

STUDIES ON THE FLORA OF SHENDURNEY WILDLIFE SANCTUARY WITH EMPHASIS ON ENDEMIC SPECIES

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Pages: 401

Index is Linked in this Report

CONTENTS

	Page	File
Index to Families		r.128.2
Abstract		r.128.3
1 Introduction	i	r.128.4
2 Method	vii	r.128.5
3 Results	viii	r.128.6
4 Discussion	xvi	r.128.7
5 Systematic Treatment	1	r.128.8
6 References	399	r.128.9

Index to Families

ACANTHACEAE	230	DIPTEROCARPACEAE	33
AGAVACEAE	340	EBENACEAE	192
ALANGIACEAE	142	ELAEOCARPACEAE	46
AMARANTHACEAE	252	ERIOCAULACEAE	360
AMARYLLIDACEAE	340	ERYTHROXYLACEAE	47
ANACARDIACEAE	78	EUPHORBIACEAE	277
ANCISTROCLADACEAE	35	FABACEAE (LEGUMINOSAE)	85
ANNONACEAE	10	FLACOURTIACEAE	25
APIACEAE	139	GENTIANACEAE	212
APOCYNACEAE	200	GESNERIACEAE	227
ARACEAE	356	HAEMODORACEAE	339
ARALIACEAE	140	HIPPOCRATEACEAE	67
ARECACEAE	351	HYPERICACEAE	29
ARISTOLOCHIACEAE	255	HYPOXIDACEAE	340
ASCLEPIADACEAE	208	ICACINACEAE	63
ASTERACEAE	170	LAMIACEAE	246
BALANOPHORACEAE	277	LAURACEAE	262
BALSAMINACEAE	49	LECYTHIDACEAE	125
BEGONIACEAE	137	LEEACEAE	72
BIGNONIACEAE	229	LENTIBULARIACEAE	226
BOMBACACEAE	40	LILIACEAE	343
BORAGINACEAE	213	LOBELIACEAE	182
CAPPARACEAE	24	LOGANIACEAE	211
CARYOPHYLLACEAE	29	LORANTHACEAE	274
CELASTRACEAE	64	LYTHRACEAE	132
CHLORANTHACEAE	259	MALPIGHIACEAE	48
CLUSIACEAE	30	MALVACEAE	36
COMBRETACEAE	116	MARANTACEAE	338
COMMELINACEAE	345	MELASTOMATACEAE	125
CONNARACEAE	82	MELIACEAE	55
CONVOLVULACEAE	215	MENISPERMACEAE	22
CORNACEAE	142	MOLLUGINACEAE	139
CUCURBITACEAE	135	MORACEAE	299
CYPERACEAE	361	MUSACEAE	339
DATISCAEAE	138	MYRISTICACEAE	260
DICHAPETALACEAE	61	MYRSINACEAE	183
DILLENIAEAE	9	MYRTACEAE	119
DIOSCOREACEAE	341	NYCTAGINACEAE	252

OCHNACEAE	55	SANTALACEAE	276
OLACACEAE	62	SAPINDACEAE	74
OLEACEAE	197	SAPOTACEAE	186
ONAGRACEAE	133	SCROPHULARIACEAE	221
ORCHIDACEAE	306	SIMAROUBACEAE	55
OROBANCHACEAE	225	SMILACACEAE	345
OXALIDACEAE	48	SOLANACEAE	219
PANDANACEAE	355	STAPHYLEACEAE	73
PASSIFLORACEAE	134	STERCULIACEAE	41
PIPERACEAE	256	SYMPHOREMATAACEAE	244
POACEAE	372	SYMPLOCACEAE	195
PODOSTEMACEAE	255	THEACEAE	33
POLYGALACEAE	28	TILIACEAE	44
POLYGONACEAE	254	ULMACEAE	298
RANUNCULACEAE	9	URTICACEAE	296
RHAMNACEAE	68	VERBENACEAE	241
RHIZOPHORACEAE	115	VIOLACEAE	25
ROSACEAE	114	VISCACEAE	276
RUBIACEAE	143	VITACEAE	70
RUTACEAE	51	XANTHOPHYLLACEAE	28
SABIACEAE	77	ZINGIBERACEAE	334

ABSTRACT

A study on the Flora of Shenduruny Wildlife Sanctuary (between 77° 4' and 77° 17' East longitude and 8° 48' and 8° 58' North latitude) with emphasis on endemic species was carried out during October 1992 - September 1995. The Sanctuary lies along the Arienkavu-Kulathupuzha Valley, in Kollam (Quilon) Revenue District of Kerala and has an area of 100 km², including the Kallada Dam Reservoir having an extent of 13.72 km². The altitude varies from 120 to 1550 m, the highest peak being Alvarakurichi. The Arienkavu-Kulathupuzha Valley is the type locality of several endemic species, many of which are currently placed under various threat categories and some are considered extinct.

During the present study 951 taxa (species and infraspecific) were collected and described. They belong to 118 families. Dicotyledons dominate with 715 species belonging to 432 genera and 100 families. Monocotyledons are represented by 236 species under 149 genera and 18 families. The top ten families with respect to species richness are Orchidaceae (70 species, 44 genera), Leguminosae (70 species, 43 genera), Poaceae (66 species, 49 genera), Rubiaceae (66 species, 32 genera), Euphorbiaceae (49 species, 25 genera), Asteraceae (29 species, 21 genera), Cyperaceae (29 species, 10 genera), Acanthaceae (28 species, 16 genera), Annonaceae (19 species, 13 genera) and Lauraceae (19 species, 8 genera). Among the 118 families, 23 Dicot and 7 Monocot families are represented by one species each.

It is estimated that there are about 3,800 species of flowering plants in Kerala and 1,272 of them are endemics. Among the 951 species collected from the Sanctuary, 309 are Western Ghat endemics. Of the estimated 1,272 endemics species, 460 are placed under various threat categories. During the present study 100 species belonging to the threat categories including 10 considered as possibly extinct ones were collected.

Two new species viz. *Polyalthia shendurunii* Basha & Sasi and *Ardisia stonei* Sasi & Sivar. were described from the Sanctuary during the present study. *Zeuxine affinis* (Lindl.) Benth. ex Hook. f. is a new record for South India and species such as *Bulbophyllum xylophyllum* Par. & Rchb., *Calamus nagbettai* Fernandez & Dey, *Cissampelopsis ansteadii* (Tadl. & Jacob) Jeffrey & Chen, *Marsdenia raziana* Yoga. & Subram. and *M. tirunelvelica* Henry & Surbram., collected from the Sanctuary are new records of occurrence for Kerala.

The Sanctuary is under severe biotic pressure due to the presence of settlements inside as well as around of the Sanctuary. The devastating rains during November 1992 caused considerable damage to the terrain by way of landslides at several places, flooding of the rivers, uprooting trees, etc. One of the casualties was the family Podostemaceae, which was virtually wiped out from the river courses. Some Begonias and Impatiens that were growing along the riversides were also destroyed during the floods. Despite the natural calamity and biotic pressure, the existing vegetation supports a flora containing several threatened species.

1. INTRODUCTION

India is considered one of the 10 nations where megadiversity exists. The Country's biodiversity constitutes 8% of the global biodiversity and occurs in about 2.4% of the land area (Khoshoo, 1996). Western Ghats is one of the two biodiversity hotspots in India. The flowering plants in the Western Ghats are estimated to be about 4,000 species (Nayar, 1996). The flora of Western Ghats is under severe threat due to various reasons. The various aspect of the problem have been highlighted by several authors namely Nair & Daniel (1986), Ahmedullah & Nayar (1987), Mc Neely *et al* (1990), Gadgil & Meher-Homji (1990) and Nayar (1996). The forest cover of 1,00,000 km² which the Western Ghats had in the past has now dwindled to 17,000 km² (Nayar, 1997). It is estimated that the flora of Western Ghats forms about 25% of the flora of India with a relatively high percentage of endemism that is out of 4,000 species, 1,500 are endemics. In the Western Ghats, Southern Western Ghats is the richest in terms of floristic density and endemism. Among the 4,000 species found in the Western Ghats 3,900 occur in the region spread over the southern parts of Karnataka, Kerala and Tamil Nadu, occupying an area of 12,000 km². Again 3,800 species of the Western Ghats are reported to occur in Kerala (Nayar, 1996). The species richness and diversity are attributed to the topographic and climatic conditions prevailing in the State.

The need for conserving the biodiversity of the country has gained importance in the recent years and conservation measures are adopted at national and regional levels. The State of Kerala has a relatively high percentage of protected areas, that is about 20% of the forest areas are protected through the establishment of Wildlife Sanctuaries and National Parks. The State has 12 Wildlife Sanctuaries and 2 National Parks. Shenduruny Wildlife Sanctuary is one of them.

Until recently the management practices followed for the protected areas laid emphasis on wild animals. However, in the context of various threats to biodiversity, more attention is being given to conserve the biodiversity, particularly in the protected areas. To have a better understanding for the management of biodiversity, inventories of flora and fauna including microbes are pre-requisites. The Wildlife Wing of the Kerala Forest Department has drawn up several research programmes including preparation of inventories. The project on the flora of Shenduruny Wildlife Sanctuary with emphasis on endemic species was taken up with the financial support and co-operation of the Wildlife Wing of Kerala Forest Department. The Sanctuary situated along the Arienkavu-Kulathupuzha Valley, the type locality of several endemic and threatened species, is contiguous with the Agasthyamala Hills, one of the centres of endemism.

1.2 Review of earlier work

Systematic exploration of Indian flora started with the arrival of Europeans. The first publication on Indian plants is *Hortus Indicus Malabaricus* by van Rheedee (1678-1693). This 12 volume book deals with the description, uses and properties of Malabar

coast plants, *Hortus malabaricus* formed a landmark in plant exploration studies in Asia (Manilal, 1980). Major contributions to floristic studies in India were made by the Britishers. Among the Botanists who worked on Peninsular Indian flora, the contributions of Robert Wight are the most outstanding. *Illustrations of Indian Botany* (1840) and *Icones Plantarum Indiae Orientalis* (1838-1853) are the important publications. Together with Walker-Arnott (1834) he published *Prodromus Florae Indiae Peninsulae Orientalis*. The other notable contributions are *Flora sylvatica for Southern India* (Beddome, 1869-1874); *Icones plantarum Indiae Orientalis* (Beddome, 1868-1874). *The Flora of British India* was published by J.D. Hooker during 1872-1897. This seven volume publications dealt with the flowering plants of the erstwhile British India. Comprehensive regional floras were published subsequently. *Flora of the Presidency of Bombay* (Cooke, 1901-1908) and *Flora of the Presidency of Madras* (Gamble & Fischer, 1915-1936) dealt with the phanerogamic plants of Peninsular India. The other important publications on South Indian plants are *Forest Trees of Travancore* (Bourdillon, 1908), *Flowering Plants of Travancore* (Rama Rao, 1914), *Vernacular list of Trees, Shrubs and Climbers of the Madras Presidency* (Lushington, 1915), *Flora of Anamalai Hills in the Coimbatore District, Madras Presidency* (Fischer, 1921) and *Flora of South Indian Hill Stations* (Fyson, 1932). Burkil (1965) in *The Chapters on the History of Botany in India* has dealt with the contributions of various Botanists.

After the publication of the *Flora of the Presidency of Madras*, there have not been many studies on the flora of South India until the reorganisation of the Botanical Survey of India. Studies of the Botanical Survey of India, Southern Circle resulted in the finding of several new and interesting taxa. A few university departments and research institutions also conducted floristic and systematic studies on South Indian plants. With the objective of revising the flora of India, the Botanical Survey of India took up the programme of studying district floras during the eighties. Apart from Botanical Survey of India, some University Botany Departments have also taken up the district flora works, often as a Ph. D. programme. The district flora work of most of the districts in Kerala have either completed or in the process of completion. The recent 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 District* (Vajravelu, 1990); *Flora of Kerala : Grasses* (Sreekumar & Nair, 1991); *Flora of Thiruvananthapuram* (M. Mohanan & Henry, 1994); *Flora of Thenmala Division* (Subramaniyan, 1995); *Flowering Plants of Thrissur Forests* (Sasidharan & Sivarajan, 1996); *Flora of Nilambur* (Sivarajan & Philip Mathew, 1996). Floristic studies of the following places have been completed as Ph. D. programme. *Flora of Quilon District* (C. N. Mohanan, 1984); *Flora of Pathanamthitta District* (Anilkumar, 1994); *Flora of Agasthyamala* (N. Mohanan, 1995).

The Shenduruny Wildlife Sanctuary is part of the erstwhile Travancore State. The forests of this region have been reasonably well-explored by forest botanists like Beddome, Bourdillon, Barber and Fischer during the late 19th century (Burkil, 1965). Their studies resulted in the discovery of several new taxa, most of which are endemics. Though the flora of Kollam (Quilon), Thiruvananthapuram, Pathanamthitta and Thenmala was studied recently, many of the endemic taxa reported earlier from this region could not be re-collected. Vignarajan (1990) listed out 212 species from the Shenduruny Sanctuary.

1.3 Location

The Shenduruny Wildlife Sanctuary is located between 77° 4' and 77° 17' East longitude and 8° 48' and 8° 58' North latitude, in the Thenmala Forest Division and in the Kollam (Quilon) Revenue District of Kerala State (Map). The Sanctuary has an area of 100 km², including the Kallada Reservoir which has an extent of 13.72 km². About 450 ha of area within the notified boundary of the Sanctuary is under private possession (Vignarajan, 1990).

1.4 Topography

The terrain is undulating. The altitude varies from 120-1550 m, the highest peak being Alvarakurichi. Part of the Sahyadri Hills lie along the eastern boundary of the Sanctuary.

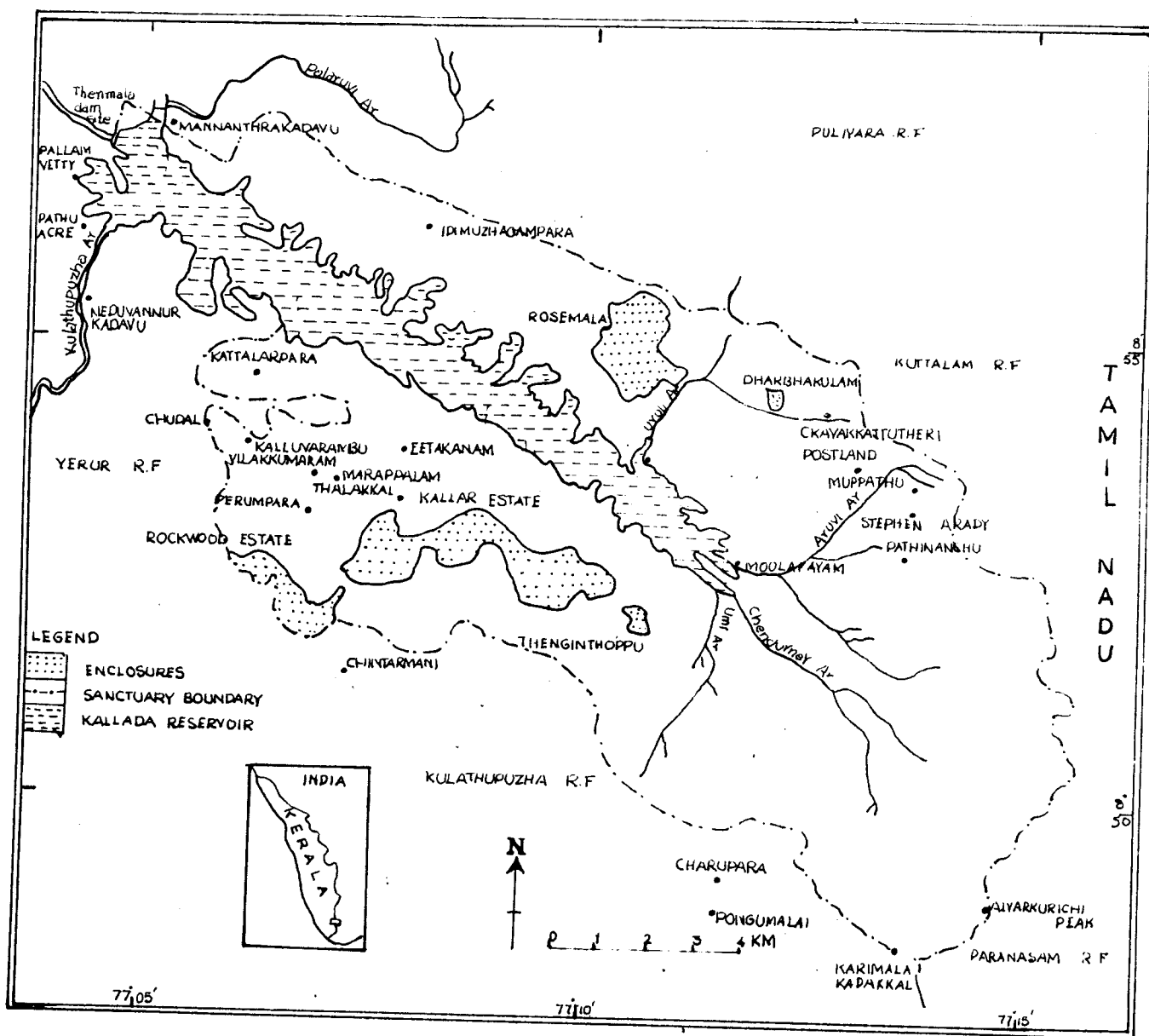
The Sanctuary is drained by the Shenduruny river and its tributaries like Aruviar, Uruliar and Umriar. The Shenduruny river drains into the Kallada Reservoir, formed by the construction of dam across Kallada river at Thenmala. The other rivers that drain into Kallada Reservoir are the Kazhuthuruty and Kulathupuzha.

1.5 Geology, rock and soil

The underlying rocks are of metamorphic type consisting of charnokites and other gneisses. In the ridges and slopes there are intrusions of rocks of granite nature. Laterite is also found in varying degrees of disintegration from hard rock to a fine gravel. The soil along the stream and river banks is of alluvial deposits (Vignarajan, 1990)

1.6 Climate

The climate is fairly equable and seasonal variation in temperature is not much. The hottest months are March and April. The area receives rains from both South-west and North-east monsoons. The average rainfall is about 3,000 mm per year. The months of June and July receive maximum rainfall. During the months of November-February, the Sanctuary experiences strong winds blowing from the plains of Tamil Nadu and passing through the Arienkavu Gap. The high altitude places like Alvarakurichi and Pandimotta



Map - Shendurony Wildlife Sanctuary

experience very strong winds during this period.

1.7 Vegetation

By following Chandrasekharan (1962) and Champion & Seth (1968), the vegetation of the Sanctuary can be classified into following types.

West coast tropical evergreen forest (evergreen)

West coast semi-evergreen forest (semi-evergreen)

Southern moist deciduous forest (moist deciduous)

Southern hill-top tropical evergreen forest (sholas)

West coast tropical evergreen forest

This forest type is the major vegetation in the Sanctuary and it is found at Rosemala, Kallar-Pandimotta region, along the banks of Umiyar and Uruliyar. Patches of evergreen forests occur in Kattalappara-Choodal and Kallar-Rockwood sections.

The upper storey trees are *Dipterocarpus indicus*, *Calophyllum polyanthum*, *Mesua ferrea*, *Poeciloneuron indicum*, *Mangifera indica*, *Cullenia exarillata*, *Vateria indica*, *Artocarpus heterophyllus*, *Gluta travancorica*, *Hopea parviflora*, *Hopea racophloea*, *Lophopetalum wightianum*, *Kingiodendron pinnatum*, *Dysoxylum malabaricum*, *Diospyros ghatensis*, *Palaquium ellipticum*, etc.

The trees of middle storey are *Garcinia spicata*, *Polyalthia coffeoides*, *Elaeocarpus serratum*, *Fahrenheitia ceylanica*, *Aglaia lawii*, *Drypetes elata*, *Garcinia gummi-gutta*, *Buchanania lanceolata*, *Syzygium gardneri*, *Gordonia obtusa*, *Aglaia barberi*, *A. perviridis*, *Xylopiya parvifolia*, *Aphanamixis polystachya*, *Humboldtia decurrens*, *Hydnocarpus alpinia*, etc.

The lower storey trees are *Goniothalamus rhynchantherus*, *Miliusa wightiana*, *Meiogyne ramarowii*, *Orophea uniflora*, *Erythroxylum lanceolatum*, *Acronychia pedunculata*, *Aglaia simplicifolia*, etc.

The shrubby plants are mostly *Dichapetalum gelonioides*, *Strobilanthus* ssp., *Lasianthus* ssp., *Glycosmis macrocarpa*, *Alpinia malaccensis*, *Leptonychia caudata*, *Clausena austroindica*, *Phaeanthus malabarica*, *Popowia beddomea*, *Tabernaemontana gamblei*, etc.

West coast semi-evergreen forest

This forest type is found in the Pallivasal and Pullubetha areas of Rosemala, Kattalappara, Kallar, Choodal and Kalluvarambu areas. Here also a three tier structure of tree canopy is found.

The upper storey trees are *Dipterocarpus indicus*, *Vateria indica*, *Myristica dactyloides*, *Mangifera indica*, *Syzygium hemisphericum*, *S. cumini*, *Pterospermum*

rubiginosum, *Antiaris toxicaria*, *Pterygota alata*, *Tetrameles nudiflora*, *Madhuca bourdillonii*, *Ficus* ssp., *Elaeocarpus tuberculatus*, *Toona ciliata*, *Chukrasia tabularis*, *Artocarpus hirsutus*, *Polyalthia coffeoides*, *Diospyros buxifolia*, etc.

The middle canopy trees are *Aglaiia barberi*, *Buchanania lanceolata*, *Diospyros montana*, *D. foliosa*, *D. paniculata*, *D. candolleana*, *Hunteria zeylanica*, *Dimocarpus longan*, *Harpullia arborea*, *Lepisanthes tetraphylla*, *Walsura trifolia*, *Mastixia arborea* ssp. *meziana*, *Sageraea grandiflora*, *Pterospermum diversifolium*, *Litsea travancorensis*, *L. coriacea*, *Cinnamomum* ssp., *Vitex altissima*, *Cyathocalyx zeylanica*, etc.

The lower storey trees are *Orophea erythrocarpa*, *Capparis rheedei*, *Clausena pubescens*, *Canthium umbellatum*, *Aidia gardneri*, *Memecylon talbotianum*, *M. deccanense*, *Syzygium mundagam*, *Blepharistemma serratum*, *Canthium pergracile*, *Archidendron monadelphum*, *Tarenna asiatica*, *Ixora brachiata*, etc.

The shrubby layer is composed of *Hibiscus lunariifolius*, *Glycosmis pentaphylla*, *Cipadessa baccifera*, *Turraea villosa*, *Gomphandra tetrandra*, *Leea guineensis*, *Allophylus concanicus*, *Psychotria* ssp., etc.

Southern moist mixed deciduous forest

This forest type is mostly confined to the low elevation places at Thenmala, Kattalappara and Rosemala. In this type also a three tier canopy structure can be observed.

The upper storey trees are *Pterocarpus marsupium*, *Terminalia paniculata*, *T. crenulata*, *T. bellirica*, *Lagerstroemia microcarpa*, *Tetrameles nudiflora*, *Sterculia guttata*, *Bombax ceiba*, *Hymenodictyon orixense*, *Dalbergia sissoides*, *Dillenia pentagyna*, *Bridelia airy-shawii*, *Stereospermum colais*, *Grewia tiliifolia*, etc.

The middle storey trees are *Lannea coromandelica*, *Hymenodictyon obovatum*, *Alstonia scholaris*, *Strychnos nux-vomica*, *Buchanania lanzan*, *Careya arborea*, *Miliusa tomentosa*, *Pongamia pinnata*, *Phyllanthus emblica*, *Macaranga peltata*, *Olea dioica*, etc.

The lower storey trees are *Wrightia tinctoria*, *Naringi crenulata*, *Mallotus philippensis*, *Chionathus mala-elengi*, *Catunaregam spinosa*, *Tabernaemontana heyneana*, *Callicarpa tomentosa*, *Helictres isora*, *Holarrhena pubescens*, *Cipadessa baccifera*, etc.

The shrubby layer is composed of *Desmodium triangulare*, *D. pulchellum*, *D. velutinum*, *Chromolaena odorata*, *Ixora malabarica*, *Solanum torvum*, etc.

Southern hill-top tropical evergreen forest

This forest type is confined to places above 1,300 m elevation at Pandimotta and Alvarakurichi. 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 trees are *Aglaia bourdillonii*, *Poeciloneuron indicum*, *Meliosma pinnata ssp. arnottiana*, *Vernonia travancorica*, *Garcinia travancorica*, *G. imberti*, *G. rubroechinata*, *Actinodaphne campanulata*, *Turpinia nepalensis*, *Ardisia rhomboidea*, *Syzygium rubicundum*, *Bhesa indica*, *Elaeocarpus venustus*, *Eugenia discifera*, etc.

