., *J. Econ. Tax. Bot.* 17: 164. 1993; Anil Kumar, *Fl. Pathanamthitta Dist.* 588. 1994; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 407. 1994; Subram., *Fl. Thenmala Division* 337. 1995; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 393. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 281. 1997; Sivar. & Mathew, *Fl. Nilambur* 605. 1997; Sasidh., *Fl. Periyar Tiger Reserve* 365. 1998; Sunil, *Fl. Pl. Alappuzha Dist.* 798. 2000; Sasidh., *Fl. Parambikulam Wildlife Sanctuary* 282. 2002; Mohanan & Sivad., *Fl. Agasthyamala* 598. 2002.

*Scepa lindleyana* Wight,  *Ic. t.* 361. 1840.

*Local names:* Aechil, Ponvetti, Vetti

Evergreen trees, to 20 m high, bark 6-8 mm thick, greyish-brown, vertical striations shallow, brittle; blaze light pink, striated; branchlets terete, glabrous. Leaves simple, attenuate, bifarious, stipulate; stipules lateral, lanceolate, cauducous; petiole 10-20 mm long, stout, grooved above, glabrous; lamina 7.5-18 x 3-8 cm, elliptic-oblong, elliptic, oblong or ovate-oblong, base acute, obtuse or round, apex acuminate or obtusely acuminate, margin entire, glabrous, coriaceous; lateral nerves 7-10 pairs, pinnate, prominent, intercostae reticulate, faint. Flowers unisexual; male flowers: yellow, solitary or clustered in axillary spikes of 1-3.5 cm long; bracts ovate, ciliate, flowers 1-3 in each bract; tepals 4, ovate, ciliate; stamens 2-3, from the centre of the flower; filaments free; anthers didymous; female flowers: pale green, 3-8 together, in densely tomentose small racemes; pedicellate; bracts concave, ciliate, imbricate; tepals 4, larger than males; ovary superior, flask-shaped, thinly hispid; 2-celled, ovules 2 in each cell; styles 2-3, connate into a column; stigmas 2, small, plumose, spreading, recurved. Fruit a capsule 10-12 mm across, globose, yellow, glabrous, pointed with the style; aril orange-yellow; seed one, brown, planoconvex.

*Flowering & Fruiting:* December-June

*Habitat:* Semi-evergreen and evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Peninsular India and Sri Lanka

**Baccaurea courtallensis** (Wight) Muell.-Arg. in DC., *Prodr.* 15: 459. 1866; Hook. f., *Fl. Brit. India* 5: 367. 1887; Gamble, *Fl. Pres. Madras* 1310(916). 1925; Manilal & Sivar., *Fl. Calicut* 260. 1982; Mohanan, *Fl. Quilon Dist.* 358. 1984; Ansari, *Fl. Kasaragod Dist.* 333. 1985; Ramach. & Nair, *Fl. Cannanore Dist.* 409. 1988; Vajr.,

Fl. Palghat Dist. 421. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 589. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 407. 1994; Subram., Fl. Thenmala Division 339. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 393. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 281. 1997; Chakrab. & Gangop., J. Econ. Tax. Bot. 21: 527. 1997; Sivar. & Mathew, Fl. Nilambur 606. 1997; Sasidh., Fl. Periyar Tiger Reserve 365. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 282. 2002; Mohanan & Sivad., Fl. Agasthyamala 599. 2002.

*Pierardia courtallensis* Wight, Ic. t. 1912. 1852.

*Baccaurea sapida* Bedd., Fl. Sylv. t. 280. 1872.

*Local names:* Mootikaya, Mootilpazham, Mootilthoori

Evergreen trees to 15 m high; bole uneven with tubercles; bark greyish-yellow, rough; branchlets terete, rough; young shoots brown-puberulous and furfuraceous. Leaves simple, alternate, often clustered towards the tip of branchlets; stipules 3-5 mm long, lateral, lanceolate, cauducous; petiole 10-60 mm long, slender, grooved above, glabrescent or puberulous; lamina 5.5-30 x 1.5-8.5 cm, oblanceolate or elliptic-oblanceolate, base acute, attenuate or cuneate, apex acuminate or caudate-acuminate, margin entire, membranous to chartaceous, scattered white furfuraceous above and beneath, often scattered puberulous on midrib beneath; lateral nerves 4-7 pairs, pinnate, slender, faint, intercostae reticulate, obscure. Flowers unisexual, dark crimson, in densely clustered slender racemes on old stem; male flowers: bracts lanceolate, linear-lanceolate or triangular, free, conduplicate, encircling the base of lateral branches; tepals 4-5, 1.5-2 x 1 mm, linear, oblong, elliptic, suborbicular or oblanceolate, glabrous or sparsely puberulous; stamens 4-8, free; anthers basifixed; pistillode clavate; female flowers: bracts 1-1.5 mm long, lanceolate; tepals 4-5, 2.5-3 x 0.6-1.5 mm, linear, oblong or oblong-elliptic, sparsely puberulous to glabrous, ciliate; ovary superior, 2.5 x 2-3 mm, ovoid or subglobose, 3-locular, ovules 2 in each cell, 3-angled, tomentose; stigmas 3, flabellate. Fruit a capsule 15-30 x 15-25 mm, subglobose, ovoid, ellipsoid or obovoid, 3 locular, thick walled, often with 6 longitudinal ribs, pale yellow when ripe, brown when dry, often verrucose, pubescent, tardily dehiscent; seeds 3, oblong, arillate.

*Flowering & Fruiting:* January-June

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kozhikkode, Kasaragode, Thrissur, Pathanamthitta, Wayanad, Trivandrum, Malappuram, Kollam, Kannur, Palakkad, Idukki

*Endemic to:* Southern Western Ghats

***Bischofia javanica*** Blume, Bijdr. 1169. 1826; Hook. f., Fl. Brit. India 5: 345. 1887; Gamble, Fl. Pres. Madras 1312c. 1925; Mohanan, Fl. Quilon Dist. 359. 1984; Manilal, Fl. Silent Valley 246. 1988; Ramach. & Nair, Fl. Cannanore Dist. 410. 1988; Vajr., Fl. Palghat Dist. 422. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 590. 1994; Subram., Fl. Thenmala Division 348. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 395. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 281. 1997; Sivar. & Mathew, Fl. Nilambur 607. 1997; Sasidh., Fl. Periyar Tiger Reserve 365. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 279. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 283. 2002; Mohanan & Sivad., Fl. Agasthyamala 599. 2002.

*Local names:* Cholavenga, Mlathethayan, Neeli, Thiruppu

Deciduous trees, to 30 m high; bark pale brown, thin, scaly; blaze red, fibrous; exudation red, watery; branches spreading. Leaves 3-foliate, alternate, stipulate;

stipules lateral, cauducous; rachis 7-20 cm long, stout, grooved above, glabrous; petiolule of lateral leaflets 3-20 mm long, of terminal leaflet 15-40 mm long, slender, glabrous; lamina 5.5-18 x 3-9 cm, elliptic, elliptic-ovate, ovate, obovate or orbicular, base acute or round, apex acuminate, margin serrate, glabrous, membranous; lateral nerves 6-9 pairs, slender, prominent, intercostae reticulate, faint. Flowers unisexual, green, in axillary and lateral pedunculate paniculate racemes; male flowers: 2-3 mm across; pedicels very short, slender; tepals 5, obovate, concave, imbricate, concealing the anthers; stamens 5, filaments short; anthers globular; pistillode short, broad; female flowers: 2-35 mm across; pedicels longer than in the male, stout, elongating in fruit; tepals 5, linear lanceolate; ovary superior, globose, 3-celled, exserted, ovules 2, in each cell; style 3, linear; stigmatic through out on the inner face. Fruit a berry, globose 7 mm across, reddish-brown; seeds 3, trigonus.

*Flowering & Fruiting:* March-October

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Malappuram, Thrissur, Palakkad, Kannur, Trivandrum, Wayanad

*Geographical:* Indo-Malesia to Pacific Islands

**Briedelia retusa** (L.) A. Juss., Euphorb. Gen. 109. 1824; Hook. f., Fl. Brit. India 5: 268. 1887p.p.; Gamble, Fl. Pres. Madras 1280(896). 1925; Manilal & Sivar., Fl. Calicut 273. 1982; Mohanan, Fl. Quilon Dist. 360. 1984; Ansari, Fl. Kasaragod Dist. 335. 1985; Vajr., Fl. Palghat Dist. 423. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 592. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 409. 1994; Subram., Fl. Thenmala Division 327. 1995; Sunil, Fl. Pl. Alappuzha Dist. 801. 2000; Chakrabarty *et al.*, J. Econ. Tax. Bot. 26: 321. 2002; Sasidh., Fl. Parambikulam Wildlife Sanctuary 284. 2002; Mohanan & Sivad., Fl. Agasthyamala 602. 2002.

*Clutia retusa* L., Sp. Pl. 1475. 1753.

*Briedelia spinosa* (Roxb.) Willd., Sp. Pl. 4:979.1805.

*Briedelia crenulata* Roxb., Fl. Ind. 3: 734. 1832; Antony, Fl. Kottayam Dist. 357. 1989; Sasidh., Fl. Chinnar Wildlife Sanctuary 280. 1999.

*Briedelia roxburghiana* (Muell.-Arg.) Gehrm., Bot. Jahrb. Syst. 41.95:30. 1908; Gamble, Fl. Pres. Madras 1280(896). 1925; Manilal & Sivar., Fl. Calicut 273. 1982.

*Briedelia airy-shawii* P. T. Li, Acta Phyt. Sin. 20: 117. 1982, *nom. illeg.*; Sasidh. & Sivar., Fl. Pl. Thrissur For. 397. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 283. 1997; Sivar. & Mathew, Fl. Nilambur 610. 1997; Sasidh., Fl. Periyar Tiger Reserve 366. 1998.

*Local names:* Asuvamaram, Mulluvenga, Mullankkayini

Deciduous trees, to 20 m high, bark greyish-brown, blaze red; young trees armed with sharp thorns; branchlets thinly hairy. Leaves simple, alternate; stipules 7 mm long, lateral, lanceolate, deciduous; petiole 9-15 mm long, stout, pubescent when young; lamina 5-22 x 3-11 cm, broadly elliptic, oblong, elliptic-oblong, obovate or obovate-oblong, base round, obtuse, truncate, cordate or acute, apex obtuse retuse or subacute, margin entire or slightly crenulate, bright green and glabrous above(turning pinkish-brown before falling), glaucous and usually finely tomentose

beneath, coriaceous; lateral nerves 14-25 pairs, parallel, prominent, dichotomously forked near the margin, intercostae scalariform, prominent. Flowers unisexual; greenish-yellow, sessile or shortly pedicellate, crowded in dense axillary or terminal, some times paniculate spikes often exceeding the leaves; bracts scaly; male flowers: 7 mm across, tepals 10, biseriate, valvate; outer tepals 3 mm long, ovate-lanceolate, thick, truncate, shortly connate, acute, inner ones 2 mm, obovate, cuneate, obtuse, fimbriate; stamens 5, monadelphous, born on a gonophore, exserted; filaments 0.7 mm, anthers oblong; pistillode bifurcate; disc annular; female flowers: 6.5 mm across, tepals 10, biseriate, lanceolate, valvate; outer and inner 2.5 and 1.5 mm long, coriaceous, puberulous without, truncate, shortly connate, fimbriate, acute; ovary half inferior, globose, 2 x 1 mm, 2-locular, ovules 2 in each cell; styles 2, forked, 2 mm; stigmatiferous; disc with an inner, membranous, fimbriate corona enclosing basal part of ovary. Fruit a drupe, 7-8 mm across, purplish-black, seated on the persistent, slightly enlarged calyx, pyrenes 2, epicarp crustaceous; seed one in each pyrene.

*Flowering & Fruiting:* August-December

*Habitat:* Semi-evergreen and deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malaya

**Cleidion javanicum** Blume, Bijdr. 613. 1826; Hook. f., Fl. Brit. India 5: 444. 1887; Gamble, Fl. Pres. Madras 1325(927). 1925; Sasidh. & Sivar., Fl. Pl. Thrissur For. 398. 1996; Sivar. & Mathew, Fl. Nilambur 611. 1997; Sasidh., Fl. Periyar Tiger Reserve 367. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 285. 2002; Kulju & van Welzen, Blumea 50: 202. 2005.

*Cleidion spiciflorum* auct. non (Burm. f.) Merr., Interpr. Rumph. Herb. Amboin. 322. 1917; Mohanan, Fl. Quilon Dist. 361. 1984; Anil Kumar, Fl. Pathanamthitta Dist. 593. 1994; Subram., Fl. Thenmala Division 344. 1995; Vajr., Fl. Palghat Dist. 424. 1990.

*Local name:* Yellari

Evergreen trees, to 20 m high; bark greenish-white, smooth; branchlets glabrous. Leaves simple, alternate; stipules lateral, ovate, acute, entire; petiole 15-70 mm long, slender, grooved above, swollen at base, glabrous; lamina 7.5-20 x 2.5-7.5 cm, elliptic, elliptic-oblong or elliptic-obovate; base acute, apex acuminate, margin serrate, glabrous, coriaceous; 2 glands at the base beneath; lateral nerves 4-6 pairs, pinnate, prominent; intercostae reticulate, prominent. Flowers unisexual, pale green. male flowers: in long slender axillary racemes; tepals 2-4 lobed, valvate; stamens many, in a globose mass on a conical receptacle; filaments free; anther cells transversely didymous on a broad connective; female flowers: single or in pairs on long axillary peduncle; pedicel 4-5 cm long, slender; tepals 3-5 lobed; lobes imbricate; ovary superior, 2-celled; ovules 1 in each cell; styles 2, connate at base, arms 2-3, filiform. Fruit a 2-lobed capsule, 10-12 x 12-25 mm, broader than long, globose; seeds 1 in each cell, 10-12 mm across, round, grey-black.

*Flowering & Fruiting:* November-April

*Habitat:* Semi-evergreen forests

*Distribution*



*Kerala:* Idukki, Malappuram, Palakkad, Kollam, Thrissur, Pathanamthitta  
*Geographical:* Indo-Malesia

**Cleistanthus collinus** (Roxb.) Benth. ex Hook.f., Fl. Brit. India 5: 274. 1887; Gamble, Fl. Pres. Madras 1282(897). 1925; Vajr., Fl. Palghat Dist. 425. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 398. 1996; Sivar. & Mathew, Fl. Nilambur 612. 1997; Chakrab. *et al.*, J. Econ. Tax. Bot. 26: 335. 2002; Sasidh., Fl. Parambikulam Wildlife Sanctuary 285. 2002.

*Clusia collina* Roxb., Pl. Corom. t.169. 1802.

*Local name:* Odugu

Deciduous trees, to 15 m high; bark dark brown, nearly black, rough, flaking off in rounded thick scales, blaze red; branchlets, terete. Leaves simple, alternate, distichous; stipules lateral, 2-3 m long, linear; petiole 3-10 mm long, puberulous to glabrous, slender; lamina 3-11.5 x 1.5-8 cm, elliptic, suborbicular, obovate or acute, apex round, retuse or apiculate, margin entire, glabrous, glaucous beneath, chartaceous; lateral nerves 4-8 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers unisexual, yellowish-green, in glomerules borne on main leafy branches and short lateral branchlets; the male 3-5 flowered; females upto 3 flowers; bracts 1.5-2 mm long, subulate; male flowers: pedicels 1-2 mm long, puberulous, calyx tube shortly obconic, lobes 5, occasionally 6, 3-4 x 1-2 mm, triangular-oblong or lanceolate-oblong, adpressed fulvous pilose outside; petals 5, linear; disc annular, shallowly lobed, glabrous; staminal column ca.1.5 mm; anthers oblong; pistillode ovoid; female flowers: pedicel 0.5 mm long, grey-pilose; calyx tube obconic, ca.1 mm long; sepals 4-5 x 1-3 mm, triangular-lanceolate, scattered grey-pilose outside; petals ca. 2 x 1 mm, subulate; disc shortly cupular-annular; ovary superior, 2-2.5 x 2-3 mm, subglobose, glabrous; styles 3-4 mm long, almost free or basal column ca.1.5 mm long, shortly to deeply bifid above, recurved. Fruit a capsule, 18-22 x 17-22 mm, subglobose or wide oblong, truncate at apex, shallowly 3 lobed and 3-angled, glossy, glabrous, black or dark brown when dry; seeds 3, globose, black; pedicels 0.5-1.5 mm long.

*Flowering & Fruiting:* December-November

*Habitat:* Deciduous forests

*Distribution*

*Kerala:* Malappuram, Palakkad, Thrissur

*Geographical:* India and Sri Lanka

**Croton malabaricus** Bedd., Fl. Sylv. 204. 1873; Hook. f., Fl. Brit. India 5: 386. 1887; Gamble, Fl. Pres. Madras 1314(919). 1925; Mohanan, Fl. Quilon Dist. 362. 1984; Vajr., Fl. Palghat Dist. 426. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 596. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 412. 1994; Subram., Fl. Thenmala Division 326. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 399. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 284. 1997; Sivar. & Mathew, Fl. Nilambur 614. 1997; Sasidh., Fl. Periyar Tiger Reserve 368. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 286. 2002; Mohanan & Sivad., Fl. Agasthyamala 605. 2002.

*Local names:* Chunnambumaram, Kolavanchi, Pambaram, Thenadal

Trees, to 20 m high, bark greyish-white, smooth, blaze red; branchlets stellate-hairy. Leaves simple, alternate; stipules 12-18 mm long, lateral, filiform, scarious; petiole 10-125 mm long, slender, stellate scales present; lamina 7-24 x 3-12 cm, rhombic-ovate, broadly ovate or elliptic, base cuneate, obtuse or round, apex acuminate, margin entire, glabrous or with silvery stellate hairs and reddish glands beneath, chartaceous; prominently, 3-4-ribbed from base; lateral nerves 4-6 pairs, pinnate, prominent, intercostae scalariform, obscure. Flowers unisexual, 5-10 mm across, white, in erect terminal racemes of 5-12.7 cm long; bracts small; perianth 2-seriate; 5-partite, glandular at base; sepals ovate, obtuse, silky tomentose; petals 5, smaller than sepals, obovate; ovary stellate hairy, 3-celled, ovules one in each cell; styles long, slender, pistillode absent in males; stamens 10-15, filaments bearded. Fruit a capsule 2.5 x 2 cm, obovoid, depressed above, brown tomentose; seeds 13 x 8 mm, oblong, mottled with brown.

*Flowering & Fruiting:* April-November

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Kollam, Palakkad, Pathanamthitta, Malappuram, Trivandrum, Thrissur, Idukki, Wayanad

*Endemic to:* Southern Western Ghats

***Croton roxburghii*** Balakr., Bull. Bot. Surv. India 3: 39. 1961; Ansari, Fl. Kasaragod Dist. 337. 1985; Sivar. & Mathew, Fl. Nilambur 616. 1997; Sunil, Fl. Pl. Alappuzha Dist. 807. 2000.

*Croton oblongifolius* Roxb., Fl. Ind. 3: 685. 1832, non Delile 1814, nec. Sieber ex Spreng. 1826; Hook. f., Fl. Brit. India 5: 386. 1887; Gamble, Fl. Pres. Madras 1315(919). 1925.

*Local names:* Somaraaji, Thomarayam

Bark grey or brownish; young shoots covered with minute orbicular silvery scales. Leaves simple, alternate, spiral, stipulate, turning red before falling; stipules lateral; petiole 15-40 mm long, stout, slightly grooved above, swollen at tip and base, silver lepidote scales present; lamina 11-23 x 3.5-7.5 cm; elliptic-obovate, elliptic-ob lanceolate or oblong-lanceolate, base acute or cuneate, apex acute, margin more or less crenate or young, coriaceous; lateral nerves 8-13 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers unisexual, pale yellowish-green, solitary or fascicled in the axils of minute bracts on long erect often fascicled racemes, the males in the upper part of the raceme, the females in the lower part; male flowers: pedicels of variable length, slender; sepals 5, ovate, obtuse; petals elliptic-lanceolate, obtuse, woolly; stamens 12, inflexed in bud; lower half of the filaments hairy; female flowers: pedicels short, stout; sepals 5, ovate, acute, ciliate; petals 5, obovate, margin densely woolly; ovary 3-celled, ovule 1 in each cell; styles 3, each again divided into 2 longer slender curled branches. Fruit a capsule, subglobose, depressed, slightly 3-lobed, lepidote scaly; seeds 3.

*Flowering & Fruiting:* March-June

*Habitat:* Scrub forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Malappuram, Alappuzha, Thrissur

*Geographical:* India, Myanmar and Sri Lanka

**Daphniphyllum neilgherrense** (Wight) K. Rosenth. in Engl., Pflanzenr. VI 147a(68): 7. 1919; Gamble, Fl. Pres. Madras 1311(917). 1925; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 429. 1994; Sasidh., Fl. Periyar Tiger Reserve 369. 1998; Mohanan & Sivad., Fl. Agasthyamala 623. 2002.

*Goughia neilgherrensis* Wight, Ic. tt. 1878, 1879. 1852.

*Daphniphyllum glaucescens* Muell.-Arg. in DC., Prodr. 16: 3. 1866, non Blume 1826-1827; Hook. f., Fl. Brit. India 5: 353. 1887.

*Daphniphyllum roxburghii* Baillon, Etude Euphorb. 565. 1858.

*Local name:* Vellakottlan

Trees, to 15 m, bark surface greyish-brown, smooth; blaze yellow; exudation milky; branchlets stout. Leaves simple, alternate, clustered at the tip of branchlets, estipulate; petiole 5-25 mm, slender, glabrous; lamina 3.5-12 x 1.5-5 cm, obovate, elliptic-obovate or obovate-oblong, base acute, apex acute or obtuse, margin entire, revolute, glabrous above and glaucous beneath, coriaceous; lateral nerves 5-10 pairs, slender, faint, intercostae reticulate, faint. Flowers unisexual, yellowish-green, in axillary racemes; male flowers: bracts 3 x 3 mm, ovate, obtuse, ciliate; tepals 5, minute; stamens 5-12, free; anthers oblong; connective apiculate; female flowers: bracteate, perianth similar to male flowers; ovary superior, imperfectly 2-celled; ovules 2 in each cell; stigmas thick, recurved, undivided. Fruit a drupe, 10-12 mm long, ovoid, greenish-red.

*Flowering & Fruiting:* January-June

*Habitat:* Evergreen and shola forest margins

*Distribution*

*Kerala:* Idukki, Trivandrum, Wayanad

*Geographical:* Indo-Malesia

**Dimorphocalyx glabellus** Thw. var. **lawianus** (Muell.-Arg.) Chakrab. & Balakr., Proc. Indian Acad. Sci. (Pl. Sci.) 100: 296. 1990.

*Trigonostemon lawianus* Muell.-Arg., Linnaea 34: 212. 1865.

*Dimorphocalyx lawianus* (Muell.-Arg.) Hook.f., Fl. Brit. India 5: 404. 1887; Gamble, Fl. Pres. Madras 1337(935). 1925; Anil Kumar, Fl. Pathanamthitta Dist. 597. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 400. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 285. 1997; Sasidh., Fl. Periyar Tiger Reserve 369. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 287. 2002.

Trees, to 8 m high; bark smooth, yellowish-grey; blaze dull yellow, branchlets slender, greyish-white. Leaves simple, alternate; stipule lateral, ovate, acute; petiole 5-20 mm long, slender, grooved above, glabrous; lamina 5-17.5 x 2-7 cm, elliptic-lanceolate, elliptic-oblong or ovate-lanceolate, base acute, apex acute, obtusely acuminate or acuminate, margin entire or distantly dentate or crenate, glabrous, dark green above, paler beneath, coriaceous; lateral nerves 7-13 pairs, parallel, slender, faint, intercostae reticulate, faint. Flowers unisexual, white; male flowers: 8-10 mm across, in axillary cymes; calyx cupular, unequally 5-lobed, 4-5 mm long; petals 5, 10 x 5 mm, oblong, obtuse, imbricate; disc glands adnate with petals; stamens 10-20, form a short column in 2 whorls; filaments thick; anthers dorsifixed; female flowers: solitary or 2-3 together, terminal or leaf-opposed; calyx deeply 5-partite, 2.5 cm long, oblong, erect, imbricate, petals as in male flower; disc annular; ovary superior, ovoid, 3-celled, densely hairy, ovule one in each cell; styles

3, connate at base, bifid, spreading. Fruit a capsule, 2 x 2.2 cm, obovoid, 3-lobed, surrounded by persistent calyx lobes; seeds yellowish mottled with brown, ellipsoid.

*Flowering & Fruiting:* March-October

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad, Kollam, Thrissur, Kozhikkode, Wayanad

*Endemic to:* Western Ghats

**Drypetes confertiflora** (Hook.f.) Pax & Hoffm. in Engl., Pflanzenr. IV 147 XV(81): 246. 1922; Sasidh. & Sivar., Fl. Pl. Thrissur For. 401. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 286. 1997; Chakrab. *et al.*, J. Econ. Tax. Bot. 21: 259. 1997.