The lower shrubby layer is composed of *Octotropis travancorica*, *Ardisia blatteri*, *Symplocos wynaadense*, *Goniothalamus wightii*, *Polyscias acuminata*, *Strobilanthus asper*, *S. luridus*, *S. tristis*, *Euomyzus paniculatus*, etc.

The palm *Bentinckia condapanna* is growing gregariously along the hills of Pongumala, often covering the hillocks at Pandimotta.

Grasslands with sparse tree growth as well as grasslands of secondary origin are also occurring in the Sanctuary to a limited extent. The former are mostly confined to the hills above Dharapakulam along the Suchimala hills. Secondary grass growth is observed at Pullubetha near Rosemala settlement and is dominated by *Pennisetum typhoides*. Some of the hillocks in the Pandimotta and Alvarakurichi have dense growth of *Ochlandra travancorica var. hirsuta*, sometimes growing as pure patches.

Relics of Myristica Swamp forest are also found in Kattalappara, close to the settlements. The dominant trees are *Myristica magnifica var. fatua*, *M. dactyloides*, *Gymnacranthera canarica*, *Syzygium travancoricum*, *Hydnocarpus pentandra*, *Lagerstroemia hirsuta*, *Lophopetalum wightianum*, *Mastixia arborea ssp. meziana*, *Knema attenuata*, *Glochidion zeylanicum*, etc.

Forests of Thenmala Forest Division have been subject to heavy extraction of timber in the past. Forests were also cleared for raising rubber (Rehabilitation plantations), oil palm (Plantation Corporation) and sugarcane (State Farming Corporation) in the Government Sector. Tea plantations have been tried in the past at places near Dharapakulam. Tea trees have almost become naturalised here. People from the reservoir area of Kallada Dam have settled at Rosemala. There are about 580 ha of enclosures inside the Sanctuary. Further, there is an area of 550 ha of vested forest within the limits of Sanctuary (Vignarajan, 1990).

2. METHOD

Collection of specimens in the generative stages was carried out from the Sanctuary for about 3 years in different seasons. Data on altitude, habit, habitat, occurrence, flowering and fruiting were recorded. The herbarium specimens were prepared as per standard specification (Fosberg & Sachet, 1965; Bridson & Forman, 1991). The specimens were identified with pertinent literature and by comparing with authentic specimens. Apart from the those collected during the study period, specimens collected earlier from the Sanctuary available at KFRI and at Institute of Forest Genetics and Tree Breeding Herbaria were also used for the study. The abbreviations used in the

rubiginosum, *Antiaris toxicaria*, *Pterygota alata*, *Tetrameles nudiflora*, *Madhuca bourdillonii*, *Ficus* ssp., *Elaeocarpus tuberculatus*, *Toona ciliata*, *Chukrasia tabularis*, *Artocarpus hirsutus*, *Polyalthia coffeoides*, *Diospyros buxifolia*, etc.

The middle canopy trees are *Aglaiia barberi*, *Buchanania lanceolata*, *Diospyros montana*, *D. foliosa*, *D. paniculata*, *D. candolleana*, *Hunteria zeylanica*, *Dimocarpus longan*, *Harpullia arborea*, *Lepisanthes tetraphylla*, *Walsura trifolia*, *Mastixia arborea* ssp. *meziana*, *Sageraea grandiflora*, *Pterospermum diversifolium*, *Litsea travancorensis*, *L. coriacea*, *Cinnamomum* ssp., *Vitex altissima*, *Cyathocalyx zeylanica*, etc.

The lower storey trees are *Orophea erythrocarpa*, *Capparis rheedei*, *Clausena pubescens*, *Canthium umbellatum*, *Aidia gardneri*, *Memecylon talbotianum*, *M. deccanense*, *Syzygium mundagam*, *Blepharistemma serratum*, *Canthium pergracile*, *Archidendron monadelphum*, *Tarenna asiatica*, *Ixora brachiata*, etc.

The shrubby layer is composed of *Hibiscus lunariifolius*, *Glycosmis pentaphylla*, *Cipadessa baccifera*, *Turraea villosa*, *Gomphandra tetrandra*, *Leea guineensis*, *Allophylus concanicus*, *Psychotria* ssp., etc.

Southern moist mixed deciduous forest

This forest type is mostly confined to the low elevation places at Thenmala, Kattalappara and Rosemala. In this type also a three tier canopy structure can be observed.

The upper storey trees are *Pterocarpus marsupium*, *Terminalia paniculata*, *T. cremulata*, *T. bellirica*, *Lagerstroemia microcarpa*, *Tetrameles nudiflora*, *Sterculia guttata*, *Bombax ceiba*, *Hymenodictyon orixense*, *Dalbergia sissooides*, *Dillenia pentagyna*, *Bridelia airy-shawii*, *Stereospermum colais*, *Grewia tiliifolia*, etc.

The middle storey trees are *Lannea coromandelica*, *Hymenodictyon obovatum*, *Alstonia scholaris*, *Strychnos nux-vomica*, *Buchanania lanzan*, *Careya arborea*, *Miliusa tomentosa*, *Pongamia pinnata*, *Phyllanthus emblica*, *Macaranga peltata*, *Olea dioica*, etc.

The lower storey trees are *Wrightia tinctoria*, *Naringi crenulata*, *Mallotus philippensis*, *Chionathus mala-elengi*, *Catunaregam spinosa*, *Tabernaemontana heyneana*, *Callicarpa tomentosa*, *Helictres isora*, *Holarrhena pubescens*, *Cipadessa baccifera*, etc.

The shrubby layer is composed of *Desmodium triangulare*, *D. pulchellum*, *D. velutinum*, *Chromolaena odorata*, *Ixora malabarica*, *Solanum torvum*, etc.

Southern hill-top tropical evergreen forest

This forest type is confined to places above 1,300 m elevation at Pandimotta and Alvarakurichi. There is no stratification of tree canopy into different tiers. The trees are

text *Fl.*; *Fr.*; *D i s t.*; *NS* and *KNS* denote Flowering; Fruiting; Distribution; N. Sasidharan and K. N. Subramaniyan respectively.

3. RESULTS

3.1 Floristic analysis

During the present study 951 species of flowering plants belonging to 118 families were collected and described. Occurrence of another 42 species, mostly under cultivation were also recorded. Dicotyledons dominate with 715 species belonging to 432 genera and 100 families. Monocotyledons are represented by 236 species under 149 genera and 18 families. Among the families, Leguminosae and Orchidaceae have 70 species each, the former with 43 genera and the latter with 44 genera. Rubiaceae and Poaceae have 66 species each, the former has 32 genera and the latter has 49 genera. Euphorbiaceae comes next with 49 species and 25 genera. Cyperaceae and Asteraceae have 29 species each, the former with 10 genera and the latter with 29 genera. Acanthaceae is the eighth largest family with 28 species and 16 genera. Both Lauraceae and Annonaceae have 19 species each, there are 8 genera in the former, while Annonaceae has 13 genera. Among the 118 families 23 Dicots and 7 Monocots are represented by one species each. About 45% of the species are belonging to 10 families.

A comparison of the relative dominance of families of South India and that of the Sanctuary shows that the first 8th families of South India are dominant in the Sanctuary also. The 9th and 10th dominant families in the Sanctuary are Annonaceae and Lauraceae. Lamiaceae and Asclepidaceae are the 9th and 10th dominant families respectively in South India, while they are 16th and 20th dominant families in the study area.

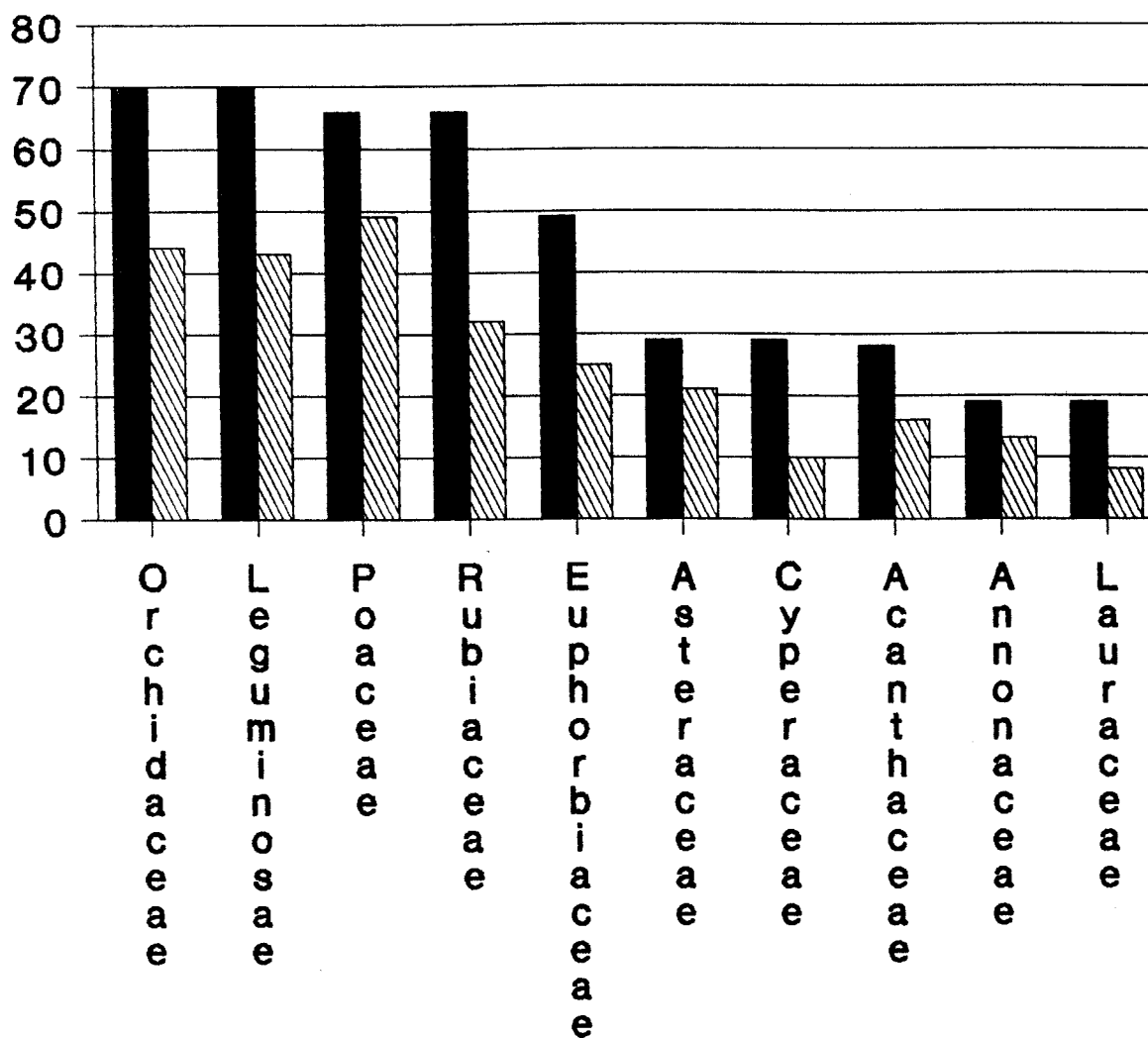
3.2 Endemic plants

The study area in the Western Ghats, is one of the two biodiversity hotspots in India with a relatively higher percentage of endemic species. Nayar (1997) estimated that out of the 4,000 species of flowering plants of Western Ghats, 1,500 are endemics. In Kerala, Nayar (1997) estimated 3,800 species with 1272 endemics. Thus, Kerala has 95% of the flowering plants of the Western Ghats.

There is no endemic family in the Western Ghats. According to Nayar (1996) there are 60 endemic genera and 48 of them are monotypic. The endemic genera in the Sanctuary are *Anaphyllum*, *Blepharistemma*, *Otonophelium*, *Poeciloneuron* and *Solenocarpus*.

Nayar (1996) has identified three hotspots of endemic centres in Kerala, viz., Agasthyamala, Anamala-High Ranges and Silent Valley-Wyanad. From Agasthyamala region it is reported that there are 189 endemics restricted to this centre. Shenduruny Sanctuary comes under Agasthyamala centre of endemism.

Relative position of 10
dominant families, their no. of
genera and species



Species
 Genera

Of the 951 species recorded from the Sanctuary, 309 are Western Ghats endemics. Among the families, Rubiaceae has the highest number of endemics with 29 species, followed by Orchidaceae (22 species), Lauraceae (16 species), Euphorbiaceae (15 species), Annonaceae and Leguminosae (13 species each), Melastomataceae (12 species), Acanthaceae (11 species), Poaceae (10 species) and Arecaceae (8 species). In Kerala the first ten families with respect to endemic species are Rubiaceae, Poaceae, Orchidaceae, Acanthaceae, Leguminosae, Balsaminaceae, Asteraceae, Euphorbiaceae, Lamiaceae and Lauraceae. Among these 10 families, except Balsaminaceae, Asteraceae and Lamiaceae, all the other rest come among the top ten families in the Sanctuary, though not in the same order. Most of the endemics of Balsaminaceae, Asteraceae and Lamiaceae are confined to the Anamala-High Range region.

3.3 Rare and threatened plants

The rare and threatened plants of India are relatively well documented by Joseph (1977), Henry *et al* (1979), Jain & Sastry (1984), Ahmedullah & Nayar (1987) and Nayar & Sastry (1987, 1988, 1990). Nayar (1997) listed out 1272 endemic taxa in Kerala and 460 of which are placed under threat categories. Zachariah (1991) compiled a list of 19 rare and threatened tree species in the Shenduruny Valley from the *Red Data Book of Indian Plants*.

The Shenduruny Wildlife Sanctuary is the type locality of several endemic and threatened species. During the present study one hundred of such species were collected from the Sanctuary. The rare and threatened species collected are listed in Table I. From the present study it is evident that some of the species that are considered as possibly extinct are still surviving in the Sanctuary.

The reasons for rarity and extinction are mainly due to habitat destruction, constraints in the reproductive mechanism and unsustainable exploitation. But our knowledge on the distribution of the rare and threatened plants is also poor. Recent studies have resulted in the rediscovery of threatened and possibly extinct plants from places other than their type localities. *Atuna travancorica*, *Madhuca bourdillonii* and *Syzygium travancoricum* are reported as not re-located during the recent floristic studies in their type localities (Arienkavu-Kulathupuzha, Kollam District). However they were re-discovered recently from Thrissur (Sasidharan & Sivarajan, 1996).

IUCN (1995) has provided a new set of guidelines for assessing the threat categories based mainly on quantitative data. During the present study to assess the structural composition of trees in the Myristica Swamp forests, enumeration of trees in two transects (Point centered quadrat sampling method) was carried out in two localities. *Syzygium travancoricum* (reported as extinct from Kulathupuzha - the type locality) was found to be the 4th dominant tree and another threatened species, *Kingiodendron pinnatum* as the 16th dominant tree among the 22 species enumerated in the first transect.

Relative position of 10 dominant families, with respect to endemism

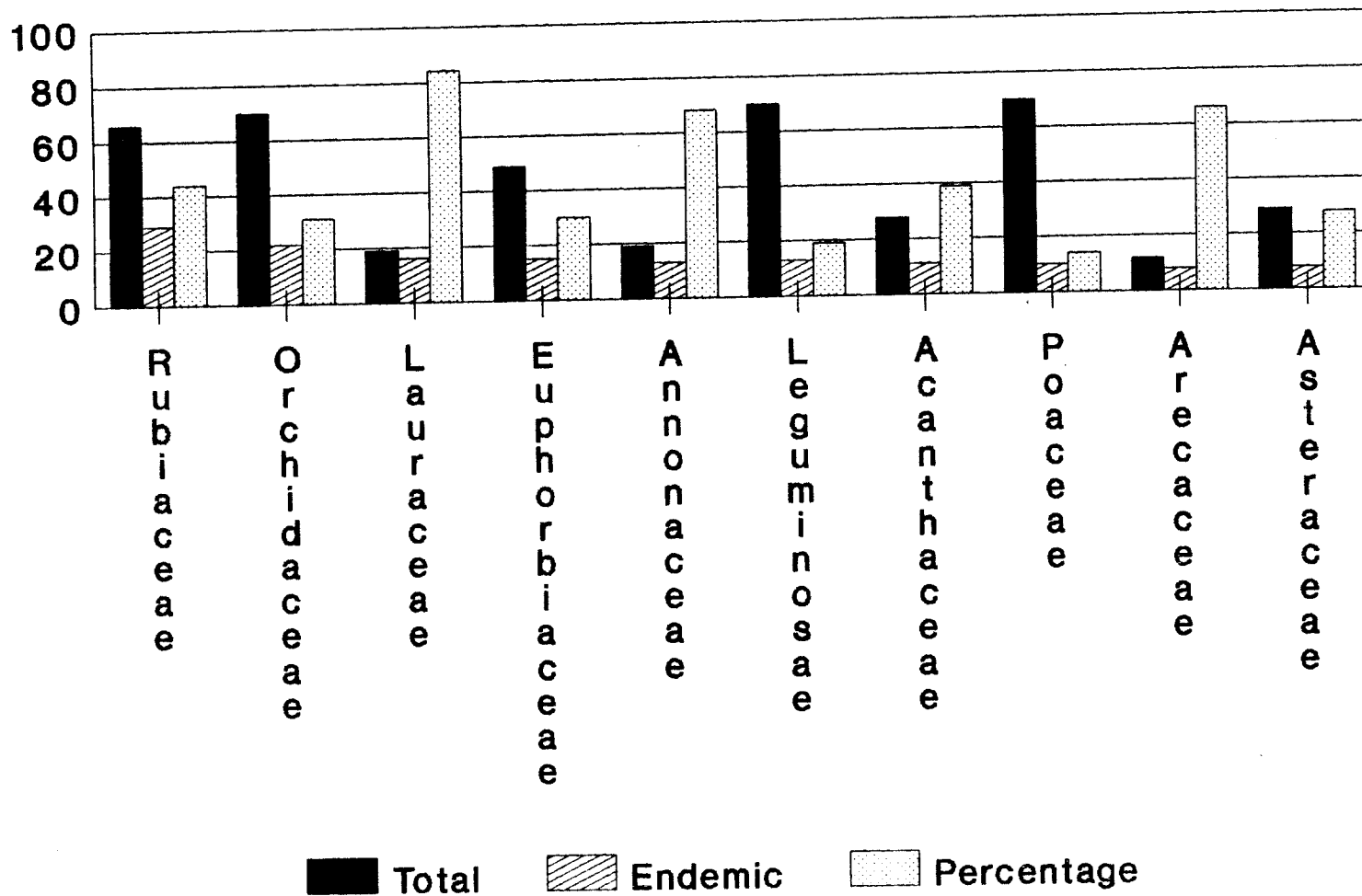


Table-I List of Rare and Threatened Species

Species	Family	Status	References
<i>Acranthera grandiflora</i> Bedd.	Rubiaceae	Vulnerable	Nayar, 1997
<i>Actinodaphne campanulata</i> Hook. f.	Lauraceae	Rare	Nayar, 1997
<i>A. malabarica</i> Balakr.	Lauraceae	Rare	Nayar, 1997
<i>Aglaia barberi</i> Gamble	Meliaceae	Rare	Ahmedullah & Nayar, 1997
<i>A. bourdillonii</i> Gamble	Meliaceae	Rare	Nayar, 1997
<i>Anaphyllum beddomei</i> Engl.	Araceae	Threatened	Nayar, 1997
<i>A. wightii</i> Schott	Araceae	Threatened	Nayar, 1997
<i>Arisaema barnesii</i> Fischer	Araceae	Threatened	Nayar, 1997
<i>Ardisia blatteri</i> Gamble	Myrsinaceae	Possibly extinct	Nayar, 1997
<i>Aspidopterys canarensis</i> Dalz.	Malpighiaceae	Vulnerable	Nayar, 1997
<i>Atuna travancorica</i> (Bedd.) Kosterm.	Rosaceae	Vulnerable	Nayar, 1997
<i>Begonia albo-coccinea</i> Hook. f.	Begoniaceae	Vulnerable	Nayar, 1997
<i>B. cordifolia</i> (Wt.) Thw.	Begoniaceae	Threatened	Nayar & Sastry, 1987
<i>Bentinckia condapanna</i> Berry ex Roxb.	Arecaceae	Threatened	Nayar, 1997
<i>Blepharistemma serratum</i> (Dennst.) Suresh	Rhizophoraceae	Vulnerable	Nayar, 1997
<i>Boesenbergia pulcherrima</i> (Wall.) O. Ktze.	Zingiberaceae	Threatened	Nayar, 1997
<i>Buchanania lanceolata</i> Wt.	Anacardiaceae	Threatened	Ahmedullah & Nayar, 1987
<i>Bulbophyllum aureum</i> (Hook. f.) J. J. Sm.	Orchidaceae	Endangered	Nayar, 1997
<i>Calamus brandisii</i> Becc.	Arecaceae	Threatened	Nayar & Sastry, 1988
<i>C. nagbettai</i> Fernadez & Dey	Arecaceae	Vulnerable	Nayar, 1997
<i>Calliandra cynometroides</i> Bedd.	Leguminosae	Possibly extinct	Nayar, 1997
<i>Canthium pergracile</i> Bourd.	Rubiaceae	Critical	Nayar, 1997
<i>Capparis fusifera</i> Dunn	Capparaceae	Rare	Nayar, 1997
<i>C. rheedei</i> DC.	Capparaceae	Rare	Nayar & Sastry, 1987

<i>Ceropegia maculata</i> Bedd.	Asclepiadaceae	Possibly extinct	Nayar & Sastry, 1988
<i>C. metziana</i> Miq.	Asclepiadaceae	Rare	Nayar & Sastry, 1988
<i>Cinnamomum filipedicellatum</i> Kosterm.	Lauraceae	Rare	Nayar, 1997
<i>Cissampelopsis ansteadii</i> (Tadul. & Jacob) Jeffrey & Chen	Asteraceae	Not recorded after type collection	Herbarium data
<i>Claoxylon anomalum</i> Hook. f.	Euphorbiaceae	Rare	S. Rani & Balakrishnan 1995
<i>Cleistanthus travancorensis</i> Jablonsky	Euphorbiaceae	Rare	Nayar, 1997
<i>Cordia octandra</i> DC.	Boraginaceae	Possibly extinct	Nayar, 1997
<i>Cryptocarya anamalayana</i> Gamble	Lauraceae	Endangered	Nayar, 1997
<i>Cynanchum alatum</i> Wt. & Arn.	Asclepiadaceae	Rare	Nayar, 1997
<i>Cynometra travancorica</i> Bedd.	Leguminosae	Rare	Nayar, 1997
<i>Drypetes confertiflora</i> (Hook. f.) Pax & Hoffm.	Euphorbiaceae	Rare	Nayar, 1997
<i>D. malabarica</i> (Bedd.) Airy Shaw	Euphorbiaceae	Rare	Ahmedullah & Nayar, 1987
<i>Didymocarpus repens</i> Bedd.	Gesneriaceae	Vulnerable	Nayar, 1997
<i>Elaeocarpus venustus</i> Bedd.	Elaeocarpaceae	Vulnerable	Nayar, 1997
<i>Ellipanthus tomentosus</i> O.Ktze.	Connaraceae	Not located recently	Henry et al 1979
<i>Eugenia discifera</i> Gamble	Myrtaceae	Endangered	Nayar, 1997
<i>Euonymus paniculatus</i> Wt. ex Laws.	Celastraceae	Critical	Nayar, 1997
<i>Garcinia imberti</i> Bourd.	Clusiaceae	Endangered Possibly extinct	Nayar, 1997 Henry et al 1979
<i>G. rubro-echinata</i> Kosterm.	Clusiaceae	Rare	Ahmedullah & Nayar, 1987
<i>G. travancorica</i> Bedd.	Clusiaceae	Rare	Ahmedullah & Nayar, 1987
<i>Glycosmis macrocarpa</i> Wt.	Rubiaceae	Rare	Ahmedullah & Nayar 1987
<i>Goniothalamus rhynchantherus</i> Dunn	Annonaceae	Rare	Nayar, 1997

Hedyotis eualata (Gambel) Henry & Subram.	Rubiaceae	Rare	Nayar, 1997
H. purpurascens Hook. f.	Rubiaceae	Indeterminate	Nayar, 1997
H. ramarowii (Gamble) Rao. & Hemadri	Rubiaceae	Rare	Nayar, 1997
Hopea racophloea Dyer	Dipterocarpaceae	Rare	Nayar, 1997
H. erosa (Bedd.) van Sloot.	Dipterocarpaceae	Endangered	Nayar, 1997
Humboldtia decurrens Bedd. ex Oliver	Leguminosae	Rare	Nayar, 1997
Hydnocarpus macrocarpus (Bedd.) Warb.	Flacourtiaceae	Endangered	Nayar, 1997
Impatiens wightiana Bedd.	Balsaminaceae	Endangered	Nayar, 1997
Kingiodendron pinnatum (Roxb. ex DC.) Harms	Leguminosae	Rare	Nayar, 1997
Kunstleria keralensis Mohanan & Nair	Leguminosae	Rare	Nayar, 1997
Lasianthus cinereus Gamble	Rubiaceae	Endangered	Nayar, 1997
L. oblongifolius Bedd.	Rubiaceae	Endangered	Nayar, 1997
Litsea travancorica Gamble	Lauraceae	Not located recently	Nayar, 1997
Madhuca bourdillonii (Gamble) H. J. Lam	Sapotaceae	Possibly extinct Endangered	Nayar & Sastry, 1987 Nayar, 1997
Marsdenia raziana Yoga. & Subram.	Asclepiada ceae	Vulnerable	Henry et al 1979
M. tirunelvelica Henry & Subram.	Asclepiadaceae	Rare	Nayar & Sastry, 1988
Memecylon gracile Bedd.	Melastomataceae	Rare	Henry et al 1979
M. lawsonii Gamble	Melastomataceae	Rare and endangered	Ahmedullah & Nayar, 1987
Morinda reticulata Gamble	Rubiaceae	Rare	Nayar, 1997
Myristica malabarica Lamk.	Myristicaceae	Rare	Ahmedullah & Nayar, 1987
M. fatua var. malabarica (Bedd.) Sinclair	Myristicaceae	Rare	Ahmedullah & Nayar 1987
Nostolachma crassifolia (Gamble) Deb & Lahiri	Rubiaceae	Not collected since 1910	Henry et al 1979

<i>Nothopogia aureo-fulva</i> Bedd. ex Hook. f.	Anacardiaceae	Not located after type collection	Henry et al 1979
<i>Octotropis travancorica</i> Bedd.	Rubiaceae	Rare	Ahmedullah & Nayar, 1987
<i>Ophiorrhiza roxburghiana</i> Wt.	Rubiaceae	Rare	Nayar, 1997
<i>Orophea uniflora</i> Bedd.	Annonaceae	Rare	Nayar & Sastry, 1988
<i>Palaquium bourdillonii</i> Brandis	Sapotaceae	Possibly extinct	Nayar, 1997
<i>Pavetta oblanceolata</i> Bremk.	Rubiaceae	Critical	Nayar, 1997
<i>P. praeciterita</i> Bremk.	Rubiaceae	Possibly extinct	Nayar, 1997
<i>Phacanthus malabaricus</i> Bedd.	Annonaceae	Vulnerable	Nayar & Sastry, 1990
<i>Phyllanthus gageana</i> (Gamble) Mohanani	Euphorbiaceae	Rare	Henry et al 1979
<i>Piper barberi</i> Gamble	Piperaceae	Vulnerable	Henry et al 1979
<i>Popowia beddomeana</i> Hook. f. & Thoms.	Annonaceae	Vulnerable	Henry et al 1979
<i>Pothos armatus</i> Fischer	Araceae	Threatened	Nayar, 1997
<i>Psychotria macrocarpa</i> Hook. f.	Rubiaceae	Rare	Nayar, 1997
<i>Pterospermum reticulatum</i> Wt. & Arn.	Sterculiaceae	Rare	Nayar, 1997
<i>Rauvolfia hookerii</i> Chitra & Srinivas.	Apocynaceae	Rare	Nayar, 1997
<i>Rhynchosia acuminata</i> Thw.	Leguminosae	Rare	Rudd, 1991
<i>Sageraea grandiflora</i> Dunn	Annonaceae	Endangered	Nayar, 1997
<i>Salacia beddomei</i> Gamble	Celastraceae	Rare	Nayar, 1997
<i>Saprosma corymbosum</i> Wt.	Rubiaceae	Rare	Nayar, 1997
<i>Semecarpus auriculata</i> Bedd.	Anacardiaceae	Vulnerable	Nayar, 1997
<i>Solenocarpus indica</i> Wt. & Arn.	Anacardiaceae	Rare	Nayar, 1997
<i>Smithia gracilis</i> Benth	Leguminosae	Rare	Nayar, 1997
<i>Symplocos macrocarpa</i> Wt. ex Cl.	Symplocaceae	Vulnerable	Nayar, 1997
<i>S. macrocarpa</i> ssp. <i>kanarana</i> (Talb.) Nootb.	Symplocaceae	Rare	Nayar, 1997
<i>S. wynaadense</i> (O. Ktze.) Nootb.	Symplocaceae	Rare	Ahmedullah & Nayar, 1987
<i>Syzygium bourdillonii</i> (Gamble) Rathakr. & Nair	Myrtaceae	Possibly extinct	Nayar, 1997

S. mundagam (Bourd.) Chitra	Myrtaceae	Rare	Ahmedullah & Nayar, 1987
S. travancoricum Gamble	Myrtaceae	Vulnerable	Nayar, 1997
Tarenna monosperma (Wt. & Arn.) Raju	Rubiaceae	Critical	Nayar, 1997
Trichosanthes anamalaiensis Bedd.	Cucurbitaceae	Rare	Nayar, 1997
Vernonia beddomei Hook. f.	Asteraceae	Critical	Nayar, 1997
V. heynei Bedd. ex Gamble	Asteraceae	Vulnerable	Nayar, 1997

In yet another transect *Syzygium travancoricum* was found to be the 6th dominant tree among the 13 tree species in the transect. These data indicate that quantitative studies are also essential to have a real status of plants on their distribution.

4 DISCUSSION

The Shenduruny Wildlife Sanctuary, the type locality of many of the 'Agasthyamala' endemics lies along the Arienkavu-Kulathupuzha Valley. The vegetation is dominated by West coast tropical evergreen, West coast semi-evergreen and Southern moist mixed deciduous forests. Southern hill-top tropical evergreen forests are confined to small areas above 1,300 elevation. Grasslands with sparse tree growth and grasses of secondary growth also occur to a limited extent.

During the study 951 species of flowering plants belonging to 118 families were collected and described. The occurrence of another 42 species under cultivation is also recorded. Among the 951 species collected and described 309 are Western Ghats endemics and 100 of them belong to various threat categories.

During the study two new species viz. *Polyalthia shendurunii* Basha & Sasi. (1994) and *Ardisia stonei* Sasi. & Sivarajan (1994) were described. *Zeuxine affinis* (Lindl.) Benth. ex Hook. f. is a new record for South India and species like *Bulbophyllum xylophyllum* Par. & Reichb., *Calamus nagbettai* Fernandez & Dey, *Cissampelopsis ansteadii* (Tadl. & Jacob) Jeffrey & Chen, *Marsdenia raziana* Yoga. & Subram. and *M. tirunelvelica* Henry & Subram. are new records of occurrence for Kerala (Sasidharan & Swarupanandan, 1995; Sasidharan & Anto, 1997).

The following species categorised as possibly extinct, viz., *Ardisia blatteri* Gamble, *Calliandra cynometroides* Bedd., *Cissampelopsis ansteadii* (Tadl. & Jacob) Jeffrey & Chen., *Cordia octandra* DC., *Garcinia imberti* Bourd. *Madhuca bourdillonii* (Gamble) H. J. Lam, *Palaquium bourdillonii* Brandis, *Pavetta praeiterita* Bremek., *Sageraea grandiflora* Dunn, *Syzygium bourdillonii* (Gamble) Rathakr. & Nair, are collected for the first time after their type collections.

The quantitative studies on the trees of Myristica Swamp forest show that *Syzygium travancoricum* Gamble, considered extinct in the type locality (Kulathupuzha) is found to be one of the dominant trees in the Myristica swamp forests. This study indicates the need for quantitative studies for having the real status of the threatened species.

The forests around the settlements are under severe biotic pressure. There is not much regeneration of trees, as the undergrowth is cut and removed for green manure. The people in the settlement are meeting their fuelwood and small timber requirement from the nearby forests. During our first collection trip to Rosemala in September 1992, two trees of *Palaquium bourdillonii* Brandis, considered extinct were seen along the roadside near Rosemala settlement. But the trees were found cut and removed for widening the road at the time of our second trip. Rosemala is the only locality for another possibly extinct species, *Calliandra cynometroides* Bedd., which is seen growing along the banks of stream near the Forest Picket Station. The effluents from the rubber latex processing unit are discharged into the stream, which may affect the existing population of the species. Steps may be adopted to check the discharge of effluents from the latex processing unit into the stream.

Most of the Myristica swamp forests, a unique vegetation type, were more or less destroyed. Now only a few hectares of them are existing, mostly in the Kulathupuzha Forest Range, bordering the Shenduruny Sanctuary. The Myristica swamp forests in the border areas of Kulathupuzha Range may be included in the Shenduruny Sanctuary. The Myristica swamp forest is the home of *Syzygium travancoricum* an endangered species, which is considered extinct from Kulathupuzha.

The heavy rains during November 1992 caused considerable damage to the terrain as well as vegetation. All the streams and rivers over flowed and the rocks and boulders were washed away by the flood. Despite the destruction and degradation at certain places, the existing forests still support a species rich vegetation containing several rare, threatened and considered possibly extinct species. So biotic pressures are to be kept minimum. It is the forests near the settlements that are the most affected. Like Rosemala, the forests at Kattalappara are also under biotic pressure. Some of the possibly extinct species like *Sageraea grandiflora* were seen very close to the settlements. It is very likely that they will be destroyed unintentionally. The settlements from the Sanctuary may be shifted to other places.

4. Systematic Treatment

4. 1 Key to families

- 1. Leaves dorsiventral, reticulately veined; embryo with 2 cotyledons : **Dicotyledons**
- 1. Leaves isobilateral with parallel veins (except in Araceae and Dioscoreaceae); embryo with 1 cotyledon : **Monocotyledons**

DICOTYLEDONS

- 1. Perianth uniseriate or absent : **Monochlamydeae**
- 1. Perianth 2 or more seriate : **2**
- 2. Petals free : **Polypetalae**
- 2. Petals united : **Gamopetalae**

POLYPETALAE

- 1. Ovary superior : **2**
- 1. Ovary inferior : **56**
- 2. Carpels free or ovary 1-celled : **3**
- 2. Ovary 2 or more celled : **25**
- 3. Ovule 1 : **4**
- 3. Ovules 2 or more : **10**
- 4. Flowers unisexual, dioecious : **Menispermaceae**
- 4. Flowers bisexual or polygamous, monoecious : **5**
- 5. Fruit an achene with persistent feathery style : **Ranunculaceae**
- 5. Fruit various, without feathery style : **6**
- 6. Fruit an oblong samara : **Simaroubaceae**
- 6. Fruit not samaroid : **7**
- 7. Carpels three or more; stamens with connectival appendage : **Annonaceae (p.p.)**
- 7. Carpel one; stamen without connectival appendage : **8**
- 8. Stamens more than 20 : **Clusiaceae**
(*Calophyllum*)
- 8. Stamens 10 or less : **9**
- 9. Climbing shrubs; calyx lobes unequal, enlarges in fruit; disc absent : **Ancistrocladaceae**
- 9. Trees; calyx lobes subequal not enlarged in fruit; disc present : **Anacardiaceae**
- 10. Gynophore or gynandrophore present : **11**
- 10. Gynophore and gynandrophore absent : **13**
- 11. Tendril climbers : **Passifloraceae**
- 11. Tendrils absent : **12**
- 12. Seeds embedded in pulp; stamens over 20 : **Capparaceae**
- 12. Seeds not embedded in pulp; stamens 15 or less : **Sterculiaceae (p.p.)**

13. Carpels 3 or more	: 14
13. Carpel one	: 15
14. Stamens with connectival appendage; endosperm ruminant	: Annonaceae (p.p.)
14. Stamens without connectival appendage; endosperm smooth	: Dilleniaceae
15. Fruit dehiscent	: 16
15. Fruit indehiscent	: 21
16. Fruit a legume	: Fabaceae
16. Fruit otherwise	: 17
17. Calyx appendaged at base	: Violaceae
17. Calyx not appendaged at base	: 18
18. Seeds arillate or covered with resinous pulp	: 19
18. Seeds without aril or pulp	: 20
19. Fruit a follicle, seeds one or two	: Connaraceae
19. Fruit a capsule, seeds 3 or more	: Flacourtiaceae (<i>Casearia</i>)
20. Large trees; sepals and petals 4 each	: Flacourtiaceae (<i>Homalium</i>)
20. Small herbs; sepals and petals 5 each	: Caryophyllaceae
21. Fruit a hard-rinded berry; petals with scales at base	: Flacourtiaceae (<i>Hydnocarpus</i>)
21. Fruit otherwise; petals without scales at base	: 22
22. Stamens over 15	: 23
22. Stamens 10 or less	: 24
23. Flowers unisexual; petals 0	: Flacourtiaceae (<i>Flacourtia</i>)
23. Flowers bisexual; petals present	: Rosaceae
24. Stamens opposite to the petals	: Oleaceae
24. Stamens alternate with petals	: Icacinaceae
25. Cells of ovary 3 or more ovuled	: 26
25. Cells of ovary 1 or 2 ovuled	: 40
26. Leaves pinnate	: 27
26. Leaves simple or palmately lobed	: 30
27. Seeds embedded in cottony wool; leaves digitately 7-9 foliolate	: Bombacaceae (p.p.)
27. Seeds not embedded in cottony wool; leaves 3-foliolate or pinnate	: 28
28. Style one; seeds winged	: Meliaceae (p.p.)
28. Styles 3 or 5; seeds not winged	: 29
29. Styles 3; leaves opposite; fruit a berry	: Staphyleaceae
29. Styles 5; leaves alternate, often fascicled; fruit a capsule	: Oxalidaceae

30. Stamens free	: 31
30. Anthers on or at the apex of staminal tube or stamens variously connate	: 34
31. Disc absent; perianth lobes not differentiated into sepals and petals	: Aizoaceae (Molluginaceae)
31. Disc prominent; perianth with distinct sepals and petals	: 32
32. Stamens numerous	: Ochnaceae
32. Stamens 5 or less than 5	: 33
33. Stamens 3	: Hippocrateaceae (p.p.)
33. Stamens 5	: Celastraceae (p.p.)
34. Flowers irregular; sepals 3, lower sepal spurred; petals 3	: Balsaminaceae
34. Flowers regular; sepals or calyx lobes 5, not spurred, petals 5 or 0	: 35
35. Petals with a ligule on the inner side	: Erythroxylaceae
35. Petals without ligule	: 36
36. Ovary stipitate	: Sterculiaceae
36. Ovary sessile	: 37
37. Flowers fascicled on old wood; fruit a spiny capsule, over 8 cm across	: Bombacaceae (Cullenia)
37. Flowers axillary to leaves or terminal; fruit not as above	: 38
38. Stamens on or at apex of staminal column; anthers 1-celled; epi-calyx often present	: Malvaceae
38. Stamens shortly connate at base into 3 or 5 phalanges, staminal column absent; anthers 2-celled; epicalyx 0	: 39
39. Ovary 2-5 locular, placentation axile	: Theaceae
39. Ovary 1-celled, placentation parietal	: Hypericaceae
40. Stamens 15 or more	: 41
40. Stamens 10 or less	: 44
41. Leaves opposite	: Clusiaceae (p.p.)
41. Leaves alternate	: 42
42. Anthers aristate at apex or connective prolonged into a subulate appendage	: 43
42. Anthers without aristae or appendage	: Tiliaceae
43. Petals lacinate; fruit a drupe with woody tubercled pyrene	: Elaeocarpaceae
43. Petals entire; fruit a nut or capsule	: Dipterocarpaceae
44. Leaves opposite or subopposite	: 45
44. Leaves alternate	: 47
45. Stamens 3	: Hippocrateaceae (p.p.)
45. Stamens 5 or 10	: 46

46. Stamens 5; disc prominent; fruit not winged	: Celastraceae (p.p.)
46. Stamens 10; disc inconspicuous; fruit winged	: Malpighiaceae
47. Flowers irregular; sepals unequal, two inner large and petaloid; petals 3 or 5, adnate with the staminal tube	: 48
47. Flowers regular; sepals equal or subequal, not petaloid; petals free from stamens or staminal tube	: 49
48. Herbs, petals 3, median with a crested appendage; fruit 2-seeded	: Polygalaceae
48. Trees, petals 5, without crested appendage; fruit 1-seeded	: Xanthophyllaceae
49. Stamens as many and opposite to the petals or few	: 50
49. Stamens as many as and alternate with petals or twice the number of petals	: 52
50. Tendril climbers; calyx shortly dentate or reduced to a rim	: Vitaceae
50. Plants without tendrils; calyx deeply divided or sepals free	: 51
51. Ovule 1 in each cell, placentation basal	: Rhamnaceae
51. Ovules 2 in each cell, placentation axile	: Sabiaceae
52. Leaves gland-dotted	: Rutaceae
52. Leaves not gland-dotted	: 53
53. Leaves simple; petals bifid	: Dichapetalaceae
53. Leaves 3 or more foliolate	: 54
54. Stamens with distinct staminal tube	: 55
54. Stamens free or united at the base only	: Sapindaceae
55. Stipules large, foliaceous; calyx lobes valvate	: Leeaceae
55. Stipules 0; sepals free, imbricate	: Meliaceae (p.p.)
56. Stamens more than 15	: 57
56. Stamens 10 or less	: 61
57. Seeds winged, petals wrinkled	: Lythraceae
57. Seeds not winged, petals entire	: 58
58. Flowers unisexual; ovary winged	: Begoniaceae
58. Flowers bisexual; ovary not winged	: 59
59. Leaves opposite, intramarginal nerve present	: Myrtaceae
59. Leaves alternate, intramarginal nerve absent	: 60
60. Stamens under 0.5 cm long; ovules less than seven	: Symplocaceae (p.p.)
60. Stamens over 1.5 cm long; ovules numerous	: Lecythidaceae
61. Plants with tendrils; anthers conduplicate	: Cucurbitaceae
61. Plants without tendrils; anthers otherwise	: 62
62. Ovary 1-celled	: 63
62. Ovary 2 or more celled	: 67
63. Flowers unisexual, dioecious; ovules numerous (over 20) parietal	: Datisceae
63. Flowers bisexual or unisexual, monoecious; ovules few (less than 15)	: 64

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|--|--|
| 64. Ovules 6-12, free central | : Melastomataceae
(<i>Memecylon</i>) |
| 64. Ovules 1-5, pendulous | : 65 |
| 65. Ovules 2-5; stamens 8 or 10 | : Combretaceae |
| 65. Ovule solitary; stamens 4-5 or over 15 | : 66 |
| 66. Stamens 4-5; petals less than twice the length of calyx lobes | : Cornaceae |
| 66. Stamens 15 or more; petals much longer than the calyx lobes | : Alangiaceae |
| 67. Petals lacerate at apex | : Rhizophoraceae |
| 67. Petals entire | : 68 |
| 68. Styles 2; fruit of 2 merocarps | : Apiaceae |
| 68. Style 1; fruit a drupe or capsule | : 69 |
| 69. Leaves bipinnate or digitately pinnate; leaf base sheathing; cells of ovary 1-ovuled | : Araliaceae |
| 69. Leaves simple; cells of ovary many ovuled | : 70 |
| 70. Leaves 3-5 ribbed from base; anther dehiscence by apical pores | : Melastomataceae (p.p.) |
| 70. Leaves penni-nerved; anther dehiscence by lateral slits | : Onagraceae |

GAMOPETALAE

- | | |
|---|--|
| 1. Ovary inferior | : 2 |
| 1. Ovary superior | : 7 |
| 2. Inflorescence a head; calyx modified into papus; fruit an achene | : Asteraceae |
| 2. Inflorescence other than a head; calyx regular; fruit other than achene | : 3 |
| 3. Leaves opposite; stipulate | : Rubiaceae |
| 3. Leaves alternate; estipulate | : 4 |
| 4. Climbing plants with tendrils; stamens 3, anthers flexuose or induplicate | : Cucurbitaceae (p.p.) |
| 4. Erect or scandent plants without tendrils; stamens 5 or more, anthers straight | : 5 |
| 5. Stamens 15 or more, filaments unequal | : Symplocaceae (p.p) |
| 5. Stamens 5 or 10, filaments equal | : 6 |
| 6. Ovary 1-celled | : Myrsinaceae |
| 6. Ovary 2-celled | : Lobeliaceae
(Campanulaceae) |
| 7. Stamens more than the number of corolla lobes | : 8 |
| 7. Stamens as many as the corolla lobes or fewer | : 9 |
| 8. Flowers unisexual; plants without milky latex | : Ebenaceae |
| 8. Flowers bisexual; plants with milky latex | : Sapotaceae |

9. Corolla zygomorphic	: 10
9. Corolla actinomorphic	: 18
10. Fruit elastically dehiscent; seeds often supported by retinacula	: Acanthaceae
10. Fruit dehiscence not as above; seeds not supported by retinacula	: 11
11. Ovules less than 5	: 12
11. Ovules over 15	: 13
12. Ovary 4-lobed; style gynobasic	: Lamiaceae
12. Ovary entire; style apical	: Verbenaceae (p. p)
13. Leaves pinnate; seeds winged	: Bignoniaceae
13. Leaves simple, entire or lobed; seeds not winged	: 14
14. Ovary 1-celled	: 15
14. Ovary 2-celled	: Scrophulariaceae
15. Small delicate herbs with insectivorous bladders; corolla spurred at the back	: Lentibulariaceae
15. Plants without insectivorous bladders; corolla not spurred	: 16
16. Leafless root parasites	: Orobanchaceae
16. Leafy herbs, sometimes epiphytes, leaves opposite	: 17
17. Corolla contorted, 4 or 5 lobed	: Gentianaceae
17. Corolla imbricate or valvate, 5-lobed	: Gesneriaceae
18. Leaves alternate	: 19
18. Leaves opposite	: 21
19. Ovules numerous	: Solanaceae
19. Ovules 4 or less	: 20
20. Twining plants; corolla plaited; fruit a capsule	: Convolvulaceae
20. Erect plants; corolla not plaited; fruit of 4 nutlets or drupe	: Boraginaceae
21. Stamens 2	: Oleaceae
21. Stamens 4 or more	: 22
22. Calyx persistent, encloses the fruit	: 23
22. Calyx deciduous	: 24
23. Inflorescence open panicle; calyx inflated and completely encloses the fruit	: Verbenaceae (Tectona)
23. Flowers in capitate heads; bracts forming an involucre around the heads; calyx not inflated in fruit	: Symphoremaceae
24. Plants without milky latex; seeds ecomose	: Loganiaceae
24. Plants with milky latex; seeds often comose	: 25
25. Stamens free from the carpels; pollens granular	: Apocynaceae
25. Stamens united with style forming a gynostegium or stamens conniving by anthers over the stigma; pollens aggregated in pollinia	: Asclepiadaceae

MONOCHLAMYDEAE

1. Thalloid aquatic herbs; ovules numerous	: Podostemaceae
1. Plants otherwise	: 2
2. Leafless root parasites; inflorescence arise directly from the rhizome	: Balanophoraceae
2. Leafy autophytes or semi-parasites; flowers on leafy stem	: 3
3. Flowers without perianth	: 4
3. Flowers with perianth	: 5
4. Flowers in dense spikes, axillary and terminal; stigma 2-5	: Piperaceae
4. Flowers in lax terminal paniced spikes; style 1	: Chloranthaceae
5. Ovary inferior	: 6
5. Ovary superior	: 10
6. Ovary 3 or 4 celled	: Aristolochiaceae
6. Ovary 1-celled	: 7
7. Ovules 2 or 3	: Santalaceae
7. Ovule solitary	: 8
8. Epiphytic parasites with haustoria	: 9
8. Autophytes without haustoria	: Nyctaginaceae
9. Flowers unisexual; anther dehiscence by apical pores	: Viscaceae
9. Flowers bisexual; anther dehiscence by lateral slits	: Loranthaceae
10. Ovary 2 or 3 celled	: Euphorbiaceae
10. Ovary 1-celled	: 11
11. Leaves with ochreate stipules	: Polygonaceae
11. Stipules not ochreate or absent	: 12
12. Stamens and staminodes (when present) united basally forming a tube or stamens adnate to a fleshy column	: 13
12. Stamens and staminodes free	: 14
13. Trees; anthers adnate to fleshy column, filaments 0; seeds arillate	: Myristicaceae
13. Herbs or subshrubs; anthers at the apex of filaments; seeds exarillate	: Amaranthaceae
14. Stamens in 3 or 4 whorls; anther dehiscence through valves; filaments often appendaged	: Lauraceae
14. Stamens in one whorl or solitary; anther dehiscence by lateral slits	: 15
15. Plants with milky latex	: Moraceae
15. Plants without milky latex	: 16
16. Style unbranched; often pencillate	: Urticaceae
16. Style 2-branched	: Ulmaceae

MONOCOTYLEDONS

- | | |
|--|-------------------------|
| 1. Pollens combined into pollen masses (pollinia) | : Orchidaceae |
| 1. Pollens free, not in pollinia | : 2 |
| 2. Fruit a caryopsis | : 3 |
| 2. Fruit a capsule, drupe or berry | : 5 |
| 3. Scapigerous herbs, stem 0; flowers in heads; ovary 2 or 3 celled | : Eriocaulaceae |
| 3. Plants with aerial stem (culms); inflorescence various; ovary 1-celled | : 4 |
| 4. Leaves 3-ranked; culms trigonous | : Cyperaceae |
| 4. Leaves 2-ranked; culms terete | : Poaceae |
| 5. Fertile stamen 1; staminodes 1-3 or absent | : 6 |
| 5. Fertile stamens 2 to many | : 7 |
| 6. Stamen with distinct filament; anther 2-celled | : Zingiberaceae |
| 6. Anther 1-celled, sessile on a large petaloid appendage | : Marantaceae |
| 7. Flowers in spadix | : 8 |
| 7. Flowers not in spadix | : 11 |
| 8. Leaves in close tristichous spirals, spiny along midrib and margins;
stem with stilt roots | : Pandanaceae |
| 8. Leaves not as above; stilt roots absent | : 9 |
| 9. Spadix branched; stem woody | : Arecaceae |
| 9. Spadix unbranched; stem often fleshy | : 10 |
| 10. Flowers bisexual, in whorls, each whorl subtended by a spathe | : Musaceae |
| 10. Flowers mostly unisexual or rarely bisexual, closely imbricating,
only one spathe for the inflorescence | : Araceae |
| 11. Flowers unisexual; dioecious climbers or twiners | : 12 |
| 11. Flowers bisexual | : 13 |
| 12. Plants with tendrils from leafbase; flowers in umbels | : Smilacaceae |
| 12. Plants without tendrils; flowers in spikes or racemes | : Dioscoreaceae |
| 13. Ovary superior | : 14 |
| 13. Ovary inferior | : 16 |
| 14. Perianth lobes differentiated into 3 sepals and 3 petals | : Commelinaceae |
| 14. Perianth lobes uniform | : 15 |
| 15. Plants with stout woody stem; perianth united below into a tube | : Agavaceae |
| 15. Plants without erect stem; perianth lobes free | : Liliaceae |
| 16. Plants without tubers, rhizomes or bulbs | : Haemodoraceae |
| 16. Plants with tuberous rhizomes or bulbs | : 17 |
| 17. Rootstock tuberous, elongated or globose; inflorescence axillary;
stamens free | : Hypoxidaceae |
| 17. Rootstock bulb; inflorescence terminal; staminal filaments united
to a tube | : Amaryllidaceae |

RANUNCULACEAE

NARAVELIA A. DC.