*Cyclostemon confertiflorus* Hook.f., Fl. Brit. India 5: 341. 1887; Gamble, Fl. Pres. Madras 1302(911). 1925.

*Local name:* Kaduvapidukkan

Trees, to 25 m high; bark greyish, smooth; blaze dull yellow; branchlets glabrous, brownish, terete. Leaves simple, alternate; stipules lateral, small, caducous; petiole 5-12 mm long, stout, grooved above, glabrous; lamina 6-22 x 2.5-7.5 cm, oblong or elliptic-oblong, base oblique, apex obtusely acuminate, margin entire or distantly serrate, glabrous and glossy, coriaceous; lateral nerves 7-10 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual, axillary but usually in clusters on old wood; male flowers: pedicels 4-5 mm long; tepals 5-6, 4-6 x 3.5-5.5 mm, suborbicular, white, ciliate; stamens 15-20; filaments glabrous; inserted around disc; anthers oblong; disc impressed, large, glabrous, radiately ribbed with inflexed marginal lobe; female flowers: nearly sessile; disc cupular; ovary superior, brown tomentose, 2-celled, ovules 2. Fruit a drupe, 3.5-5 cm across, subglobose, somewhat flattened, pubescent, 2-locular; endocarp fleshy.

*Flowering & Fruiting:* February-May

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Thrissur, Kollam

*Endemic to:* Southern Western Ghats

*Status:* Rare (Nayar, 1997)

**Drypetes gardneri** (Thw.) Pax & Hoffmann in Engl., Pflanzenr. IV 147 XV(81): 270. 1922; Chakrab. *et al.*, J. Econ. Tax. Bot. 21: 264. 1997.

*Hemicyclia gardneri* Thw. in Hook.'s J. Bot. Kew Gard. Misc. 7: 21. 1855; Hook. f., Fl. Brit. India 5: 338. 1887.

*Hemicyclia travancorica* Bourd., For. Trees Travancore 329. 1908; Gamble, Fl. Pres. Madras 1300(910). 1925.

*Drypetes travancorica* (Bourd.) Sant. & Jain, Indian For. 92: 643. 1966; Mohanan, Fl. Quilon Dist. 364. 1984.

Dioecious evergreen trees, to 18 m high; branchlets terete, brownish, yellow-tomentulous to thinly puberulous, glabrous in age. Leaves simple, alternate, stipule lateral, small, cauducous; petiole 2-6 mm long, stout, tomentulous to glabrous; lamina 2.5-9 x 1-3 cm, elliptic, oblong-elliptic or ovate-lanceolate, base oblique, apex subacute, acuminate or sometimes emarginate, margin shallowly crenulate-

denticellate or serrulate or subentire, glabrous, coriaceous; lateral nerves 6-12 pairs, pinnate, slender, faint, intercostae reticulate, faint. Flowers unisexual, pale yellow, in axillary fascicles; male flowers: pedicels 3-6 mm long, puberulous; tepals 4-[5], 2.5-5 x 1.5-4 mm, obovate, suborbicular or triangular-oblong, tomentose, ciliate, imbricate; stamens (8-) 12-25, 2-4 mm long; filaments free; anthers *ca.* 1 mm long, oblong, basifixed; disc disciform, curved at margin, puberulous; females flowers: pedicels 5-8 mm long, puberulous; tepals 4, 3-5 x 2-4.5 mm, obovate to suborbicular, puberulous, ciliate; disc annular, puberulous; ovary superior, *ca.* 2 x 1.5 mm, obovoid, 1-locular, appendiculate, glabrous, ovules 2; style *ca.* 0.5 mm long, terminal; stigma *ca.* 0.5 mm broad, flabelliform or reniform. Fruit a drupe *ca.* 10 x 7 mm, bright red, obovoid, somewhat flattened, thin-walled, smooth, glabrous; pedicels *ca.* 10 mm long.

*Flowering & Fruiting:* September-January

*Distribution*

*Kerala:* Kollam

*Geographical:* South India and Sri Lanka

*Status:* Endangered (IUCN, 2000)

***Drypetes malabarica*** (Bedd.) Airy Shaw, Kew Bull. 23: 56. 1969; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 413. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 401. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 286. 1997; Sasidh., Fl. Periyar Tiger Reserve 370. 1998; Chakrab. *et al.*, J. Econ. Tax. Bot. 21: 269. 1997; Gopalan & Henry, End. Pl. India SW Ghats 142. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 287. 2002.

*Cyclostemon malabaricus* Bedd., Fl. Sylv. 199.1873; Hook. f., Fl. Brit. India 5:341.1887; Gamble, Fl. Pres. Madras 1302(911). 1925.

*Local name:* Kalladamba

Evergreen trees, to 25 m high; bole slightly fluted, bark grey, smooth; blaze yellow; branches horizontal; branchlets 2-5 mm thick, terete, tomentose. Leaves simple, alternate; stipules lateral, small, caducous; petiole 4-8 mm long, stout, tomentose; lamina 10-26 x 2.5-8.5 cm, oblong, base oblique, apex acuminate or obtusely acuminate, margin entire or distantly serrate glabrous above and brown tomentose beneath, coriaceous; lateral nerves 7-10 pairs, pinnate, prominent; intercostae reticulate, prominent. Flowers unisexual, 10-12 mm across, reddish-yellow, fascicled on old wood; pedicels 1.5-5 mm long, stout, densely fulvous tomentose; tepals 4, 4-7 x 3.5-4 mm, broadly ovate, tomentose outside, imbricate; stamens 30-40, 5-7 mm long, inserted around a small fulvous villous disc; ovary superior, globose, 2-celled, ovules 2, densely tomentose; style short; stigma 4-lobed, peltate, black. Fruit a drupe 25 x 16-18 mm, subglobose, 2-locular, thick-walled, fulvous-tomentose, stigma 2, reniform, persistent; pedicels 10-12 mm long.

*Flowering & Fruiting:* December-June

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Kollam, Thrissur, Palakkad, Trivandrum

*Endemic to:* Southern Western Ghats

*Status:* Rare (Nayar, 1997)

**Drypetes oblongifolia** (Bedd.) Airy Shaw, Kew Bull. 23: 57. 1969; Manilal, Fl. Silent Valley 248. 1988; Ramach. & Nair, Fl. Cannanore Dist. 414. 1988; Vajr., Fl. Palghat Dist. 427. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 598. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 401. 1996; Sivar. & Mathew, Fl. Nilambur 618. 1997; Sasidh., Fl. Periyar Tiger Reserve 370. 1998; Chakrab. *et al.*, J. Econ. Tax. Bot. 21: 270. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 287. 2002.

*Laneasagum oblongifolium* Bedd., Madras J. Lit Sci. ser. 3, 6: 71. 1861.

*Cyclostemon macrophyllus* sensu Gamble, Fl. Pres. Madras 1302(911). 1925, non Blume 1826.

*Cyclostemon macrophyllus* Blume var. *sessiliflora* Bedd., Fl. Sylv. t. 278. 1872.

*Cyclostemon macrophyllus* Blume var. *peninsularis* Hook.f., Fl. Brit. India 5:341. 1887.

*Local name:* Malampayin

Trees, to 20 m high, bole fluted, bark pale grey, mottled with green, lenticellate; blaze creamy yellow; branches horizontal; branchlets brown angled when young, finally terete, greyish; young parts pubescent. Leaves simple, alternate, stipulate; stipules lateral, small, caducous; petiole 3-10 mm long, stout, grooved above, pubescent; lamina 9-27 x 3-10 cm, oblong, elliptic-oblong or oblong-lanceolate, base obliquely acute or round; apex acuminate, margin entire or distantly serrate, glabrous, coriaceous, lateral nerves 5-11 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual, cauliflorous or axillary, yellowish; male flowers: sessile, 10-15 mm across, tepals 4-5, 8-10 x 4-5 mm, oblong to ovate; stamens 30-40, 5-10 mm long, inserted around the disc; anthers oblong; disc disciform, lobulate, pubescent; female flowers: sessile, solitary or in pairs, 10-15 mm across, tepals 4-5, 4-5 x 4-5 mm, ovate to orbicular, tomentellous; disc annular; ovary globose, 2-celled, ovules 2, tomentellous; style short; stigma 2 mm broad, flabellate. Fruit a drupe 2 x 1.5 cm, sessile, globose or ellipsoid-oblong, yellow, densely pubescent, brown when dry.

*Flowering & Fruiting:* January-December

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Thrissur, Kannur, Pathanamthitta, Malappuram, Palakkad, Kozhikkode, Idukki

*Geographical:* Indo-Malesia

**Drypetes roxburghii** (Wall.) Hurusawa, J. Fac. Sci. Univ. Tokyo, Sect. 3. Bot. 6: 337. 1954; Manilal, Fl. Silent Valley 248. 1988; Sivar. & Mathew, Fl. Nilambur 618. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 281. 1999; Chakrab. *et al.*, J. Econ. Tax. Bot. 21: 271. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 288. 2002.

*Putranjiva roxburghii* Wall., Tent. Fl. Nap. 61. 1826; Hook. f., Fl. Brit. India 5: 336. 1887; Gamble, Fl. Pres. Madras 1311(917). 1925.

*Local names:* Ekkoli, Poothilanji, Ponkalam, Puthrajeevi

Trees, to 20 m high, bark dark grey, whitish when young with horizontal lenticels; branches generally pendent; branchlets terete, brown or blackish, slender, pubescent. Leaves simple, alternate; stipule small, lateral, caducous; petiole 5-7 mm long, slender, pubescent; lamina 3.5-12 x 1.5-4.5 cm, elliptic-oblong, base oblique, apex shortly acuminate, acute or obtuse with retuse tip; margin serrate or serrulate, glabrous, dark green, shining, coriaceous; lateral nerves 8-12 pairs, pinnate, slender, ascending, prominent, intercostae reticulate, slender, prominent.

Flowers unisexual, small, yellow; male flowers: sessile, in axillary spikes, 2-2.5 mm across; pedicels 1.5-2 mm long, glabrous; tepals 3-5, oblong, puberulous without, ciliate, obtuse, imbricate; stamens 2-4, 1.5-2 mm long; filaments thick, more or less connate towards base; anthers ovate, hairy; female flowers: solitary or in 2 or 3, axillary; pedicel upto 15 mm long, puberulous; bracts lanceolate; tepals 5-6, 2-2.5 × 1-1.5 mm, unequal, oblong, puberulous without, ciliate, acute; ovary superior, 3 x 2.5 mm, globose, tomentose, 3-celled, ovules 2 in each cell; style 3, spreading, tomentose, often connate below into dilated into broad fleshy stigma; stigma crescent-shaped, glandular. Fruit a drupe, 1.3-2 x 1.5 cm, ovoid-ellipsoid, white tomentose; seed one, crustaceous; pedicels 6-25 mm long.

*Flowering & Fruiting:* March-April

*Habitat:* Moist and dry deciduous forests, also in sacred groves

*Distribution*

*Kerala:* Idukki, Malappuram, Palakkad, Thrissur

*Geographical:* Indo-Malesia

**Drypetes sepiaria** (Wight & Arn.) Pax & Hoffm. in Engl., Pflanzenr. IV 147 XV(81): 271. 1922; Mohanan, Fl. Quilon Dist. 364. 1984; Sasidh., Fl. Chinnar Wildlife Sanctuary 281. 1999; Chakrab. *et al.*, J. Econ. Tax. Bot. 21: 272. 1997; Sunil, Fl. Pl. Alappuzha Dist. 808. 2000; Kumar *et al.*, J. Econ. Tax. Bot. 26: 142. 2002.

*Hemicyclia sepiaria* Wight & Arn., Edinb. New Phil. J. 14: 297. 1833; Hook. f., Fl. Brit. India 5: 337. 1887; Gamble, Fl. Pres. Madras 1299(909). 1925.

*Local names:* Veeramaram, Vellakasavu

Evergreen trees, to 15 m high, bark grey, thin, smooth; branchlets yellowish or blackish, terete. Leaves simple, alternate; stipules small, caducous; petiole 3-8 mm, stout, puberulent; lamina 2-9 x 1.5-4.5 cm, ovate, elliptic, ovate-oblong, ovate-elliptic or orbicular, base round or cordate, apex obtuse or round and retuse, margin entire or crenate, thickly coriaceous, glabrous, shining; lateral nerves 4-8 pairs, slender, pinnate, obscure, ascending, intercostae reticulate, obscure. Flowers unisexual, yellowish, in axillary clusters; male flowers: pedicel 4-7 mm, pubescent; tepals 4, 3-4 x 2.5-3.5 mm, small, concave, ciliate, obtuse, imbricate; stamens 6-10; filaments 2 mm, free; anthers oblong; disc disciform or shortly cupular; female flowers: pedicel 1-10 mm long, pubescent; tepals 4, 2-4 x 1.7-3.5 mm, small, concave, ciliate; disc annular, crenate; ovary ovoid, 1-1.5 mm across, 1-locular, ovules 2; style 1; stigma broad, cupular, peltate, fimbriate. Fruit a drupe 8 mm across, globose, glabrous, red; epicarp crinkled; seed 1, arillate.

*Flowering & Fruiting:* January-April

*Habitat:* Dry and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Kollam, Alappuzha, Trivandrum, Idukki

*Geographical:* Peninsular India and Sri Lanka

**Drypetes venusta** (Wight) Pax & Hoffm. in Engl., Pflanzenr. IV 147 XV(81): 268. 1922; Mohanan, Fl. Quilon Dist. 365. 1984; Chakrabarty *et al.*, J. Econ. Tax. Bot. 21: 277. 1997; Sasidh., Fl. Periyar Tiger Reserve 370. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 288. 2002.

*Astylis venusta* Wight, Ic. t. 1992. 1853.

*Hemicyclia venusta* (Wight) Thw. in Hook.'s J. Bot. Kew Gard. Misc. 7: 272. 1855; Hook. f., Fl. Brit. India 5: 339. 1887; Gamble, Fl. Pres. Madras 1300(909). 1925.

*Drypetes elata* (Bedd.) Pax. & Hoffm. in Engl., Pflanzenr. IV 147 XV(81): 268. 1922; Manilal, Fl. Silent Valley 248. 1988; Ramach. & Nair, Fl. Cannanore Dist. 413. 1988; Vajr., Fl. Palghat Dist. 427. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 413. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 401. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 286. 1997; Sivar. & Mathew, Fl. Nilambur 617. 1997; Sasidh., Fl. Periyar Tiger Reserve 370. 1998.

*Hemicyclia elata* Bedd., Fl. Sylv. t. 279. 1872; Hook. f., Fl. Brit. India 5: 339. 1887; Gamble, Fl. Pres. Madras 1300(909). 1925.

*Local names:* Choota, Enikamban, Konamaram, Thalakani, Vellakasavu

Deciduous trees, to 30 m high, bole fluted, bark greyish-white, smooth, thin; branchlets 1-5 mm thick, slender, drooping, glabrous. Leaves simple, alternate; stipules small, lateral, caducous; petiole 3-20 mm long, slender, grooved above, glabrous; lamina 6-15 x 2-6.4 cm, elliptic, elliptic-lanceolate or elliptic-oblong, base oblique, acute, apex obtusely acute, obtusely acuminate or acute, margin entire, glabrous, coriaceous; lateral nerves 7-15 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers unisexual, greenish-yellow, 5-8 mm across; male flowers: 3-6 in axillary clusters; pedicel 5-8 mm long, minutely hispid; tepals 4, 4 x 2 mm, oblong, obtuse, hispid outside; stamens 6-10; filaments 3 mm long, free, glabrous; anthers oblong; disc lobulate, villous; female flowers: solitary or in pairs, axillary; pedicel minutely hispid; tepals 4, 4 x 2 mm, oblong, obtuse, hispid outside; ovary ovoid, 1-celled; stigma mushroom shaped; ovules 2, pendulous. Fruit a drupe, obovoid, 1.5-2.5 cm long, greenish-yellow, drooping; seed solitary, covered with pulpy mucilage.

*Flowering & Fruiting:* November-July

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Malappuram, Palakkad, Kannur, Trivandrum, Thrissur

*Endemic to:* Western Ghats

***Drypetes wightii*** (Hook. f.) Pax & Hoffm. in Engl., Pflanzenr. IV 147 XV(81): 273. 1922; Sasidh. & Anto in Manoharan et al., Silent Valley-Whispers of Reason 139. 1999; Sasidh., Fl. Periyar Tiger Reserve 371. 1998; Chakrab. *et al.*, J. Econ. Tax. Bot. 21: 277. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 288. 2002.

*Hemicyclia wightii* Hook.f., Fl. Brit. India 5: 339. 1887; Gamble, Fl. Pres. Madras 1300(909). 1925.

*Local name:* Vellakasavu

Bark greyish-white, smooth; branches drooping; branchlets terete, glabrous. Leaves simple, alternate; stipules small, lateral, caducous; petiole 2-8 mm long, stout, glabrous; lamina 4-10.5 x 1.5-3.5 cm, elliptic, elliptic-oblong or elliptic-lanceolate, base oblique or acute, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves 6-9 pairs, pinnate, prominent; intercostae reticulate, prominent. Flowers unisexual, yellowish, in axillary clusters or in the axils of fallen leaves; male flowers: pedicels 3-5 mm long, puberulous; tepals 4-5, 3 x 2-2.5 mm, broadly elliptic to suborbicular, tomentellous outside; stamens 6-10, 1-1.5 mm long; filaments free; anthers oblong; disc entire, pubescent; female flowers: pedicels 4-5 mm long, puberulous; tepals 4-5, 3-4 x 2.5-3.5 mm, suborbicular, tomentellous outside; disc



annular; ovary 2 x 1 mm, ellipsoid, 1-locular, ovules 2, sparsely puberulous to glabrous; stigma reniform. Fruit a capsule 17-20 x 15 mm, ovoid, ellipsoid or obovoid, smooth, glabrous; pedicels 10-12 mm long.

*Flowering & Fruiting:* October-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Wayanad

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Epiprinus mallotiformis** (Muell.-Arg.) Croizat, J. Arnold Arbor. 23: 53. 1942; Manilal, Fl. Silent Valley 249. 1988; Ramach. & Nair, Fl. Cannanore Dist. 414. 1988; Vajr., Fl. Palghat Dist. 427. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 413. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 403. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 287. 1997; Sasidh., Fl. Periyar Tiger Reserve 371. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 288. 2002; Mohanan & Sivad., Fl. Agasthyamala 607. 2002.

*Symphyllia mallotiformis* Muell.-Arg., Linnaea 34: 156. 1865; Gamble, Fl. Pres. Madras 1323(925). 1925.

*Adenochlaena indica* (Bedd.) Bedd. ex Hook.f., Fl. Brit. India 5: 418. 1887.

*Cephalocroton indicum* Bedd., Fl. Sylv. t. 261. 1872.

*Local name:* Karinjikkada

Trees, to 12 m; tender parts stellate-tomentose. Leaves simple, alternate; stipules 2, lateral, minute; petiole 4-20 mm long, stout, stellate-tomentose when young; lamina 7-20 x 1-8 cm, elliptic, elliptic-ovate or elliptic-obovate, base round, obtuse or acute, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 6-10 pairs, pinnate, prominent intercostae reticulate, prominent. Flowers unisexual, pale green, in long axillary spikes; male flowers: densely clustered along the upper part of the raceme; tepals 4-6, ovate, acute, thinly tomentose; stamens 4-6, free, inflexed in bud; pistillode columnar; female flowers: tepals 5-8, unequal, 2 mm, shortly connate, lanceolate, puberulous without; ovary superior, 2 mm long, globose, pubescent, 3-locular; ovules one in each cell; styles 3, stout, 3 mm, twice forked, papillose. Fruit a capsule 2.5-3 cm across, 3-lobed, lobes globular, densely stellate hairy; seeds 3, globose.

*Flowering & Fruiting:* March-April

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Palakkad, Kannur, Trivandrum, Kollam, Thrissur, Idukki, Wayanad

*Endemic to:* Southern Western Ghats

**Excoecaria agallocha** L., Sp. Pl. 1451. 1763; Hook. f., Fl. Brit. India 5: 472. 1888; Gamble, Fl. Pres. Madras 1344(941). 1925; Manilal & Sivar., Fl. Calicut 270. 1982; Mohanan, Fl. Quilon Dist. 366. 1984; Ansari, Fl. Kasaragod Dist. 339. 1985; Ramach. & Nair, Fl. Cannanore Dist. 417. 1988; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 416. 1994; Chakrab. & Gangop., J. Econ. Tax. Bot. 18: 198. 1994; Sunil, Fl. Pl. Alappuzha Dist. 817. 2000.

*Stillingia agallocha* (L.) Baill., Etud. Gen. Euph. 518. 1858.

*Local name:* Komatti, Kannampotti

Trees to 10 m high, bark grey, smooth; branchlets 2-5 mm thick, brownish or greyish. Leaves simple, alternate; stipules lateral, minute; petiole 10-30 mm long, slender, glabrous; lamina 3-13 x 1.5-5 cm, elliptic, oblong-lanceolate or ovate-lanceolate, base acute, obtuse or round, apex acuminate or acute, margin crenulate-serrulate or entire, glabrous, glossy above, coriaceous; lateral nerves 5-10 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers unisexual, pale green; male flowers: in axillary spikes of 3.5-12.5 cm long, 2-3 together in an axil with a series of spirally arranged bracts; each bract subtending one male flower: bracteoles narrow, on with either side of the flower, lacinate, large glands on either side, sessile; tepals 3, 1.5 × 1 mm, lacinate; stamens 3, yellow; filaments free, to 2 mm long; anthers basifixed; female flowers: in axillary racemes of 4-8 cm long, 1-2 in each axil; pedicel 3 mm long; bracteoles as in male flower; tepals 3, 1.5 × 1 mm, lacinate, closely adpressed to the ovary; ovary superior, 1-1.5 mm across, tricarpeal, ovules one in each locule, pendulous; styles 3, simple, stout, spreading, spreading, recurved; stigma 3, glandular. Fruit a capsule 4-5 x 8-10 mm, depressed globose, crustaceous, 3-celled, black; pedicels 3-5 mm long; seeds 3, globose.

*Flowering & Fruiting:* March-October

*Habitat:* Banks of backwaters and mangrove forests

*Distribution*

*Kerala:* Kasaragode, Kollam, Trivandrum, Malappuram, Kozhikkode, Alappuzha, Thrissur, Ernakulam, Kannur

*Geographical:* Indo-Malesia to Australia and Pacific islands

**Excoecaria indica** (Willd.) Muell.-Arg., *Linnaea* 32: 123. 1863; Mohanan, *Fl. Quilon Dist.* 366. 1984; Chakrab. & Gangop., *J. Econ. Tax. Bot.* 18: 206. 1994; Sunil, *Fl. Pl. Alappuzha Dist.* 817. 2000.

*Sapium indicum* Willd., *Sp. Pl.* 4: 572.1805; Hook. f., *Fl. Brit. India* 471. 1888; Gamble, *Fl. Pres. Madras* 1346(941). 1925.

*Local name:* Pencolam

Evergreen trees, to 8 m high, bark greyish or pale brown, smooth, lenticellate; exudation milky acrid; branchlets greyish, terete. Leaves simple, alternate, stipulate; stipules minute, lateral; petiole 5-15 mm long, stout, grooved above, glabrous; lamina 4-15 x 2-4 cm, elliptic-lanceolate, lanceolate, oblong or oblong-elliptic, base acute or cuneate, apex caudate, acuminate or acute, margin crenate, coriaceous, glabrous, glossy above; lateral nerves 5-22 pairs, slender, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual, yellowish-green, in terminal or lateral racemes, to 10 cm long with a series of spirally arranged bracts; bracts subtending 5-7 male flowers and large glands on either side; female flowers: 1-2 at base; pedicels upto 4 cm long, slender; tepals 3, connate, 1-1.5 × 1.4-2 mm; ovary superior, 1.5-2 mm across, 3-celled, ovules one in each cell; styles 3, simple, spreading, recurved, shortly connate at base; stigma linear, glandular. Fruit a capsule, 2.5-3 cm across, globose, unlobed or scarcely lobed, 3-locular, dehiscent; seeds 12-12 x 5-7 mm, dark brown, oblong-ovoid.

*Flowering & Fruiting:* December-March

*Distribution*

*Kerala:* Kollam, Alappuzha

*Endemic to:* Peninsular India

**Excoecaria oppositifolia** Griff. var. **crenulata** (Wight) Chakrab. & Gangop., J. Econ. Tax. Bot. 18: 208. 1994; Sasidh., Fl. Parambikulam Wildlife Sanctuary 290. 2002.