Naravelia zeylanica (L.) DC., Syst. 1: 167. 1817; Fl. Brit. India 1: 7. 1872; Fl. Madras 3. 1915; Fl. Thenmala 1. 1995. *Atragene zeylanica* L., Sp. Pl. 542. 1753.

Climbing shrubs, young shoots pubescent. Leaflets broadly ovate, abruptly acute, base rounded, tomentose beneath; 10-14 x 6-9 cm, basally 5-ribbed; petiole 5-10 cm long. Flowers greenish-yellow, 1.5 cm across. Achenal style ca. 3 cm long.

Fairly common in moist deciduous forests.

NS 11106 (Kattalappara)

Fl. & Fr. November-February

Dist. India and Sri Lanka

DILLENiaceae

- | | |
|---|-------------|
| 1. Scapigerous herbs | : Acrotrema |
| 1. Trees or climbers | : 2 |
| 2. Flowers yellow, clustered in the axils of leaf scars; trees | : Dillenia |
| 2. Flowers white, in terminal or axillary panicles; climbing shrubs | : Tetracera |

ACROTREMA Jack.

Acrotrema arnottianum Wt., Ill. I, t. 3. 1840; Fl. Brit. India 1: 32. 1872; Fl. Madras 6. 1915; Fl. Thenmala 1. 1995.

Rhizomatous stemless scapigerous herbs. Leaves obovate or oblong, obtuse, toothed along the margins, to 30 x 14 cm, lateral nerves many, prominent, parallel; stipules sheathing. Flowers yellow, 1.2 cm across, in axillary racemes, bracteate, softly hairy. Stamens in 3 bundles.

Fairly common in evergreen forests, often along road cuttings.

NS 10154, 10356 (Kallar)

Fl. December-April

Dist. Southern W. Ghats : endemic

DILLENIA L.

- | | |
|---------------------------------|----------------|
| 1. Flowers white, in racemes | : D. bracteata |
| 1. Flowers yellow, in fascicles | : D. pentagyna |

Dillenia bracteata Wt., Ic. t. 358. 1840-43; Fl. Brit. India 1: 37. 1872; Fl. Madras 7. 1915; Fl. Thenmala 2. 1995.

Medium sized trees, young branches silky pubescent. Leaves ovate-oblong, obtuse,

crenate, to 25 x 15 cm. Racemes few flowered. Flowers 4 cm across.

Occasional in evergreen forests.

KNS 1560 (Rockwood)

Fl. April

Dist. Western Ghats : endemic

Dillenia pentagyna Roxb., Pl. Corom. 1: 21. t. 29. 1795; Bedd., Fl. Sylv. t. 104. 1869; Fl. Brit. India 1: 38. 1872; For. Trees Travancore 1. 1908; Fl. Madras 8. 1915; Fl. Thenmala 2. 1995.

Large deciduous trees, bark greyish, smooth, branchlets with prominent V-shaped leafscars. Leaves obovate or oblong-obovate, obtuse, base attenuate, 20-50 x 8-20 cm; lateral nerves numerous, parallel. Flowers in fascicles of 2-7; pedicels 3-5 cm long. Petals 5, yellow. Stamens many, in groups. Berry yellow, 2 cm across.

Common in moist deciduous forests.

NS 10880 (Rosemala)

Fl. & Fr. December-March

D i s t. Indo-Malesia and China

TETRACERA L.

Tetracera akara (Burm.f.) Merr., Philipp. J. Sci. 19: 366. 1921. *Calophyllum akara* Burm.f., Fl. Ind. 121. 1768. *T. rheedei* DC., Syst. 1: 402. 1818; Wt., Ic. t. 70. 1838. *T. laevis* auct. non Vahl, DC., Syst. 1: 401. 1818; Fl. Brit. India 1: 31. 1872; Fl. Madras 7. 1915.

Climbing shrubs, young shoots scabrous. Leaves oblong lanceolate, acute or acuminate, base cuneate, shortly decurrent on the petiole, glabrous, 8-12 x 3.5-5 cm. Flowers white, 2 cm across, in 5-8 flowered axillary and terminal panicles.

Occasional in semi-evergreen forests.

NS 1721 (Choodal)

Fl. March-May

D i s t. Indo-Malesia

ANNONACEAE

- | | |
|--|----------------------|
| 1. Carpel one; sepals united into a cup | : Cyathocalyx |
| 1. Carpels 3 or more; sepals free | : 2 |
| 2. Inner petals clawed, lozenge-shaped | : 3 |
| 2. Inner petals without claw, not lozenge-shaped | : 5 |
| 3. Ovules 4 or more | : Mitrephora |
| 3. Ovules 1 or 2 | : 4 |

4. Stamens 12 or less; petals thin	: Orophea
4. Stamens more than 20; petals thick	: Goniothalamus
5. Carpels 3-6	: 6
5. Carpels 12 or more	: 8
6. Petals linear	: Xylopia
6. Petals orbicular	: 7
7. Leaves over 15 cm (to 39 cm) long. Pedicels 1.5 cm long, large trees:	Sageraea
7. Leaves less than 10 cm long, pedicels about 0.5 cm long, shrubs	: Popowia
8. Inner petals almost as long as the outer petals	: 9
8. Inner petals much longer than the outer petals	: 12
9. Flowers on hooked peduncles, inner petals constricted at base	: Artabotrys
9. Flowers not borne on hooked peduncles; inner petals not constricted	: 10
10. Petals ovate-orbicular, connate at base and falling in one piece	: Uvaria
10. Petals linear, free, not falling as above	: 11
11. Flowers subsessile	: Meiogyne
11. Flower pedicels over 1 cm long	: Polyalthia
12. Connective widened above anthers	: Phaeanthus
12. Connective not widened above anthers	: Millusa

ARTABOTRYS R. Br. ex Ker-Gawl.

Artabotrys zeylanicus Hook. f. & Thoms., Fl. Ind. 128. 1855 & Fl. Brit. India 1: 54. 1872; Bedd., Ic. t. 48. 1868-1874; Fl. Madras 14. 1915; Das, Bull. Bot. Surv. India 5: 40. 1965.

Large climbing shrubs, bark smooth, black. Leaves oblong or elliptic-oblong, abruptly obtusely acuminate, base truncate or rounded, glabrous and shining above, to 15 x 6.5 cm. Flowers solitary or in few-flowered clusters; pedicels 1 cm long. Petals greenish-yellow, oblong-lanceolate, to 3.5 x 0.8 cm, tomentose on both sides. Fruitlets sessile, ovoid or ellipsoid; seeds 1 or 2.

Fairly common in semi-evergreen and evergreen forests.

NS 10302 (Choondippara); *10425* (Kattalappara); *11242* (Rosemala)

Fl. & Fr. August-December

D i s t. South West India and Sri Lanka

CYATHOCALYX Champ. ex Hook. f. & Thoms.

Cyathocalyx zeylanica Champ. ex Hook. f. & Thoms., Fl. Ind. 127. 1855; '*zeylanicus*'; Bedd., Ic. t. 47. 1868-1874; Fl. Brit. India 1: 53. 1872; For. Trees Travancore 4. 1908; Fl. Madras 13. 1915; Das, Bull. Bot. Surv. India 5: 40. 1963; Fl. Thenmala 3. 1995.

Small to medium sized trees, bark greyish-brown, smooth; branches horizontal, confined to the top of the trunk. Leaves elliptic-oblong, caudate, acuminate, base acute or obtuse, glabrous, to 20 x 6 cm. Flowers solitary or in pairs. Petals ovate-lanceolate, tomentose, outer 2.5 x 0.8 cm. Ovary pubescent; stigma disc-shaped. Berry ovoid, 7 x 5 cm; seeds compressed.

Fairly common in semi-evergreen forests.

NS 10090 (Kattalappara) 11324 (Rosemala)

Fl. & Fr. April-December

Dist. South India and Sri Lanka

GONIOTHALAMUS BL.

- | | |
|---|----------------------------|
| 1. Outer petals brown pubescent; stigma 2-fid | : <i>G. wightii</i> |
| 1. Outer petals glabrous; stigma entire | : <i>G. rhynchantherus</i> |

Goniothalamus rhynchantherus Dunn, Kew Bull. 1914: 1 82. 1914 & in Fl. Madras 19. 1915; Nayar & Sastry, Red Data Book Indian Pl. 1: 26. 1987 [Fig. 1].

Trees, to 12 m tall. Leaves ovate or oblong, obtusely cuneate at base, shortly obtusely acuminate at apex, to 18 x 5 cm. Flowers greenish-yellow, solitary, axillary. Sepals free, ovate, subacute. Outer petals oblong-ovate, acute, coriaceous, to 2.5 x 1.2 cm; inner ones half as long as the outer, connate at the tip. Carpels few, strigose, 2-ovuled. Fruitlets oblong to obovate, ca 1 cm long.

Fairly common in evergreen forests.

NS 10298 (Choondippara); 10947 (Rosemala)

Fl. & Fr. February-June

Dist: Southern W. Ghats : endemic

Goniothalamus wightii Hook.f & Thoms., Fl. Ind. 106. 1855 & in Fl. Brit. India 1: 76. 1872; Bedd., Ic. t. 63. 1868-1874; For. Trees Travancore 8. 1908; Fl. Madras 18. 1915 [Fig. 2].

Trees, to 6 m tall, branches puberulous. Leaves linear-lanceolate, cuneate at base, shortly acuminate at apex, to 12 x 2.5 cm, glabrous. Flowers purple with yellow tinge, solitary, axillary. Outer petals ovate, acute, to 1.5 x 1 cm; inner ones slightly smaller forming a cone. Stamens many. Carpels strigose.

Occasional in evergreen forests above 1000 m.

NS 11376 (Alvarakurichi)

Fl. January-March

Dist: Southern W. Ghats : endemic

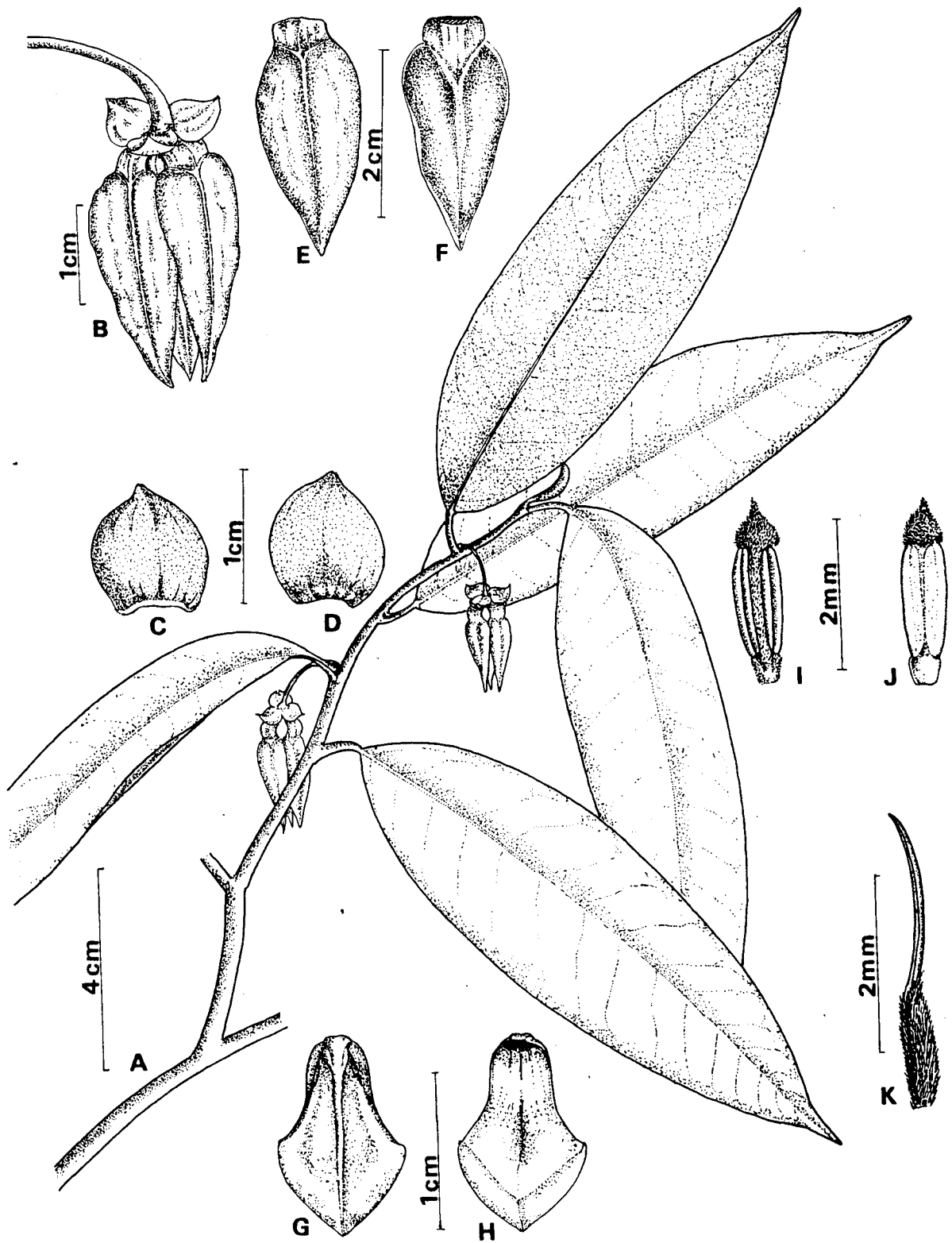


Fig. 1 : *Goniothalamus rhynchantherus* Dunn A. flowering twig, B. flower, C. & D. sepal-inner and outer views, E. & F. outer petal-outer and inner views, G. & H. inner petals-inner and outer views, I. & J. stamen dorsal and ventral views, K. carpel

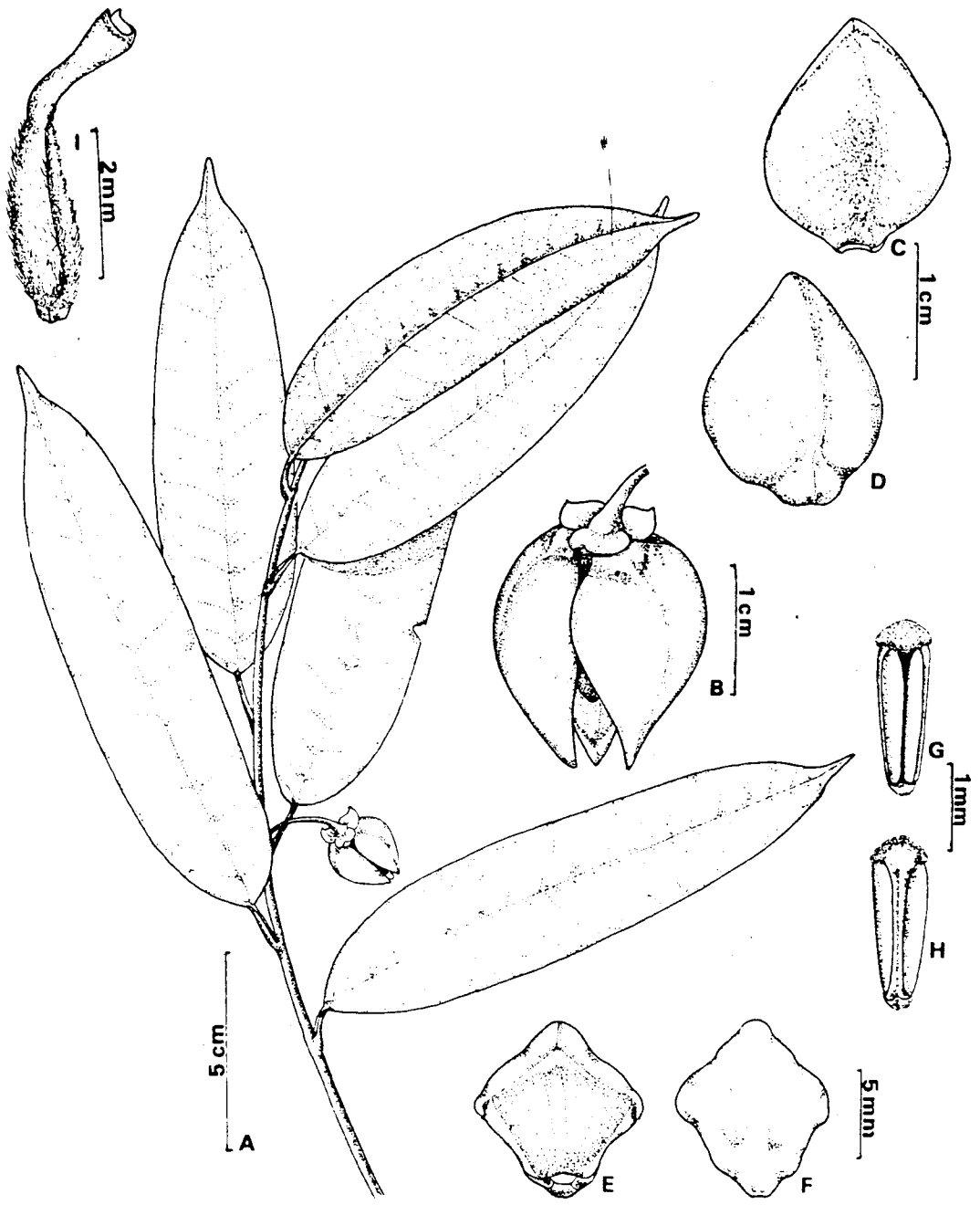


Fig. 2 : *Goniothalamus wightii* Hook. f. & Thoms. A. flowering twig, B. flower, C. & D. inner and outer views of outer petal, E. & F. inner and outer views of inner petal, G. & H. dorsal and ventral views of stamen, I. carpel

MEIOGYNE Miq.

1. Petals to 2 x 0.6 cm; leaves 6-12 cm long : *M. ramarowii*
1. Petals to 3 x 1 cm; leaves less than 6 cm long : *M. pannosa*

Meiogyne pannosa (Dalz.) Sinclair, Sarawak Mus. J. 5: 604. 1951; Fl. Thenmala 5. 1995.
Unona pannosa Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 3: 207. 1851; Fl. Brit. India 1: 58. 1872; Bedd., Ic. t. 52. 1868-1874; For. Trees Travancore 4. 1908; Fl. Madras 14. 1915.

Small trees, bark greyish, mottled with white, smooth, young shoots adpressed tomentose, branchlets slender. Leaves elliptic-acuminate, base obtuse or rounded, glabrous except on midrib below, to 6 x 3 cm. Petals yellowish, ovate-acute or oblong-acute, inner slightly narrower than the outer. Carpels 10-12, strigose. Fruitlets velvety tomentose.

Mostly confined to evergreen forests above 900 m.

NS 10047 (Kallar)

Fl. & Fr. April-June

D i s t. Throughout W. Ghats: endemic

Meiogyne ramarowii (Dunn) Gandhi in Sald. & Nicols., Fl. Hassan Dist. 38. 1976. *Unona ramarowii* Dunn, Kew Bull. 1914: 1 83. 1914 & Fl. Madras 15. 1915. *Desmos ramarowii* (Dunn) Das, Bull. Bot. Surv. India 5: 42. 1963.

Large shrubs, young shoots hirsute. Leaves ovate-acuminate or oblong-acuminate, base truncate or rounded, glabrous above and tomentose below, to 12 x 3.5 cm. Petals yellow, ovate-lanceolate, tomentose on both sides. Carpels tomentose. Fruitlets subglabrous.

Common undergrowth in semi-evergreen and evergreen forests below 700 m.

NS 10131, (Kallar); 10299 (Charupara) 10662 (Rosemala)

Fl. & Fr. January-March

D i s t. Southern W. Ghats: endemic

MILIUSA Lesch. ex A. DC.

1. Young shoots and leaves tomentose, flowers greenish yellow : *M. tomentosa*
1. Young shoots and leaves glabrous, flowers pink : *M. wightiana*

Miliusa wightiana Hook. f. & Thoms., Fl. Ind. 149. 1855; Bedd., Ic. t. 86. 1868-1874; For. Trees Travancore 9. 1908; Fl. Madras 21. 1915; Mitra, Fl. India 1: 222. 1993.

Trees to 10 m tall. Leaves oblong or oblong-lanceolate, acuminate, base obtuse, glabrous to 8 x 4 cm. Flowers solitary. Petals pink. Carpels ca. 15, subglabrous.

Occasional in evergreen forests.

NS 10246 (Charupara), 11378 (Rosemala)

Fl. March-April

D i s t. W. Ghats : endemic

Miliusa tomentosa (Roxb.) Sinclair, Gard. Bull. s.s. 14: 378. 1955. *Uvaria tomentosa* Roxb., Pl. Corom. t. 35. 1795. *Saccopetalum tomentosum* (Roxb.) Hook. f. & Thoms., Fl. Ind. 152. 1855 & in Fl. Brit. India 1: 88. 1872; Bedd., Ic. t. 49. 1868-1874; For. Trees Travancore 10. 1908; Fl. Madras 22. 1915; Das, Bull. Bot. Surv. India 5: 46. 1963.

Medium sized deciduous trees, bark pale-brown with shallow vertical fissures; young shoots pubescent. Leaves oblong, acute or acuminate, base rounded or truncate, glabrescent above and pubescent below, to 12 x 7 cm. Flowers solitary or in few flowered racemes. Outer petals lanceolate, tomentose, 0.8 x 0.2 cm; inner oblong, saccate at base, greenish-yellow outside and dull red inside, 1.5 x 0.5 cm.

Common in moist deciduous forests.

NS 10181 (Choodal)

Fl. December-June

D i s t. Peninsular and North East India

MITREPHORA Hook. f. & Thoms.

Mitrephora grandiflora Bedd., Ic. t. 101. 1868-1874; Fl. Brit. India 1: 78. 1872; Fl. Madras 19. 1915; Das, Bull. Bot. Surv. India 5: 44. 1963.

Medium sized trees, bark black, smooth, young shoots golden-brown tomentose. Leaves shining green, ovate or elliptic-lanceolate, acute, base truncate, glabrous on both sides

when mature, to 15 x 7.5 cm. Peduncle shorter than petiole. Outer petals obovate-acute, 3 x 2 cm, white, turning yellow, tomentose; inner lozenge-shaped, white with red streaks, tomentose on both sides.

Fairly common in semi-evergreen forests.

NS 10153 (Kallar); *10872* (Rosemala)

Fl. April

D i s t. Southern W. Ghats (Karnataka and Kerala) : endemic

OROPHEA Bl.

1. Outer 6 stamens sterile; peduncle densely hirsute; carpels strigose : *O. erythrocarpa*

1. All stamens perfect; peduncle and carpels glabrous : *O. uniflora*

Orophea erythrocarpa Bedd., Madras J. Lit. Sci. 22: 71. 1861 & Ic. t. 68. 1868-1874; Fl. Brit. India 1: 91. 1872; For. Trees Travancore 12. 1908; Fl. Madras 24. 1915; Kessler, Blumea 33: 47. 1988.

Small trees, young shoots pilose. Leaves oblong-acuminate, base rounded or truncate, to 10 x 5 cm. Flowers yellowish, in 3 or 4 flowered, tomentose racemes. Nectaries of inner petals oblong, horizontal. Fruitlets sessile, oblong, red.

Occasional in semi-evergreen and evergreen forests.

NS 10895, 11282 (Rosemala)

Fl. & Fr. February-August

D i s t. Southern W. Ghats (Kerala and Tamil Nadu): endemic

Orophea uniflora Hook. f. & Thoms., *Fl. Ind.* 111. 1855 & in *Fl. Brit. India* 1: 90. 1872; *Bedd., Ic. t.* 69. 1868-1874; *For. Trees Travancore* 11. 1908; *Fl. Madras* 24. 1915; Kessler, *Blumea* 33: 63. 1988; Nayar & Sastry, *Red Data Book Indian Pl.* 2: 16. 1988.

Shrubs or small trees; young shoots glabrous. Leaves elliptic-oblong or lanceolate, obtusely acuminate, base acute or rounded, to 6.5 x 3 cm. Flowers creamy yellow, solitary or in axillary clusters; pedicels 0.5-1.2 cm long. Petals glabrous; nectary triangular. Stamens 12, 2-seriate.

Fairly common in semi-evergreen and evergreen forests.

NS 10932, 11243, 11318 (Rosemala)

Fl. April-August

D i s t. Southern W. Ghats: endemic

PHAEANTHUS Hook. f. & Thoms.

Phaeanthus malabaricus Bedd., *Ic. t.* 76. 1868-1874; *Fl. Brit. India* 1: 72. 1872; *Fl. Madras* 17. 1915; Nayar & Sastry, *Red Data Book Indian Pl.* 3: 16. 1990.

Shrubs, young shoots ferruginous-tomentose. Leaves oblong, acute or caudate-acuminate, base subcordate, glabrous, 10-15 x 3.5-5 cm. Flowers solitary, leaf-opposed, creamy white; pedicels 1 cm long, tomentose. Outer petals ovate-acuminate, 0.5 cm long; inner thick, cymbiform, 1 cm long, inflexed and meeting by their apices.

Not uncommon, in semi-evergreen and evergreen forests.

NS 10033, 10505 (Kattalappara), 10915 (Rosemala)

Fl. March-September

D i s t. Southern W. Ghats (Kerala): endemic

Note: According to Nayar & Sastry (l.c.) the species is vulnerable and is confined to Northern Kerala. In the study area the species is rather common.

POPOWIA Endl.

Popowia beddomeana Hook. f. & Thoms. in Hook. f., *Fl. Brit. India* 1: 66 1872; *For. Trees Travancore* 7. 1908; *Fl. Madras* 17. 1915; Nayar & Sastry, *Red Data Book Indian Pl.*

1: 28. 1987. *P. ramosissima* Bedd., Ic. t. 75. 1868-1874.

Large shrubs to small trees, branches brown tomentose when young. Leaves ovate-lanceolate or oblong-lanceolate, acute at base, to 8 x 2.5 cm, glabrous above, tomentose beneath. Flowers solitary, sometimes paired, extra-axillary. Petals tomentose outside, glabrous inside; inner ones concave, inflexed at tip. Stamens many. Carpels tomentose. Fruitlets globose 1 cm across, red.

Occasional in evergreen forests above 900 m.

NS 10110 (Kallar), 10285 (Charupara)

Fl. January-March

Dist: Southern W.Ghats : endemic

POLYALTHIA BL.

- | | |
|--|-------------------------|
| 1. Young shoots and leaves below tomentose | : <i>P. cerasoides</i> |
| 1. Young shoots and leaves glabrous | : 2 |
| 2. Petals 8-9 x 1.5-2 cm | : <i>P. shendurunii</i> |
| 2. Petals 3-5 x 0.7-1 cm | : <i>P. coffeoides</i> |

Polyalthia cerasoides (Roxb.) Bedd., Fl. Sylv. t. 1. 1869; Fl. Brit. India 1: 63. 1872; For. Trees Travancore 6. 1908; Fl. Madras 17. 1915; Fl. Thenmala 4. 1995. *Uvaria cerasoides* Roxb., Pl. Cor. 33. 19. 1795.

Trees to 10 m tall, bark grey, young shoot rufous-tomentose. Leaves oblong-lanceolate, acuminate, rounded at base, pubescent below, to 15 x 3 cm. Flowers axillary, solitary or 2 or 3. Petals ovate-oblong, acute, inflexed, green.

Occasional in semi-evergreen forests

NS 11309 (Rosemala)

Fl. January-March

Dist. Indo-Burma

Polyalthia coffeoides (Thw. ex Hook. f. & Thoms.) Hook. f. & Thoms. in Hook. f., Fl. Brit. India 1: 62. 1872; For. Trees Travancore 5. 1908; Bedd., Ic. t. 53. 1868-1874; Fl. Madras 16. 1915. *Guatteria coffeoides* Hook. f. & Thoms., Fl. Ind. 141. 1855.

Medium to large trees, bark black, often mottled with grey. Leaves oblong or narrowly ovate, acute or acuminate, base rounded or truncate, glabrous, to 27 x 11 cm. Flowers often from woody tubercles on older stem. Petals yellow, oblong acuminate. Carpels ca. 20.

Common in evergreen forests.

NS 10095, 10759 (Kallar)

Fl. December-April

Dist. South West India and Sri Lanka

Polyalthia shendurunii Basha & Sasi., *Rheedea* 4: 21. 1994 [Fig. 3].

Trees to 15 m tall, bark smooth, brownish-black. Leaves 15-26 x 6-8.5 cm, oblong or elliptic-lanceolate, acuminate, acumen to 3 cm long, base rounded or truncate, glabrous, midrib impressed and channelled above, lateral veins 10-14 pairs, intercostae scalariform-reticulate, thin; petioles ca. 0.5 cm long. Flowers on twigs solitary and/or upto 10 in fascicles on tubercles on the trunk. Pedicels 4-5.5 cm long and 2-3 mm, across; bract 3-4 x 2.5-3 mm towards the lower half of the pedicel, ovate-acute, tomentose. Sepals 1.5-2 x 1-1.3 cm., deltoid-ovate, acuminate, reflexed, connate at base, persistent. Petals subequal; outer slightly smaller, oblong, acuter to acuminate, coriaceous, minutely rugose and adpressed-tomentose on both sides, greenish-yellow to yellow. Stamens numerous, closely arranged, 3 mm long; anthers and connective hirsute, more on the ventral surface, appendage glabrous. Carpels ca. 50, each 2.5 mm long; ovule solitary, basal; style indistinct; stigma orbicular, depressed at middle, margins shortly lobed, glabrous. Fruiting pedicel 4-5 mm across; fruitlets to 7, oblong-ovoid, glabrous, 3 x 2.5 cm; stalk ca. 1.8 cm long. Seed oblong, 2.8 x 1.8 cm.

Fairly common in semi-evergreen and evergreen forests.

NS 11246, (Rosemala); 11423 (Kallar)

Fl. & Fr. January-May

D i s t. So far known only from the Shenduruny Wildlife Sanctuary.

SAGERAEA Dalz.

Sageraea grandiflora Dunn, *Kew Bull.* 1914: 182. 1914 & in *Fl. Madras* 12. 1915; Nayar & Sastry, *Red Data Book Indian Plants* 1: 30. 1987 [Fig. 4].

Medium sized or large trees, bark smooth, black, often blotched with grey; young shoots glabrous. Leaves oblong-lanceolate, acute, base rounded or acute, glabrous, to 30 x 8 cm. Petals creamy-white, outer 1.2 x 1 cm.

Common in semi-evergreen forests.

NS 10079 (Kattalappara), 11327 (Rosemala)

Fl. January-February

D i s t. Endemic to Southern W. Ghats (Kerala)

Note: The species first collected by Bourdillon in 1894 from Kulathupuzha, the type locality. Has not been located thereafter. Nayar & Sastry (l.c.) reported the species as endangered or possibly extinct.

UVARIA L.

Uvaria macropoda Hook. f. & Thoms., *Fl. Ind.* 101. 1855 & in *Fl. Brit. India* 1: 50. 1872; Bedd., *l.c.* t. 79. 1868-1874; *Fl. Madras* 13. 1915; Das, *Bull. Bot. Surv. India* 5: 39. 1963;

Lianas, young shoots tomentose. Leaves narrowly elliptic or oblong, acute or acuminate, base obtuse or rounded, glabrous, to 15 x 5 cm. Flowers solitary. Pedicels and

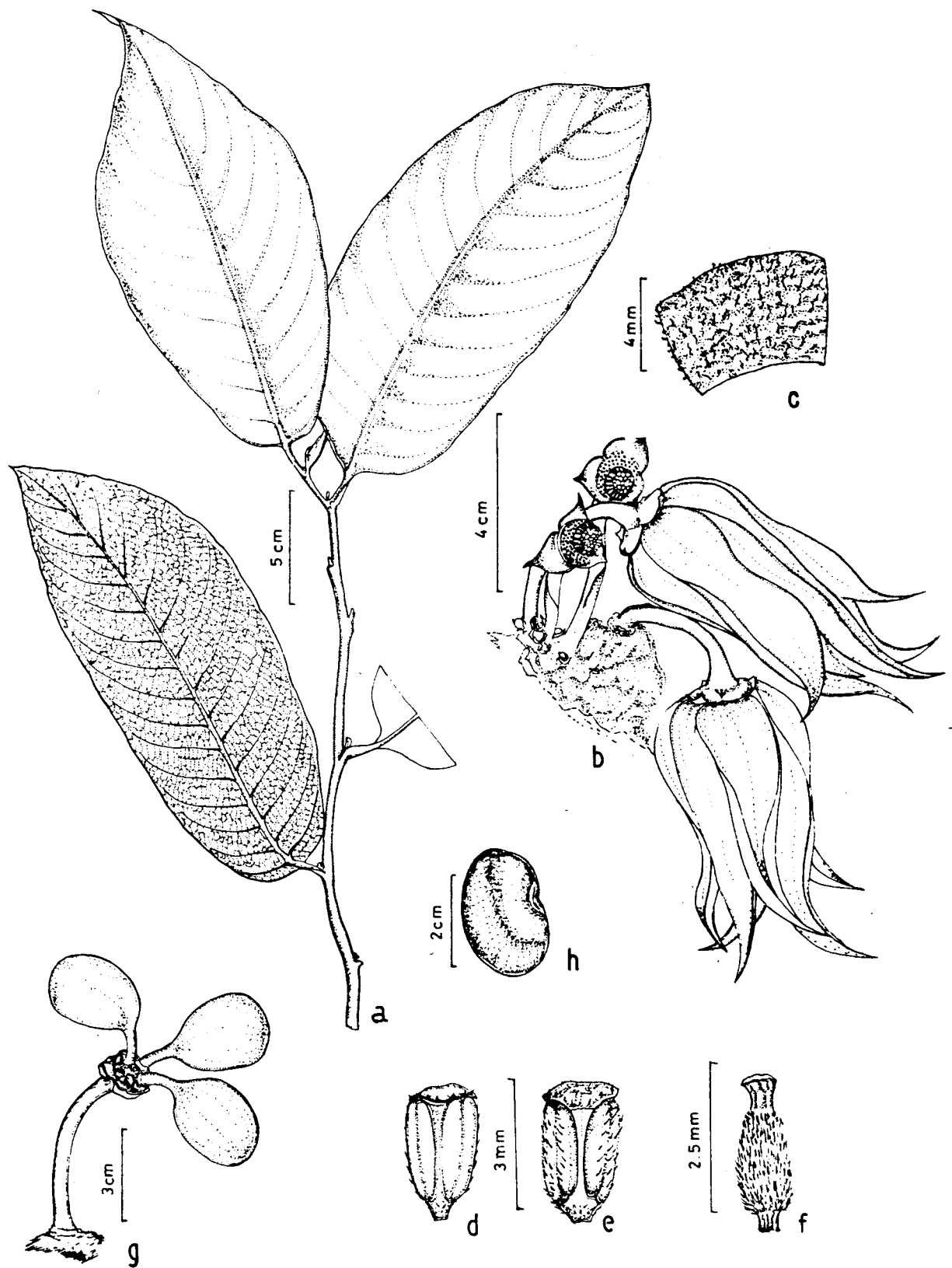


Fig. 3 : *Polyalthia shendurunii* Basha & Sasi. a. twig, b. flowers on tubercle from trunk, c. portion of petal showing rugation, d. & e. dorsal and ventral views of stamen, f. carpel, g. fruit, h. seed.

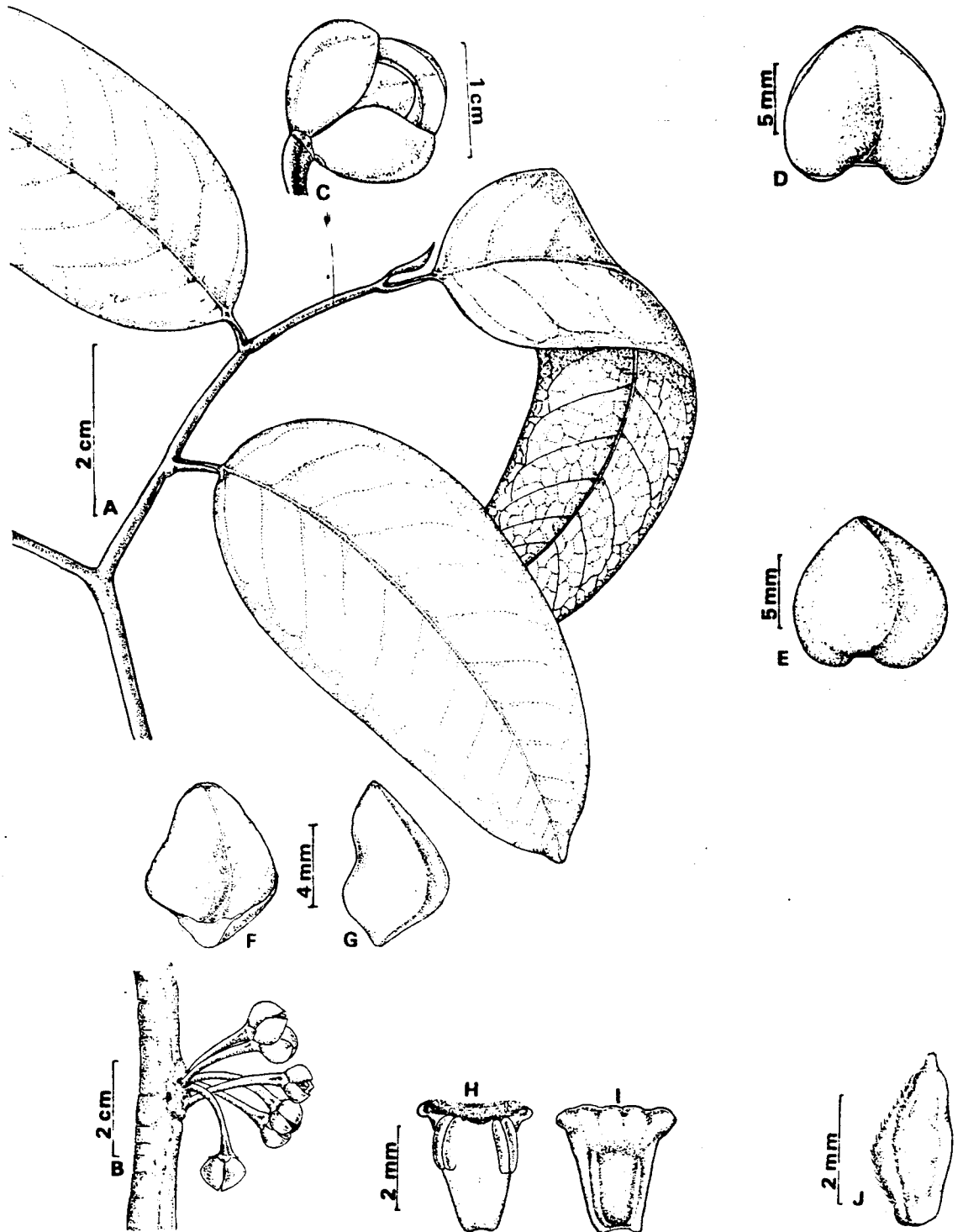


Fig. 4 : *Sageraea grandiflora* Dunn A. leafy twig, B. flowering portion of twig, C. flower, D. & E. inner and outer views of outer petal. F. & G. inner and outer views of inner petal, H. & I. ventral and dorsal views of stamen, J. carpel

calyx tuberculate, ferrugineous-tomentose. Petals dull-purple with yellow at base, elliptic or ovate, connate at base, tomentose on both sides. Fruitlets long-stipitate.

Occasional in semi-evergreen and evergreen forests.

NS 10289 (Choondippara), 10978 (Rosemala)

Fl. & Fr. March-June

D i s t. South India and Sri Lanka

Note : From India this species was earlier recorded only from Andhra Pradesh and Tamil Nadu (Gamble, l.c.).

The present collection extends the range of distribution further to Kerala.

XYLOPIA L.

Xylopia parvifolia (Wt.) Hook. f. & Thoms., Fl. Ind. 125. 1855 & in Fl. Brit. India 1: 84. 1872; For. Trees Travancore 9. 1908; Fl. Madras 20. 1 950. *Patonia parvifolia* Wt., Illus 1: 19. 1838.

Trees, to 25 m tall, young branches brown pubescent. Leaves ovate to oblong-lanceolate, acute at base, acuminate at apex, to 10 x 3 cm, coriaceous, glabrous above, sparsely puberulous beneath. Flowers yellow, in axillary fascicles of 2-5. Sepals 3, connate up to middle, ovate, acute. Petals 2 x 0.5 cm, linear. Stamens numerous. Carpels 5, linear.

Occasional in evergreen forests.

NS 10080 (Kattalappara)

Fl. August-November.

D i s t. South India and Sri Lanka

MENISPERMACEAE

1. Leaves white hoary pubescent on the under surface; stem deep yellow inside : **Coscinium**
1. Leaves surface tomentose or glabrous; stem not deep yellow inside : 2
2. Sepals united to form a calyx : **Cyclea**
2. Sepals free : 3
3. Stamens in male flowers united, anthers around the pettate column : 4
3. Stamens free in male flowers : **Stephania**
4. Flowers in panicles from mature stem; carpels 3 in female flowers; woody climbers : **Anamirta**
4. Flowers from leaf axils; carpel 1 in female flowers; slender climbers : **Cissampelos**

ANAMIRTA Colebr.

Anamirta cocculus (L.) Wt. & Arn., Prodr. 446. 1834; Fl. Brit. India 1: 93. 1872; Fl. Madras 28. 1915; Forman, Kew Bull. 32: 392. 1978. *Menispermum cocculus* L., Sp. Pl. 340. 1753.

Woody climbers, young shoots glabrous. Leaves broadly ovate, acute or acuminate, base truncate or cordate, glabrous, to 20 x 12 cm; 3-5 ribbed; petiole 7-15 cm, long. Flowers creamy yellow in many flowered panicles arising from mature stem. Fruitlets globose, about 1 cm in diameter; seeds smooth, black.

Occasional in moist deciduous forests.

NS 10737 (Rosemala)

Fl. & Fr. December-January

Dist. Indo-Malesia

CISSAMPELOS L.

Cissampelos pareira L. var. *hirsuta* (Ham. ex DC.) Forman, Kew Bull. 22: 356. 1968; Fl. Thenmala 6. 1995. *C. hirsuta* Ham. ex DC., Syst. 1: 535. 1817. *C. convolvulacea* var. *hirsuta* (Ham. ex DC.) Hassk., Pl. Jav. Rar. 171. 1848. *C. pareira* L., Sp.Pl. 1 031. 1753 p.p.; Fl. Brit. India 1: 103. 1872; Fl. Madras 30. 1915.

Slender tomentose climbers. Leaves ovate-orbiculate, apiculate, peltate, base cordate, hairy beneath and glabrous above, 3-6 x 2.5-5 cm, venation obscure; petiole to 2.5 cm long. Flowers greenish-white. Drupes scarlet, hirsute.

Common in moist deciduous forests and forest plantations.

NS 11458 (Rosemala)

Fl. & Fr. September-October

Dist. Throughout the tropics

COSCINIUM Colebr.

Coscinium fenestratum (Gaertn.) Colebr., Trans. Linn. Soc. London 13: 65. 1822; Fl. Brit. India 1: 99. 1872; Fl. Madras 27. 1 915; Forman, Kew Bull. 32: 325. 1 978. *Menispermum fenestratum* Gaertn., Fruct. 1: 219, t. 45, f. 5. 1788.

Climbing shrubs, bark surface greyish; stem deep yellow inside; young shoots hoary. Leaves ovate, acuminate, base truncate, deltoid, glabrous above and hoary below, to 18 x 15 cm; basally 5-7 ribbed; petiole 8-12 cm long.

Occasional in semi-evergreen and evergreen forests.

NS 10053 (Kallar)

Dist. Indo-Malesia

Note: Due to over-exploitation for medicinal use, this species has become extremely rare, no mature plants with flowers could be seen.

CYCLEA Arn. ex Wt.

Cyclea peltata (Poir.) Hook. f. & Thoms., Fl. Ind. 201. 1855 & in Fl. Brit. India 1: 1 04.

1872 p.p.; Fl. Madras 31. 1915; Sant. & Janardh., Bull. Bot. Surv. India 10: 369. 1969. *Menispermum peltatum* Poir. in Lamk., Encyl. 4: 96. 1797. *Cyclea burmanni* Hook. f. & Thoms., Fl. Ind. 201. 1855.

Herbaceous twiners, stem pubescent. Leaves very variable, ovate to linear-oblong, acute, base shortly hastate, thinly coriaceous, hairy on the veins. Staminate panicles longer than the pistillate. Fruits subglobose, white, 3-4 mm across.

Common in all forest types.

NS 10473 (Kallar)

Fl. & Fr. August-March

D i s t. Peninsular India

STEPHANIA Lour.

Stephania wightii (Arn.) Dunn in Gamble, Fl. Madras 30. 1915. *Clypea wightii* Arn. in Wt., Ill. 1: 22. 1840. *Stephania rotunda* sensu Hook. f. & Thoms., Fl. Ind. 197. 1855 & Fl. Brit. India 1: 103. 1872. p.p., non Lour. 1790.

Branchlets glabrous. Leaves broadly ovate or orbicular, acute or acuminate, base truncate or rounded, coarsely dentate or entire, glaucous below, to 8 cm across; petiole to 10 cm long. Male flowers in heads; female in pedunculate cymes. Petals suborbicular, greenish-yellow.

Occasional in semi-evergreen forests, among rock crevices and boulders.

NS 10388 (Kallar)

Fl. April-May

D i s t. Indo-Malesia

CAPPARACEAE

CAPPARIS L.

1. Flowers 6-8 cm across; young leaves covered with reddish-brown

tomentum

: *C. rheedei*

1. Flowers 3-4 cm across; young leaves without reddish-brown

tomentum

: *C. fusifera*

Capparis fusifera Dunn, Kew Bull. 1914: 377. 1914 & Fl. Madras 45. 1915; Jacobs, Blumea 12: 1965; Nayar & Sastry, Red Data Book Indian Pl. 1: 104. 1987. *C. tomentella* Dunn, Fl. Madras 46. 1915. *C. parviflora* sensu Bedd., Ic. t. 276. 1868-1874, non Hook. f. & Thoms. 1872.

Large shrubs to small trees; young shoots and leaves glabrous. Leaves oblong, acuminate, mucronate, base rounded or truncate, to 12 x 5 cm. Flowers solitary or in axillary

fascicles. Petals creamy white, with yellow blotches at the base of upper pair. Berry fusiform, ca. 4 cm long.

Occasional in evergreen forests.

NS 10075 Kallar); 11216 (Rosemala)

Fl. & Fr. March-June

Dist. Throughout W. Ghats : endemic

Capparis rheedei DC., Prodr. 1: 246. 1824 '*rheedii*'; Nicols., Bull. Bot. Surv. India 17: 160. 1978; Nayar & Sastry, Red Data Book Indian Pl. 1: 107. 1987. *C. heyneana* Wall. ex Wt. & Arn., Prodr. 25. 1834; Fl. Brit. India 1: 174. 1872; Fl. Madras 45. 1915.

Large shrubs to small trees; young shoots and leaves reddish brown tomentose, becoming glabrous. Leaves ovate or elliptic, oblong, acuminate or acute, mucronate, base acute or truncate, to 14 x 6 cm. Flowers solitary, axillary. Petals pale blue changing to white, with yellow blotches at the base of upper pair. Stamens 80-100. Berry ovoid, ca. 4 cm long.