*Excoecaria crenulata* Wight, Ic. t. 1865. 1852; Hook. f., Fl. Brit. India 5: 473. 1888; Gamble, Fl. Pres. Madras 1345(941). 1925; Manilal, Fl. Silent Valley 250. 1988; Ramach. & Nair, Fl. Cannanore Dist. 417. 1988; Vajr., Fl. Palghat Dist. 429. 1990; Sivar. & Mathew, Fl. Nilambur 621.1997; Sasidh., Fl. Periyar Tiger Reserve 372.1998. *Excoecaria bantamensis* Muell.-Arg., Linnaea 32: 124. 1863 & in DC., Prodr. 15: 1219. 1866.

*Excoecaria robusta* Hook.f., Fl. Brit. India 5: 474. 1888; Gamble, Fl. Pres. Madras 1345(941). 1925; Sasidh., Fl. Periyar Tiger Reserve 372. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 284. 1999.

Trees, upto 8 m high; branchlets 3-7 mm thick, flattened or angled when young, terete in age, brown. Leaves simple, opposite; stipules minute, inter petiolar, 15 mm long, lanceolate; petiole 5-30 mm long, stout, grooved above, glabrous; lamina 8-20 x 2-4.5 cm, oblong-lanceolate, oblanceolate, elliptic or obovate, base acute or obtuse, apex acuminate, apiculate or subacute, margins shallowly crenate-serrate, dentate or entire, coriaceous, glabrous, glossy above; lateral nerves, 10-22 pairs, slender, parallel, prominent; intercostae reticulate, prominent. Flowers unisexual, yellowish-green; bracteoles with large glands on either side; male flowers: in terminal and axillary 3.5-18 cm long spikes; bracts 1.5-2 x 0.8-2 mm, broadly ovate, deltoid, triangular, suborbicular or flabellate, denticulate to entire; tepals 3, 1-1.5 x 0.8-1.3 mm, broadly ovate, ovate-oblong or suborbicular, dentate or erose or occasionally subentire; stamens 2-3, 1.5-2 mm long, anthers 0.5-1 mm across, basifixed; female flowers: in axillary or terminal 1-3 flowered clusters; bracts 1-2 x 1-2.5 mm, broadly triangular to deltoid or suborbicular, entire to erose; pedicel 1-5 mm long; tepals 3, 2-3.5 x 1.5-3 mm, broadly ovate to triangular, lanceolate to entire; ovary superior, 1.5-2 mm across, subglobose, 3-celled, ovules 1 in each cell; styles 3, 3-7 mm long, simple or occasionally shortly bifid above; basal column 1-2 mm long. Fruit a capsule 1-3 cm across, somewhat depressed, shallowly or sometimes deeply 3 lobed, seeds globose.

*Flowering & Fruiting:* January-December

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Malappuram, Palakkad, Kannur

*Geographical:* Peninsular India and Sri Lanka

**Falconeria insignis** Royle, Bot. Himal. Mts. 354. t.98. f.2. 1839.

*Sapium insigne* (Royle) Benth. in Benth. & Hook. f., Gen. Pl. 3: 335. 1880; Hook. f., Fl. Brit. India 5: 471. 1888; Gamble, Fl. Pres. Madras 1346(941). 1925; Manilal & Sivar., Fl. Calicut 270. 1982; Ansari, Fl. Kasaragod Dist. 346. 1985; Manilal, Fl. Silent Valley 254. 1988; Vajr., Fl. Palghat Dist. 437. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 413. 1996; Sasidh., Fl. Periyar Tiger Reserve 380. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 298. 2002; Mohanan & Sivad., Fl. Agasthyamala 620. 2002.

*Falconeria malabarica* Wight, Ic. t. 1866. 1852.

*Local names:* Kalmaram, Kannampotti

Deciduous monoecious trees, to 15 m high; exudation milky; branchlets stout, terete.

Leaves simple, alternate, petiole 10-50 mm, slender glabrous, with 2 conspicuous glands at the apex; lamina 7-20 x 2.5-7 cm, elliptic-oblong, elliptic-ovate or obovate, base acute, apex acuminate, margin crenate, membranous, glabrous; lateral nerves 10-18 pairs, pinnate, prominent beneath, intercostae reticulate, prominent. Flowers unisexual, reddish, in terminal spikes, male flowers above, female ones below or in separate spikes; bracts 2, orbicular; male flowers: many in each bracts; bracteoles linear; tepals 2, orbicular, concave, stamens 2, free, exserted; female flowers: solitary in each bract; bracteoles concave imbricate, basally connate, mucronate; tepals 2, ovate, acuminate; ovary superior, ovoid, glabrous, 3-locular, ovules 1 in each cell, pendulous; styles 2-3; stigmas 3, subsessile, recurved. Fruit a capsule, loculicidal, fleshy, subglobose; seeds 3, globose, smooth.

*Flowering & Fruiting:* January-February

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kasaragode, Palakkad, Trivandrum, Malappuram, Kozhikkode, Thrissur, Idukki

*Geographical:* Indo-Malesia

**Givotia moluccana** (L.) Sreem., Taxon 24: 696. 1975; Matthew, Kew Bull. 46: 545. 1991; Sasidh., Fl. Parambikulam Wildlife Sanctuary 291. 2002.

*Croton moluccanus* L., Sp. Pl. 1005. 1753.

*Givotia rottleriformis* Griff. ex Wight, Ic. 5: 24. 1852; Hook. f., Fl. Brit. India 5: 395.

1887; Gamble, Fl. Pres. Madras 1342(938). 1925; Vajr., Fl. Palghat Dist. 430. 1990; Sasidh., Fl. Periyar Tiger Reserve 373. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 284. 1999; Sunil, Fl. Pl. Alappuzha Dist. 818. 2000.

*Local names:* Kappakadalavanakku, Vandarali, Kottathanukku

Dioecious trees, to 20 m high; bark brown, smooth, peeling off in thick scales; branchlets densely stellate-tomentose. Leaves simple, alternate, stipulate; petiole 8-12 cm long, stout, swollen at base, stellate-tomentose, 2 prominent glands near the tip; lamina 6-18 x 5-20 cm, broadly ovate or orbicular, base cordate, apex acute or shortly acuminate, margin coarsely repand-dentate, glabrous above except nerves and white stellate tomentose beneath; 5-ribbed from base, palmate, which repeatedly dividing dichotomously towards margin; prominent; intercostae scalariform. Flowers unisexual, in axillary or subterminal racemose or cymose panicles; pedicels jointed; bracts linear, conspicuous; tepals 10, in 2 series; outer 5 x 3 mm, incurved, subacute, outside, stellate tomentose; inner petaloid 7 x 4 mm, shortly connate at base, obtuse; stamens 8-20, exserted; filaments free, unequal to 6 mm, villous at base; anthers oblong; disc 4, free; ovary superior, globose, stellate tomentose, 2-3-celled, ovules in each cell; styles short, 2-fid, spreading. Fruit a drupe 2.5 cm across, subglobose or ellipsoid, densely stellate tomentose; seeds 3, oblong; testa bony.

*Flowering & Fruiting:* October-February

*Habitat:* Dry and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Idukki, Palakkad, Alappuzha

*Geographical:* Peninsular India and Sri Lanka

**Glochidion bourdillonii** Gamble, Bull. Misc. Inform. Kew 1925: 330. 1925 & Fl. Pres. Madras 1308(915). 1925; Mohanan, Fl. Quilon Dist. 366. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 417. 1994; Sasidh., Fl. Periyar Tiger Reserve 373. 1998; Ramach. & Nair, Fl. Cannanore Dist. 418. 1988; Chakrab. & Gangop., J. Econ. Tax. Bot. 19: 187. 1995.

Trees, to 10 m high; branchlets greyish, black or chocolate-coloured, glabrous. Leaves simple, alternate, stipulate; stipule lateral; petiole 3-6 mm long, stout, glabrous; lamina 4-12 x 2-5.5 cm, oblong, elliptic-oblong, ovate, ovate-lanceolate or obovate, base oblique, apex acuminate or apiculate, margin entire, coriaceous, glabrous; lateral nerves 4-8 pairs, pinnate, prominent, intercostae subscalariform, prominent. Flowers unisexual, yellow, in slightly supra-axillary upto 12-flowered clusters; peduncle upto 3 mm long; male flowers: pedicel 6-10 mm long; tepals 3 + 3, 2-4 x 1-2 mm, oblong-elliptic or obovate to subspathulate; stamens 3, ca. 1 mm long, connate by their connectives in a column; connectives produced; female flowers: pedicels 1-5 mm; tepals 3+3, free or shortly connate, 0.7-1.5 x 0.3-1.2 mm, triangular, ovate, oblong or linear-lanceolate; ovary superior, 1-2 mm across, depressed or subglobose, 4-5 locular, ovules 2 in each cell; styles 4-5, initially free, deltoid, triangular or orbicular, connivent or erect, finally connate and turbinate or subglobose or cylindric, 1.2-2 x 1.2-3 mm; lobes like free styles. Fruit a capsule, 3-4 x 7-10 mm, somewhat depressed, 4-5 locular, deeply lobed with the lobes mostly bilobulate; seeds 5 or 6, 3 x 3 mm, dark brown, glabrous; pedicels upto 5 mm long.

*Flowering & Fruiting:* February-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Kannur, Trivandrum, Idukki

*Endemic to:* Peninsular India

*Status:* Vulnerable (IUCN, 2000)

**Glochidion ellipticum** Wight, Ic. t. 1906. 1852; Hook. f., Fl. Brit. India 5: 321. 1887; Gamble, Fl. Pres. Madras 1308(915). 1925; Mohanan, Fl. Quilon Dist. 367. 1984; Ramach. & Nair, Fl. Cannanore Dist. 418. 1988; Vajr., Fl. Palghat Dist. 430. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 602. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 417. 1994; Chakrab. & Gangop., J. Econ. Tax. Bot. 19: 199. 1995; Subram., Fl. Thenmala Division 339,31,36; Sasidh. & Sivar., Fl. Pl. Thrissur For. 404. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 289. 1997; Sivar. & Mathew, Fl. Nilambur 622. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 285. 1999; Sasidh., Fl. Periyar Tiger Reserve 373. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 291. 2002; Mohanan & Sivad., Fl. Agasthyamala 609. 2002.

*Phyllanthus malabaricus* Muell.-Arg., Linnaea 34: 69. 1865 & in Flora 48: 386. 1865 & in DC., Prodr. 15: 305. 1866.

*Glochidion malabaricum* (Muell.-Arg.) Bedd., Fl. Sylv. 193. 1872; Hook. f., Fl. Brit. India 5: 319. 1887; Gamble, Fl. Pres. Madras 1308(915). 1925; Ramach. & Nair, Fl. Cannanore Dist. 419. 1988; Antony, Fl. Kottayam Dist. 360. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 602. 1994; Sivar. & Mathew, Fl. Nilambur 622. 1997; Mohanan & Sivad., Fl. Agasthyamala 609. 2002.

*Local names:* Kulachan, Njanjetti

Trees, to 15 m high, bark blackish-grey or dark brown, with shallow vertical striations; blaze red; branchlets sometimes sparsely puberulous when young, soon glabrous. Leaves simple, alternate, distichous; stipule lateral; petiole 2-9 mm long, stout, glabrous; lamina 4-17 x 1.5-9 cm, elliptic, oblong, elliptic-oblong, elliptic-lanceolate, oblong-lanceolate, subfalcate or obovate, base acute, attenuate, round or oblique, apex apiculate to acuminate or obovate, margin entire, coriaceous, glabrous, glossy; lateral nerves 5-12 pairs, pinnate, prominent, intercostae scalariform, faint. Flowers unisexual, yellow, in dense clusters from leafscars; male flowers: pedicels 5-17 mm long, filiform; tepals 3+3, 1.5-5 x 0.3-2 mm, ovate, elliptic, triangular, oblong, linear or spatulate; stamens 3-4, 1-1.5 mm long, connate by their connectives in a column; connectives produced; female flowers: sessile or pedicels 1-5 mm; tepals 3+3, 1-3 x 0.5-1 mm, linear, oblong, elliptic or triangular, occasionally sparsely puberulous; ovary superior, 0.5-1 mm across, subglobose, usually 4 locular, ovules 2 in each cell, densely hispid; style 2-3 mm, columnar to conical, sometimes obconic; lobes corresponds to locules, suborbicular, oblong or linear, occasionally bilobulate, erect or spreading. Fruit a capsule 3-10 x 6-15 mm, depressed, unlobed or shallowly to deeply lobed with the lobes rounded or bilobular, crustaceous, hirsute; seeds brown, glabrous; pedicels 2-8 mm.

*Flowering & Fruiting:* January-July

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Kollam, Idukki, Pathanamthitta, Malappuram, Thrissur, Palakkad, Kannur, Trivandrum, Kottayam

*Endemic to:* Western Ghats

**Glochidion heyneanum** (Wight & Arn.) Wight, Ic. t. 1908. 1852; Hook. f., Fl. Brit. India 5: 323. 1887; Chakrab. & Gangop., J. Econ. Tax. Bot. 19: 205. 1995; Sasidh., Fl. Parambikulam Wildlife Sanctuary 292. 2002.

*Gynoon heyneanum* Wight & Arn., Edinb. New Phil. J. 14: 300. 1833 & in Dietr., Syn. Pl. 5: 388. 1852.

*Glochidion velutinum* Wight, Ic. t. 1907. f.2. 1852; Hook. f., Fl. Brit. India 5: 322. 1887; Gamble, Fl. Pres. Madras 1307(914). 1925; Ramach. & Nair, Fl. Cannanore Dist. 419. 1988; Antony, Fl. Kottayam Dist. 360. 1989; Sasidh., Fl. Periyar Tiger Reserve 374. 1998.

*Local names:* Chathakkadambu, Kayara

Tomentose trees, to 7 m high, bark brown, rough; branchlets brown. Leaves simple, alternate, distichous; stipules lateral; petiole 3-6 mm, slender, tomentose; lamina 3-15 x 1.5-8 cm, elliptic, elliptic-oblong, elliptic-lanceolate or elliptic-ovate, base acute or oblique, apex acute, obtuse or acuminate at apex, margin entire, coriaceous, densely to sparsely puberulous to glabrous above and velvety tomentose beneath; lateral nerves 4-8 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers unisexual, yellow, solitary or few together in axillary clusters; male flowers: pedicels 5-14 mm long, filiform, tepals 3-3, 1.5-4 x 0.8-2 mm, oblong, lanceolate or oblanceolate, tomentose; stamens 3, 1-2 mm long, connate by their connectives in a column; connectives produced; female flowers: pedicel 1-5 mm long, filiform

tomentose; tepals 3+3, oblong, ovate, triangular, lanceolate or linear, densely tomentose; ovary superior, 1-1.5 mm across, subglobose, 3-6 locular; ovules 2 in each cell; style 1-3 mm long, columnar to clavate or occasionally obconic or sometimes free and forming globose mass of connivent lobes; apical lobes 3-6, orbicular, elliptic, oblong or triangular often bilobulate. Fruit a capsule 3-5 x 6-12 mm, depressed, deeply lobed with bilobulate lobes, tomentose; seeds 5-7, 2 x 2.5 mm, grey, smooth; pedicels 5-10 mm long.

*Flowering & Fruiting:* March-November

*Habitat:* Evergreen forests, sholas and grasslands

*Distribution*

*Kerala:* Idukki, Kottayam, Kannur, Palakkad

*Geographical:* India, Himalaya, Bangladesh and Myanmar

**Glochidion hohenackeri** (Muell.-Arg.) Bedd. var. **johnstonei** (Hook. f.) Chakrab. & Gangop., J. Econ. Tax. Bot. 19: 210. 1995; Sasidh., Fl. Parambikulam Wildlife Sanctuary 292. 2002.

*Glochidion johnstonei* Hook.f., Fl. Brit. India 5: 314. 1887; Gamble, Fl. Pres. Madras 1307(914). 1925; Sasidh., Fl. Periyar Tiger Reserve 373. 1998.

Trees, to 10 m high; branchlets tawny or grey-tomentellous to sparsely puberulous. Leaves simple, alternate, distichous; stipules lateral; petiole 2-5 mm, slender, puberulous; lamina 7-13 x 1.5-6.5 cm, oblong, elliptic, elliptic-oblong, oblong-lanceolate, oblong-ovate or subfalcate, base oblique, apex acuminate, glabrous above, sparsely pilose on major nerves beneath, margin entire, coriaceous; lateral nerves 4-8 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual, yellow; male flowers: in many flowered axillary clusters; pedicels 3-8 mm long, densely tomentose; tepals 3+3, 3-4 x 0.8-1.5 mm, lanceolate or oblanceolate, puberulous; stamens 3-4, connate by their connectives in a column; connectives produced; female flowers: in few flowered axillary clusters; sessile; perianth 1.2-3 x 1.5-3.5 mm, tomentellous to glabrescent, irregularly 4-6 toothed; ovary superior, subglobose, ca. 1 mm across, 4-6 locular, ovules 2 in each cell, tomentellous to glabrous; styles 4-6, usually connate into subglobose or discoid mass, often with minute projection at the corners, sometimes free or connate only at base. Fruit a capsule 2-5 x 6-12 mm, 4-6 locular, depressed, deeply lobed with the lobes bilobulate, puberulous to glabrous; pedicels absent, to 4 mm long.

*Flowering & Fruiting:* November-April

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* Peninsular India

*Status:* Vulnerable (IUCN, 2000)

**Glochidion zeylanicum** (Gaertn.) A. Juss., Euphorb. Gen. 107. 1824, var. **zeylanicum**; Hook. f., Fl. Brit. India 5: 310. 1887; Gamble, Fl. Pres. Madras 1306(914). 1925; Manilal & Sivar., Fl. Calicut 260. 1982; Mohanan, Fl. Quilon Dist. 367. 1984; Ansari, Fl. Kasaragod Dist. 339. 1985; Antony, Fl. Kottayam Dist. 360. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 603. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 417. 1994; Subram., Fl. Thenmala Division 338. 1995; Chakrab. & Gangop., J. Econ. Tax. Bot. 19: 226. 1995; Sasidh. & Sivar., Fl. Pl.

Thrissur For. 405. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 289. 1997; Sivar. & Mathew, Fl. Nilambur 623. 1997; Sasidh., Fl. Periyar Tiger Reserve 374. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 285. 1999; Sunil, Fl. Pl. Alappuzha Dist. 821. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 292. 2002; Mohanan & Sivad., Fl. Agasthyamala 610. 2002.

*Briedelia zeylanica* Gaertn., Fruct. 2: 128. t.109. 1790.

*Local names:* Neervetti, Pannimutti

Trees to 8 m high, bark 2-3 mm thick, brown, smooth, longitudinally cracked; blaze pink-red; branchlets grey, glabrous. Leaves simple, alternate; stipules lateral; petiole 2-8 mm long, slender, glabrous; lamina 5.5-26 x 2.5-12 cm, oblong, oblong-lanceolate, ovate-oblong, elliptic, ovate-elliptic, elliptic-lanceolate or rarely oblanceolate, base oblique, cordate, truncate, obtuse or round, apex apiculate to obtusely acuminate or acute, margin entire, coriaceous, glabrous, glossy; lateral nerves 4-12 pairs, raised beneath, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual, yellow, supra-axillary or rarely in axillary umbels; peduncle adnate to the them, 8-10 mm long; male flowers: pedicels 5-10 mm long; tepals 3+2-3, 1-3 x 0.7-2 mm; oblong, ovate, suborbicular or obovate; stamens 3-8, 1.2-2 mm long, connate by their connectives in a column; connectives produced; female flowers: pedicels 1-8 mm long; tepals 3+2-3, 1-3 x 1-2.5 mm, triangular, deltoid, oblong, ovate or suborbicular, occasionally the perianth cupular and 1.5-4 x 2 mm with ovate teeth; ovary superior, 1-2.5 mm across, subglobose or depressed, tomentose or glabrous; 4-7 locular, ovules 2 in each cell; styles to 3.5 mm long, free and triangular, connivent and columnar, conical to clavate; apical lobes 4-7, triangular, oblong or suborbicular. Fruit a capsule, 3-8 x 7-11 mm, depressed to subglobose, unlobed or obscurely lobed, 4-7 locular, puberulous to glabrous, beaked, orange; pedicels 2-8 mm long.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Kollam, Pathanamthitta, Trivandrum, Kozhikkode, Idukki, Kottayam, Malappuram, Alappuzha, Palakkad, Thrissur

*Geographical:* Indo-Malesia

***Glochidion zeylanicum*** (Gaertn.) A. Juss. var. ***tomentosum*** (Dalz.) Chakrab. & Gangop., J. Econ. Tax. Bot. 19: 229. 1995; Sasidh., Fl. Parambikulam Wildlife Sanctuary 292. 2002.

*Glochidion tomentosum* Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 2: 38. 1850; Hook. f., Fl. Brit. India 5: 309. 1887; Gamble, Fl. Pres. Madras 1306(914). 1925; Anil Kumar, Fl. Pathanamthitta Dist. 602. 1994; Sasidh., Fl. Periyar Tiger Reserve 374. 1998.

*Local name:* Nellikkapuli

Trees, to 10 m high, bark brown; blaze pink-red; all parts except often the upper surface of leaves grey, fulvous, brown, or rufous tomentose or densely hirsute. Leaves simple, alternate; stipules lateral; petiole 2-8 mm long, stout, tomentose; lamina 4-26 x 2.5-12 cm, oblong, ovate, oblong-ovate or ovate-lanceolate, sometimes suborbicular, base oblique, round, truncate or cordate, apex apiculate to acuminate or subacute, margin entire, pilose to puberulous on nerves, glabrous above and tomentose beneath; lateral nerves 4-12 pairs, pinnate, prominent,



intercostae reticulate, prominent. Flowers unisexual, yellow, in supra axillary or rarely axillary umbels; peduncle adnate to the stem, 8-10 mm long; male flowers: pedicel 5-10 mm long; tepals 3 + 2-3, 1.5-3 x 1-2.5 mm, stamens 5-7, connate by their connectives in a column; connectives produced; female flowers: pedicel 2-7 mm long; tepals 3 + 2-3, oblong, ovate to suborbicular or connate and cupular 2-4 mm, with ovate, triangular or deltoid; ovary superior, 4-6 locular; ovules 2 in each cell; styles to 3 mm long, free, subulate or oblong, connivent erect and columnar or conical with 4-6 triangular lobes. Fruit a capsule, 3-6 x 7-12 mm, depressed or subglobose, 4-6 locular, unlobed or obscurely lobed, angled, beaked, hispid; pedicels 2-7 mm long.

*Flowering & Fruiting:* March-May

*Habitat:* Deciduous and evergreen forests, also in grasslands

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad

*Endemic to:* Western Ghats

*Status:* Endangered (IUCN, 2000)

**Hevea braziliensis** (Willd. ex A. Juss.) Muell.-Arg., *Linnaea* 34: 204. 1865-66; Gamble, *Fl. Pres. Madras* 1346(942). 1925; Manilal & Sivar., *Fl. Calicut* 259. 1982; Mohanan, *Fl. Quilon Dist.* 375. 1984; Ansari, *Fl. Kasaragod Dist.* 339. 1985; Ramach. & Nair, *Fl. Cannanore Dist.* 428. 1988; Vajr., *Fl. Palghat Dist.* 440. 1990; Subram., *Fl. Thenmala Division* 330. 1995; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 296. 1997; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 416. 1996; Sivar. & Mathew, *Fl. Nilambur* 623. 1997; Sunil, *Fl. Alappuzha Dist.* 822. 2000.

*Siphonia braziliensis* Willd. ex A. Juss., *Euphorb. Gen.* 113. t. 12. f. 38B. 1824.

*Local name:* Rubber

Trees, to 25 m high, bark grey; latex milky. Leaves digitately trifoliate, alternate, estipulate; rachis 3-10.5 cm long, slender, glabrous, swollen at base, a gland at the top; petiolule 5-7 mm long, whorled, slender, glabrous; lamina 5.5-14 x 3-6 cm, elliptic, elliptic-ovate or obovate, base acute, apex acuminate, margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 13-20 pairs, pinnate, prominent, intercostae scalariform. Flowers unisexual, yellowish-white, in terminal paniced racemes in which the central flowers are female and the males; tepals yellowish-white; disc of 5 free or united glands; stamens 5-10 in 2 whorls; filaments united into a column extending beyond the anthers; ovary superior, 3-celled, ovules 3; stigma sessile. Fruit a capsule, 3-4 x 3-3.5 cm, 3-lobed, woody, dehiscent; seeds 3, yellowish-brown, mottled.

*Flowering & Fruiting:* February-June

*Habitat:* Raised in plantations

*Distribution*

*Kerala:* All districts

*Geographical:* Native of Brazil; introduced in the tropics elsewhere

**Macaranga indica** Wight,  *Ic. t.* 1883. 1852; Hook. f., *Fl. Brit. India* 5: 446. 1887; Gamble, *Fl. Pres. Madras* 1326(927). 1925; Mohanan, *Fl. Quilon Dist.* 368. 1984; Manilal, *Fl. Silent Valley* 252. 1988; Vajr., *Fl. Palghat Dist.* 432. 1990; Anil Kumar, *Fl. Pathanamthitta Dist.* 605. 1994; Sasidh., *Fl. Periyar Tiger Reserve* 374. 1998.