Fairly common in semi-evergreen forests.

NS 10178 (Kattalappara); 10905 (Rosemala)

Fl. & Fr. March-June

Dist. Throughout W. Ghats: endemic

Note: This species has been listed in the Red Data Book on Indian Plants as 'rare' (Nayar & Sastry, l.c.)

However, it is fairly common in the Sanctuary.

VIOLACEAE

VIOLA L.

Viola arcuata Bl., Bijdr. 58. 1825. *V. distans* Wall., Trans. Med. Soc. (Calcutta) 7: 227. 1835; Fl. Brit. India 1: 183. 1872; Fl. Madras 48. 1915.

Herbs with trailing stems. Leaves ovate to deltoid, acute, base cordate, crenate-serrate, to 3 cm long; petiole to 8 cm long. Flowers solitary or binate on peduncles, pale blue. Sepals ovate-lanceolate. Petals unequal, the largest spurred at base.

Occasional in grasslands.

NS 11382 (Alvarakurichi)

Fl. & Fr. October-March

Dist. Indo-Malesia

FLACOURTIACEAE

- | | |
|---|----------------------|
| 1. Petals present | : 2 |
| 1. Petals absent | : 3 |
| 2. Fruits hard rinded globose berry, more than 4 cm in diameter | : Hydnocarpus |
| 2. Fruits capsule, less than 2 cm long | : Homalium |

3. Flowers bisexual; fruit dehiscent; trunk unarmed : **Casearia**
 3. Flowers unisexual; fruit indehiscent; trunk armed with thorns : **Flacourtia**

CASEARIA Jacq.

Casearia ovata (Lamk.) Willd., Sp. Pl. 2: 629. 1799; Mukh., Bull. Bot. Surv. India 14: 184. 1972. *Anavinga ovata* Lamk., Encyl. 1: 148. 1789. *C. esculenta* Roxb., Fl. Ind. 2: 422. 1832; Fl. Brit. India 2: 592. 1874; For. Trees Travancore 201. 1908; Fl. Madras 521. 1919.

Small trees, young shoots glabrous. Leaves ovate or elliptic, acuminate, acumens twisted and folded, base acute or rounded, to 13 x 6 cm; lateral veins 6-8 pairs, reticulation faint, glabrous and shining; petiole ca. 0.5 cm long. Tepals glabrous. Capsule orange yellow, 1.2-1.8 cm long.

Fairly common in evergreen forests.

NS 10167, 10329 (Kattalappara); *10210* (Kodimarappacha)

Fl. & Fr. February-October

D i s t. India and Sri Lanka

FLACOURTIA L'Herit.

Flacourtia montana Grah., Cat. Pl. Bombay 10. 1839; Fl. Brit. India 1: 192. 1872; Fl. Madras 54. 1915.

Small to medium sized trees; trunk often thorny; branchlets pubescent or glabrous. Leaves ovate, acuminate or acute, base acute or rounded, crenate, glabrous except the midrib below, to 22 x 8 cm; 3-5 nerved from the base; petiole 0.6-0.8 cm long. Flowers in small branched, pubescent cymes. Berry globose, 1-1.5 cm across, bright red.

Fairly frequent in semi-evergreen forests.

NS 10858 (Umiyar); *10122* (Kattalappara)

Fl. & Fr. November-March

D i s t. India

HOMALIUM Jacq.

Homalium travancoricum Bedd., Fl. Sylv. t. 211. 1872; Fl. Brit. India 2: 598. 1879; For. Trees Travancore 202. 1908; Fl. Madras 522. 1919.

Medium sized trees, bark pale brown, smooth; branchlets often inflated due to inhabitation of ants. Leaves oblong-elliptic, acuminate, base acute or obtuse, crenate, glabrous, to 10 x 6 cm. Racemes axillary, to 8 cm long. Sepals ciliate along the margins, 4 mm long. Petals white, glabrous, 4 mm long. Stamens 4, alternating with staminodes. Ovary pubescent; ovules many, on 4 parietal placenta; styles 4.

Rare, in evergreen forests.

NS 10800 (Kallar)

Fl. March

D i s t. Southern W. Ghats : endemic

HYDNOCARPUS Gaertn.

- | | |
|--|-------------------------|
| 1. Scale of petal lobed; stamens many | : <i>H. macrocarpus</i> |
| 1. Scale of petal not lobed; stamens 5-8 | : 2 |
| 2. Leaf margin entire; scale as long as the petal | : <i>H. alpina</i> |
| 2. Leaf margin serrate; scale half the length of petal | : <i>H. pentandra</i> |

Hydnocarpus alpina Wt., Ic. t. 942. 1845; Bedd., Fl. Sylv. t. 77. 1871; Fl. Brit. India 1: 197. 1872; For. Trees Travancore 19. 1908; Fl. Madras 52. 1915.

Medium sized trees, bark smooth, black, mottled with grey. Leaves oblong or elliptic-oblong, acute or acuminate, base rounded or obtuse, unequal, to 20 x 7 cm. Flowers clustered at the tip of short thick peduncle. Petals glabrous, creamy white. Berry globose, tomentose, 5-7 cm across.

Fairly common in semi-evergreen forests.

NS 10859 (Rosemala)

Fl. & Fr. December-March

D i s t. South India and Sri Lanka

Hydnocarpus macrocarpus (Bedd.) Warb., in Engl. & Prantl, Pflanzenf., 3(6a): 21. 1893 ssp. *macrocarpus*: Mukh., Bull. Bot. Surv. India 14: 183. 1972. *Asteriastigma macrocarpa* Bedd., For. Man. Bot. t. 266. 1873 & in Ic. t. 242. 1874; Fl. Madras 52. 1915. *Taraktogenos macrocarpa* (Bedd.) Balakr., J. Bombay Nat. Hist. Soc. 67: 57. 1970.

Medium sized trees. Leaves oblong, obtusely acuminate, base rounded, unequal sided, margin entire, glabrous on both sides, to 30 x 9 cm. Flowers from the basal leafless parts of branches. Sepals 4. Petals greenish-yellow, scales half the length of petals, 3-lobed. Stigma 6, bilobed. Berry globose, to 15 cm across.

Evergreen forests above 700 m.

NS 10389 (Kallar); 10290 (Choondippara)

Fl. & Fr. March-May

D i s t. Southern W. Ghats (Kerala) : endemic

Hydnocarpus pentandra (Buch.-Ham.) Oken, Allg. Natur. 3(2): 1381. 1841; Mukh., Bull. Bot. Surv. India 14: 183. 1972. *Chilmoria pentandra* Buch.-Ham., Trans. Linn. Soc. London 13.501. 1822. *H. laurifolia* (Dennst.) Sleum., Bot. Jarb. 69: 33. 1938. *H. wightiana* Bl., Rumph. 4: 22. 1848; Fl. Brit. India 1: 196. 1872; For. Trees Travancore 18. 1908; Fl. Madras 52. 1915.

Medium sized trees, bark smooth, grey. Leaves elliptic-lanceolate, acuminate, serrate, glabrous and shining above, dull below, to 20 x 8 cm. Flowers in axillary cymes. Sepals pubescent. Petals greenish-yellow, ciliate along the margin, scales densely hairy. Berry globose, sometimes beaked and vertically 5-grooved, 4-6 cm across.

Common in moist deciduous and semi-evergreen forests, mostly along the banks of streams.

NS 10312 (Kattalappara)

Fl. & Fr. February-May

Dist. Southern W. Ghats: endemic

POLYGALACEAE

POLYGALA L.

Polygala arvensis Willd., Sp. Pl. 3: 876. 1802; Burt, Notes R. Bot. Gard. Edinb. 32: 404. 1973; Fl. Thenmala 18. 1995. *P. chinensis* auct. non L. 1758; Fl. Brit. India 1: 204. 1872. p.p; Fl. Madras 58. 1915.

Erect or procumbent herbs. Leaves very variable. 1-5 x 0.5-1.8 cm, glabrous or densely pubescent. Flowers yellow, solitary or in lateral racemes, to 2 cm long. Keel petal crested with shortly forked or notched appendages. Style curved, hooked at apex. Capsule ciliate along the margins; seeds black, elliptic-obovate, pilose.

Fairly common in moist deciduous forests, mostly in open rocky areas.

NS 11453 (Kattatplappara)

Fl. & Fr. July-December

Dist. Indo-Malesia

XANTHOPHYLLACEAE

XANTHOPHYLLUM Roxb.

Xanthophyllum arnottianum Wt., Ill. 1: 50. t. 23. 1840; Meyden, Leiden Bot. Ser. 7: 79. 1982. *X. flavescens* auct. non Roxb. 1814, sensu Benn. Fl. Brit. India 1: 209. 1874; For. Trees Travancore 21. 1908; Fl. Madras 59. 1915.

Small to medium sized tree, bark smooth, greenish-black, mottled with grey. Leaves ovate-lanceolate or oblong-lanceolate, acuminate, base acute, glabrous and shining, 5-15 x 3-7.5 cm. Flowers yellowish white. Sepals ovate-obtuse. Petals obovate. Stamens 8. Fruit subglobose 1.5-2 cm across, green, rugose.

Common in semi-evergreen and evergreen forests.

NS 10306 (Kattalappara) 10371 (Kallar)

Fl. & Fr. December-June

Dist. Southern W. Ghats: endemic

CARYOPHYLLACEAE

1. Leaves orbicular-ovate, 3-5 nerved : *Drymaria*
1. Leaves linear or linear-spathulate, 1-nerved : *Polycarpon*

DRYMARIA Willd.

Drymaria cordata (L.) Roem. ex Schult., Syst. Veg. 5: 406. 1820; Fl. Brit. India 1: 244. 1874; Fl. Madras 63. 1915; Fl. Thenmala 20. 1995. ssp. *diandra* (Bl.) Duke, Ann. Missouri Bot. Gard. 48: 253. 1961; Majumdar, Bull. Bot. Surv. India 10: 294. 1969. *Holosetum cordatum* L., Sp. Pl. 88. 1753.

Diffuse glabrous herbs. Leaves 1-2 x 1-1.8 cm, 3-5 nerved from base. Sepals oblong, 0.3 cm long. Petals 2-fid, white 0.2 cm long. Stamens 3. Seeds many, reniform.

Common along the sides of water courses and forest clearings above 700 m.

NS 10795 (Kallar)

Fl. & Fr. Throughout the year

D i s t. Paleo-tropics

POLYCARPON L.

Polycarpon prostratum (Forssk.) Aschers & Schwein.f., Osterr. Bot. Zeitschr. 39: 128. 1889; Sant., Fl. Khandala. 12. 1967. *Alsine prostrata* Forssk., Fl. Aeg.-Arb. 207. 1775. *P. loeflingiae* (Wt. & Am.) Benth. & Hook. f. ex Edgw. & Hook. f., Fl. Brit. India 1: 245. 1874; Fl. Madras 64. 1915.

Decumbent pubescent herbs; branches numerous from the base of stem. Leaves linear-oblong or spatulate, 0.6-1.5 cm long. Flowers in dense dichotomous cymes. Sepals ovate-oblong, keeled, margins scarious, 3 mm long. Petals linear, smaller than the sepals.

Occasional along road sides in forest plantations.

NS 10557 (Kattalappara)

Fl. & Fr. March-April

D i s t. Asia

HYPERICACEAE

HYPERICUM L.

Hypericum japonicum Thunb. ex Murr., Syst. Veg. ed. 14. 702. 1784; Fl. Brit. India 1: 256. 1874; Fl. Madras 70. 1915; Robson, Blumea 20: 267. 1972.

Erect or procumbent herbs. Leaves decussate, sessile, oblong, acute, base auricled, 3-nerved from base, to 10 x 4 mm. Flowers 2 cm across, axillary, yellow. Sepals entire. Stamens, monadelphous. Ovary 1-locular.

Occasional in grasslands.

NS 11348 (Alvarakurichi)

Fl. & Fr. January-April

D i s t. Indo-Malaysia

CLUSIACEAE

- | | |
|--|------------------------|
| 1. Flowers solitary, fascicled or in umbels or spikes | : 2 |
| 1. Flowers in racemes or panicles | : 3 |
| 2. Lateral nerves of the leaves indistinct; inner bark reddish; flowers over 5 cm across | : Mesua |
| 2. Lateral nerves of leaves distinct; inner bark yellow; flowers less than 2 cm across | : Garcinia |
| 3. Leaves with many close and parallel lateral nerves; style 1 | : Calophyllum |
| 3. Lateral nerves of leaves indistinct; styles 2 | : Poeciloneuron |

CALOPHYLLUM L.

Calophyllum polyanthum Wall. ex Choisy, Descr. Guttif. Ind. 43.1849; Mahes., Bull. Bot. Surv. India 2: 144. 1960; Stevens, J. Arnold Arbor. 61: 220.1980. *C. elatum* Bedd., Fl. Sylv. t. 2. 1869; Fl. Madras 76. 1915. *C. tomentosum* auct. non Wt. 1839, sensu Anders., Fl. Brit. India 1: 274. 1874; For. Trees Travancore 27. 1908.

Lofty trees, bark deeply spirally fissured, yellowish-brown, pink inside; branchlets minutely brown tomentose. Leaves elliptic-lanceolate, acuminate, base narrowed, very glossy, to 12.5 x 8 cm. Flowers white, ca. 2 cm across, in panicles, terminal and from the axils of upper leaves. Drupe ovoid, ca. 2.5 cm long, apiculate.

Common in evergreen forests, dominant among the top canopy trees.

NS 10198 (Choodal)

Fl. & Fr. April-November

D i s t. Southern W. Ghats : endemic

GARCINIA L.

- | | |
|--|----------------------------|
| 1. Flowers 5-merous; stamens in 5 phalanges | : G. spicata |
| 1. Flowers 4-merous; stamens monadelphous | : 2 |
| 2. Stigma entire | : 3 |
| 2. Stigma rayed or lobed | : 4 |
| 3. Leaves oblanceolate, lateral nerves not close and parallel | : G. imberti |
| 3. Leaves linear oblong, lateral nerves many close and parallel, margin often recurved | : G. travancorica |
| 4. Fruit echinate | : G. rubro-echinata |
| 4. Fruit smooth | : 5 |
| 5. Fruit 6-8 grooved, apiculate at apex | : G. gummi-gutta |
| 5. Fruit entire, subglobose | : G. mangostana |

Garcinia gummi-gutta (L.) Robs., Brittonia 20: 103. 1968; Kosterm., Ceylon J. Sci. Biol. 12: 55. 1976; Fl. Thenmala 24. 1995. *Cambogia gummi-gutta* L., Gen. Pl. (ed.5). 522. 1754. *G. cambogia* (Gaertn.) Desv. in Lamk., Encyl. 3: 701. 1792; Fl. Brit. India 1: 261. 1874; For. Trees Travancore 22. 1908; Fl. Madras 73. 1915.

Medium sized trees, bark brownish black, thinly scaly, yellow inside. Leaves elliptic-oblong or obovate, acute or obtuse, base cuneate, glossy, to 12 x 5 cm. Male flowers fascicled, terminal or axillary to leafscars. Petals yellowish with a median pink streak, fleshy. Female flowers usually solitary. Berry depressed globose, 4-5 cm across.

Fairly common in semi-evergreen and evergreen forests in moist localities.

NS 10170 (Kattalappara); 10415 (Kallar)

Fl. & Fr. March-May

D i s t. Southern W. Ghats : endemic

Note: According to Kostermans (l.c.) *G. gummi-gutta* is endemic to India.

Garcinia imberti Bourd., J. Bombay Nat. Hist. Soc. 12: 349. 1899 & For. Trees Travancore 24. 1908; Fl. Madras 74. 1915.

Small to medium sized trees. Leaves lanceolate, acuminate, base acute, to 7 x 3 cm. Flowers at the end of branchlets solitary or a few together, 5 mm across. Stamens 16-20.

Rare in evergreen forests above 1,200 m.

NS 11435 (Alvarakurichi)

Fl. February-April

D i s t. Southern W. Ghats : endemic

Note: The little known tree is not reported after the type of collection. (Henry *et al.*, 1979)

Garcinia mangostana L., Sp. Pl. 443. 1753; Fl. Brit. India 1: 260. 1874; Fl. Madras 73. 1915; Mahesh., Bull. Bot. Surv. India 6: 120. 1964.

Medium sized trees, bark dark brown, exudation yellow. Leaves oblong or ovate-oblong, acute at apex, truncate or acute at base, thickly coriaceous, glossy; lateral nerves faint; petiole 2-2.5 cm long. Flowers axillary, fascicled, 3 cm across. Berry 5-7 cm across, reddish-brown.

Cultivated earlier, now getting naturalized

NS 10839 (Dharppakulam)

Fl. & Fr. March-April

D i s t. Native of Malaysia, widely cultivated in the tropics.

Garcinia rubro-echinata Kosterm., Ceylon J. Biot. Sci. 12: 128. 1977. *G. echinocarpa* auct non Thw. 1854; Fl. Brit. India 1: 264. 1874; For. Trees Travancore 23. 1908; Fl. Madras 73. 1915.

Medium sized trees, young shoots terete. Leaves ovate, obtuse, coriaceous, to 15 x 6 cm; petiole stout, 1-1.5 cm long. Flowers sessile, mostly at the apex of branchlets. Sepals fleshy, ovate, concave 1.5 cm long, red. Petals similar to sepals, green. Ovary 4 celled. Fruit ovate, tubercled, to 5 x 4 cm.

Occasional in evergreen forests above 1,200 m.

NS 11425 (Alvarakurichi)

Fl. & Fr. December

D i s t. Southern W. Ghats : endemic

Garcinia spicata (Wt. & Arn.) Hook. f., J. Linn. Soc. Bot. 14: 486. 1875; Fl. Madras 74. 1915; Mahes., Bull. Bot. Surv. India 6: 112. 1965. *Xanthochymus spicatus* Wt. & Arn., Prodr. 102. 1834. *G. ovalifolia* Hook. f. var. *spicata* (Wt. & Arn.) Anders. in Hook.f, Fl. Brit. India 1: 269. 1874; For. Trees Travancore 26. 1908.

Medium sized trees, bark smooth, pale brown, blotched with grey, sap yellow, scanty; branchlets 4-angled. Leaves oblong or elliptic-oblong, obtuse, base rounded or truncate, thickly coriaceous, glossy, to 20 x 8 cm. Male flowers in spikes, axillary to leafscars. Female flowers pedicelled. Berry globose, 5 cm across; 2 or 3 seeded.

Common in evergreen and semi-evergreen forests.

NS 10165 (Mamood); 10678, 10846 (Rosemala)

Fl. & Fr. February-March

D i s t. South India and Sri Lanka

Garcinia travancorica Bedd., Fl. Sylv. t. 173. 1869; Fl. Brit. India 1: 265. 1874; For. Trees Travancore 25. 1908; Fl. Madras 74. 1915; Mahes., Bull. Bot. Surv. India 6: 120. 1964.

Small to medium sized trees, bark brownish-black, branchlets terete. Leaves linear-oblong or linear-lanceolate, obtuse, to 12 x 2 cm; lateral nerves numerous, close and parallel. Flowers sessile, axillary and terminal. Berry subglobose or oblong, crowned by the thick style and stigma.

Occasional in evergreen forests.

NS 11370 (Alvarakurichi)

Fr. December-March

D i s t. Southern W. Ghats : endemic

MESUA L.

Mesua ferrea L., Sp. Pl. 515. 1753; Wt., Ic. t. 118. 1839; Fl. Brit. India 1: 277. 1874; For. Trees Travancore 29. 1908; Fl. Madras 77. 1915; Mahes., Bull. Bot. Surv. India 5: 336. 1964; Stevens, Taxon 35: 353. 1986; Fl. Thenmala 22. 1995. *M. speciosa* Choisy in DC., Prodr. 1: 562. 1824; Wt., Ic. t. 961. 1845. *M. pedunculata* Wt., Ic. t. 119. 1839. *M. coromandelica* Wt., Ic. t. 117. 1839; Bedd., Fl. Sylv. t. 64. 1870. *M. nagassarium* sensu Kosterm., Ceylon J. Biol. Sci. 12: 71. 1976.

Very large trees, bark reddish grey, flaking off as thin scales, pale-pink inside. Leaves elliptic-oblong, acute or caudate-acuminate, base acute, glaucous below, to 10 x 3 cm; petiole 1 cm long. Flowers solitary, axillary, 5 cm across. Capsule ovoid, 4 cm long.

Common in evergreen forest.

NS 10025 (Kattalappara)

Fl. & Fr. April-July

D i s t. South India and Sri Lanka

Note: The nomenclature, circumscription and classification of this species has been quite confusing. Kostermans (Ceylon J. Biol. Sci. 12: 55-71. 1976) has restricted *M. ferrea* to Sri Lanka and attributed the name *M. nagassarium* to Indian material. Stevens (Taxon 35: 352-354. 1986) after careful studies of the types reverted it to *M. ferrea* L.

POECILONEURON Bedd.

Poeciloneuron indicum Bedd., J. Linn. Soc. Bot. 8: 267, t. 17.1865 & in Fl. Sylv. t. 3. 1869; Fl. Brit. India 1: 278. 1874; For. Trees Travancore 31. 1908; Fl. Madras 77. 1915.

Large evergreen trees, bark greyish-brown, reddish inside. Leaves oblong-lanceolate, caudate-acuminate, base acute, glossy, to 18 x 7.5 cm; petiole 1-2 cm long. Flowers white, ca. 2 cm across in axillary and terminal panicles. Sepals and petals 5. Stamens ca. 20, anthers lobed. Capsule globose, beaked, ca. 2.5 cm across.

Occasional in evergreen forests.

NS 10048 (Kallar); 10244(Pandimotta); 11393 (Alvarakurichi)

Fl. & Fr. November-March.

D i s t. Throughout W. Ghats : endemic

THEACEAE

GORDONIA Ellis.

Gordonia obtusa Wall. ex Wt. & Arn., Prodr. 87. 1834; Wt., Ill. 1, t. 39. 1840; Fl. Brit. India 1: 291. 1874; For. Trees Travancore 33. 1908; Fl. Madras 79. 1915.

Small to medium sized trees. Leaves oblong-lanceolate, base cuneate, crenate, coriaceous; lateral nerves 10-12 pairs, intercostae reticulate; petiole ca. 0.5 cm long. Flowers ca. 4 cm across. Sepals rounded, inner ones larger. Petals white, obovate, notched at the tip.

Occasional in evergreen forests above 1000 m.

NS 11001 (Kallar)

Fl. April-December

D i s t. Southern W. Ghats : endemic

Note: *Camellia sinensis* (L.) O. Ktze., the tea plant, has been raised at Dharpakulam area (Rosemala) in the past. It has become almost naturalized here.

DIPTEROCARPACEAE

- | | |
|--|-----------------|
| 1. Stamens 15 or less | : Hopea |
| 1. Stamens about 50 | : 2 |
| 2. Sepals unequal, the outer 2 enlarged into wings in fruits | : Dipterocarpus |
| 2. Sepals equal, not enlarged into wings in fruits | : Vateria |

DIPTEROCARPUS Gaertn.

Dipterocarpus indicus Bedd., Fl. Sylv. t. 94.1871; For. Trees Travancore 32. 1908; Fl. Madras 81. 1915; Fl. Thenmala 24. 1995. *D. turbinatus* sensu Dyer, Fl. Brit. India 1: 295. 1874 p.p.

Very large evergreen trees with a straight unbranched bole up to the crown, bark greyish-brown, fairly smooth. Leaves ovate, acute, base truncate or acute, to 12 x 7.5 cm. Flowers white with pink tinge, 5 cm across, in axillary racemes. Fruit wings oblong, reddish-brown, to 10 x 2 cm.

An emergent upper canopy tree in evergreen and semi-evergreen forests.

Fl. & Fr. April-July

D i s t. Throughout W. Ghats : endemic

HOPEA Roxb. *nom. cons.*

- | | |
|---|------------------------|
| 1. Sepals subequal | : <i>H. erosa</i> |
| 1. Two outer sepals larger | : 2 |
| 2. Leaves obtusely caudate acuminate, lateral nerves 4 or 5 pairs | : <i>H. racophloea</i> |
| 2. Leaves acute, lateral nerves 7 or more pairs | : 3 |
| 3. Panicle tomentose; petals glabrous | : <i>H. parviflora</i> |
| 3. Panicle glabrous; petals tomentose | : <i>H. ponga</i> |

Hopea erosa (Bedd.) van Sloot., *Reinwardtia* 3: 318. 1956. *Balanocarpus erosa* Bedd., *For. Man. Bot.* 237. 1873 & in *Fl. Sylv. t.* 329. 1874; *For. Trees Travancore* 40. 1908; *Fl. Madras* 84. 1915.

Large trees, bark pale-brown, smooth, yellow with pink tinge inside. Leave oblong, acute, base unequally cordate, to 20 x 5 cm. Flowers 1 cm across, subsessile, in unilateral racemed axillary panicles. Sepals sub-orbicular, ciliate along the margins. Petals pilose outside, white with pink shades. Ovary glabrous.