*Local names:* Uppila, Vatta, Vattakkanni

Gregarious trees, bark grey, smooth; exudation red, watery; branchlets fulvous tomentose, glaucous. Leaves simple, alternate; stipules large, lateral, densely pubescent, deciduous; petiole 12-22 cm long, stout, pubescent; lamina 15-30 x 12-25 cm, ovate-orbicular or deltoid-ovate, base peltate, apex acuminate, margin entire or toothed, glabrous above and tawny-pubescent, intermingled with yellowish glands beneath; 2 large glands near the petiolar insertion above, coriaceous; 8-10 ribs from base, palmate, prominent; lateral nerves 6-12 pairs, parallel, prominent; intercostae scalariform, prominent, margin glandular. Flowers unisexual, yellow, in axillary panicles having zig-zag branches; bracts small with a large, flat glandular appendage; male flowers: tepals 3, initially connate, later spreading, concave, ovate, valvate, acute, glandular; stamens 6-8, shortly connate below, exerted; anthers 4-celled; female flowers: tepals 4, lanceolate, basally connate at base, valvate, acute, glandular; ovary superior, 2-6-celled, globose, echinate, ovules one in each cell; style lateral; stigma acute. Fruit a capsule, 7-8 mm across, globose, echinate; seeds black.

*Flowering & Fruiting:* October-December

*Habitat:* Degraded forest areas

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Palakkad, Idukki

*Geographical:* South and South East Asia

**Macaranga peltata** (Roxb.) Muell.-Arg. in DC., Prodr. 15: 1010. 1866; Gamble, Fl. Pres. Madras 1326(928). 1925; Manilal & Sivar., Fl. Calicut 259. 1982; Mohanan, Fl. Quilon Dist. 368. 1984; Ansari, Fl. Kasaragod Dist. 341. 1985; Ramach. & Nair, Fl. Cannanore Dist. 421. 1988; Antony, Fl. Kottayam Dist. 362. 1989; Vajr., Fl. Palghat Dist. 432. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 606. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 418. 1994; Subram., Fl. Thenmala Division 345. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 405. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 289. 1997; Sivar. & Mathew, Fl. Nilambur 626. 1997; Sunil, Fl. Pl. Alappuzha Dist. 824. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 293. 2002; Mohanan & Sivad., Fl. Agasthyamala 610. 2002.

*Osyris peltata* Roxb., Fl. Ind. 3: 755. 1832.

*Mappa peltata* (Roxb.) Wight, Ic. t. 817. 1844-45.

*Macaranga roxburghii* Wight, Ic. t. 1949, f.4. 1853; Hook. f., Fl. Brit. India 5: 448. 1887.

*Macaranga tomentosa* Wight, Ic. t. 1949, f.1. 1853.

*Local names:* Podini, Thodukanni, Uppila, Vatta, Vattakanni

Dioecious trees, to 15 m high; bark surface pale, greyish-brown mottled with white, smooth, lenticellate; brittle; blaze deep pink-red; exudation red, gummy; branchlets thick, terete, glaucous. Leaves simple, alternate, stipulate; stipules large, lateral, ovate-acuminate, reflexed, cauducous; petiole 12-35 mm long, stout, glabrous; lamina 11-25 x 9-20 cm, ovate-orbicular, deltoid-ovate, ovate or orbicular, base peltate, apex acute or acuminate, margin entire, glabrous or glabrescent, pubescent with reddish glands beneath, coriaceous; 8-10 ribs from base, palmate, prominent beneath; lateral nerves 7-8 pairs, parallel, regular, prominent, intercostae scalariform, much prominent; margin glandular. Flowers unisexual, greenish-yellow;

male flowers: in axillary, much branched, dense, tomentose, panicles, concealed in large bracts; bracteoles concave; tepals 3, minute, obovate, cuneate; stamens 2-8, free, shortly connate below, exserted; female flowers: in panicles simpler than in males, branches racemes with larger bracts; tepals 4, basally connate at base; ovary superior, 2-6-celled, densely glandular, ovule one in each cell; style lateral; stigma sessile, often embracing one side of the ovary, thickly papillose. Fruit a capsule, 5-6 mm across, globose, hairy, glandular, black; seed one, black.

*Flowering & Fruiting:* January-February

*Habitat:* Moist deciduous and secondary forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* India, Sri Lanka and Andamans

**Mallotus atrovirens** Muell.-Arg., *Linnaea* 34: 195. 1865; Hook. f., *Fl. Brit. India* 5: 440. 1887; Gamble, *Fl. Pres. Madras* 1322(925). 1925; Manilal & Sivar., *Fl. Calicut* 260. 1982; Antony, *Fl. Kottayam Dist.* 363. 1989; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 406. 1996; Sivar. & Mathew, *Fl. Nilambur* 627. 1997; Sunil, *Fl. Pl. Alappuzha Dist.* 826. 2000; Sasidh., *Fl. Parambikulam Wildlife Sanctuary* 294. 2002.

Small trees, to 7 m high, bark ash-grey; blaze-dull yellow, branchlets glabrous. Leaves simple, opposite; stipules interpetiolar; petiole 5-20 mm long, stout, glabrous, grooved above; lamina 5.5-15 x 2-6 cm, elliptic-obovate or obovate, base acute or cuneate, apex acute or shortly acuminate, margin entire, glabrous above, yellow glandular beneath, chartaceous; lateral nerves 5-7 pairs, pinnate, slender, prominent, intercostae scalariform, prominent. Flowers unisexual, yellow, in axillary and terminal racemes; pedicels yellow glandular; perianth globose, glabrescent, densely glandular, separating into 3-5 lobes; ovary 2-4-celled, ovules one in each cell; stigma sessile, 2, plumose; stamens many, exserted, free. Fruit a capsule 5 x 7 mm, 2-lobed, smooth, yellow glandular; style deciduous; seeds 2, plano-convex or hemispherical, 3.5 x 4 mm; smooth.

*Flowering & Fruiting:* January-July

*Habitat:* Along riverbanks in semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* Malappuram, Kottayam, Kozhikkode, Thrissur, Alappuzha, Palakkad

*Endemic to:* Southern Western Ghats

*Status:* Vulnerable (IUCN, 2000)

**Mallotus philippensis** (Lam.) Muell.-Arg., *Linnaea* 34: 196. 1865; Hook. f., *Fl. Brit. India* 5: 442. 1887, "philippinensis"; Gamble, *Fl. Pres. Madras* 1322(924). 1925; Manilal & Sivar., *Fl. Calicut* 260. 1982; Mohanan, *Fl. Quilon Dist.* 369. 1984; Ansari, *Fl. Kasaragod Dist.* 342. 1985; Ramach. & Nair, *Fl. Cannanore Dist.* 422. 1988; Antony, *Fl. Kottayam Dist.* 363. 1989; Vajr., *Fl. Palghat Dist.* 433. 1990; Anil Kumar, *Fl. Pathanamthitta Dist.* 607. 1994; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 420. 1994; Subram., *Fl. Thenmala Division* 342. 1995; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 408. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 291. 1997; Sivar. & Mathew, *Fl. Nilambur* 629. 1997; Sasidh., *Fl. Periyar Tiger Reserve* 375. 1998; Sasidh., *Fl. Chinnar Wildlife Sanctuary* 287. 1999; Sunil,

Fl. Pl. Alappuzha Dist. 826. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 294. 2002; Mohanan & Sivad., Fl. Agasthyamala 612. 2002.

*Croton philippensis* Lam., Encycl. 2: 206. 1786.

*Local names:* Chenkolli, Kurangumanjal, Noorimaram

Dioecious trees, to 12 m high, bark 4-5 mm thick, pale brown; branchlets, young leaves and inflorescence tawny or rusty pubescent. Leaves simple, alternate; stipules lateral, cauducous; petiole 7-60 mm long, stout, swollen at base, fulvous-pubescent with 2 small sessile glands on each side of the submit; lamina 5-20 x 2-8 cm, ovate or ovate-lanceolate, base acute or round, apex acuminate or acute, margin entire or sparsely serrate, glabrous above, greyish pubescent to fulvous tomentose with minute red glands beneath; coriaceous; 3-ribbed from base; lateral nerves upto 6 pairs, pinnate, ascending, prominent, intercostae scalariform, prominent. Flowers unisexual, brick red, in rusty puberulous, terminal spicate panicles; male flowers: 4.5 mm across; tepals 4, lanceolate, stamens many; female flowers: 4 mm across, tepals 3 or 4, thicker than in males, ovate-lanceolate; ovary with red glands, superior, 3-celled, ovules one in each cell; styles 3, to 3.5 mm long, papillose. Fruit a capsule, 7-8 mm across, globose, 3-lobed, loculicidally 3 valved, densely red-glandular, pubescent; seeds 1-4, globose, glabrous, black.

*Flowering & Fruiting:* October-March

*Habitat:* Semi-evergreen, moist deciduous, evergreen and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia and Australia

**Mallotus tetracoccus** (Roxb.) Kurz, J. Asiat. Soc. Bengal Pt. 2, Nat. Hist. 41: 245. 1873; Mohanan, Fl. Quilon Dist. 369. 1984; Ansari, Fl. Kasaragod Dist. 342. 1985; Manilal, Fl. Silent Valley 253. 1988; Ramach. & Nair, Fl. Cannanore Dist. 423. 1988; Antony, Fl. Kottayam Dist. 364. 1989; Vajr., Fl. Palghat Dist. 434. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 609. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 421. 1994; Subram., Fl. Thenmala Division 342. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 408. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 291. 1997; Sivar. & Mathew, Fl. Nilambur 630. 1997; Sasidh., Fl. Periyar Tiger Reserve 375. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 287. 1999; Sunil, Fl. Pl. Alappuzha Dist. 828. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 295. 2002; Mohanan & Sivad., Fl. Agasthyamala 613. 2002.

*Rottlera tetracocca* Roxb., Fl. Ind. 3: 827. 1832.

*Rottlera peltata* Wight, Ic. t. 1873. 1852.

*Rottlera albus* var. *occidentalis* Hook.f., Fl. Brit. India 5: 429. 1887; Gamble, Fl. Pres. Madras 1321(924). 1925.

*Local names:* Porivatta, Vattakumbil

Dioecious trees, to 20 m high, bark 5-8 mm thick, surface grey, smooth, fibrous; blaze concentrically striate, pinkish-yellow, inner surface slimy; branchlets grey tawny tomentose; young parts covered with rusty lepidote scales. Leaves simple, alternate; stipules lateral, deciduous; petiole 45-100 mm long, stout, swollen at base, with 2 large glands at the top, stellate tomentose; lamina 9-21 x 7.5-20 cm, orbicular or deltoid-ovate, base truncate, peltate, subcordate or round, apex

acuminate, margin entire or glandular dentate, glabrous above and tomentose below when matured; coriaceous; usually 5-ribbed from base; lateral nerves 6-8 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers unisexual, yellow, in terminal branching tomentose spicate panicles; male flowers: 7 mm across, tepals 4, 2 mm, ovate; stamens many, crowded on a fleshy receptacle; filaments to 3 mm; anther cells unequal; female flowers: 5 mm across, tepals 4, 2 mm, connate at base; ovary superior, 0.8 x 0.7 cm, 3-4 locular, densely stellate hairy, ovule one in each cell; style 3 mm, 3, plumose; stigma acute. Fruit a capsule 7-8 mm across, globose, loculicidal 3-4 valved, echinate with soft, woolly spines, white-tomentose; seeds angular, black.

*Flowering & Fruiting:* July-April

*Habitat:* Evergreen, semi-evergreen and shola forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* India, Sri Lanka and China

**Margaritaria indica** (Dalz.) Airy Shaw, Kew Bull. 20: 387. 1966; Raju, J. Bomb. Nat. Hist. Soc. 81: 526. 1984; Sasidh. & Sivar., Fl. Pl. Thrissur For. 408. 1996; Sasidh., Fl. Periyar Tiger Reserve 376. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 295. 2002.

*Prosorus indicus* Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 4:346.1852; Gamble, Fl. Pres. Madras 1294(905). 1925.

*Phyllanthus indicus* (Dalz.) Muell.-Arg., Linnaea 32: 52. 1863; Hook. f., Fl. Brit. India 5: 305. 1887.

*Local name:* Mala-aechil

Deciduous dioecious evergreen trees, to 25 m high; bark reddish-brown, thin, smooth, peeling off in thin scales. Leaves simple, alternate, distichous; stipules lateral, 2.5-4.5 mm long, lanceolate, brownish-scarious; petiole 5-10 mm long, slender grooved above, glabrous; lamina 4-12 x 2.5-6 cm, elliptic, elliptic-ovate, elliptic-obovate or obovate, base unequal or acute, apex obtusely acuminate, margin entire, glabrous above and glaucous beneath, membranous; lateral nerves 6-10 pairs, pinnate, slender, prominent, intercostae reticulate, slender, faint. Flowers unisexual, green, axillary; male flowers : fascicled, many together, axillary; pedicels ca. 4-6 mm long; tepals 4, biseriate, outer ones ovate, 1-1.5 x 0.6-1 mm, inner ones obovate, 1.3-1.8 x 1-1.5 mm; disc adnate, smooth; stamens 4, free; filaments 0.7-1.5 mm long; anthers elliptic or oblong; female flowers solitary or few together; pedicels subterete, 8-21 mm long; tepals 4, biseriate, ovate to oblong, ca. 1.5-2 mm long; disc entire, adnate; ovary superior, 3-celled, ovules 2 in each cell; styles 3, free or basally connate, spreading, shortly bifid. Fruit a capsule, 8 mm across, depressed globose, irregularly dehiscent, 3-lobed; pericarp thin, membranous; seeds subtrigonous; arillate.

*Flowering & Fruiting:* March-April

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Wayanad, Thrissur, Palakkad, Idukki

*Geographical:* Indo-Malesia to Australia

**Paracroton integrifolius** (Airy Shaw.) Balakr. & Chakrab., Kew Bull. 48: 718. 1993; Sivar. & Mathew, Fl. Nilambur 632. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 296. 2002.

*Ostodes integrifolius* Airy Shaw, Kew Bull. 16: 362. 1963.

*Ostodes zeylanicum* var. *minor* sensu Gamble, Fl. Pres. Madras 1336(935). 1925, non (Thw.) Hook.f. 1887.

*Fahrenheitia integrifolia* (Airy Shaw) Airy Shaw, Kew Bull. 20:410. 1966; Ramach. & Nair, Fl. Cannanore Dist. 417. 1988.

Trees, to 18 m high, bark 3-4 mm thick, surface brown, smooth, exfoliations small; brittle or semifibrous; blaze orange brown; branches lepidote-pubescent. Leaves simple, alternate; stipules lateral, caducous; petiole 10-25 mm long, stout, 4 glands seen at the apex of the petiole 2 on either sides, lepidote scales present, lamina 10-16 x 4-7 cm, elliptic or elliptic-obovate, base cuneate, apex shortly acuminate, margin entire or distantly indistinctly serrate, glabrous, coriaceous; lateral nerves 10-13 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers unisexual, white, in terminal and axillary racemes; tepals 10 in 2 series; outer 5 lobed, unequal; inner 5 petaloid, free; stamens 10-20, free; connective broad; ovary superior, glabrous, 3-celled, 4 mm across, strigose, ovules 1 in each cell; styles 3, short, bifid, disc of 5-10 glands. Fruit a capsule, 2 cm across, 6-ribbed, subglobose, tomentose, breaking into 3, 2-valved cocci; seeds mottled.

*Flowering & Fruiting*: November-December

*Habitat*: Evergreen forests

*Distribution*

*Kerala*: Kannur, Malappuram, Wayanad, Palakkad

*Geographical*: Peninsular India and Sri Lanka

**Paracroton pendulus** (Hassk.) Miq. ssp. **zeylanicus** (Thw.) Balakr. & Chakrab., Kew Bull. 48: 719. 1993; Sasidh. & Sivar., Fl. Pl. Thrissur For. 411. 1996; Sivar. & Mathew, Fl. Nilambur 633. 1997; Sasidh., Fl. Periyar Tiger Reserve 376. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 296. 2002.

*Desmostemon zeylanicus* Thw., Enum. Pl. Zeyl. 278. 1861.

*Ostodes zeylanica* (Thw.) Muell.-Arg., Linnaea 34: 214. 1865; Hook. f., Fl. Brit. India 5: 400. 1887; Gamble, Fl. Pres. Madras 1336(934). 1925.

*Fahrenheitia zeylanica* (Thw.) Airy Shaw, Kew Bull. 20: 410. 1966; Manilal, Fl. Silent Valley 250. 1988; Vajr., Fl. Palghat Dist. 429. 1990; Subram., Fl. Thenmala Division 329. 1995; Sasidh., Fl. Shenduruny Wildlife Sanctuary 288. 1997.

*Local names*: Modha, Vellamaram

Trees, to 20 m high; bark greyish-brown; blaze dull yellow; branches angled. Leaves simple, alternate; stipules lateral, cauducous; petiole 40-70 mm long, stout with 4 glands at the apex of the petiole in 2 rows on either side, lepidote scales present; lamina 15-30 x 7.5-12 cm, oblong, elliptic-oblong or obovate, base acute, apex obtusely acuminate, margin distantly serrate, glabrous, coriaceous; lateral nerves 10-15 pairs, pinnate, ascending, prominent; intercostae scalariform, prominent. Flowers unisexual, white, in lax terminal and lateral elongate pendulous racemes; bracts ovate, ciliate; tepals 10 in 2 rows; outer 5 unequal, densely lepidote-scaly outside; inner 5 longer than outer lobes, white; disc glands 5-10; stamens many, filaments free; ovary 3-celled, ovule 1 in each cell; styles 3, bifid. Fruit a capsule, 2.5-3 cm across, rusty tomentose, globose, splitting into 3, 2 valved cocci; seeds ovoid.

*Flowering & Fruiting:* March-April

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Palakkad, Kollam, Malappuram, Thrissur, Idukki

*Geographical:* Western Ghats and Sri Lanka

**Phyllanthus emblica** L., Sp. Pl. 982.1753; Hook. f., Fl. Brit. India 5:289.1887; Manilal & Sivar., Fl. Calicut 262.1982; Mohanan, Fl. Quilon Dist. 370.1984; Manilal, Fl. Silent Valley 253. 1988; Vajr., Fl. Palghat Dist. 436. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 612.1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 424.1994; Subram., Fl. Thenmala Division 332. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 412. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 293.1997; Sivar. & Mathew, Fl. Nilambur 636.1997; Sasidh., Fl. Periyar Tiger Reserve 377. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 288.1999; Sunil, Fl. Pl. Alappuzha Dist. 835.2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 297. 2002; Mohanan & Sivad., Fl. Agasthyamala 617. 2002.

*Emblica officinalis* Gaertn., Fruct. 2: 122. 1791; Gamble, Fl. Pres. Madras 1295(906). 1925; Ramach. & Nair, Fl. Cannanore Dist. 414.

*Local name:* Nelli, Gooseberry

Deciduous trees, to 15 m high, bark grey-brown, rough, irregularly flaking; blaze pink-red. Leaves simple, alternate, bifarious on short deciduous branchlets, closely overlapping, subsessile; stipules minute, lateral, linear; lamina 0.4-1.5 x 2-4 mm, oblong or linear-oblong, base round, apex obtuse and shortly apiculate, glabrous, membranous; nerves obscure. Flowers unisexual, 2-3 mm across, greenish-yellow, densely clustered in leaf axils; male flowers: tepals 6, oblanceolate, 1.5 mm, obtuse, stamens 3, anthers oblong, connate by their connectives; apiculate; disc glands 6; female flowers: tepals 6, oblanceolate, obtuse; ovary superior, 1.5 mm, 3-celled; ovules 2 in each cell; styles 3, broadly fimbriate, recurved, stigmatiferous. Fruit a capsule 1.5-2.5 cm across, subglobose, dehiscent into 6 cocci, disc enlarged to give an appearance of fleshy yellowish-green, indehiscent berry.

*Flowering & Fruiting:* February-January

*Habitat:* Dry and moist deciduous forests, also cultivated in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Throughout the tropics

**Phyllanthus indofischeri** Bennet, Indian For. 109: 221. 1983; Sasidh., Zoo's Print J. 16: 407. 2001.

*Emblica fischeri* Gamble, Bull. Misc. Inform. Kew 1925: 330. 1925; Gamble, Fl. Pres. Madras 1295(906). 1925, non Pax 1894.

Small deciduous trees, to 10 m high; bark pale brown, peeling off in scales; branchlets distichous, pubescent. Leaves simple, alternate, 12-70 in a branchlets; stipules minute, lateral, triangular at base, scarious, deep brown; petiole 1 mm, slender, glabrous; lamina 1.3-2.3 x 0.5-1 cm, oblong; base oblique, cordate or rounded, apex obtuse or retuse, margin entire, glabrous, glandular beneath, chartaceous; lateral nerves 4-7 pairs, pinnate, slender, obscure, intercostae reticulate, faint. Flowers unisexual, in axillary fascicles, yellowish-green; male flowers: pedicels 4 mm long, glabrous; tepals 6, 3-4 x 1-2 mm, obovate; stamens 3; filaments connate in a column; anthers united, 1-1.5 mm; female flowers: tepals 6,

1.5-1.7 x 0.8-1 mm, oblong, fleshy; ovary superior, 1.5-2 x 0.5-0.75 mm, ovary 3-celled, ovoid, ovules 2 in each cell; style short, bifid. Fruit a drupe, 2.5-4 cm; pyrenes 3, 2 seeded; seeds 6 mm long, trigonus.

*Flowering & Fruiting:* February-December

*Distribution*

*Kerala:* Idukki, Wayanad

*Endemic to:* Southern Western Ghats

**Trewia nudiflora** L., Sp. Pl. 1193.1753, var. **nudiflora**; Hook. f., Fl. Brit. India 5: 423. 1887; Gamble, Fl. Pres. Madras 1319(922). 1925; Manilal & Sivar., Fl. Calicut 271. 1982; Mohanan, Fl. Quilon Dist. 374. 1984; Ansari, Fl. Kasaragod Dist. 348. 1985; Ramach. & Nair, Fl. Cannanore Dist. 428. 1988; Antony, Fl. Kottayam Dist. 370. 1989; Vajr., Fl. Palghat Dist. 440. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 622. 1994; Subram., Fl. Thenmala Division 344. 1995; Sivar. & Mathew, Fl. Nilambur 645. 1997; Sasidh., Fl. Periyar Tiger Reserve 382. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 300. 2002.

*Local names:* Malamkumbil, Naikumbil, Pambarakumbil, Thavalamaram

Deciduous dioecious trees to 20 m, bark greyish-brown, smooth; blaze creamy yellow; young parts tomentose. Leaves simple, opposite, decussate; stipules inter petiolar, 2-3 x 1 mm, linear lanceolate; petiole 3-12 cm long, slender, glabrous, unequal at each node, lamina 10-20 x 9-15 cm, broadly ovate or deltoid base subcuneate, subtruncate, truncate, subcordate or cordate at base, apex acuminate to cuspidate or cordate-acuminate, margin entire, glabrous above, glaucous beneath, chartaceous; 3-ribbed from base, prominent, lateral nerves 3-6 pairs, prominent, intercostae scalariform, faint. Flowers unisexual, pale green; male flowers; 3-5 mm across, numerous on 10-20 cm long peduncle with abundant floral remains over the peduncle; bracts ca. 3 mm across, ovate-lanceolate, pubescent; pedicels 4-5 mm long; tepals globose, ovate, splitting into 3-4 broad, concave, often reflexed segments, 4-7 x 3-4 mm; stamens many, clustered on a convex receptacle; filaments 1.5-3 mm long, free, slender; anthers oblong; female flowers; 5-9 mm across, 4-5 on axillary racemes; pedicels 5-10 mm long, finely hairy; tepals 3-5, 4-5 mm long, broadly ovate, densely tomentose beneath, cauducous; ovary superior, 3-4 mm across, 2-4-loculed, ovule one in each cell; styles 3, 1.5-3 cm long, spreading, connate below, oblong. Fruit a capsule 2-3 cm across, woody, dark brown, broadly rounded, 3-4 loculed, pericarp very thick; seeds globose, ovoid.

*Flowering & Fruiting:* May-November

*Habitat:* Along riverbanks in evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Kollam, Pathanamthitta, Palakkad, Kannur, Idukki, Kottayam, Malappuram, Kozhikkode

*Geographical:* Indo-Malesia

**Trewia nudiflora** L. var. **polycarpa** (Benth.) Susila & Balakri., J. Econ. Tax. Bot. 22: 351. 1998.

*Trewia polycarpa* Benth. in Benth. & Hook.f., Gen. Pl. 3:318.1880; Hook. f., Fl. Brit. India 5:424.1887; Gamble, Fl. Pres. Madras 1319(923). 1925; Vajr., Fl. Palghat Dist. 440. 1990; Antony, Fl. Kottayam Dist. 370. 1989; Anil Kumar, Fl.



Pathanamthitta Dist. 621. 1994; Subram., Fl. Thenmala Division 344. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 416. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 296. 1997; Sunil, Fl. Pl. Alappuzha Dist. 843. 2000.

*Trewia nudiflora* sensu Wight, Ic. t. 1871. 1852, non L. 1753.

*Local names:* Ammanaka, Pambarakumbil, Thavalamaram

Deciduous dioecious trees, to 20 m high, bark greyish, smooth; blaze creamy yellow; branchlets glabrous. Leaves simple, opposite, decussate; stipules inter petiolar, 2-3 x 1 mm, linear or lanceolate; petiole 3-10 cm long, slender, glabrous, unequal at each node, lamina 6-20 x 3-9 cm, broadly ovate or deltoid, base cordate and subcrenate, apex acuminate to cuspidate or caudate, apex acuminate, margin entire, faintly puberulous beneath, chartaceous; 3-ribbed from base, prominent, lateral nerves 3-6 pairs, prominent; intercostae scalariform, faint. Flowers unisexual, pale green; male flowers : 7-10 mm across, many flowered 10-18 cm long racemes, with abundant floral remains on peduncle; bracts *ca.*3 mm across, ovate-lanceolate, pubescent; tepals globose, ovate, splitting into 3-4 broad, concave, often reflexed segments, 4-7 x 3-4 mm, hyaline, greenish, nearly glabrous; stamens many, clustered on a convex receptacle; filaments 1.5-3 mm long, free, slender; anthers oblong; female flowers: 5-9 mm across, 5-6 flowered axillary racemes; pedicels 5-8 mm long, pubescent; tepals 3-5, 4-5 mm long, broadly ovate, densely tomentose beneath, cauducous; ovary superior, 3-4 mm across, 2-4 loculed, ovule one in each cell; styles 3, 1.5-3 cm long, spreading, connate below, oblong. Fruit a capsule 1-1.5 cm across pale brown with dark brown spots, shallowly 3-lobed, ovoid, dehiscent, pericarp thin, crustaceous; seeds globose, ovoid.

*Flowering & Fruiting:* January-May

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Pathanamthitta, Palakkad, Kollam, Thrissur, Alappuzha, Kottayam

*Endemic to:* Peninsular India

#### ULMACEAE

1. Leaves penni-nerved; fruit thin, samaroid.....**Holoptelea integrifolia**
1. Fruit a drupe .....2

2. Leaves penni-nerved, stipules sheathing the buds .....**Aphananthe cuspidata**
2. Leaves 3-ribbed at base, stipules free..... 3
3. Perianth lobes valvate; leaves densely tomentose ..... **Trema orientalis**
3. Perianth lobes imbricate; leaves glabrous or glabrescent below..... 4
4. Leaves with prominent lateral nerves from the midrib, base oblique, margin serrate .....**Celtis tetrandra**
4. Leaves without prominent lateral nerves from the midrib, base equal or subequal, margin entire or serrate at towards apex ..... 5
5. Perianth lobes ciliate along the margins; leaves coriaceous; style arms entire or shortly toothed.....**Celtis timorensis**
5. Perianth lobes not ciliate along the margins; leaves chartaceous; style arms papillose ..... **Celtis philippensis** var. **wightii**

**Aphananthe cuspidata** (Blume) Planch. in DC., Prodr. 17: 209. 1873; Manilal, Fl. Silent Valley 257. 1988; Sivar. & Mathew, Fl. Nilambur 655. 1997.

*Cyclostemon cuspidatum* Blume, Bijdr. 599. 1826.

*Gironniera reticulata* Thw., Enum. Pl. Zeyl. 268. 1861; Gamble, Fl. Pres. Madras 1349(944). 1928.

*Local names:* Bhuthiyunarthi, Thondupoliyan

Trees, to 25 m high, bole buttressed; bark brownish, exfoliating in irregular, projecting flakes; blaze pink with light coloured streaks. Leaves simple, alternate; stipules sheathing, deciduous; petiole 6-10 mm, slender, grooved above, glabrous; lamina 6-18 x 2.5-7.5 cm, elliptic, ovate-lanceolate or oblong-ovate, base rounded, apex acuminate, margin entire, glabrous, coriaceous; lateral nerves 10-14 pairs, pinnate, prominent; intercostae reticulate, prominent. Flowers unisexual, male in short axillary panicles; female axillary, solitary; tepals 5, concave, obtuse or acute; stamens 5, filaments 2 mm; pistillode woolly; ovary sessile, superior, glabrous; stigmas 2, spreading, filiform. Fruit a drupe, obovoid, 1.5-2 cm long, glabrous, stoutly beaked, slightly 2-angled.

*Flowering & Fruiting:* February-May

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Malappuram, Palakkad, Wayanad

*Geographical:* India, Myanmar, Sri Lanka and Indo-China

**Celtis philippensis** Blanco var. **wightii** (Planch.) Soep. in Steenis, Fl. Males. ser. 1. 8: 62. 1977; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 429. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 424. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 299.1997; Sasidh., Fl. Periyar Tiger Reserve 388. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 294. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 306. 2002.

*Celtis wightii* Planch., Ann. Sci. Nat. Bot. ser. 3, 10:307.1848; Hook. f., Fl. Brit. India 5:483.1888; Gamble, Fl. Pres. Madras 1349(944). 1928.

*Local names:* Bhoothakkali, Peenari

Trees, to 25 m high, bark pale green or grey with black streaks inside, covered with lenticels; blaze speckled with black and yellow; branchlets pubescent. Young foliage pink. Leaves simple, alternate; stipules lateral, elliptic-ovate; petiole 4-15 mm, slender, pubescent; lamina 6-12 x 2-6 cm, ovate, elliptic or elliptic-oblong, base

round or acute, apex acuminate, margin entire, glabrous, coriaceous; 3-nerved from the base, prominent, intercostae scalariform, prominent. Flowers polygamous, yellow, in axillary puberulous cymes, usually on new shoots; male flowers usually at the basal part and female flowers on the upper side; tepals 5, 2 x 1 mm, ovate, concave, ciliate, membranous; stamens 5, free, inserted round a woolly torus; ovary superior, sessile, ovoid, 1 mm, 1-celled; style 8 mm long, pubescent. Fruit a drupe 7 x 5 mm, ovoid, smooth.

*Flowering & Fruiting:* March-June

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Kollam, Thrissur, Palakkad, Trivandrum

*Geographical:* Indo-Malesia to Australia and Tropical Africa

**Celtis tetrandra** Roxb., Fl. Ind. 2: 63. 1832; Hook. f., Fl. Brit. India 5: 482. 1888; Gamble, Fl. Pres. Madras 1348(944). 1928; Ramach. & Nair, Fl. Cannanore Dist. 428. 1988; Vajr., Fl. Palghat Dist. 441. 1990; Sasidh., Fl. Periyar Tiger Reserve 388. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 295. 1999.

*Celtis serotina* Planch., Ann. Sci. Nat. Bot. ser. 3, 10: 301. 1848.

*Local names:* Poochakkurumaram, Kuyyamaram, Oma

Trees, to 30 m high, bark 0.6 cm, smooth, grey, lenticellate, wrinkled horizontally; blaze yellow; branchlets slender, pubescent. Leaves simple, alternate; stipules linear-lanceolate, lateral, free; petiole 3-10 mm, slender, pubescent, shallowly grooved above; lamina 5-14 x 2.5-7 cm, obliquely ovate or obliquely ovate-lanceolate; base oblique, apex acuminate, margin serrate from apex to below middle then entire, membranous, glabrous above, puberulent beneath; 3-nerved from base, prominent, lateral nerves 1-4 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers polygamous, yellow; male in axillary clusters, born on leafless shoots; pedicels 1 cm long, filiform; female flowers on leaf axils; tepals 4, 1.5 mm long, ciliate, concave, obtuse; stamens 4, inserted round a woolly torus; ovary sessile, obovoid, pubescent, 1-celled; style ciliate. Fruit a drupe, 7 x 6 mm, ovoid, glabrous.

*Flowering & Fruiting:* February-March

*Habitat:* Evergreen and shola forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kannur

*Geographical:* Indo-Malesia

**Celtis timorensis** Span., Linnaea 15: 343. 1841; Manilal, Fl. Silent Valley 257. 1988; Ramach. & Nair, Fl. Cannanore Dist. 429. 1988; Vajr., Fl. Palghat Dist. 441. 1990.

*Celtis cinnamomea* Lindl. ex Planch., Ann. Sci. Nat. Bot. ser. 3, 10: 303. 1848; Hook. f., Fl. Brit. India 5: 482. 1888; Gamble, Fl. Pres. Madras 1349(944). 1928; Mohanan, Fl. Quilon Dist. 375. 1984.

*Celtis trinervia* sensu Bedd., Fl. Sylv. t. 312. 1873, non Roxb. 1814.

*Local names:* Poochakkurumaram, Bhuthi-yunarthi

Trees, to 15 m high, bark pale green, covered with small lenticels; young parts pubescent; branchlets angular. Leaves simple, alternate; stipules lateral, lanceolate-subulate, cauducous; petiole 3-5 mm long, slender; lamina 8-13 x 3-5.8 cm, oblong, ovate, lanceolate, oblong-ovate or elliptic-lanceolate, base acute, cuneate or oblique; apex acuminate, margin entire or serrate along the upper half, chartaceous

or subcoriaceous; glabrous above, ferruginous pubescent beneath; 3-ribbed from base, prominent; lateral nerves 1-2 pairs, pinnate, puberulous, faint, intercostae reticulate, faint. Flowers polygamous, 3-5 mm across; male flowers in short axillary racemose cymes; female flowers in more slender axillary cymes; tepals 4-5, linear, incurved, 1.7 mm, ciliate, acute; stamens 4-5, inserted round a wooly torus; filaments 1 mm; ovary 1 mm, superior, sessile, ellipsoid, 1-celled; style 4 mm. Fruit a drupe, 15 mm across, ovoid, narrowed towards tip, black.

*Flowering & Fruiting:* January-March

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Idukki, Kollam, Palakkad, Kannur

*Geographical:* Indo-Malesia

**Holoptelea integrifolia** (Roxb.) Planch., Ann. Sci. Nat. Bot. ser. 3, 10: 259. 1848; Hook. f., Fl. Brit. India 5: 481. 1888; Gamble, Fl. Pres. Madras 1348(943). 1928; Vajr., Fl. Palghat Dist. 441. 1990; Subram., Fl. Thenmala Division 349. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 424. 1996; Sasidh., Fl. Periyar Tiger Reserve 388. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 307. 2002.

*Ulmus integrifolius* Roxb., Pl. Corom. t. 78. 1798.

*Local names:* Aavel, Njettaval

Large deciduous trees, to 25 m high, bark 6-8 mm thick, whitish-grey, smooth; blaze yellowish-grey, streaked with light brown; branchlets pubescent. Leaves simple, alternate; stipules lateral, scarious; petiole 5-10 mm, stout, pubescent; lamina 6-12.5 x 2.5-6.5 cm, ovate-oblong, ovate or elliptic-ovate, base rounded or subcordate, apex acuminate, margin entire, distantly serrate when young, coriaceous, glabrous above, appressed pubescent punctate below; lateral nerves 6-9 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers polygamous, appear before leaves, 5-8 mm across, greenish-purple, in axillary fascicles; tepals 4 or 5, free, anthers pubescent; female flowers with longer pedicels; ovary superior, compressed, long stipitate, 2-winged, 1-celled, ovule 1; style 2 fid. Fruit a samara, 3 cm across, orbicular, wings nerved, glabrous, seed one.

*Flowering & Fruiting:* December-March

*Habitat:* Semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* Idukki, Palakkad, Kollam, Thrissur, Wayanad

*Geographical:* Indo-Malesia

**Trema orientalis** (L.) Blume, Mus. Bot. Lugd.-Bat. 2: 62. 1856; Hook. f., Fl. Brit. India 5: 484. 1888; Gamble, Fl. Pres. Madras 1350(944). 1928; Manilal & Sivar., Fl. Calicut 274. 1982; Mohanan, Fl. Quilon Dist. 375. 1984; Ansari, Fl. Kasaragod Dist. 350. 1985; Manilal, Fl. Silent Valley 258. 1988; Ramach. & Nair, Fl. Cannanore Dist. 429. 1988; Antony, Fl. Kottayam Dist. 371. 1989; Vajr., Fl. Palghat Dist. 442. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 622. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 429. 1994; Subram., Fl. Thenmala Division 349. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 424. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 299. 1997; Sivar. & Mathew, Fl. Nilambur 656. 1997; Sasidh., Fl. Periyar Tiger Reserve 389. 1998; Sasidh., Fl. Chinnar Wildlife

Sanctuary 295. 1999; Sunil, Fl. Pl. Alappuzha Dist. 847. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 307. 2002; Mohanan & Sivad., Fl. Agasthyamala 623. 2002.

*Celtis orientalis* L., Sp. Pl. 1044. 1753.

*Sponia wightii* Planch., Ann. Sci. Nat. Bot. ser. 3, 10: 322. 1848.

*Local names:* Aamathali, Amapotti, Ami, Javanthi, Pottama

Dioecious trees, to 15 m high, bark 0.6 cm, thin, greyish or bluish-green, rough, lenticellate; blaze creamy-yellow, streaked; branchlets scabrous to adpressed pubescent. Leaves simple, alternate; stipules lateral, cauducous; petiole 5-10 mm, slender, tomentose, grooved above; lamina 7.5-15 x 2.5-6 cm, ovate-lanceolate, ovate or oblong-lanceolate, base obliquely cordate, apex acuminate, margin serrulate, scabrid above, tomentose beneath, chartaceous, 3-5-ribbed from base, prominent, lateral nerves 3-4 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual, 3-4 mm across, greenish, in axillary fascicles or cymes; male flowers usually sessile; tepals 4 or 5, equal, 2 mm long, curved, ciliate; stamens 5; pistillode oblong; female flowers : tepals unequal, ciliate; ovary superior, sessile, 1-celled, ovate; style bifid, villous; stigma plumose. Fruit a drupe, 4 x 3 mm, globose, black; stylar tip persistent; seed globose.

*Flowering & Fruiting:* September-December

*Habitat:* Dry and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Tropical Africa, Asia and Australia

#### MORACEAE

- |     |  |   |
|-----|--|---|
| 1.  | Flowers enclosed in a syconia (fig ).....  | 2   |
| 1.  | Flowers in open peduncles or solitary .....  | 23  |
| 2.  | Leaves opposite; twigs hollow.....   | <b>Ficus hispida</b>                        |
| 2.  | Leaves alternate; twigs solid.....   | 3   |
| 3.  | Figs cauliflorous, often on short leafless shoots .....  | <b>Ficus racemosa</b>                       |
| 3.  | Figs axillary or from leafless nodes.....  | 4   |
| 4.  | Figs sessile.....  | 5   |
| 4.  | Figs stalked.....  | 14  |
| 5.  | Young shoots and tender leaves densely tomentose .....   | 6   |
| 5.  | Young shoots and tender leaves glabrous or puberulus .....                                       | 7   |
| 6.  | Lateral nerves of leaves 9-14 pairs, brown tomentose below; figs 1.5-2.5 cm long, glabrous ..... | <b>Ficus drupacea</b> var. <b>pubescens</b> |
| 6.  | Lateral nerves of leaves 5-6 pairs, white tomentose below; figs 0.4-0.5 cm long .....            | <b>Ficus mollis</b>                         |
| 7.  | Leaves ovate-cordate, caudate acuminate, acumen over 3 cm long.....                              | <b>Ficus religiosa</b>                      |
| 7.  | Leaves otherwise .....   | 8   |
| 8.  | Leaves obtuse at apex; basal pair of nerves extending beyond the middle of lamina.....           | <b>Ficus benghalensis</b>                   |
| 8.  | Leaves acute or acuminate at apex; basal pair of leaves less than half the length of lamina..... | 9   |
| 9.  | Figs solitary or paired.....   | 10  |
| 9.  | Figs in groups of 3 or more .....  | <b>Ficus tsjahela</b>                       |
| 10. | Lateral nerves many, close and parallel.....   | <b>Ficus benjamina</b>                      |

10.	Lateral nerves less than 9 pairs, fairly wide apart .....	11
11.	Petiole 1-1.5 cm long, leaf apex obtuse or slightly emarginate. <b>Ficus microcarpa</b>	
11.	Petiole 2.5 cm or more long, leaf apex acute or acuminate .....	12
12.	Figs with prominent internal bristles ..... <b>Ficus virens</b> var. <b>wightiana</b>	
12.	Internal bristles minute or absent.....	13
13.	Leaf apex acute to slightly cuspidate, base obtuse or rounded <b>Ficus amplissima</b>	
13.	Leaf apex acutely caudate acuminate, base narrowed..... <b>Ficus talbotii</b>	
14.	Leaves unequal sided with one side more or less gibbous and the other side cuneate .....	15
14.	Leaves equal or subequal sided, not gibbous on one side.....	16
15.	Leaves elliptic-obovate or oblanceolate, narrowed to the apex, acuminate.....	
	..... <b>Ficus tinctoria</b> ssp. <b>gibbosa</b> var. <b>cuspidifera</b>	
15.	Leaves elliptic-ovate or rhomboid, acute or acuminate at apex.....	
	..... <b>Ficus tinctoria</b> ssp. <b>parasitica</b>	
16.	Leaves scabrous above, margins denticulate..... <b>Ficus exasperata</b>	
16.	Leaves not scabrous above, margins entire .....	17
17.	Figs on 2-3 mm long peduncles; leaf base deeply cordate ..... <b>Ficus arnottiana</b>	
17.	Figs on 5 mm or more long peduncles; leaf base not cordate .....	18
18.	Figs with 3 persistent bracts at the base .....	19
18.	Figs without 3 persistent bracts at the base.....	20
19.	Figs reddish-brown, basal bracts ovate, acute, medially ribbed, glabrous .....	
	..... <b>Ficus beddomei</b>	
19.	Figs yellow, basal bracts ovate, obtuse, bifid, tomentose .....	<b>Ficus dalhousiae</b>
20.	Figs 0.5-0.7 cm across, 3 or more together, peduncle 2-3 mm long; petiole articulated .....	<b>Ficus caulocarpa</b>
20.	Figs 1 cm or more long, solitary or paired, peduncle 1 cm or more long; petiole not articulated .....	21
21.	Figs solitary, 2.5-3 cm across, greenish-yellow..... <b>Ficus callosa</b>	
21.	Figs paired, less than 1.5 cm across, reddish.....	22
22.	Bracts at the base of the peduncle; lateral nerves 7-10 pairs ..... <b>Ficus nervosa</b>	
22.	Bracts at the top of the peduncle; lateral nerves 10-16 pairs ..... <b>Ficus costata</b>	
23.	Flowers in oblong or globose heads .....	24
23.	Female flowers solitary, male in capitate clusters or on flat or discoid receptacle .....	28
24.	Twigs with paired stipular scars; male heads globose, 1 cm across.....	
	..... <b>Artocarpus gomezianus</b> ssp. <b>zeylanicus</b>	
24.	Twigs with annular stipular scars; male heads oblong, elongated .....	25
25.	Leaves serrate; stipules denticulate; sorosis less than 2.5 cm across .....	
	..... <b>Broussonetia papyrifera</b>	
25.	Leaves entire; stipules entire; sorosis over 6 cm across.....	26
26.	Leaves ovate, pinnatisect, over 30 cm wide .....	<b>Artocarpus incisus</b>
26.	Leaves oblong, elliptic or obovate, less than 10 cm wide .....	27
27.	Young shoots and under surface of leaves yellowish-brown hirsute; male spikes over 10 cm long .....	<b>Artocarpus hirsutus</b>
27.	Young shoots and under surface of leaves without yellowish-brown tomentum; male spikes below 7 cm long.....	<b>Artocarpus heterophyllus</b>
28.	Female flowers without perianth, male on a flat or discoid receptacle .....	
	..... <b>Antiaris toxicaria</b>	

28. Female flowers with 4 perianth lobes, male in capitate clusters .....  
..... **Streblus asper**

**Antiaris toxicaria** Lesch., Ann. Mus. Natl. Hist. Nat. Paris 16: 478, t.22. 1820; Hook. f., Fl. Brit. India 5: 537. 1888; Gamble, Fl. Pres. Madras 1367(957). 1928; Mohanan, Fl. Quilon Dist. 376. 1984; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 430. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 425. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 300. 1997; Sivar. & Mathew, Fl. Nilambur 658. 1997; Sasidh., Fl. Periyar Tiger Reserve 389. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 295. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 307. 2002; Mohanan & Sivad., Fl. Agasthyamala 624. 2002.

*Local names:* Aranthal, Maravuri

Lofty deciduous trees, to 50 m high; bole buttressed; bark 10-15 mm thick greyish-white, smooth, pustular-lenticellate, lenticels in vertical rows; blaze creamy white; exudation watery or milky. Leaves simple, alternate, bifarious; stipule small, lateral, connate, cauducous; petiole 3-8 mm long, stout, velvety; lamina 6.5-15 x 2.5-5 cm, elliptic-oblong or ovate-oblong, base round, obtuse or cordate, apex acuminate or obtusely acuminate, margin entire or distantly crenulate, coriaceous, glabrous, scabrous beneath; lateral nerves 6-11 pairs, parallel, looped near the margin, prominent, intercostae reticulate, faint. Flowers unisexual, greenish-yellow, minute, in spikes; male receptacle to 1.5 cm across, axillary, 3-4 together, tomentose; peduncle velvety; receptacle surrounded by imbricating bracts; tepals 3 or 4, spathulate, imbricate; stamens 3-8; filaments erect; anthers yellow; female flowers solitary in an involucre of few connate bracts, tepals absent; ovary superior, adnate to the involucre, 1-celled, ovule 1, pendulous; style arms 2, subulate, recurved. Fruit a drupe, 1.5-2.5 x 1-2 cm, pyriform or obovoid, fleshy, scarlet, velvety; seed 10-16 mm long.

*Flowering & Fruiting:* January-April

*Habitat:* Evergreen and semi-evergreen forests, also in the sacred groves

*Distribution*

*Kerala:* Kollam, Idukki, Malappuram, Trivandrum, Thrissur, Palakkad, Wayanad

*Geographical:* Paleotropics

**Artocarpus gomezianus** Wall. *ex* Trecul ssp. **zeylanicus** Jarrett, J. Arnold Arbor. 41: 90. 1960; Vajr., Fl. Palghat Dist. 443. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 624. 1994; Subram., Fl. Thenmala Division 354. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 425. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 300. 1997; Sivar. & Mathew, Fl. Nilambur 659. 1997; Sasidh., Fl. Periyar Tiger Reserve 390. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 308. 2002.

*Artocarpus lakoocha* sensu Fischer in Gamble, Fl. Pres. Madras 1369(958). 1928, non Roxb. 1832; Mohanan & Sivad., Fl. Agasthyamala 627. 2002.

*Local names:* Chima, Theetiylavu

Deciduous trees to 30 m high, bark 10-12 m, surface grey, rough, exfoliation small, fibrous; blaze pink, exudation milky; branchlets minutely pubescent. leaves simple, alternate, distichous; stipules 8-10 mm long, lateral, sheathing, pubescent; petiole 15-30 mm long, stout, pubescent; lamina 10-25 x 5-13 cm, elliptic-oblong or ovate-oblong, base subcordate, truncate, round or acute, apex acuminate, margin entire,

(young ones sometimes serrate) shining and glabrous above, subscabrous beneath; lateral nerves 9-16 pairs, parallel, prominent, intercostae reticulate, prominent. Flowers unisexual, green, turning yellowish, small; male and female in separate axillary globose heads; male spike 8 mm across, globose, peduncle 10-18 mm long; tepals 2-3, triangular, truncate, puberulous; stamen 1, filament broad below, tapering upwards; anther exerted, short, broad; bracteoles peltate; female spikes stouter; anthocarp completely united; ovary superior, ovule pendulous; style exerted; stigma undivided. Fruit a sorosis 2-3 cm across, subglobose, yellow, velvety; seeds few, broad.