Rare in evergreen forests.

NS 10303 (Choondippara)

Fl. April

D i s t. Southern W. Ghats : endemic

Note: This species is listed among the rare and threatened species (Ahmedullah & Nayar, 1987).

Hopea parviflora Bedd., *Fl. Sylv. t.* 7. 1869; *Fl. Brit. India* 1: 308. 1874; *For. Trees Travancore* 36. 1908; *Fl. Madras* 82. 1915; *Fl. Thenmala* 25. 1995.

Large to very large trees, often buttressed. Leaves ovate or oblong, acute or bluntly acuminate, base subcordate, truncate or acute, 8-10 x 3-5 cm, domatia present in the axils of nerves. Flowers in axillary and terminal panicles. Sepals pubescent. Petals creamy yellow, crisped at apex. Ovary glabrous; style subulate. The larger fruit sepals 4.5-6 cm long, the smaller ones as long as the fruit belly.

Very common in semi-evergreen and evergreen forests.

NS 10994 (Kattalappara)

Fl. & Fr. March-May

D i s t. W. Ghats from Konkan southwards : endemic

Hopea ponga (Dennst.) Mabb., *Taxon* 28: 587. 1979; *Fl. Thenmala* 26. 1995. *Artocarpus ponga* Dennst., *Schluss. Hort. Ind. Malab.* 15, 18, 30. 1818. *H. wightiana* Wall. *ex Wt. & Arn., Prodr.* 85. 1834; Bedd. *Fl. Sylv. t.* 96. 1871; *For. Trees Travancore* 38. 1908; *Fl. Brit. India* 1: 309. 1874; *Fl. Madras* 82. 1915.

Medium sized to large trees, branchlets pubescent. Leaves ovate or ovate-oblong, obtuse or subacute, base rounded or subcordate, to 14 x 7 cm. Flowers arranged in one-sided racemes along the branches of the axillary panicles. Petals yellowish with red tinge, falcate-oblong, glabrous. Stamens 10. Fruit belly ovoid *ca.* 1 cm long; the longer wings 5.5-10 x 1-1.5 cm, reddish when ripe.

Occasional in evergreen forests along banks of streams.

NS 11224 (Rosemala)

Fl. & Fr. March-June

D i s t. Throughout W. Ghats : endemic

Hopea racophloea Dyer in Hook. f., *Fl. Brit. India* 1: 310. 1874; *For. Trees Travancore* 39. 1908; *Fl. Madras* 82. 1915. *H. malabarica* Bedd., *Ic. t.* 185. 1868-1874.

Medium sized to large trees, bark dark brown, peels off in strips with the lower end detached from the stem and curved upwards. Leaves ovate or oblong lanceolate, obtusely caudate-acuminate, rounded at base, to 7 x 4 cm; lateral nerves 4 or 5 pairs, domatia prominent, glabrous; petiole 0.7 cm long, tender leaves white. Echinate galls common, about 1 cm across. Flowers not seen.

Occasional in evergreen forests.

NS 10821 (Rosemala)

D i s t. Southern W. Ghats (Kerala) : endemic

Note: This species is listed among the rare and endangered plants of W. Ghats.

VATERIA L.

Vateria indica L., *Sp. Pl.* 513. 1753; *Fl. Brit. India* 1: 313. 1874; *For. Trees Travancore* 41. 1908; *Fl. Madras* 85. 1915; *Fl. Thenmala* 26. 1995. *V. malabarica* Bl., *Mus. Bot.* 2: 29. 1852; Bedd., *Fl. Sylv. t.* 84. 1871.

Bark smooth, grey, exudes gummy resinous sap when cut. Leaves elliptic-oblong, obtuse or shortly acuminate, base rounded, subcordate or truncate, 12-20 x 6-9 cm. Flowers white, 2 cm across, slightly fragrant, in terminal panicles. Ovary ovate-oblong, pubescent. Capsule oblong, obtuse, 4.5-5.5 x 3-3.5 cm.

Common in evergreen forests.

NS 11444 (Rosemala)

Fl. & Fr. March-June

D i s t. W. Ghats, North Kanara southwards : endemic

ANCISTROCLADACEAE

ANCISTROCLADUS Wall.

Ancistrocladus heyneanus Wall. ex Grah., *Cat. Pl. Bombay* 28. 1839; *Wt., Ic. tt.* 1987, 1988. 1853; *Fl. Brit. India* 1: 299. 1874; *Fl. Madras* 86. 1915; *Fl. Thenmala* 27. 1995.

Scandent shrubs with hooked branches. Leaves sessile, crowded towards the apex of

branchlets, oblanceolate, acute or obtuse, base attenuate, to 20 x 7 cm. Flowers yellow, terminal or from the axils of upper leaves, in racemose panicles. Fruiting sepals unequal, 3 larger ones to 7 x 3 cm and 2 smaller ones to 5 x 1.5 cm.

Common in semi-evergreen and evergreen forests.

NS 10292 (Choondippara)

Fl. & Fr. March-May

D i s t. W. Ghats : endemic

MALVACEAE

- | | |
|---|---------------|
| 1. Cells of ovary 1-ovuled | : 2 |
| 1. Cells of ovary 2-or more ovuled | : 3 |
| 2. Fruits covered with glochidiate spines; epicalyx present | : Urena |
| 2. Fruits without glochidiate spines; epicalyx absent | : Sida |
| 3. Style 1, unbranched | : Thespesia |
| 3. Styles 5 or more branched | : 4 |
| 4. Flowers without epicalyx | : Abutilon |
| 4. Flowers with epicalyx | : 5 |
| 5. Calyx spatheous | : Abelmoschus |
| 5. Calyx tubular, 5-toothed | : Hibiscus |

ABELMOSCHUS Medic.

Abelmoschus angulosus Wall. ex Wt. & Arn., Prodr. 53. 1834; Wt., Ic. T. 951. 1845; Paul & Nayar, Fasc. Fl. India 19: 68. 1988. *Hibiscus angulosus* (Wall. ex Wt. & Arn.) Steud. Nomencl. 1: 758. 1840; Fl. Brit. India 1: 341. 1874; Fl. Madras 97. 1957.

Prickly annual shrubs. Leaves orbicular, 3-5 lobed, hastate or cordate at base, sparsely tomentose on both sides, to 12 x 10 cm; basally 9-ribbed. Flowers in terminal racemes. Epicalyx segment ovate-acute, densely hairy along margins. Petals obovate, yellow with purple base, 8-10 cm long. Capsule densely hairy, subtended by the enlarged epicalyx.

Occasional in disturbed areas above 1000 m.

NS 10149 (Kallar)

Fl. & Fr. October-March

D i s t. Indo-Malesia to Australia

ABUTILON Mill.

Abutilon persicum (Burm. f.) Merr., Philipp. J. Sci. 19: 364. 1921; Paul & Nayar, Fl. India Fasc. 18: 91. 1988; Fl. Thenmala 34. 1995. *Sida persica* Burm. f., Fl. Ind. 148. 1768. *Abutilon polyandrum* (Roxb.) Wt. & Arn. ex Wt., Cat. 12. 1833, non G. Don 1831; Fl. Brit. India 1: 325. 1874; Fl. Madras 91. 1915.

Pubescent herbs or subshrubs. Lower leaves ovate-cordate, to 15 cm long; upper ovate to lanceolate, crenate-dentate, velutinous below and glabrescent above, basally 5-9 nerved. Flowers 3.5-4.5 cm across, petals yellow, obovate. Mericarps 5, puberulous.

Common in moist deciduous and semi-evergreen forests.

Fl. & Fr. November-January

D i s t. Indo-Malesia

HIBISCUS L.

- | | |
|---|---------------------------|
| 1. Plants prickly; climbing or scandent shrubs | : <i>H. surattensis</i> |
| 1. Plants not prickly; erect herbs or shrubs | : 2 |
| 2. Epicalyx more than 1 cm long; flowers yellow | : <i>H. lunariifolius</i> |
| 2. Epicalyx minute or absent; flowers white | : <i>H. lobatus</i> |

Hibiscus lobatus (J.A. Murr.) O. Ktze., Rev. Gen. Pl. 3, 2: 19. 1898; Paul & Nayar, Fl. India Fasc. 19: 133. 1988; Fl. Thenmala 35. 1995. *Solandra lobata* J.A. Murr., Comm. Soc. Reg. Sc. Goetting. 6: 20, t. 1. 1785. *Hibiscus solandra* L'Herit, Strip. Nov. 1: 103, t. 49. 1788, *nom. illeg.* Fl. Brit. India 1: 336. 1874; Fl. Madras 98. 1915.

Annual erect herbs, stem minutely pubescent. Leaves entire to 3-lobed, cordate at base, to 7 x 5 cm; basally 5-7 ribbed. Flowers 1.5-1.8 cm across, axillary, solitary, becoming racemose due to reduction of upper leaves. Petals white, obovate. Capsule 1-1.5 cm long; seeds minutely tubercled, black.

Occasional in moist deciduous forests.

NS 10648 (Kattalappara)

Fl. & Fr. October-November

D i s t. Indo-Malesia, Tropical Africa and Central Asia

Hibiscus lunariifolius Willd., Sp. Pl. 3: 811. 1800; Fl. Brit. India 1: 338. 1874; Fl. Madras 98. 1915; Paul & Nayar, Fl. India Fasc. 19: 135. 1988; Fl. Thenmala 36. 1995.

Subshrubs, stem stellately hairy. Leaves orbicular to ovate, lower leaves 3-5 lobed, lobes acuminate, base broadly cordate or rounded, margin serrate to dentate, basally 5-7 nerved, stellately hairy. Flowers 7-10 cm across, solitary, axillary, becoming racemose due to reduction of upper leaves. Epicalyx segments, linear to lanceolate, persistent. Capsule obovoid, 2 cm long, tomentose; seeds numerous.

Occasional in moist deciduous forests.

NS 10156 (Kattalappara)

Fl. & Fr. October-November

D i s t. South and South East Asia and Tropical Africa

Hibiscus surattensis L., Sp. Pl. 696. 1753; Fl. Brit. India 1: 334. 1874; Fl. Madras 97. 1915; Paul & Nayar, Fl. India Fasc. 19: 153. 1988; Fl. Thenmala 35. 1995.

Stem, petioles and nerves of leaves with recurved prickles. Leaves ovate to suborbicular, lower one 5-parted, base truncate, margins crenate-serrate, sparsely hairy or glabrescent; basally 5-7 nerved. Epicalyx segments 10, divided into a leafy portion and a linear subulate segment. Petals obovate, 3 cm long. Capsule ovoid, 1.5 cm long.

Mostly in disturbed moist deciduous forests.

Fl. & Fr. October-February

D i s t. Paleo-tropics

SIDA L.

- | | |
|---|-------------------------|
| 1. Mericarps 5; trailing herbs | : 2 |
| 1. Mericarps 6-10; erect herbs or shrubs | : 3 |
| 2. Calyx lobes longer than the tube; stem rooting at nodes | : <i>S. beddomei</i> |
| 2. Calyx lobes equal to the tube; stem not rooting at nodes | : <i>S. cordata</i> |
| 3. Stipules dissimilar, one linear-lanceolate, the other subulate | : <i>S. acuta</i> |
| 3. Stipules similar, filiform | : <i>S. rhombifolia</i> |

Sida acuta Burm. f., Fl. Ind. 147.1768; Fl. Madras 90. 1915; Paul & Nayar, Fl. India Fasc. 19:201. 1988; Fl. Thenmala 33. 1995. *S. carpinifolia* Mast. in Fl. Brit. India 1: 323. 1874, non L. f. 1781.

Annual herbs or subshrubs. Leaves linear or elliptic-lanceolate or ovate-oblong, acute, base acute or obtuse, margin coarsely serrate, 3-nerved at base. Flowers mostly solitary. Petals obliquely obovate, 7 mm long. Mericarps 6-10, 3-4 mm long, awns 1.5 mm long.

Common in forest plantations and along roadside in moist deciduous forests.

NS 10590 (Kattalappara)

Fl. & Fr. August-February

D i s t. Throughout tropics

Sida beddomei Jacob, J. Bombay Nat. Hist. Soc. 47: 50. 1950. *S. cordata* sensu Paul & Nayar, Fl. India Fasc. 19: 206. 1988, non (Burm. f.) Borss., 1966.

Slender prostrate herbs. Leaves ovate, acute or acuminate, base cordate, crenate-serrate, sparsely tomentose, to 5 x 4 cm, basally 5-7 nerved. Flowers axillary, 1.5 cm across, yellow. Calyx lobes longer than the tube. Mericarps awnless.

Fairly common in semi-evergreen and moist deciduous forests.

NS 11093 (Kattalappara)

Fl. & Fr. July-December

D i s t. Southern W. Ghats (Kerala) : endemic

Sida cordata (Burm. f.) Borss., Blumea 14: 182. 1966; Fl. Thenmala 32. 1995; Paul & Nayar, Fl. India Fasc. 19: 206. 1988, in part. *Melochia cordata* Burm. f., Fl. Ind. 143. 1768. *Sida veronicaefolia* Lamk., Encyl. 1: 5. 1783; Fl. Madras 89. 1915. *S. humilis* Cav., Diss. 5. t. 134, f. 2. 1788; Fl. Brit. India 1: 322. 1874.

Prostrate herbs, branches very long, pilose. Leaves ovate to orbicular, acute to acuminate, base cordate, crenate, 5-8 x 3-5 cm; 5-7 nerved at base. Flowers mostly solitary, pedicels to 2.5 cm long, slender. Petals obovate-obtuse, 6 mm long. Mericarps slightly keeled at the back.

Common in moist deciduous forests and forest plantations.

NS 11136 (Kattalappara)

Fl. & Fr. August-January

Dist. Pantropical

Sida rhombifolia L., Sp. Pl. 684. 1753; Fl. Brit. India 1: 323. 1874; Borss., Blumea 14: 193. 1966; Fl. Madras 90. 1915; Fl. Thenmala 33. 1995.

1. Leaves ovate-oblong, rhomboid or lanceolate; pedicels longer than the petioles

: *ssp. rhombifolia*

1. Leaves obovate to orbicular; pedicels as long as the petioles

: *ssp. retusa*

ssp. rhombifolia Fl. Madras 90. 1915; Paul & Nayar, Fl. India Fasc. 19: 214. 1988; Fl. Thenmala 33. 1995. *S. rhombifolia* *ssp. rhombifolia* var. *rhombidea* Mast. in Hook. f., fl. Brit. India 1: 324. 1874.

Subshrubs or herbs, erect. Leaves 2-8 x 1.5 cm minutely stellately hairy; petioles to 1.5 cm long. Flowers 1-1.5 cm across. Mericarps usually muticous or with 2 awns

In semi-evergreen and evergreen forests.

NS 11194 (Kattalappara)

Fl. & Fr. August-March

Dist. Indo-Malesia

ssp. retusa (L.) Borss., Blumea 14: 198. 1966; Paul & Nayar, Fl. India Fasc. 19: 126. 1988. *S. retusa* L., Sp. Pl. (ed 2). 961. 1763. *S. rhombifolia* var. *retusa* (L.) Maqst., Fl. Brit. India 1: 327. 1874.

Herbs or subshrubs, erect or ascending. Leaf apex mostly retuse, 1-5 x 1-4 cm. Flowers 1 cm across. Mericarps with 2 short awns.

Common in moist deciduous forests and plantations.

NS 11039 (Kattalappara)

Fl. & Fr. September-March

Dist. Indo-Malesia

THESPESIA Soland. ex Corr. *nom. cons.*

Thespesia lampas (Cav.) Dalz. & Gibs., Bombay Fl. 19. 1861; Fl. Brit. India 1: 345. 1874; Paul & Nayar, Fl. India Fasc. 19: 222. 1988; Fl. Thenmala 34. 1995. *Hibiscus lampas* Cav., Diss. 3: 154. 1787; Wt., Ic. t. 5. 1838; Fl. Madras 98. 1915.

Shrubs, young shoots stellately hairy. Leaves 3-5 lobed, base truncate or cordate, lobes acute or acuminate, 5-7 nerved at base. Flowers solitary, axillary, ca. 6 cm across. Capsule ovoid, 3 x 1.8 cm; seeds minutely adpressed hairy.

Common in moist deciduous forests.

NS 10566 (Kattalappara)

Fl. & Fr. November-February

Dist. Indo-Malesia and East Africa

URENA L.

Urena lobata L., Sp. Pl. 692. 1753; Fl. Brit. India 1: 329. 1874; Fl. Madras 92. 1915; Paul & Nayar, Fl. India Fasc. 19: 228. 1988; Fl. Thenmala 30. 1995.

Erect annual herbs. Leaves ovate-orbicular, unlobed or angular, base truncate, velvety tomentose on both sides, to 6 x 7 cm, 7-ribbed at base. Flowers pink, 3 cm across.

Common in disturbed forests.

NS 10596 (Kattalappara)

Fl. July-February

D i s t. Pantropical

Thespesia populnea (L.) Soland. ex Corr. is grown as peper stands and fence posts in settlements.

BOMBACACEAE

1. Leaves digitate; fruits smooth

: **Bombax**

1. Leaves simple; fruits spiny

: **Cullenia**

BOMBAX L.

1. Stamens about 80, in five phalanges

: **B. ceiba**

1. Stamens about 500, in several phalanges

: **B. insigne**

Bombax ceiba L., Sp. Pl. 511. 1753; Nicols., Taxon 28: 370. 1979; Fl. Thenmala 37. 1995. *B. malabaricum* DC., Prodr. 1: 479. 1824; Wt., Ill. t. 29. 1840; Fl. Brit. India 1: 349. 1874; For. Trees Travancore 44. 1908; Fl. Madras 99. 1915. *Salmalia malabarica* (DC.) Schott & Endl., Melet. Bot. 35. 1832.

Very large deciduous, buttressed trees, bark greyish-brown, to 2.5 cm thick, reddish inside. Leaflets oblong-lanceolate, caudate, petiolule ca. 2.5 cm long; petioles to 20 cm long. Flowers bright red. Petals elliptic-oblong, tomentose outside. Capsule subcylindric, downy, to 12 x 3 cm.

Common in moist deciduous and semi-evergreen forests.

NS 11446 (Rosemala)

Fl. & Fr. February-May

D i s t. Tropical Asia

Bombax insigne Wall., Pl. Asiat. Rar. 1: 71. 1830; Fl. Brit. India 1: 349. 1784; For. Trees Travancore 45. 1908; Fl. Madras 100. 1915; Fl. Thenmala 38. 1995. *Salmalia insignis* (Wall.) Schott & Endl., Melet. Bot. 35. 1832.

Medium sized to large deciduous trees, trunk and branches densely prickly, bark greyish-brown, reddish inside. Leaflets oblong or obovate, caudate-acuminate; leaflets subsessile; petioles to 25 cm long. Petals oblong, acute, tomentose, creamy yellow to pale red, to 15 x 2.5 cm. Capsule 5-angled, tomentose, to 18 x 4.5 cm.

Occasional in moist deciduous forests.

Fl. & Fr. November-March

D i s t. South Asia

CULLENIA Wt.

Cullenia exarillata Robyns, Bull. Jard. Bot. Nat. Belg. 40: 249. 1970. *C. excelsa* auct., mult., non Wt., Ic. tt. 1761, 1762. 1851; Fl. Brit. India 1: 350. 1874; For. Trees Travancore 46. 1908; Fl. Madras 101. 1915.

Very large buttressed evergreen trees, branches with knotty tubercles. Leaves oblong, acuminate, base rounded or truncate, shining below and dark green above; lateral nerves inconspicuous. Flowers brownish-yellow, 3.5 cm long. Capsule to 12 cm across.

Common in evergreen forests.

NS 10757 (Kallar)

Fl. & Fr. November-December

D i s t. Southern W. Ghats : endemic

Ceiba pentandra (L.) Gaertn. native of Tropical America is found grown in settlements.

STERCULIACEAE

- | | |
|--|-----------------------|
| 1. Flowers bisexual; petals present | : 2 |
| 1. Flowers unisexual; petals absent | : 4 |
| 2. Staminal tube distinct from the carpels and enclosing them | : Leptonychia |
| 2. Staminal tube adnate to the gynophore | : 3 |
| 3. Fruits 5-valved woody capsule; seeds winged | : Pterospermum |
| 3. Fruits of 5 spirally twisted follicles; seeds without wings | : Helicteres |
| 4. Leaves below covered with peltate scales and shining | : Heritiera |
| 4. Leaves below without peltate scales | : 5 |
| 5. Follicles membranous; peduncle covered with orange-red tomentum | : Firmiana |
| 5. Follicles woody; peduncle without orange-red tomentum | : 6 |
| 6. Seeds winged | : Pterygota |
| 6. Seeds not winged | : Sterculia |

FIRMIANA Dryand. ex Ait.

Firmiana colorata (Roxb.) R. Br. in Bennet & Brown, Pl. Jav. Rar. 235. 1844; Fl. Madras 107. 1915. *Sterculia colorata* Roxb., Pl. Corom. t. 25. 1975; Fl. Brit. India 1: 359. 1874; For. Trees Travancore 50. 1908.

Medium sized deciduous trees, bark greyish-brown, 2 cm thick. Leaves palmately 3-lobed, lobes caudate-acuminate, basally 7-9 nerved, to 18 cm long; petioles to 20 cm long. Panicles clothed with orange-red tomentum. Calyx to 2 cm long. Staminal column exerted, anthers crowded at the apex.

Occasional in moist deciduous forests.

NS 11447 (Choodal)

Fl. February-March

D i s t. Indo-Malesia

HELICTERES L.

Helicteres isora L., Sp. Pl. 963. 1753; Wt., Ic. t. 180. 1839; Fl. Brit. India 1: 365. 1874; Fl. Madras 107. 1915; Fl. Thenmala 41. 1995.

Large shrubs, young shoots stellately tomentose. Leaves oblong-obovate, acute or acuminate, base unequally cordate, crenate-serrate, scabrous above and tomentose below, to 10 x 8 cm, basally 3-5 ribbed. Flowers in axillary fascicles, 3-3.5 cm long, red, fading to pale blue. Follicles *ca.* 6 cm long; seeds tubercled.

Common in moist deciduous forests.

NS 10584 (Kattalappara)

Fl. & Fr. August-March

D i s t. Indo-Malesia

HERITIERA Dryand. ex Ait.

Heritiera papilio Bedd., Fl. Sylv. t. 218. 1872; Fl. Brit. India 1: 363. 1874; For. Trees Travancore 52. 1908; Fl. Madras 104. 1915; Kosterm., Reinwardtia 4: 511. 1959 & 5: 382. 1961.

Large evergreen trees, bark brownish, shallowly longitudinally fissured. Leaves oblong or lanceolate, acute, to 18 x 8 cm. Panicles to 4 cm long, lepidote-scaly. Flowers yellow, 5 mm long. Seed towards the base of samaras.

Fairly common in evergreen forests above 1,000 m.

NS 11252 (Rosemala)

Fl. & Fr. August-December

D i s t. W. Ghats : endemic

LEPTONYCHIA Turcz.

Leptonychia caudata (Wall. ex G. Don) Burret, Notizbl. Bot. Gart. Berlin. 9: 727. 1926; Veldk. & Flippi, Blumea 32: 451. 1987. *Grewia caudata* Wall. ex G. Don, Gen. Syst. 1: 547. 1831. *Leptonychia moacurroides* Bedd., Fl. Sylv. t. 114. 1871; Fl. Brit. India 1: 379. 1874; For. Trees Travancore 55. 1908; Fl. Madras 112. 1915.

Small slender trees. Leaves oblong or elliptic-oblong, caudate-acuminate, base rounded, subcoriaceous, 7-12 x 3-5 cm. Flowers greenish-yellow, 8 mm long, in short axillary cymes. Capsule depressed globose, 3-lobed, tomentose, 2.5 x 2 cm; seeds arillate.

Fairly common in evergreen forest

NS 11264 (Rosemala); *10014, 10392* (Kallar)

Fl. & Fr. October-April

D i s t. Indo-Malesia

PTEROSPERMUM Scherb. *nom. cons.*

1. Calyx to 10 cm long

: *P. diversifolium*

1. Calyx less than 5 cm long

: *P. rubiginosum*

Pterospermum diversifolium Bl., Bijdr. 88. 1825; Fl. Brit. India 1: 367. 1874; Fl. Madras 108. 1915; *P. glabrescens* Wt. & Arn., Prodr. 69. 1834; For. Trees Travancore 54. 1908.

Medium sized trees, bark greyish brown, smooth. Leaves obovate-oblong, acuminate, base cordate or truncate, very variable in young plants, deeply lobed, glabrous above, yellowish-white below, 10-25 x 7-15 cm. Flowers solitary or in pairs, axillary; bracteoles entire. Petals slightly shorter than the sepals. Capsule woody, to 15 cm long.

Fairly common in semi-evergreen and evergreen forests.