*Flowering & Fruiting:* January-April

*Habitat:* Semi-evergreen and moist deciduous forests

*Distribution*

*Kerala:* Idukki, Pathanamthitta, Palakkad, Kollam, Thrissur, Trivandrum, Malappuram

*Geographical:* South West India and Sri Lanka

**Artocarpus heterophyllus** Lam., *Encycl.* 3: 209. 1789; Manilal & Sivar., *Fl. Calicut* 278. 1982; Mohanan, *Fl. Quilon Dist.* 376. 1984; Ansari, *Fl. Kasaragod Dist.* 350. 1985; Manilal, *Fl. Silent Valley* 258. 1988; Ramach. & Nair, *Fl. Cannanore Dist.* 430. 1988; Vajr., *Fl. Palghat Dist.* 443. 1990; Anil Kumar, *Fl. Pathanamthitta Dist.* 624. 1994; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 430. 1994; Subram., *Fl. Thenmala Division* 354. 1995; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 426. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 300. 1997; Sivar. & Mathew, *Fl. Nilambur* 659. 1997; Sasidh., *Fl. Periyar Tiger Reserve* 390. 1998; Sunil, *Fl. Pl. Alappuzha Dist.* 849. 2000; Sasidh., *Fl. Parambikulam Wildlife Sanctuary* 308. 2002; Mohanan & Sivad., *Fl. Agasthyamala* 625. 2002.

*Artocarpus integrifolius* Wight,  *Ic. t.* 678. 1840; Hook. f., *Fl. Brit. India* 5: 541. 1888, non L.f. 1781; Gamble, *Fl. Pres. Madras* 1369(957). 1928.

*Local names:* Pilavu, Plavu

Evergreen trees to 25 m high, bark 10-12 mm thick, blackish-grey, mottled with green and black, exfoliating in large thick flakes, exfoliated surface orange-red; blaze pinkish-yellow; exudation milky white latex; trunk with warty tubercles; branchlets glabrous. Leaves simple, alternate; stipules 3-5 cm long, lateral, ovate-lanceolate, sheathing, glabrous, cauducous; petiole 20-40 mm long, stout, grooved above, glabrous; lamina 8-23 x 3-13 cm, obovate, obovate-oblong, or elliptic-ovate, base acute, round or cuneate, apex acute or obtuse, margin entire, glabrous and shining above and scabrous beneath; lateral nerves 6-8 pairs, pinnate, prominent, arched, intercostae scalariform, prominent. Flowers unisexual, minute, yellowish-green, in spikes enclosed by spathe-like bracts, male from young branches, catkin narrow-cylindric; perianth 2-lobed, puberulous; stamen 1; filament somewhat flattened, stout; anthers ovate-oblong; female catkins from the trunk and mature branches, more massive, perianth with strongly projecting conical apex; ovary 0.3 mm, superior, globose-obovoid; style exerted; stigma spathulate. Fruit a sorosis 30-45 x 20-25 cm, oblong, tuberculate, tubercles conical yellowish-green, fruiting perianth yellow to light orange, fleshy; seeds 10-12 x 8-10 mm, elliptic-oblong, smooth, glossy.

*Flowering & Fruiting:* November-April

*Habitat:* Evergreen and semi-evergreen forests, also widely cultivated



*Distribution*

*Kerala:* All districts

*Geographical:* Widely cultivated in the tropics, origin is probably South India

**Artocarpus hirsutus** Lam., *Encycl.* 3: 210. 1789; Hook. f., *Fl. Brit. India* 5: 541. 1888; Gamble, *Fl. Pres. Madras* 1369(957). 1928; Manilal & Sivar., *Fl. Calicut* 278. 1982; Mohanan, *Fl. Quilon Dist.* 376. 1984; Ansari, *Fl. Kasaragod Dist.* 351. 1985; Ramach. & Nair, *Fl. Cannanore Dist.* 430. 1988; Antony, *Fl. Kottayam Dist.* 371. 1989; Vajr., *Fl. Palghat Dist.* 443. 1990; Anil Kumar, *Fl. Pathanamthitta Dist.* 624. 1994; Mohanan & Henry, *Fl. Thiruvananthapuram Dist.* 431. 1994; Subram., *Fl. Thenmala Division* 355. 1995; Sasidh. & Sivar., *Fl. Pl. Thrissur For.* 426. 1996; Sasidh., *Fl. Shenduruny Wildlife Sanctuary* 301. 1997; Sivar. & Mathew, *Fl. Nilambur* 660. 1997; Sasidh., *Fl. Periyar Tiger Reserve* 390. 1998; Sasidh., *Fl. Chinnar Wildlife Sanctuary* 296. 1999; Sunil, *Fl. Pl. Alappuzha Dist.* 850. 2000; Sasidh., *Fl. Parambikulam Wildlife Sanctuary* 308. 2002; Mohanan & Sivad., *Fl. Agasthyamala* 626. 2002.

*Local names:* Anjili, Ayani

Evergreen trees, to 50 m high, bark 10-15 mm thick, surface dull grey-brown, smooth, lenticellate, exfoliations thin, exfoliated surface red, fibrous; blaze creamy turning to pinkish-yellow; exudation milky white, sticky, branchlets hirsute. Leaves simple, alternate; stipules to 4 cm long, lateral, densely tawny strigose; petiole 10-30 mm long, stout, hirsute; lamina 13-25 x 7.5-15 cm, broadly ovate, obovate or elliptic, base acute, obtuse or round, apex subacute or very shortly acuminate, margin entire, undulate, coriaceous, glabrous above, hirsute-pubescent beneath; lateral nerves 6-12 pairs, pinnate, prominent; intercostae scalariform, faint. Flowers unisexual, minute, yellowish-green; male in axillary, pendulous, narrowly cylindrical spikes upto 15 cm long; tepals 2, united below; stamen 1; anther exerted, ovate, bracteoles chaffy; female flowers in axillary ovoid spikes; perianth tubular, confluent below with the receptacle; ovary superior, straight, ovule pendulous; style exerted; stigma undivided. Fruit a sorosis 6-7.5 cm across, globose or ovoid, echinate, yellow when ripe, the spines cylindrical, straight, hispid, perforate at the apex for filiform style; seeds 16-18 mm long, ovoid, white.

*Flowering & Fruiting:* December-March

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Endemic to:* Southern Western Ghats

**Artocarpus incisus** (Thunb.) L.f., *Suppl. Pl.* 411. 1781; Sunil, *Fl. Pl. Alappuzha Dist.* 850. 2000.

*Rademachia incisa* Thunb., *Kongl. Vetensk. Acad. Handl.* 37: 253. 1776.

*Artocarpus communis* J.R. & G. Forst., *Char. Gen.* 103. 1776; Manilal & Sivar., *Fl. Calicut* 277. 1982; Mohanan, *Fl. Quilon Dist.* 376. 1984; Ramach. & Nair, *Fl. Cannanore Dist.* 430. 1988; Antony, *Fl. Kottayam Dist.* 374. 1989.

*Local names:* Kadachakka, Kadapilavu, Seemaplavu

Evergreen trees, to 10 m high. Leaves simple, alternate; stipule 10-25 cm long, lateral; petiole 3-6 cm long, stout, brown tomentose; lamina 10-60 x 8-30 cm,

pinnatifid, base decurrent, apex acuminate, margin of each lobes entire or dentate-serrate, chartaceous, sericeous-pubescent along the nerves above, densely beneath; lateral nerves 8-12 pairs, pinnate, intercostae scalariform, prominent. Flowers unisexual; spikes on the main branches; male catkin: 8-20 x 1-2 cm, pendent, oblong-cylindric; flower: perianth 2 mm, glabrous, bilobed; stamen 1; filament to 2 mm; anthers oblong; female spike: 4-8 x 3-6 cm; perianth 2 mm; ovary superior, 0.2 mm, obovoid; stigma simple. Fruit a sorosis 15-20 x 10-15 cm, oblong or round, set with conical process; peduncle 4-12 cm; seeds 1.5-2.5 cm, oblong-cylindric (seed formation is very rare).

*Flowering & Fruiting:* Throughout the year

*Habitat:* Cultivated for edible fruits

*Distribution*

*Kerala:* All districts

*Geographical:* Native of New Guinea

**Broussonetia papyrifera** Vent., Table Regne Veg. 3: 547. 1799; Hook. f., Fl. Brit.

India 5: 490. 1888; Vajr., Fl. Palghat Dist. 458. 1990; Sivar. & Mathew, Fl. Nilambur 662. 1997; Sasidh., Fl. Parambikulam Wildlife Sanctuary 308. 2002.

Deciduous trees, to 18 m high, bark smooth, grey, fibrous; latex white; young parts tomentose. Leaves alternate; stipules 6-7 mm long, ovate-lanceolate, membranous, denticulate; petiole 3-10 cm long, slender, tomentose; lamina 4-20 x 1.5-11 cm, ovate, elliptic or lanceolate, base oblique, cordate or truncate, apex acuminate, margin serrate or dentate, scabrous above and hirsute beneath, membranous; 3-ribbed from the base, lateral nerves 4-15 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers unisexual; male flowers: in 20-60 mm long spikes with sterile tip on one side; bracts 1-1.3 mm long, ovate, acute; tepals 4, joined in the lower half; stamens 4, inflexed in bud; pistillode spicate, minute; female flowers : in axillary globose heads to 5-8 mm wide; peduncle 2-5 mm long; bracts 1-1.3 mm long, subpeltate-clavate, with minutely hooked hairs; perianth saccate with 4 short lobes; ovary superior, sessile; style 1, puberulous. Sorosis 10-25 mm wide, orange-red, more or less pulpy; achenes 1.7-2.5 mm long, ovoid-compressed, smooth.

*Flowering & Fruiting:* November-January

*Habitat:* Cultivated, getting naturalised

*Distribution*

*Kerala:* Palakkad, Malappuram, Wayanad

*Geographical:* Malesia, China and Japan; introduced in India

**Ficus amplissima** J. E. Smith in Rees, Cyclop. 14: n.1. 1810; Ansari, Fl. Kasaragod

Dist. 353. 1985; Manilal, Fl. Silent Valley 259. 1988; Vajr., Fl. Palghat Dist. 445. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 626. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 427. 1996; Sasidh., Fl. Periyar Tiger Reserve 391. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 297. 1999; Sunil, Fl. Pl. Alappuzha Dist. 853. 2000.

*Ficus tsiela* Roxb. ex Buch.-Ham., Trans. Linn. Soc. London 15: 149. 1826; Hook. f., Fl. Brit. India 5: 515. 1888; Gamble, Fl. Pres. Madras 1362(953). 1928.

Large spreading trees, to 25 m high; aerial roots few more; bark greenish-grey, smooth; blaze yellow; exudation milky, copious; branchlets glabrescent or puberulous, pale. Leaves simple, alternate; stipule to 2.5 cm, lateral, lanceolate;

petiole 15-50 mm long, slender, grooved above, glabrous, glandular at apex below, not articulated; lamina 5-14 x 2.5-9 cm, broadly ovate or ovate-oblong, base round, truncate or acute, apex acute, margin entire, glabrous, coriaceous; 3-ribbed from base, lateral nerves 8-10 pairs, parallel, secondary laterals present, slender prominent, intercostae reticulate, obscure. Flowers unisexual; inflorescence a syconia, monoecious, geminate, axillary, subsessile, crowned towards the end of branchlets, depressed globose; basal bracts 3, broadly ovate, 3 mm, obtuse, glabrous or puberulous, more or less concealed, orifice circular, closed by 3 flat apical scales, in terminal bristles none; flowers of 4 kinds; male flowers dispense, few; sessile or pedicel 2 mm long; tepals 2 in pedicellate flowers and 3 in sessile flowers, reddish, ovate acute, free, margin scarious; stamen 1, included; filaments 0.4 mm; anthers oblong, parallel, unequal; female flower sessile, tepals 3-4, reddish, ovate acute, free; ovary superior, bean shaped, 1 mm, white; style filiform, 2 mm; gall flowers similar to female; pedicellate. Syconium red or purple when ripe; achenes smooth.

*Flowering & Fruiting:* September-December

*Habitat:* Evergreen, moist and dry deciduous forests

*Distribution*

*Kerala:* Kasaragode, Thrissur, Alappuzha, Idukki, Pathanamthitta, Palakkad

*Geographical:* Sri Lanka, Maldives and Peninsular India

**Ficus arnottiana** (Miq.) Miq., Ann. Mus. Lugd.-Bat. 3: 287. 1867; Hook. f., Fl. Brit. India 5: 513. 1888; Gamble, Fl. Pres. Madras 1363(953). 1928; Mohanan, Fl. Quilon Dist. 377. 1984; Ansari, Fl. Kasaragod Dist. 353. 1985; Antony, Fl. Kottayam Dist. 372. 1989; Anil Kumar, Fl. Pathanamthitta Dist. 627. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 432. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 428. 1996; Sasidh., Fl. Periyar Tiger Reserve 392. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 310. 2002; Mohanan & Sivad., Fl. Agasthyamala 629. 2002.

*Urostigma arnottiana* Miq. in Hook. 's London J. Bot. 6: 564. 1847.

*Local names:* Amakanniyan, Kallal, Kallaroyal

Deciduous epiphytic or independent trees, to 10 m high, aerial roots absent; bark surface grey-brown, smooth, tuberculate-lenticellate; blaze pink; latex milky. Leaves simple, alternate spiral; stipules 3-5 cm long, lateral, reddish-green, glabrous, cauducous, leaving annular scars; petiole 3-10 cm long, slender, red, not articulated, glabrous; lamina 6-20 x 5-13 cm, broadly ovate, base deeply cordate, apex caudate-acuminate, margin entire, slightly undulate, glabrous, coriaceous; 5-7-ribbed from base, lateral nerves 5-8 pairs, pinnate, slender, prominent, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, in axillary pairs or crowded near the apex, sessile or shortly pedunculate, globose, glabrous, orifice plane; bracts 3, 1 x 2-2.5 mm, ovate, thin, eventually cauducous; flowers of 4 kinds; tepals red, more or less gamophyllous, 3-4 lobed, fleshy; male flowers sessile, around the orifice and sparsely scattered in the interior of the syconia; stamens 1, subsessile; anthers 2-celled, ovate-oblong, dehiscence longitudinally; female flowers sessile, sparsely scattered in the interior of syconia, cream, somewhat reddish on stylar side; ovary superior, depressed globose; style

filiform; stigma flat gall flowered stalked; neutar flowers few. Synconium yellowish-brown when ripe; 5-7 mm across; achenes smooth.

*Flowering & Fruiting:* December-April

*Habitat:* Semi-evergreen and moist deciduous forests

*Distribution*

*Kerala:* Kasaragode, Kollam, Thrissur, Kottayam, Trivandrum, Pathanamthitta, Idukki, Palakkad, Kannur

*Geographical:* India and Sri Lanka

**Ficus beddomei** King, Ann. Roy. Bot. Gard. (Calcutta) 1: 26. tt. 24 & 81 M. 1887; Hook. f., Fl. Brit. India 5: 513. 1888; Gamble, Fl. Pres. Madras 1364(954). 1928; Vajr., Fl. Palghat Dist. 446. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 432. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 428. 1996; Sivar. & Mathew, Fl. Nilambur 663. 1997; Sasidh., Fl. Periyar Tiger Reserve 392. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 310. 2002; Mohanan & Sivad., Fl. Agasthyamala 630. 2002.

*Local names:* Chela, Thavittaal

Evergreen trees, epiphytic or independent, to 30 m high; aerial roots none; bark pale brown, smooth, blaze light-pink, exudation milky white. Leaves simple, alternate; stipules 5-10 cm long, lateral, leafy, golden yellow, glabrous, leaving an annular scar; petiole 5-10 cm long, stout, grooved above, glandular at apex below, glabrous; lamina 15-25 x 8-15 cm, broadly ovate, base acute, truncate or round, apex caudate acuminate, margin entire, slightly undulate, glabrous, coriaceous; 3-ribbed from base; lateral nerves 10-15 pairs, parallel, prominent, looped near the margin, intercostae reticulate, obscure. Flowers unisexual; inflorescence a syconia, in axillary pairs, ovoid or obovoid, with several vertical ridges, green, glabrous; peduncle 1.5-2 cm long, stout, angled; basal bracts 3, 6-7 x 3-4 mm, ovate-lanceolate, shortly connate, reflexed, persistent; orifice slightly raised, internal bristles linear, glabrous; fig wall thick; flowers of 4 kinds; male flowers mixed with female through out the receptacle; pedicel short; perianth cupular, 2-3 lobed, lobes unequal, brownish, glabrous; stamen 1; filament twisted, 2 mm, decurrent with the stalk of the ovary; anther 2-celled, 2 mm; female and gall flowers similar; pedicel short; tepals 4-5, lanceolate, unequal, brownish, glabrous, ovary 2 x 1.5 mm, superior, globose obovoid, blackish-brown on stylar side; style straight or curved, 2 mm, tapering. Syconium 1.5-2.5 cm across, green, spotted with yellow when ripe; achenes 2.5 x 1.8 mm, obovoid, smooth.

*Flowering & Fruiting:* July-February

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Malappuram, Palakkad, Trivandrum, Thrissur, Kozhikkode

*Endemic to:* Western Ghats

**Ficus benghalensis** L., Sp. Pl. 1059. 1753; Hook. f., Fl. Brit. India 5: 499. 1888; Gamble, Fl. Pres. Madras 361(952). 1928; Manilal & Sivar., Fl. Calicut 277. 1982; Mohanan, Fl. Quilon Dist. 378. 1984; Ansari, Fl. Kasaragod Dist. 354. 1985; Ramach. & Nair, Fl. Cannanore Dist. 431. 1988; Vajr., Fl. Palghat Dist. 450. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 627. 1994; Subram., Fl. Thenmala Division

352. 1995; Sivar. & Mathew, Fl. Nilambur 663. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 297. 1999; Sunil, Fl. Pl. Alappuzha Dist. 853. 2000; Mohanan & Sivad., Fl. Agasthyamala 630. 2002.

*Urostigma bengalense* (L.) Gasp., Nov. Gen. Fici 7. 1844.

*Local names:* Alamaram, Peraal, Vadavriksham

Spreading trees, to 30 m high; aerial roots numerous from the branches; bark 10-12 mm thick, greyish-white, smooth, exfoliating in irregular flakes; blaze dull red; exudation milky latex; young parts softly pubescent; branchlets light brownish. Leaves simple, alternate, spiral; stipules lateral, 2-2.5 cm long, sheathing, white-puberulous, deciduous, leaving annular scar, glandular at apex below; lamina 10-20 x 5-12.5 cm, ovate, base round or subcordate, apex obtuse, margin entire, coriaceous, glabrescent above, minutely pubescent beneath; 3-7-ribbed from base, lateral nerves 4-6 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, sessile, in axillary pairs, globose, puberulous without; basal bracts 3, broad, round, glabrous, coriaceous, persistent, orifice plane, closed by 3 bracts in a 3-4 mm wide disc; internal bristles none; flowers of 4 kinds; male flowers dispersed with female, rather numerous near the mouth of the receptacles; pedicel 0.5-2.8 mm long; tepals 2-3, rather broad, shortly connate, brownish, glabrous; stamens 1; filament 0.8-1 mm; anther oblong, parallel, unequal, shortly mucronate, connective brown; female flowers sessile; tepals 3-4, shortly connate, brownish, glabrous, ovary superior, 1.5 x 1 mm, obovoid-globose, dark brown on styler side; style erect or curved, tapering; gall flowers similar to female but pedicellate. Syconium 1.5-2 cm across, ripening orange to red, achenes 2 x 1.5 mm, globose-ellipsoid, dark brown.

*Flowering & Fruiting:* May-August

*Habitat:* Dry deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indian subcontinent; widely grown as avenue tree

***Ficus benjamina*** L., Mant. Pl. 1: 129. 1767; Hook. f., Fl. Brit. India 5: 508. 1888; Gamble, Fl. Pres. Madras 1367(956). 1928.

Evergreen trees, aerial roots few; bark grey, smooth; latex milky. Leaves simple, alternate, distichous; stipules 10-12 mm long, paired, lateral, lanceolate; petiole 4-25 mm long, stout, glabrous, glandular at apex below; lamina 3-12 x 1.5-6 cm, elliptic or elliptic-ovate, base round, acute or subcordate, apex acute or acuminate, margin entire, glabrous, coriaceous; lateral nerves 6-18 pairs, parallel, prominent, secondary laterals prominent, intercostae reticulate, faint. Inflorescence a syconia, 8-12 x 7-10 mm, axillary, sessile, paired, globose or subobovoid; basal bracts 2-3, minute, ovate; orifice circular, slightly raised, closed by 3 apical bracts; internal bristles absent; flowers unisexual, of 4 kinds; male flowers : abundant, disperse; pedicels 0.8-2 mm; tepals 3; stamen 1, included; anthers oblong; female flowers : sessile, tepals 3-4; ovary 0.7 mm long, ovate, brownish; style 1.5 mm long, tip curved, dilated, stigmatiferous; gall flowers similar to female flowers but pedicellate. Syconium orange, rarely pink or dark purple; achenes smooth.

*Flowering & Fruiting:* January-June

*Habitat:* Planted as ornamental tree

*Distribution*

*Kerala:* All districts

*Geographical:* India and South China to Solomon Islands

**Ficus callosa** Willd., Mem. Acad. Roy. Sci. Hist. (Berlin) 102. 1798; Hook. f., Fl. Brit. India 5: 516. 1888; Gamble, Fl. Pres. Madras 1364(954). 1928; Manilal & Sivar., Fl. Calicut 276. 1982; Mohanan, Fl. Quilon Dist. 378. 1984; Ansari, Fl. Kasaragod Dist. 354. 1985; Vajr., Fl. Palghat Dist. 446. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 627. 1994; Sasidh., Fl. Periyar Tiger Reserve 392. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 310. 2002; Mohanan & Sivad., Fl. Agasthyamala 631. 2002.

*Local name:* Kadaplavu

Trees, to 45 m high, bark 10-15 mm thick, surface grey, smooth, lenticellate, fibrous; blaze creamy yellow, latex watery turning yellowish-white. Leaves simple, alternate spiral; stipules 15-30 mm long, broadly ovate, pubescent; petiole 25-70 mm long, stout, grooved above, not articulated, glabrous; lamina 10-30 x 7.5-13 cm, elliptic, broadly oblong or ovate-oblong, base round, obtuse or subcordate, apex obtusely acute, round, margin entire, slightly recurved, coriaceous, glabrous, glossy above and scabrid beneath; 3-5-ribbed from base, lateral nerves 5-12 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, axillary, solitary subglobose, puberulous-scabrid, peduncle to 1.5 cm long, pubescent-scabrid; basal bracts 3, 1.5-4 mm long, broadly ovate, pubescent, persistent, yellow, when ripe, orifice closed with 3 apical bracts separating to show the interval bracts; internal bristles none, receptacle wall thick; flowers of 4 kinds, numerous, scattered, sessile with 2 stamens or pedicellate with 1 stamens; tepals 4-6, red, lanceolate in sessile flowers, spatulate in pedicellate flowers, free, glabrous; filament short, thin; anthers small, ovate; female flowers and gall flowers similar, sessile or pedicellate; tepals 4-6, red, lanceolate, free, glabrous, ovary superior, obovoid; style elongate; stigma bifid. Syconium greenish-yellow when ripe, 2.5 cm across; basal bracts yellow; achene oblong, slightly keeled.

*Flowering & Fruiting:* March-April

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* Kasaragode, Kollam, Idukki, Pathanamthitta, Thrissur, Palakkad, Kozhikkode, Trivandrum

*Geographical:* Indo-Malesia

**Ficus caulocarpa** Miq., Ann. Mus. Lugd.-Bat. 3: 268. 1867; Ansari, Fl. Kasaragod Dist. 354. 1985; Sasidh., Fl. Periyar Tiger Reserve 392. 1998; Sasidh. & Jomy., Rheedeia 9: 77. 1999.

*Ficus infectoria* Roxb. var. *caulocarpa* (Miq.) King, Ann. Roy. Bot. Gard. (Calcutta) 1: 63, Pl. 79. 1887.

Large trees with aerial roots, bole buttressed; bark greyish-brown, smooth; blaze dull-yellow; exudation milky; branchlets glabrous. Leaves simple, alternate spiral; stipule 12-15 mm long, lateral, ovate, grey-puberulous; petiole 40-80 mm long, slender, grooved above, swollen at base, articulated, glabrous, deciduous at base of the lamina; lamina 10-19 x 4-10 cm, ovate-oblong or broadly ovate, base round, subcordate or slightly cuneate, apex obtusely acuminate, margin entire, glabrous, coriaceous; 3-ribbed from base; lateral nerves 7-14 pairs, pinnate, slender, obscure;

intercostae reticulate, obscure. Flowers unisexual; inflorescence a syconia, 2-8 in the axils of leaf scars and on the twigs just behind; peduncle 1-4 mm long, puberulous, basal bracts 3 free or usually jointed in a glabrous or puberulous disc of 3-4 mm across, splitting into 4-6 lobes, persistent, body subglobose, glabrous, orifice closed by 3 flat or slightly prominent apical bracts, subumbonate on drying; internal bristles chaffy-vesicular, abundant; male flowers ostiolar, in 2-3 rings, sessile; tepals 1-2, saccate-lanceolate, free or jointed; gall flowers sessile or shortly stalked; female flowers sessile; tepals 3-4, reddish-brown, lanceolate or spatulate, free to almost wholly gamophyllous; ovary superior, sessile to shortly stalked, dark red. Syconium 5-8 mm across, white, globose.

*Flowering & Fruiting:* March-May

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Idukki

*Geographical:* Indo-Malesia to Solomon Islands

**Ficus costata** Ait., Hort. Kew. (ed. 1) 3: 452. 1789; Sasidh., Fl. Periyar Tiger Reserve 392. 1998; Sasidh. & Jomy., Rheedia 9: 79. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 311. 2002.

*Ficus caudiculata* Trimen, J. Bot. 23: 243. 1885; Hook. f., Fl. Brit. India 5: 510. 1888.

*Ficus mooniana* King in Hook.f., Fl. Brit. India 5: 514. 1888.

Trees; rarely epiphytic, to 15 m high; branchlets slender, glabrous. Leaves simple, alternate, spiral; stipules small, lateral, glabrous or puberulous, leafy, deciduous, leaving on annular scar; petiole 1.5-4 cm long, not articulated, slender, glabrous, grooved above; lamina 7.5-15 x 3.5-7.5 cm, oblong-ovate or elliptic-oblong, base round or subcordate, apex obtusely acuminate, margin entire, glabrous, areolate beneath; 3-ribbed from base, coriaceous; lateral nerves 9-18 pairs, parallel, slender, prominent, looped near the margin, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, in axillary pairs, smooth or scurfy when young; peduncle 5-8 mm long, glabrous; basal bracts 3, ovate, 2.5 x 4.5 mm, sometimes shortly connate at base, body subglobose; the orifice slightly depressed; no internal bristles; male flowers disperse, sessile or pedicellate; tepals 3, red, fleshy, connate at base; stamen 1, 1 mm long; anther submucronate; gall flowers with red pedicels; ovary sessile, reddish on stylar side; female flowers sessile; tepals 3, red ovate, connate at base, fleshy, ovary superior, reddish on the stylar side; stigma simple. Syconium yellow turning to red when ripe; achene smooth.

*Flowering & Fruiting:* November-December

*Distribution*

*Kerala:* Idukki, Thrissur, Palakkad

*Geographical:* South India and Sri Lanka

**Ficus dalhousiae** Miq. in Hook.'s J. Bot. Kew Gard. Misc. 6: 571. 1854; Hook. f., Fl. Brit. India 5: 499. 1888; Gamble, Fl. Pres. Madras 1364(954). 1928; Mohanan, Fl. Quilon Dist. 378. 1984; Vajr., Fl. Palghat Dist. 446. 1990; Sasidh. & Sivar., Fl. Pl. Thrissur For. 428. 1996; Sivar. & Mathew, Fl. Nilambur 664. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 298. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 311. 2002.

*Local name:* Kallaal

Trees, to 10 m high, sometimes epiphyte; bark brown, fairly smooth; blaze creamy-pink; exudation milky; aerial roots absent; young shoots softly pubescent. Leaves simple, alternate; stipules to 3 cm long, lateral, ovate-lanceolate, puberulous; petiole 4-10 cm long, stout, not articulated, pubescent; lamina 25-30 x 12-18 cm, ovate or ovate-oblong, base deeply cordate, apex acute or acuminate, margin entire, coriaceous, glabrous above and minutely pubescent beneath; 3-7-ribbed from base, lateral nerves 10-13 pairs, pinnate, prominent; intercostae reticulate, obscure. Flowers unisexual; inflorescence a syconia, in axillary pairs, 1 x 0.8 cm, obovoid, with 3 broad triangular apicular scales, densely pubescent; bracts 3, spreading, broad, triangular, sometimes bifid; peduncle 8 mm long, pubescent; flowers of 4 kinds; male flowers very few, only near the apex of receptacle, sessile, globose; tepals 3, concave, round; stamen 1, connective wide; filament thick, adnate; female flower sessile; perianth gamophyllous; ovary ovoid; style long, lateral; stigma cylindrical; gall flowers on thick pedicels, ovary obovoid, smooth; style short. Syconium yellow when ripe.

*Flowering & Fruiting:* December-January

*Habitat:* Dry and moist deciduous forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Thrissur, Malappuram

*Endemic to:* Southern Western Ghats

**Ficus drupacea** Thunb. var. **pubescens** (Roth) Corner, Gard. Bull. Singapore 17: 381. 1960 & 21: 13. 1965; Manilal & Sivar., Fl. Calicut 276. 1982; Vajr., Fl. Palghat Dist. 446. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 628. 1994; Subram., Fl. Thenmala Division 352. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 428. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 302. 1997; Sivar. & Mathew, Fl. Nilambur 665. 1997; Sasidh., Fl. Periyar Tiger Reserve 392. 1998; Sunil, Fl. Pl. Alappuzha Dist. 854. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 311. 2002; Mohanan & Sivad., Fl. Agasthyamala 631. 2002.

*Ficus mysorensis* Heyne ex Roth in Roem. & Schult., Syst. Veg. 1: 508. 1817; Hook. f., Fl. Brit. India 5: 500. 1888; Gamble, Fl. Pres. Madras 1361(952). 1928.

*Ficus mysorensis* Heyne ex Roth var. *pubescens* Roth in Roem. & Schult., Syst. Veg. 1: 508. 1817; Hook. f., Fl. Brit. India 5: 500. 1888; Gamble, Fl. Pres. Madras 1361(952). 1928.

*Local names:* Chela, Kallal

Trees to 25 m high; aerial roots numerous, arising in tufts from the stout branches; bark surface greyish-brown, smooth; exudation milky; young shoots brown pubescent. Leaves simple, alternate, spiral, subdistichous; stipule 10-25 mm long, lateral, broadly lanceolate, tomentose; petiole 1.2-3.5 cm long, stout, grooved above, glandular at apex below, tomentose; lamina 10-22 x 6-15 cm, ovate or elliptic-ovate, base round or subcordate, apex abruptly acuminate, margin entire, tender leaves tomentose below, glabrous above and scurfy tomentose beneath when mature, coriaceous; 3-5-ribbed from base, lateral nerves 9-13 pairs, parallel, prominent beneath, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, sessile, in axillary pairs, ellipsoid-globose, thick walled, tomentose without, at first covered by stout conical tomentose stipule; basal bracts 3, 2-6 mm, orbicular, concave, brown-pilose without, obtuse, orifice umbonate, closed by 3-4 apical bracts, not forming a flat disc; internal bristles a few; flowers of 4 kinds; male



flowers disperse, numerous; pedicel to 4 mm long; tepals 2-3, free, brown, acute; stamen 1, exserted; filament sessile; tepals 3-4, free, brown, acute, ovary superior, obovoid, 0.7 mm, brown; style filiform 2 mm; gall flowers pedicellate; pedicel 0.2-3.5 mm; tepals 3, free; ovary obovoid; style short, subterminal. Syconium 1.5-2 cm across, orange red when ripe; achene smooth.

*Flowering & Fruiting:* March-April

*Habitat:* Semi-evergreen and moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* India, Sri Lanka, Bangladesh and Laos

**Ficus exasperata** Vahl, Enum. Pl. 2: 197. 1805; Manilal & Sivar., Fl. Calicut 275. 1982; Mohanan, Fl. Quilon Dist. 378. 1984; Ansari, Fl. Kasaragod Dist. 355. 1985; Manilal, Fl. Silent Valley 259. 1988; Ramach. & Nair, Fl. Cannanore Dist. 432. 1988; Antony, Fl. Kottayam Dist. 372. 1989; Vajr., Fl. Palghat Dist. 447. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 628. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 432. 1994; Subram., Fl. Thenmala Division 352. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 429. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 303. 1997; Sivar. & Mathew, Fl. Nilambur 665. 1997; Sasidh., Fl. Periyar Tiger Reserve 394. 1998; Sunil, Fl. Pl. Alappuzha Dist. 855. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 311. 2002; Mohanan & Sivad., Fl. Agasthyamala 632. 2002.

*Ficus asperrima* Roxb., Fl. Ind. 3: 554. 1832; Hook. f., Fl. Brit. India 5: 522. 1888; Gamble, Fl. Pres. Madras 1366(955). 1928.

*Local names:* Parakam, Therakam

Deciduous trees, to 18 m high; aerial roots none; bark 5-6 mm thick, greenish-white, smooth, punctiform lenticellate, fibrous; blaze creamy white, exudation watery; all parts coarsely and harshly scabrid with stout white hairs. Leaves simple, laxly alternate spiral to opposite or subdistichous; stipules short, paired, lateral, cauducous; petiole 1-6.5 cm long, slender, not articulated, lamina 5.5-19 x 3-9 cm, elliptic, ovate, oblong-lanceolate, or obovate, basal acute, round or cuneate, apex acute to shortly acuminate, margin denticulate or sinuate-crenate to serrate, scabrid on both surfaces, with out, coriaceous, 3-ribbed from base, glands at nerve axils; lateral nerves 3-6 pairs, pinnate, prominent, intercostae scalariform; leaves of saplings and coppice shoots often lobed. Flowers unisexual; inflorescence a syconia, axillary, solitary, harshly scabrid; peduncle to 1.5 cm with 2-3 small scattered, lateral bracts, sometimes more or less aggregated into a collar, body subglobose or ellipsoid with scattered small lateral bracts, apical bracts projecting 1-2 mm; internal bristles copious, white, shorter than flowers; flowers of 4 kinds; male flowers sessile, ostiolar, in 1-2 rings; tepals 3-6, oblong-spathulate, white hairy; stamen 1; filament 0.5 mm; anther oblong, parallel; female flowers sessile; tepals 4-7, linear-spathulate, white hairy; ovary superior, obovoid; style filiform, lateral, puberulous, stigma clavate; gall flowers sessile to pedicellate tepals 4-6, lanceolate, white hairy, ovary white, sessile, style terminal, puberulous, stigma dilated. Syconium 0.7-1.5 x 1-1.5 cm, yellow or purple when ripe; achene oblong, slightly keeled, reticulate.

*Flowering & Fruiting:* February-April

*Habitat:* Moist deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* East Africa, Arabia, India and Sri Lanka

**Ficus hispida** L. f., Suppl. Pl. 442. 1781; Hook. f., Fl. Brit. India 5: 522. 1888; Gamble, Fl. Pres. Madras 1367(956). 1928; Manilal & Sivar., Fl. Calicut 275. 1982; Mohanan, Fl. Quilon Dist. 378. 1984; Ansari, Fl. Kasaragod Dist. 356. 1985; Manilal, Fl. Silent Valley 259. 1988; Ramach. & Nair, Fl. Cannanore Dist. 432. 1988; Antony, Fl. Kottayam Dist. 372. 1989; Vajr., Fl. Palghat Dist. 447. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 629. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 433. 1994; Subram., Fl. Thenmala Division 351. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 429. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 303. 1997; Sivar. & Mathew, Fl. Nilambur 667. 1997; Sasidh., Fl. Periyar Tiger Reserve 394. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 298. 1999; Sunil, Fl. Pl. Alappuzha Dist. 856. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 312. 2002; Mohanan & Sivad., Fl. Agasthyamala 633. 2002.

*Ficus oppositifolia* Roxb., Pl. Corom. t.124. 1799.

*Local names:* Erumanakku, Kattatthi, Parakam, Thonditherakam

Trees, to 10 m high laxly branched; bark grey, smooth; blaze yellow; exudation milky; young shoots hispid; internodes of branchlets hollow. Leaves simple, opposite; stipules 11-15 mm long, interpetiolar, ovate-lanceolate, cauducous, often in whorls of 4 on the receptacles with leafless branches; petiole 1-4 cm long, stout, hispid, with a subnodal gland; lamina 7-20 x 6-10 cm, elliptic-oblong, ovate-oblong or obovate-oblong, base round, subcordate or cuneate, apex abruptly acute or acuminate or cuspidate, margin subentire to minutely dentate, membranous, scabrid, hispid-pubescent; 3-5-ribbed from base, lateral nerves 5-6 pairs, pinnate, prominent, intercostae scalariform, prominent. Flowers unisexual; inflorescence a syconia, dioecious, fascicled on trunk or on elongated pendulous or trailing leafless branches, depressed-globose, base narrowed, sticky pubescent without, faintly ribbed; peduncle 5-15 mm long, stout; basal bracts 3, 1-1.5 mm long, subtriangular, orifice slightly raised, closed by 5-6 apical bracts and numerous small inner bracts; internal bristles absent, appressed lateral bracts when present 2-4 mm wide; male flowers and gall flowers in same receptacle; female flowers in separate; male flowers ostiolar, in 2 rings; tepals 3 broad; stamen 1, subsessile; anther oblong, parallel, unequal; female flowers sessile or stalked; perianth short, tubular to 2 mm, glabrous; ovary depressed-globose, superior, red-brown; style 1.5 mm long, hairy; stigma clavate; gall flowers same as female but larger and distinctly stalked. Syconium 2-2.5 cm across, yellow; achenes 1.5 mm, lenticular, keeled with prominent hilum.

*Flowering & Fruiting:* September-May

*Habitat:* Moist deciduous and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia to Australia

**Ficus microcarpa** L. f., Suppl. Pl. 442. 1781; Manilal & Sivar., Fl. Calicut 276. 1982; Mohanan, Fl. Quilon Dist. 379. 1984; Ansari, Fl. Kasaragod Dist. 356. 1985; Vajr.,

Fl. Palghat Dist. 448. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 630. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 429. 1996; Sasidh., Fl. Periyar Tiger Reserve 394. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 298. 1999; Sunil, Fl. Pl. Alappuzha Dist. 857. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 312. 2002; Mohanan & Sivad., Fl. Agasthyamala 634. 2002.

*Ficus retusa* King, Ann. Roy. Bot. Gard. (Calcutta) 1:50. tt.61 & 84 P.1887, non L. 1767; Hook. f., Fl. Brit. India 5: 511. 1888; Gamble, Fl. Pres. Madras 1362(952). 1928.

*Ficus retusa* var. *nitida* sensu Hook.f., Fl. Brit. India 5: 511. 1888, non Thunb. 1781-1801; Gamble, Fl. Pres. Madras 1362(952). 1928.

*Local names:* Ithi, Ithiyal, Kallithi

Evergreen trees, usually epiphytic, to 18 m high, aerial roots numerous, slender, arching from the branches; bark surface grey to greyish-brown, smooth; blaze dull yellow; latex milky; branchlets 2-3 mm thick, angled, glabrous. Leaves simple, alternate, spiral; stipules 10-15 mm long, lateral, ovate-lanceolate, glabrous or the edges ciliate; cauducous, leaving an annular scar; petiole 10-15 mm long, glandular at apex below, glabrous, flattened above, slender, not articulate; lamina 4-12 x 2-5 cm, elliptic, elliptic-ovate, elliptic-obovate or obovate, base acute or obtuse, apex acute, obtusely acute or retuse, margin entire, undulate, glabrous, coriaceous; 3-5-ribbed from base, lateral nerves 5-9 pairs, pinnate, slender, secondary laterals as prominent as primary, looped near the margin, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, sessile, in axillary pairs, globose, 7 mm across, glabrous, orifice plane or slightly raised, cloned by 3 flat apical bracts; internal bristles minute, sparse; basal bracts 3, 1.5-3.5 x 1.5-2.5 mm, ovate-lanceolate, obtuse, persistent; flowers of 4 kinds; male flowers numerous; sessile or shortly pedicelled; tepals 3, subspathulate, free; stamen 1; filament 0.3 mm; anthers unequal, ovate-oblong, mucronate; female flowers sessile, sepals 3, spathulate, ovary superior, smooth, stigma cylindrical or clavate; gall flowers pedicellate; tepals 3, broadly spathulate. Syconium 8-10 mm across, globose, glabrous, pink with yellow shades when ripe; achenes smooth.

*Flowering & Fruiting:* March-May

*Habitat:* Evergreen and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia to Pacific Islands and South China

***Ficus mollis*** Vahl, Symb. Bot. 1: 82. 1790; Sasidh., Fl. Chinnar Wildlife Sanctuary 298. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 312. 2002.

*Ficus tomentosa* Roxb. ex Willd., Sp. Pl. 4: 1136. 1806; Hook. f., Fl. Brit. India 5: 501. 1888; Gamble, Fl. Pres. Madras 1361(952). 1928.

Deciduous trees, epiphytic or independent, to 15 m high; aerial roots few or more; bark 5-6 mm thick, surface greyish-white, smooth. Leaves simple, alternate spiral; stipule lateral, ovate-lanceolate, densely appressed, brown-strigose, cauducous, leaving an annular scar; petiole 10-50 mm long, stout, tomentose, often with a subglandular patch on the back at the junction with the midrib below; lamina 6-15 x 3-9 cm, elliptic-ovate, elliptic-obovate, ovate-oblong, base round or cordate, apex obtuse, subacute or obtusely tomentose on both sides when young, becoming glabrescent above and tomentose beneath when mature, coriaceous; 3-7-ribbed from base; lateral nerves 5-6 pairs, pinnate, prominent beneath, intercostae

reticulate, faint. Flowers unisexual; inflorescence a syconia, sessile, in axillary pairs, subglobose, tomentose, orifice circular, slightly raised, closed by 3 glabrous apical bracts in a disc; internal bristles sparse to abundant; basal bracts 3, 4-5 mm long, half covering the body of syconia, ovate, acute, often split, velvety tomentose without; flowers of 4 kinds; male flowers disperse; pedicel 0.7 mm long, tepals 4, reddish, free, lanceolate, stamen 1, filament 0.3 mm, anther oblong; female flowers sessile; tepals 4, shorter than ovary, ovary superior, ellipsoid-globose, 1 mm, brown; style 1.5 mm, tapering; gall flowers sessile or pedicellate; tepals 4, shorter than the smooth ovary; style short. Fruit a syconium 5-8 mm across, fleshy, grey, tomentose; achenes smooth.

*Flowering & Fruiting:* December-June

*Habitat:* Dry deciduous forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Geographical:* India and Sri Lanka

**Ficus nervosa** Heyne ex Roth in Roem. & Schult., Syst. Veg. 1: 513. 1817; Hook. f., Fl. Brit. India 5: 512. 1888; Gamble, Fl. Pres. Madras 1364(954). 1928; Mohanan, Fl. Quilon Dist. 379. 1984; Ramach. & Nair, Fl. Cannanore Dist. 432. 1988; Vajr., Fl. Palghat Dist. 448,24,31; Sasidh. & Sivar., Fl. Pl. Thrissur For. 429. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 304. 1997; Sivar. & Mathew, Fl. Nilambur 668. 1997; Sasidh. & Anto in Manoharan et al., Silent Valley-Whispers of Reason 140. 1999; Sasidh., Fl. Periyar Tiger Reserve 395. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 312. 2002; Mohanan & Sivad., Fl. Agasthyamala 634. 2002.

*Ficus angustifolia* Roxb., Fl. Ind. 3: 554. 1832.

*Local name:* Eechamaram

Evergreen trees, to 30 m high, bole buttressed; buttresses to 6 m high; bark 10-12 mm thick, grey to greyish-brown, often mottled with black, smooth; blaze dull yellow; latex scanty, white, turning to yellow soon. Leaves simple, alternate, spiral, pinkish-brown when young; stipule 10-12 mm long, lateral, ovate-lanceolate, membranous, puberulous, cauducous, leaving an annular scar; petiole 10-25 mm long, stout, grooved above, glabrous; lamina 6-17.5 x 4-8 cm, elliptic, oblong-lanceolate, ovate-elliptic or oblanceolate, base round or acute, apex acute or acuminate, margin entire, or slightly undulate, glabrous, glossy, coriaceous; 3-5-ribbed from base, glandular at basal nerve axils beneath; lateral nerves 5-12 pairs, pinnate, prominent, looped near the margin, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, axillary and on twigs behind the leaves, paired or solitary, 8-15 mm across, subpyriform, hard, orifice circular, depressed, closed by 3 flat, apical scales, internal bristles 0; peduncle to 1 cm, slender, basal bracts 0 but 3 small, free, round-ovate pubescent bracts low down on the peduncle; flowers unisexual, of 4 kinds; male flowers few, only near the mouth of receptacle, pedicelled, tepals 2-3, red, free; stamen 1, filaments as long as the anther, adnate to one sepal; anther broadly oblong, mucronate; female flowers rarely pedicelled, sepals 3, lanceolate, red, style filiform, stigma bifid; gall flowers pedicellate; sepals 3, elongate, acuminate, ovary superior, ovoid, smooth; style short. Syconium depressed globose, red, glabrous, to broadly round to truncate, on elongate stalks; achenes smooth.

*Flowering & Fruiting:* March-May

*Habitat:* Semi-evergreen and evergreen forests

*Distribution*

*Kerala:* Kollam, Idukki, Palakkad, Kannur, Thrissur, Trivandrum, Malappuram, Wayanad

*Geographical:* Indo-Malesia to Australia

**Ficus racemosa** L., Sp. Pl. 1060. 1753; Manilal & Sivar., Fl. Calicut 275. 1982; Mohanan, Fl. Quilon Dist. 379. 1984; Ansari, Fl. Kasaragod Dist. 357. 1985; Ramach. & Nair, Fl. Cannanore Dist. 433. 1988; Vajr., Fl. Palghat Dist. 448. 1990; Subram., Fl. Thenmala Division 353. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 430. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 304. 1997; Sivar. & Mathew, Fl. Nilambur 668. 1997; Sasidh., Fl. Periyar Tiger Reserve 395. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 299. 1999; Sunil, Fl. Pl. Alappuzha Dist. 858. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 312. 2002; Mohanan & Sivad., Fl. Agasthyamala 635. 2002.

*Ficus glomerata* Roxb., Pl. Corom. t. 123. 1799; Hook. f., Fl. Brit. India 5: 535. 1888; Gamble, Fl. Pres. Madras 1364(954). 1928.

*Local name:* Atthi

Deciduous trees, to 30 m high; bole buttressed; bark 8-10 mm thick, surface reddish-brown or yellowish-brown smooth, coarsely flaky, fibrous; blaze creamy pink; latex milky; young shoots and twigs finely white hairy, soon glabrous; branchlets 1.5-3 mm thick, puberulous. Leaves simple, alternate, stipules 12-18 mm long, lanceolate, linear-lanceolate, pubescent, often persistent on young shoots; petiole 10-50 mm long, slender, grooved above, becoming brown scurfy; lamina 6-15 x 3.5-6 cm, elliptic-oblong, elliptic-lanceolate, elliptic-ovate or oblong-ovate, base acute, obtuse or cuneate, apex narrowed, blunt or acute, margin entire, membranous, glabrous, blistered appearance on drying; 3-ribbed from base, 4-8 pairs, slender, pinnate, prominent beneath, intercostae reticulate, obscure. Flowers unisexual; inflorescence a syconia, on short leafless branches or warty tubercles of trunk or on larger branches, subglobose to pyriform, smooth, often lenticellate-verrucose; peduncle 3-12 mm long, stout, orifice plane or slightly sunken, closed by 5-6 apical bracts; internal bristles none; basal bracts 3, 1-2 m long, ovate-triangular, obtuse, persistent; flowers of unisexual, 4 kinds; male flowers near the mouth of receptacles, in 2-3 rings, sessile, much compressed; tepals 3-4, dentate-lacerate, lobes jointed below, red, glabrous; stamens 2, exserted; filaments 1 mm, connate below; anthers oblong, parallel; female flowers sessile or very shortly stalked among gall flowers; tepals 3-4, dentate-lacerate, lobes jointed below, red, glabrous, ovary superior, sessile or substipitate, red spotted; style 2-3 mm long, glabrous, simple; stigma clavate; gall flowers long stalked; ovary dark red, rough; style short. Syconium 2.5 x 2 cm, orange, pink or dark crimson; achene granulate.

*Flowering & Fruiting:* February-May

*Habitat:* Semi-evergreen and deciduous forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia to Australia

**Ficus religiosa** L., Sp. Pl. 1059. 1753; Hook. f., Fl. Brit. India 5: 513. 1888; Gamble, Fl. Pres. Madras 1363(953). 1928; Manilal & Sivar., Fl. Calicut 277. 1982;

Mohanan, Fl. Quilon Dist. 380. 1984; Ansari, Fl. Kasaragod Dist. 357. 1985; Ramach. & Nair, Fl. Cannanore Dist. 434. 1988; Vajr., Fl. Palghat Dist. 450. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 631. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 433. 1994; Sasidh., Fl. Shenduruny Wildlife Sanctuary 304. 1997; Sunil, Fl. Pl. Alappuzha Dist. 859. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 313. 2002.

*Urostigma religiosum* (L.) Gasp., Ric. Caprifico 82. t. 7. ff.1-5. 1845.

*Local names:* Arayal, Arasu, Thullal

Deciduous trees, to 25 m high; aerial roots absent; bark grey, smooth; exudation milky. Leaves simple, alternate, spiral; new leaves pink; stipules 1-1.5 cm long, lateral, ovate-lanceolate, puberulous; petiole 60-120 mm long, stout, glabrous, articulated, a gland at the apex below; lamina 5-13 x 4.5-12 cm, broadly ovate, base truncate or subcordate, apex caudate-acuminate, margin entire, undulate, glabrous, shining, coriaceous; 5-7-ribbed from base, lateral nerves 8-10 pairs, pinnate, slender, prominent beneath, looped near the margin, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, sessile, axillary, in pairs, obovoid or globose, twig wall thick; basal bracts 3, 3-5 mm long, ovate-obtuse, silky-puberulous, persistent, orifice, closed by 3 apical bracts in a disc 2-3 mm wide; internal bristles none; flowers of 4 kinds; male flowers ostiolar, sessile, in one ring; tepals 2, ovate-lanceolate, free, reddish; stamen 1; filaments 0.2 mm; anther oblong, parallel; female flowers sessile; tepals 3-4, linear-lanceolate, free, brownish, glabrous; ovary superior, ovoid-oblong, 1 mm, red-brown, style 1.5 mm, lateral, stigma rounded; gall flowers similar to female. Syconium 4-8 mm across, ripening pink, purple or black; achenes smooth.

*Flowering & Fruiting:* November-February

*Habitat:* Widely planted in temple premises

*Distribution*

*Kerala:* All districts

*Geographical:* East Himalayas; planted and naturalised in India and neighbouring countries

**Ficus talbotii** King, Ann. Roy. Bot. Gard. (Calcutta) 1: 51. tt.63 & 84. 1887; Hook. f., Fl. Brit. India 5: 512. 1888; Gamble, Fl. Pres. Madras 1363(953). 1928; Manilal & Sivar., Fl. Calicut 277. 1982; Mohanan, Fl. Quilon Dist. 380. 1984; Ansari, Fl. Kasaragod Dist. 357. 1985; Ramach. & Nair, Fl. Cannanore Dist. 433. 1988; Vajr., Fl. Palghat Dist. 449. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 631. 1994; Sasidh., Fl. Periyar Tiger Reserve 395. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 299. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 313. 2002.

*Local name:* Vellayal

Evergreen epiphytic trees, to 30 m high; aerial roots none; bark 10-12 mm thick, surface green, smooth; blaze dull yellow; exudation milky; branchlets 1.5-3 mm thick, brown. Leaves simple, alternate, spiral, stipulate; stipules 5 mm long, lateral, ovate, pubescent, cauducous; petiole 15-30 mm, slender, glabrous, grooved above; lamina 5-12 x 2.5-5 cm, elliptic-ovate or ovate-oblong, base cuneate or acute, apex acuminate, margin entire, coriaceous, glabrous; 3-ribbed from base, lateral nerves 8-10 pairs, parallel, looped near the margin, secondary laterals faint, intercostae reticulate, obscure. Flowers unisexual; inflorescence a syconia, sessile, in axillary pairs, depressed globose; basal bracts 3, 3-5 mm, ovate-concave, obtuse, glabrous or appressedly puberulous, persistent, orifice circular, plane or slightly sunken,

closed by 3 flat apical bracts in a disc of 1 mm wide; internal bristles few, minute, brownish; flowers of 4 kinds; male flowers disperse, few, shorter than the gall flowers; tepals 3-4, free, spatulate with white edges, glabrous; stamen 1, hardly exerted; filament 0.3 mm; anther oblong, parallel, unequal; female flowers sessile; tepals 3-4, red, free, ovate-subacute, with white edges, ovary superior, ovoid, globose, yellowish; style 1 mm, tapering; stigma simple; gall flowers similar, pedicellate. Syconium glabose, 0.5-0.6 cm across.

*Flowering & Fruiting:* January-April

*Habitat:* Shola and semi-evergreen forests

*Distribution*

*Kerala:* Kasaragode, Kollam, Pathanamthitta, Palakkad, Kannur, Idukki, Malappuram, Kozhikkode

*Geographical:* India, Sri Lanka and Indo-China

**Ficus tinctoria** G. Forst. ssp. **gibbosa** (Blume) Corner var. **cuspidifera** (Miq.) Chithra in Henry *et al.*, Fl. Tamil Nadu 2: 255. 1987; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 433. 1994; Sasidh., Fl. Periyar Tiger Reserve 395. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 313. 2002.

*Ficus cuspidifera* Miq. in Hook.'s London J. Bot. 7: 434. 1848; Hook. f., Fl. Brit. India 5: 497. 1888.

*Ficus gibbosa* Blume var. *cuspidifera* (Miq.) King, Ann. Roy. Bot. Gard. (Calcutta) 1: 6. t. 2A. 1887; Gamble, Fl. Pres. Madras 1366(955). 1928.

*Local name:* Ithimottu

Epiphytic or independent trees; aerial roots many, interlacing; bark white, smooth; exudation milky; branchlets slender, scabrous. Leaves simple, alternate; stipules lateral, lanceolate, glabrous; petiole 5-10 mm long, slender, grooved above, scabrous; lamina 3.5-10 x 2-5 cm, elliptic, elliptic-obovate or oblanceolate, gibbous on one side, base obliquely acute or attenuate, apex acuminate or acute, margin entire, glabrous and more or less scabrid on both surfaces, coriaceous; 3-ribbed from base, lateral nerves 3-6 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, dioecious, axillary, usually paired or clustered, rarely solitary, globose; peduncle 1.5-10 mm, slender, scabrous, body scabrous; basal bracts 3, small, orifice plane, closed by several small apical scales; internal bristles minute, abundant; flowers of 4 kinds; male and gall flowers in same receptacle; female in separate; male flowers ostiolar, in 1-2 rows, sessile or pedicellate, oblong; tepals 3-6, free, 0.7-1 mm, white, scabrous, puberulous; stamen 1; filament 0.6 mm; anther oblong, parallel, mucronate; pistillode present; female flowers sessile; tepals 4, oblong, free, white, scabrous, puberulous; ovary superior, sessile, 1 x 0.8 mm, obovoid-globose, white; style 2 mm, lateral; gall flowers sessile or pedicellate; tepals as male flowers; ovary globose or 2-lobed; style lateral, short tapering, tip thickened, brown. Syconium yellow when ripe; peduncle to 1.5 cm long; achene 1.5 x 1.2 mm, keeled or not.

*Flowering & Fruiting:* October-December

*Habitat:* Semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Trivandrum, Palakkad

*Geographical:* India, China and Sri Lanka

**Ficus tinctoria** G. Forst. ssp. **parasitica** (Koen. ex Willd.) Corner, Gard. Bull. Singapore 17: 476. 1960; Manilal & Sivar., Fl. Calicut 276. 1982; Mohanan, Fl. Quilon Dist. 380. 1984; Ansari, Fl. Kasaragod Dist. 358. 1985; Ramach. & Nair, Fl. Cannanore Dist. 433. 1988; Antony, Fl. Kottayam Dist. 373. 1989; Vajr., Fl. Palghat Dist. 449. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 632. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 430. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 305. 1997; Sivar. & Mathew, Fl. Nilambur 669. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 299. 1999; Sunil, Fl. Pl. Alappuzha Dist. 859. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 314. 2002; Mohanan & Sivad., Fl. Agasthyamala 636. 2002.

*Ficus parasitica* Koenig ex Willd., Mem. Acad. Roy. Sci. Hist. (Berlin) 2: 102. 1798.

*Ficus gibbosa* Blume var. *parasitica* (Koenig ex Willd.) King, Ann. Roy. Bot. Gard. (Calcutta) 1: t.2,16. 1887; Hook. f., Fl. Brit. India 5: 497. 1888; Gamble, Fl. Pres. Madras 1365(955). 1928.

*Local names:* Itthi, Kallithi

Small trees, often epiphytic with interlacing aerial roots; bark grey; blaze yellow; exudation milky; branchlets glabrous. Leaves simple, alternate; stipules lateral, to 1.5 cm, lanceolate; petiole 5-10 mm, slender, grooved above, scabrous; lamina 5-12 x 2-5.5 cm, elliptic-ovate or rhomboid, gibbous on one side, base acute or attenuate, apex acute or acuminate, margin entire, gibbous on one side, more or less scabrous, hispid above, coriaceous; 3-ribbed from base, lateral nerves 3-7 pairs, pinnate, prominent beneath, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, dioecious, axillary, usually paired or clustered, rarely solitary, globose; peduncle 1.5-10 mm, slender, scabrous, body scabrous; basal bracts 3, small, closed by several small apical scales; internal bristles minute, abundant; flowers of 4 kinds, male and gall flowers in same receptacle; female in separate; male flowers ostiolar, in 1-2 rows, sessile or pedicellate, oblong; tepals 3-6, free, 0.7-1 mm, white, scabrous, puberulous; stamen 1; filament 0.6 mm long; anther oblong, parallel, mucronate; pistillode present; female flowers sessile; tepals 4, oblong, free, white, scabrous, puberulous; ovary superior, sessile, 1 x 0.8 mm, obovoid-globose, white; style 2 mm, lateral; gall flowers sessile or pedicellate; tepals as in male flowers; ovary 0.5 mm across, globose or 2-lobed; style lateral, short tapering, tip thickened, brown. Syconium yellow when ripe; peduncle to 1.5 cm long; achene 1.5 x 1.2 mm, keeled or not.

*Flowering & Fruiting:* March-April

*Habitat:* Moist deciduous and semi-evergreen forests, also in the plains

*Distribution*

*Kerala:* All districts

*Geographical:* Indo-Malesia

**Ficus tsjahela** Burm. f., Fl. Ind. 227. 1768; Hook. f., Fl. Brit. India 5: 514. 1888, "tjakela"; Gamble, Fl. Pres. Madras 1362(953). 1928; Manilal & Sivar., Fl. Calicut 277. 1982; Mohanan, Fl. Quilon Dist. 380. 1984; Ansari, Fl. Kasaragod Dist. 358. 1985; Manilal, Fl. Silent Valley 260. 1988; Ramach. & Nair, Fl. Cannanore Dist. 434. 1988; Vajr., Fl. Palghat Dist. 450. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 632. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 434. 1994; Subram., Fl. Thenmala Division 353. 1995; Sasidh. & Sivar., Fl. Pl. Thrissur For. 430. 1996; Sasidh., Fl. Shenduruny Wildlife Sanctuary 305. 1997; Sivar. & Mathew, Fl.



Nilambur 671. 1997; Sasidh., Fl. Periyar Tiger Reserve 395. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 299. 1999; Sunil, Fl. Pl. Alappuzha Dist. 860. 2000; Sasidh., Fl. Parambikulam Wildlife Sanctuary 314. 2002; Mohanan & Sivad., Fl. Agasthyamala 637. 2002.

*Local names:* Chela, Kara

Deciduous trees, often epiphytic, to 15 m high; aerial roots absent; bark surface dark brown, rough, blaze red, fibrous; exudation milky. Leaves simple, alternate spiral, stipulate; stipule 4-7 cm long, lateral, ovate-lanceolate, yellowish-red, foliaceous; petiole 3.5-10 cm long, slender, grooved above, glandular at apex below, glabrous, articulate; lamina 9-21 x 3.5-12 cm, elliptic-oblong or ovate-oblong, base rounded, subtruncate or cuneate, apex abruptly acuminate, margin entire; coriaceous, glabrous, glossy above; 3-5-ribbed from base, lateral nerves 7-14 pairs, pinnate, prominent, looped near the margin, intercostae reticulate, prominent. Flowers unisexual; inflorescence a syconia, sessile, in clusters of 2-6, on very short crowded tubercles in the axils of the leaves or most frequently at the scars of fallen leaves, depressed-globose, wall thin, orifice small, plane, internal bristles none; basal bracts 3, 2-2.5 x 3-3.5 mm, ovate, concave, persistent; flowers of 4 kinds; male flowers few, sessile, only near the mouth of receptacle, tepals 2-3, ovate, red, free or shortly jointed, shorter than the single stamen; anthers ovate; filaments about as long; female flowers sessile, tepals 3-4, red, lanceolate, free or shortly jointed; ovary superior, obovate, dark red; style elongate; stigma cylindrical; gall flowers like female, sessile or with white pedicels. Syconium 5-6 mm across, yellowish-white and dotted, sessile rarely very shortly peduncled; achenes smooth.

*Flowering & Fruiting:* March-April

*Habitat:* Moist deciduous forests, also in the plains; often epiphytic and later becoming independent

*Distribution*

*Kerala:* All districts

*Geographical:* Peninsular India and Sri Lanka

***Ficus virens*** Ait. var. ***wightiana*** (Miq.) Chithra in Henry et al., Fl. Tamil Nadu ser. 1, 2: 256. 1987; Sasidh., Fl. Periyar Tiger Reserve 396. 1998; Sasidh., Fl. Parambikulam Wildlife Sanctuary 314. 2002.

*Urostigma wightianum* Miq. in Hook.'s London J. Bot. 6: 566. 1847.

*Ficus infectoria* Roxb. var. *wightiana* (Miq.) King, Ann. Roy. Bot. Gard. (Calcutta) 1: 63. t.77. 1887; Gamble, Fl. Pres. Madras 1362(953). 1928.

*Ficus wightiana* (Miq.) ex Miq., Ann. Mus. Lugd.-Bat. 3: 286. 1867; Hook. f., Fl. Brit. India 5: 516. 1888.

*Local name:* Cherla

Deciduous trees, to 20 m high, often epiphytic; aerial roots few, often fluted; bark 10-12 mm thick, surface dark brown, smooth; blaze red; brown; leaves simple, alternate, spiral; stipules 10-12 mm long, lateral, broadly ovate, pubescent; petiole 3.7-6 cm long, slender, glabrous, grooved above, articulated, glandular at apex below; lamina 5-17.5 x 3-10 cm, oblong-ovate or ovate, base round, truncate or subcordate, apex, obtusely acuminate, margin entire, glabrous, coriaceous; 3-ribbed from base, lateral nerves 5-15 pairs, pinnate, prominent, faint towards margin, intercostae reticulate, obscure. Flowers unisexual; inflorescence a syconia, axillary, paired, 1-1.5 cm across, globose, often obconical; peduncle 1-6 mm long,

slender, pubescent; basal bracts 3, ovate, acute, persistent; orifice plane, closed by 3 flat apical bracts in a disc 1 mm wide, internal bristles abundant, white, chaffy-vesicular; flowers of 4 kinds; male flowers ostiolar, sessile, in 2-3 rings; tepals 2-3, ovate, acute or shortly gamophyllous; stamen 1; filament 0.5 mm; anther oblong, parallel; female flowers sessile; tepals 3-4, free; ovary superior, 1.2 mm, obovoid, sessile or stalked, red-brown; style filiform, tapering; gall flowers sessile or shortly pedicellate; tepals 3-4, reddish, spatulate to linear-lanceolate, free, ovary sessile or stalked, red-brown. Syconium white and fleshed with pink when ripe; achenes smooth.

*Flowering & Fruiting:* May-August

*Habitat:* Evergreen and semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad

*Endemic to:* Peninsular India

**Streblus asper** Lour., Fl. Cochinch. 615. 1790; Hook. f., Fl. Brit. India 5: 489. 1888; Gamble, Fl. Pres. Madras 1353(947). 1928; Manilal & Sivar., Fl. Calicut 274. 1982; Ansari, Fl. Kasaragod Dist. 358. 1985; Antony, Fl. Kottayam Dist. 373. 1989; Vajr., Fl. Palghat Dist. 450. 1990; Anil Kumar, Fl. Pathanamthitta Dist. 633. 1994; Sasidh. & Sivar., Fl. Pl. Thrissur For. 430. 1996; Sivar. & Mathew, Fl. Nilambur 672. 1997; Sasidh., Fl. Chinnar Wildlife Sanctuary 300. 1999.

*Epicarpurus orientalis* Blume, Bijdr. 488. 1826.

*Local names:* Paravamaram, Shangkoda-vriksham

Evergreen, dioecious or rarely monoecious trees, to 10 m high, bark 10-20 mm thick, light grey, smooth, lenticellate, fibrous; blaze creamy yellow; exudation milky white latex; branches often drooping; branchlets on trunk often arrested and thorny. Leaves simple, alternate, spiral; stipules 2-5 mm long, lateral, lanceolate, adpressedly hairy, cauducous; petiole to 4 mm long, slender, pubescent; lamina 3-10 x 1.2-5 cm, elliptic, elliptic-obovate or rhomboid, base cuneate, acute or obtuse, apex acute or acuminate, margin serrate, or subentire, glabrous, scabrid on both sides; 3-ribbed from base, lateral nerves 4-10 pairs, pinnate, slender, prominent, intercostae reticulate, faint. Flowers unisexual, greenish-yellow; male in axillary heads, peduncle to 10 mm, sparsely puberulous to glabrous with 1-2 small bracts at the base, occasionally on the stalk, and a few small bracts at the apex; tepals 4, free, lanceolate, 2.5 mm, puberulous without, subacute; stamens 4; filaments 2.5 mm; anthers 1 mm; female flowers axillary, solitary or 2-5 in a cluster; peduncle to 10 mm, puberulous bracts and bracteoles 2.5 mm, ovate, puberulous; tepals 4, ovate, concave, 4 mm, puberulous, subacute; ovary 3 mm, ovoid; style 1 mm long, then lengthening to 2-3 mm; stigmatic arms 3-4 mm long, lengthening to 6-12 mm long, glabrous. Fruit a drupe, 6-8 mm across, globose, obscurely 2-humped, yellow to orange, tepals persistent; seed one, 4-5 mm across, globose, greyish-white.

*Flowering & Fruiting:* January-October

*Habitat:* Moist and dry deciduous forests, also in the plains

*Distribution*

*Kerala:* Kozhikkode, Kasaragode, Kottayam, Malappuram, Palakkad, Pathanamthitta, Thrissur, Idukki

*Geographical:* India, China and Malesia

## CASUARINACEAE

**Casuarina litorea** L., Diss. Stickman 12. 1754, "Cassarina".

*Casuarina equisetifolia* L., Amoen. Acad. 4: 413. 1759; Gamble, Fl. Pres. Madras 1389(972). 1928; Manilal & Sivar., Fl. Calicut 280. 1982; Ansari, Fl. Kasaragod Dist. 362. 1985; Ramach. & Nair, Fl. Cannanore Dist. 442. 1988; Antony, Fl. Kottayam Dist. 377. 1989; Vajr., Fl. Palghat Dist. 458. 1990; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 440. 1994; Subram., Fl. Thenmala Division 360. 1995; Sunil, Fl. Pl. Alappuzha Dist. 863. 2000.

*Local names:* Chavukku, Choola, Kattadi, Samprani

Dioecious trees, to 30 m high, bark brown, rough, peeling off in vertical strips branchlets to 15 cm, arising from the axils of small, recurved scales, ribbed. Leaves scaly, *ca.* 7 at a node, alternating with the ribs of the upper node, 0.5-1 mm long, acute. Flowers in spikes; male flowers: in terminal spikes, pendulous, brown, of 3-6 x 0.3 cm; tepals 2, 1 mm, lanceolate, scarious, thinly ciliate, acute; stamen 1, inflexed in bud; filaments 1-2 mm; anther oblong, 1 mm; female flowers: in axillary spikes of 0.4-0.8 x 0.3-0.4 cm, solitary or in pairs, condensed into an ovoid 'cone', shortly stalked; bracts and bracteoles 1.5-2 mm, persistent, woody; tepals absent; ovary superior, 1 mm, ovoid; style 0.5-0.8 cm; style filiform, persistent, reddish-purple, 2-fid. Fruit a carpophore, 1.5-3 x 1-2 cm, ovoid or oblong-cylindric; nutlets compressed; seeds winged.

*Flowering & Fruiting:* March-January

*Distribution*

*Kerala:* All districts

*Geographical:* Malay Islands, Australia, Pacific

## BETULACEAE

**Alnus nepalensis** D.Don, Prodr. Fl. Nepal 58.1825; Hook. f., Fl. Brit. India 5:600.1888.

Deciduous trees; branchlets glabrous, spreading, winter buds stalked. Leaves simple, alternate, stipulate; stipules free, sheathing, caducus; petiole 7-30 mm long, glabrous, stout, swollen at base, grooved above; lamina 7.5-20 x 5-10.2 cm, elliptic, ovate-oblong; base acute or oblique; apex acute; margin entire, glabrous, glaucous beneath, coriaceous; lateral nerves 10-18 pairs, pinnate, prominent; intercostae scalariform. Flowers unisexual, green; male flowers in 10-25.5 mm long spikes in terminal drooping panicle, flowers in clusters of 6-12; bracts 3-flowered, with 3-5 adnate bracteoles; perianth 4 lobed; stamens 4, mixed with ciliate scales under each bracts; anthers subsessile; female flowers in short erect spikes, 6 mm long, flowers pendulous, bracteoles 2-4, minute; perianth absent; ovary 2-celled, superior; ovule 1 in each cell; styles 2, stigma producing beyond bracteoles. Fruit a strobilate spike, bracts persistent, 1.5-2 x 0.7-1 cm, woody, oblong, bracts persistent, seeds winged, 4 x 3 mm, surmounted by the persistent style.

*Flowering & Fruiting:* September-April

*Habitat:* Raised in plantations

*Distribution*

*Kerala:* Idukki

*Geographical:* Himalaya and China

## SALICACEAE

**Salix tetrasperma** Roxb., Pl. Corom. t. 97. 1798; Hook. f., Fl. Brit. India 5: 626. 1888; Gamble, Fl. Pres. Madras 1390(973). 1928; Manilal, Fl. Silent Valley 266.

1988; Ramach. & Nair, Fl. Cannanore Dist. 442. 1988; Vajr., Fl. Palghat Dist. 458. 1990; Sasidh., Fl. Periyar Tiger Reserve 396. 1998; Sasidh., Fl. Chinnar Wildlife Sanctuary 300. 1999; Sasidh., Fl. Parambikulam Wildlife Sanctuary 314. 2002.

*Local names:* Puzhappanji, Vanchi

Deciduous dioecious trees, to 25 m high, bark 10-12 thick, pale brown, rough, vertically fissured; blaze red; young branches silky pubescent. Leaves simple, alternate; stipules lateral, ovate, cauducous; petiole 10-25 mm, slender, glabrous, grooved above; lamina 6-15 x 2-5 cm, ovate, lanceolate or ovate-lanceolate; base acute or rounded; apex acuminate; margin serrate, glabrous and shining above, glaucous beneath, coriaceous; lateral nerves 10-18 pairs, pinnate, close, prominent, intercostae reticulate, faint. Flowers unisexual, in axillary catkins, to 6 cm long, minutely silky villous; male yellowish; female greenish; bracts ovate, 2 x 2 mm, densely woolly; perianth absent; stamens 5-12, unequal, free, with 2 glands at the base; anthers basifixed; disc yellow, ovary stalked, superior, 1-celled, ovoid, 4-6 ovuled; stigma 2, branched again. Fruit a capsule, 4 mm, 2-4 valved; seeds 1-4, oblong, with long deciduous hairs.

*Flowering & Fruiting:* July-December

*Habitat:* Along riverbanks in semi-evergreen forests

*Distribution*

*Kerala:* Idukki, Palakkad, Kannur, Wayanad

*Geographical:* Indo-Malesia and South China

#### **PODOCARPACEAE**

**Nageia wallichiana** (Pers.) O. Ktze., Rev. Gen. Pl. 2: 800. 1891; Anil Kumar, Fl. Pathanamthitta Dist. 816. 1994; Mohanan & Henry, Fl. Thiruvananthapuram Dist. 440. 1994.

*Podocarpus wallichianus* Pers., Bot. Bremek. 110. 1844; Gamble, Fl. Pres. Madras 1393(975). 1934; Mohanan, Fl. Quilon Dist. 487. 1984.

*Podocarpus latifolia* Wall., Pl. Asiat. Rar. 1: 26. t.30. 1830, non (Thunb.) R.Br. 1825; Hook. f., Fl. Brit. India 5: 649. 1888.

*Decussocarpus wallichianus* (Pers.) Laubenf., J. Arnold Arbor. 50: 349. 1969.

*Local name:* Nirambali

Tall evergreen trees, to 30 m high; bark 0.65 cm, greyish-brown, smooth, molted with brown and white. Leaves simple, opposite or subopposite, estipulate; petiole 5 mm, short, flat, glabrous; lamina 7.5-17.5 x 2-5 cm, linear-lanceolate or ovate-lanceolate; base acute; apex acute; margin entire, coriaceous, glabrous; lateral nerves many, linear-parallel, close, slender, prominent. Flowers unisexual; male flowers 0.85 cm in 2-5 flowered pedunculate clusters; bracts imbricate; anthers sessile, spirally crowded; scales ovate-acuminate; female flowers solitary; pedicels 1.3 cm; bracts fleshy, forming a peduncle to the fleshy ovuliferous scale to which the ovule is adnate. Seed ovoid, 2.5 cm, seated on fleshy receptacle solitary, subglobose.

*Flowering & Fruiting:* April-May

*Habitat:* Evergreen forests

*Distribution*

*Kerala:* Kollam, Pathanamthitta, Trivandrum, Idukki

*Geographical:* Indo-Malesia

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