NS 10747 (Kattalappara)

Fl. & Fr. March-May

D i s t. South West India

Pterospermum rubiginosum Heyne ex Wt. & Arn., Prodr. 68. 1834; Bedd., Fl. Sylv. t. 106. 1871; Fl. Brit. India 1: 368. 1874; For. Trees Travancore 53. 1908; Fl. Madras 109. 1915.

Medium sized trees, bark greyish-brown, peels off in thin rectangular strips; branchlets slender, branches drooping. Leaves oblong-acuminate, base unequal, glabrous above and white tomentose below. Flowers solitary, axillary; bracteoles lacinate. Petals greenish-white, linear, 4 cm long. Capsule narrowly oblong, acuminate, 5 x 1.5 cm.

Fairly common in semi-evergreen and evergreen forests.

NS 10091 (Kallar)

Fl. & Fr. November-April

D i s t. W. Ghats from Kanara Southwards : endemic

PTERYGOTA Schott & Endl.

Pterygota alata (Roxb.) R. Br. in Benn. & Br., Pl. Jav. Rar. 234. 1844 p.p.; Fl. Madras 104. 1915. *Sterculia alata* Roxb., Pl. Corom. t. 287. 1820; Fl. Brit. India 1: 360. 1874; For. Trees Travancore 50. 1908.

Very large trees, bark greyish-white, smooth. Leaves ovate-cordate, acute, 5-7 ribbed from base, intercostae reticulate, 12-30 x 7-15 cm. Panicles mostly from the axils of leafscars. Flowers brownish, ca. 2.5 cm long.

Occasional in evergreen forests.

NS 10803 (Kattalappara)

Fl. April-May

D i s t. India and Burma

STERCULIA L.

Sterculia guttata Roxb. ex DC., Prodr. 1: 482. 1824; Wt., Ic. t. 487. 1841; Bedd., Fl. Sylv. t. 105. 1871; Fl. Brit. India 1: 355. 1874; For. Trees Travancore 49. 1908; Fl. Madras 106. 1915; Fl. Thenmala 41. 1995.

Medium sized to large deciduous trees, bark brownish, thinly scaly, yellow inside. Leaves oblong or elliptic-oblong, acute to caudate-acuminate, base truncate or rounded,

glabrous above and stellately tomentose below, to 30 x 14 cm; 3-ribbed at base. Panicles in terminal clusters. Flowers *ca.* 2 cm across, with fetid smell. Follicles bright red, *ca.* 7 cm long; seeds black, smooth.

Common in moist deciduous forests.

NS 10628 (Kattalappara)

Fl. September-November

D i s t. South West India and Sri Lanka

TILIACEAE

- | | |
|--|---------------------|
| 1. Fruits bristly or echinate | : <i>Triumfetta</i> |
| 1. Fruits without bristles or prickles | : <i>Grewia</i> |

GREWIA L.

- | | |
|--------------------------------------|-------------------------|
| 1. Flowers in terminal panicles | : <i>G. nervosa</i> |
| 1. Flowers in cymes or umbels | : 2 |
| 2. Stipules leafy, auricled | : <i>G. tiliifolia</i> |
| 2. Stipules lanceolate, not auricled | : 3 |
| 3. Climbing or scandent shrubs | : <i>G. umbellifera</i> |
| 3. Erect small trees | : <i>G. glabra</i> |

Grewia glabra Bl., Bijdr. 115. 1825; Burret, Notizbl. Bot. Gart. Berlin-Dahlem 9: 676. 1926; 1983. *G. disperma* auct. non Rottl. ex Spreng. 1825, sensu Gamble, Fl. Madras 118. 1915. *G. laevigata* auct. non Vahl 1790, Fl. Brit. India 1: 389. 1874; For. Trees Travancore 58. 1908.

Small trees, bark greyish-white, smooth. Leaves lanceolate, acuminate, base rounded or acute, serrate, 5-12 x 2-5 cm. Flowers in umbellate cymes, peduncle longer than the petiole. Petals white, ovate, often notched. Drupe 1-4 (2) lobed, glabrous.

Common in moist deciduous and semi-evergreen forests.

NS 10324 (Choodal)

Fl. & Fr. October-March

D i s t. Indo-Malesia and tropical Africa

Grewia nervosa (Lour.) Panigr., Taxon 34: 702. 1985. *Fallopia nervosa* Lour., Fl. Cochinch. 336. 1790. *G. microcos* L., Syst. (ed. 12) 2: 602. 1766 *nom. illeg.*; Fl. Brit. India 1: 392. 1874; Fl. Madras 116. 1915; Fl. Thenmala 42. 1995. *G. ulmifolia* Roxb., Fl. Ind. 2: 591. 1832; Wt. Ic. t. 84. 1838.

Shrubs to small trees; young shoots minutely stellately pubescent. Leaves elliptic-oblong to obovate, caudate-acuminate, base rounded or acute, subentire, glabrous, 8-18 x 4-7 cm, 3-nerved at base. Buds ovoid, 2 or 3 together, enclosed by 6-8 imbricate bracts. Petals white, very small, entire or lobed. Drupe obovoid or subglobose, entire, *ca.* 1 cm long, glabrous.

Occasional in semi-evergreen forests.

NS 10564 (Kattalappara)

Fl. & Fr. August-April

D i s t. Asia

Grewia tiliifolia Vahl, *Symb. Bot.* 1: 35. 1790; Bedd., *Fl. Sylv.* t. 108. 1871; *For. Trees Travancore* 57. 1908; *Fl. Madras* 118. 1915 (*tiliaefolia*); Burret, *Notizbl. Bot. Gart. Berlin.* 9: 659. 1926; *Fl. Thenmala* 44. 1995.

Medium sized to large trees, bark brown, rough, reddish inside; young shoots pubescent. Leaves ovate, acuminate, base unequally cordate, glabrescent above and hoary pubescent below, crenate-dentate, 5-6 nerved at base. Petals yellow, half the length of sepals, entire or notched. Drupe 5 mm long, reddish-purple, globose or 2-lobed, smooth.

Common in moist deciduous forests.

NS 10314 (Kattalappara)

Fl. & Fr. February-May

D i s t. South and South East Asia and Tropical Africa

Grewia umbellifera Bedd., *For. Man. Bot.* 37. 1871; *Fl. Brit. India* 1: 393. 1874; *Fl. Madras* 117. 1915; Burret, *Notizbl. Bot. Gart. Berlin.* 9: 691. 1926; *Fl. Thenmala* 43. 1995.

Large scandent woody shrubs, bark brown, rough. Leaves oblong or elliptic-oblong, acute or acuminate, base rounded or acute, dentate or serrulate, sparsely stellately hairy below when young, 7-12 x 3-6 cm; 3-nerved at base. Flowers in axillary and terminal umbels, peduncles longer than the petioles. Petals white, oblong, 1 cm long. Drupe yellowish-red, fleshy, 2-4 lobed, glabrous.

Fairly common in semi-evergreen forests.

NS 10490 (Kallar)

Fl. & Fr. January-March

D i s t. Southern and Central W. Ghats : endemic

TRIUMFETTA L.

1. Lower leaves 3-lobed

: *T. rhomboidea*

1. All leaves entire

: *T. annua*

Triumfetta annua L., *Mant. Pl.* 1: 73. 1767; *Fl. Brit. India* 1: 396. 1874; *Fl. Madras* 120. 1915;

Annual herbs, young shoots glabrescent. Leaves ovate, caudate-acuminate, base rounded or subcordate, membranous, serrate, sparsely hairy on both sides, to 10 x 5 cm. Flowers in axillary fascicles. Petals yellow, 4 mm long. Capsule *ca.* 1 cm across.

Common in moist deciduous forests.

NS 10720 (Umiyar)

Fl. & Fr. October-November

D i s t. South Asia, Malagasy Island and Tropical South West Africa

Triumfetta rhomboidea Jacq., Enum. Pl. Carib. 22. 1760; Fl. Brit. India 1: 395. 1874; Fl. Madras 120. 1915. *Bartamia indica* L., Sp. Pl. 378. 1753, non *Triumfetta indica* Lamk. 1792. *Triumfetta angulata* Lamk., Encyl. 3: 41. 1789; Wt., Ic. t. 320. 1840.

Erect annual herbs or subshrubs, stem stellately tomentose. Lower leaves 3-lobed, serrate, 5-nerved from base, stellately hairy on both sides, upper leaves ovate-acuminate, much smaller, 3-nerved basally. Flowers in dense leaf opposed cymes. Buds oblong. Sepals oblong, hooded and apiculate, 4 mm long. Petals ciliate at base. Stamens 10. Capsule 4-5 mm across, bristles glabrous.

Common in moist deciduous forests and forest plantations.

NS 11088 (Kattalappara)

Fl. & Fr. October-February

D i s t. Tropical Asia and Africa

ELAEOCARPACEAE

ELAEOCARPUS L.

1. Pyrenes laterally compressed; leaves obovate, crowded towards the apex of branchlets : 2
1. Pyrenes oblong or ovoid; leaves elliptic, equidistant : 3
2. Leaves glabrous, nerve axils with glandular domatia : *E. venustus*
2. Leaves tomentose below along the nerves and petioles, without domatia : *E. tuberculatus*
3. Pyrenes ovoid; anthers ciliate : *E. serratus*
3. Pyrenes oblong; anthers not ciliate : *E. glandulosus*

Elaeocarpus glandulosus Wall. ex Merr., J. Arnold Arbor. 32: 194. 1951; Tirel & Raynal, *Adansonia* (ser. 2) 20: 175. 1980. *E. oblongus* sensu Wt., Ic. t. 48. 1838; Fl. Brit. India 1: 403. 1874; For. Trees Travancore 59. 1908; Fl. Madras 124. 1915.

Medium sized trees, bark greyish brown, reddish inside. Leaves equidistant, ovate or obovate, acute or acuminate, to 12 x 6 cm; lateral nerves ca. 5 pairs, axils or nerves glandular. Flowers ca. 1.2 cm across. Ovary tomentose, 3-celled. Drupe oblong, 3-3.5 cm long; pyrene tubercled.

Occasional in semi-evergreen and evergreen forests.

NS 10602, 10750 (Kattalappara); 11075 (Dharpakulam)

Fl. & Fr. March-April

D i s t. Indo-Malesia

Elaeocarpus serratus L., Sp. Pl. 515. 1753; Fl. Brit. India 1: 401. 1874; For. Trees Travancore 58. 1908; Fl. Madras 124. 1915; Tirel & Raynal, *Adansonia* (ser. 2) 20: 175. 1980; Fl. Thenmala 46. 1995. *E. oblongus* Gaertn. Fruct., 1: 202, t. 43. 1788.

Medium sized to large buttressed trees with aerial roots on the buttresses, bark brown, mottled with grey, reddish inside. Leaves elliptic-oblong, acute at both ends, distantly serrate,

glabrous above and glabrescent below, to 12 x 6 cm; glandular in the axils. Flowers ca. 1.5 cm across. Anthers with 4-5 bristles at apex. Ovary tomentose, 3-celled. Drupe 2-2.5 cm across; pyrene shortly tubercled.

Common in semi-evergreen and evergreen forests

NS 10335 (Kattalappara); 10413 (Kallar)

Fl. & Fr. February-March

D i s t. India

Elaeocarpus tuberculatus Roxb., Fl. Ind. 2: 594. 1832; Bedd., Fl. Sylv. t. 113. 1871; Fl. Brit. India 1: 404. 1874; For. Trees Travancore 59. 1908; Fl. Madras 124. 1915; Fl. Thenmala 47. 1995.

Large buttressed trees, bark smooth, pale brown, greyish-brown inside. Leaves obovate, obtuse, base cuneate or rounded, crenate or subentire, to 24 x 12 cm. Flowers 2.5 cm across. Petals white, obovate, tomentose outside. Anthers aristate. Ovary tomentose, 2-celled. Drupe oblong or ellipsoid, 4.5-5 cm long; pyrene warty tubercled.

Common in evergreen forests often along the banks of streams

NS 10069, 10082 (Kallar)

Fl. & Fr. March-April

D i s t. Indo-Malesia

Elaeocarpus venustus Bedd., Fl. Sylv. t. 174. 1872; For. Trees Travancore 60. 1908; Fl. Madras 124. 1915; Nayar & Sastry, Red. Data Book Indian Pl. 2: 107. 1988. *E. monocera* sensu Mast. in Fl. Brit. India 405. 1874, non Cav., 1800.

Large evergreen trees. Leaves obovate, obtuse, narrowed towards base, glabrous, to 10x5 cm. Flowers white, 2.5 cm across. Sepals glabrous. Drupe 4x2.5 cm, pyrenes warty tubercled.

Occasional in evergreen forests, above 1500 m.

NS 11354 (Alvarakurichi)

Fl. & Fr. December-March.

D i s t. Western Ghats : endemic.

Note : Nayar & Sastry (l. c.) have reported this species as vulnerable and is confined to Muthiikuzhivayal (Tamil Nadu) and Chemunji (Kerala)

ERYTHROXYLACEAE

ERYTHROXYLUM P. Br.

Erythroxylum lanceolatum (Wt.) Walp., Rep. 1: 407. 1842; Fl. Brit. India 1: 415. 1874; Fl. Madras 127. 1915. *Sethia lanceolata* Wt., Ill. 1: 136. 1840.

Small to medium sized trees, bark reddish brown. Leaves lanceolate, acuminate, base acute or obtuse, glabrous, to 8 x 3 cm, lateral nervous slender, faint. Flowers axillary, solitary or paired. Petals white with an erect ligule at the base. Staminal filaments united at the base to form a tube. Drupe oblong, to 1.5 x 0.4 cm; seed one.

Fairly common in evergreen forests and occasional in grassland.

NS 10020 (Kallar), 11377 (Alvarakurichi)

Fl. & Fr. December-June

D i s t. Peninsular India and Sri Lanka

MALPIGHIACEAE

- | | |
|---|----------------|
| 1. Flowers in terminal racemes; fruits with 2-3 unequal wings | : Hiptage |
| 1. Flowers in axillary clusters; fruits with orbicular wings | : Aspidopterys |

ASPIDOPTERYS A. Juss.

Aspidopterys canarensis Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 3:351. 1851; Fl. Brit. India 1: 420. 1874; Fl. Madras 129. 1915; Srivas., J. Econ. Tax. Bot. 6: 62. 1985; Nayar & Sastry, Red Data Book Indian Pl. 1: 194. 1987.

Lianas. Leaves ovate to elliptic-lanceolate, acuminate, base rounded or acute, glabrous, 7-10 x 3-5 cm; petiole *ca.* 1 cm long. Flowers with slender pedicels, clustered, axillary to leaves or leafscars; bracts rusty tomentose. Calyx lobes tomentose. Petals oblong, yellow, 4 x 2 mm. Samara suborbicular, truncate at apex, papery, 3-4 cm across.

Occasional in semi-evergreen forests.

NS 10212 (Choodal)

Fl. & Fr. March-April

D i s t. Southern W. Ghats : endemic

HIPTAGE Gaertn.

Hiptage benghalensis (L.) Kurz, J. Asiat. Soc. Bengal. 43: 136. 1874; Jacobs in Steenis, Fl. Males. I, 5: 132. 1955. *Banisteria benghalensis* L., Sp. Pl. 427. 1753. *Hiptage madablota* Gaertn., Fruct. 2: 169, t. 116. 1791; Fl. Madras 128. 1915.

Large scandent shrubs, young shoots silky pubescent. Leaves elliptic-oblong, acuminate or acute, base rounded or acute, entire, glabrous, 10-18 x 3-7 cm; petiole to 1 cm long. Flowers fragrant, *ca.* 2 cm across. Calyx pubescent outside, gland red. Petals white, fimbriate along the margins, one petal yellow at base. Samaras with a longer median wing and 2 shorter lateral wings.

Occasional in semi-evergreen forests.

NS 10980 (Rosemala)

Fl. & Fr. February-April

D i s t. Indo-Malesia

OXALIDACEAE

- | | |
|------------------------|-------------|
| 1. Leaves pinnate | : Biophytum |
| 1. Leaves trifoliolate | : Oxalis |

BIOPHYTUM A. DC.

Biophytum reinwardtii (Zucc.) Klotzch in Peters Reise Mossamb. Bot. 1:85. 1862; Fl. Brit. India 1: 437. 1874; Fl. Madras 133. 1915; Fl. Thenmala 48. 1995. *Oxalis reinwardtii* Zucc. in Abh. Malth.-Phys. Cl. Koenigl. Bayer. Akad. Wiss. 1: 274. 1829-1830.

Stem to 20 cm tall. Leaves 5-12 cm long, leaflets 10-15 pairs, oblong, slightly oblique, base truncate, glabrous. Peduncle to 15 cm long, glandular-hispid; flowers to 15 per umbel, pedicels yellow.

Common in moist deciduous forests and forest plantations.

NS 10544 (Kattalappara)

Fl. & Fr. July-December

Dist. Indo-Malesia

OXALIS L.

Oxalis corniculata L., Sp. Pl. 435. 1753; Wt., Ic. t. 18. 1838; Fl. Brit. India 1: 436. 1874; Fl. Madras 132. 1915; Fl. Thenmala 48. 1995.

Diffuse herbs, branches rooting at lower nodes. Leaves 3-foliolate; leaflets sessile, obcordate, emarginate, base cuneate, pilose, to 1.5 x 1.6 cm. Flowers yellow. Capsule oblong, acuminate, to 1.5 cm long; seeds transversely ridged.

Fairly common in disturbed moist deciduous forests and forest plantations.

NS 11175 (Kattalappara)

Fl. & Fr. Throughout the year

Dist. Cosmopolitan

BALSAMINACEAE

IMPATIENS L.

- | | |
|--|-------------------------|
| 1. Flowers axillary, solitary or fascicled | : 2 |
| 1. Flowers in racemes | : 4 |
| 2. Leaves alternate, mostly confined towards apex of stem | : <i>I. flaccida</i> |
| 2. Leaves opposite | : 3 |
| 3. Leaves ovate or elliptic; petiolate; wings with long claw | : <i>I. minor</i> |
| 3. Leaves linear-oblong, upper ones sessile, wings without long claw | : <i>I. inconspicua</i> |
| 4. Plants tomentose; flowers lax on the racemes | : <i>I. fruticosa</i> |
| 4. Plants glabrous; flowers congested towards the apex of racemes | : 4 |
| 5. Stem prostrate below, rooting at lower nodes; leaves ovate-cordate; spur slender, longer than the lip | : <i>I. cordata</i> |
| 5. Erect plants, leaves oblong or ovate-oblong; spur shorter than the lip | : <i>I. wightiana</i> |

Impatiens cordata Wt., Madras J. Lit. Sci. (ser. D) 5: 10. 1837; Fl. Brit India 1: 462. 1874; Fl. Madras 139. 1915.

Annual herbs, stem prostrate and rooting at nodes. Leaves ovate-cordate, acuminate, sparsely hairy along nerves, to 5 cm across; petiole to 3 cm long. Flowers in axillary umbellate, 3-5 flowered racemes, peduncle 5-7 cm long. Flowers 2.5 cm long, pink with purple shade at the centre. Sepals ovate-acuminate. Standard emarginate, lateral lobes of wing incurved, terminal lobes orbicular. Lip boat-shaped, spur slender, incurved.

Fairly common in evergreen forests.

NS 10245 (Charuppara), 10718 (Umiyar)

Fl. December-March

D i s t. Southern W. Ghats : endemic

Impatiens flaccida Arn., Companion Bot. Mag. 1: 322. 1836; Hook.f., Bot. Mag. t. 5276. 1861 & Fl. Brit India 1: 457. 1874, p.p.; Fl. Madras 143. 1915.

Annual erect herbs. Leaves alternate, usually fascicled towards the apex of stem, lanceolate or elliptic-lanceolate, acuminate, base cuneate, glabrescent above and pubescent along the veins beneath, crenate, to 7 x 3.5 cm; petioles to 4 cm long. Flowers axillary, solitary or in groups of 2 or 3; pedicels to 4 cm long. Sepals ovate-lanceolate 4 mm long. Standard petal broadly obcordate, 1.2 x 1.5 cm; wing petals obovate; spur to 3 cm long.

Common in moist deciduous and semi-evergreen forests.

NS 11202 (Rosemala)

Fl. September-January

D i s t. South India and Sri Lanka

Impatiens fruticosa Lesch. ex DC., Prodr. 1: 687. 1824; Fl. Brit India 1: 459. 1874; Fl. Madras 143. 1915.

Erect perennial subshrubs. Leaves fascicled towards the apex of branches, elliptic, acuminate, base acute, densely pilose on both sides, to 10 x 4 cm; petiole with 1 or 2 stipitate glands below the lamina. Racemes to 13 cm long. Flowers pink, 2.5-3 cm long. Sepals acuminate. Standard orbicular, 2-lobed, wings lobed. Lip trumpet-shaped, spur curved, slender. Seeds obovoid, testa pitted.

Occasional in grasslands.

NS 10256 (Pandimotta)

Fl. & Fr. January-April

D i s t. South India and Sri Lanka

Impatiens inconspicua Benth. ex Wt., & Arn., Prodr. 139. 1834; Wt. Ic. t. 970. 1845; Fl. Brit. India 1: 447. 1874. *I. pusilla* Heyne ex Hook. f. & Thoms., J. Linn. Soc. Bot. 4: 122. 1859; Fl. Madras. 140. 1915.

Flaccid glabrous herbs. Leaves distantly serrate, basal ones ovate, upper linear, sparsely hairy above, glabrous below. Flowers solitary or pairs, 1 cm long. Pedicels slender, pubescent, to 1 cm long. Sepals linear, subulate with terminal lobes of wings broadly obovate, clawed, laterals linear. Lip saccate. Spur 0, Seeds globose, black, shining.

Occasional in grasslands.

NS 11063 (Rosemala)

Fl. & Fr. August-December

D i s t. W. Ghats : endemic.

Impatiens minor (DC.) Bennet, Indian J. For. 2: 283. 1979. *Balsamina minor* DC., Prodr. 1: 686. 1824. *Impatiens kleinii* Wt. & Arn., Prodr. 140. 1834; Wt. Ic. t. 884. 1844-1845; Hook.f., Fl. Brit. India 1: 445. 1874; Gamble, Fl. Madras 140. 1915.

Slender glabrous branched herbs. Leaves elliptic-lanceolate, or oblong-obovate, acute or acuminate, base acute, serrulate, with a pair of stalked glands at the base, to 5 x 2 cm; petiole to 5 mm long. Flowers pink-violet, 8 mm across; pedicels slender, 1-1.5 cm long, deflexed in fruits. Sepals linear-subulate; spur slender, to 1.5 cm long. Standard petal orbicular; wings broadly ovate, entire, clawed. Capsule linear, 2 cm long; seeds black.

Fairly common in moist deciduous semi-evergreen forests.

NS 10546 (Kattalappara)

Fl. & Fr. August-October

D i s t. Southern W. Ghats : endemic

Impatiens wightiana Bedd., Madras J. Lit. Sci. Ser. 2, 20: 67. 1859 & Ic. t. 146. 1868-1874; Fl. Brit. India 1: 467. 1875; Fl. Madras 145. 1915.

Erect glabrous herbs. Leaves elliptic-lanceolate, acuminate, base rounded or obtuse, margins serrate or crenate, to 15 x 5 cm; petiole to 7 cm long with a few stipitate glands below the lamina. Racemes 10-15 cm long; flowers 2 cm long, white with pink shade. Sepals small. Standard orbicular, apiculate. Lip funnel shaped, spur short, incurved.

Occasional in grasslands and open areas in evergreen forests.

NS 10111 (Kallar)

Fl. November-February

D i s t. Southern W. Ghats : endemic

RUTACEAE

- | | |
|--|----------------------|
| 1. Leaves simple | : 2 |
| 1. Leaves 3 or more foliolate | : 3 |
| 2. Flowers in long-peduncled corymbs | : Acronychia |
| 2. Flowers in short racemes, panicles or fascicles | : Atalantia |
| 3. Stamens 8 or more | : 4 |
| 3. Stamens 6 or less | : Zanthoxylum |
| 4. Leaf rachis winged | : Naringi |
| 4. Leaf rachis without wings | : 5 |
| 5. Plants with axillary thorns, climbers | : Luvunga |
| 5. Plants unarmed, shrubs or trees | : 6 |
| 6. Alternate filaments shorter; petals 1 cm or more long | : Murraya |
| 6. Filaments all equal; petals 0.5 cm or less long | : 7 |
| 7. Cells of ovary 1-ovuled; anthers glandular | : Glycosmis |
| 7. Cells of ovary 2-ovuled; anthers eglandular | : Clausena |

ACRONYCHIA J. R. & G. Forst.

Acronychia pedunculata (L.) Miq., Fl. Ind. Bat. (Suppl.) 532. 1861; Hartley, J. Arnold Arbor. 55: 549. 1974; Fl. Thenmala 54. 1995. *Jambolifera pedunculata* L., Sp. Pl. 349. 1753. *Acronychia laurifolia* Bl., Cat. Gew. Buitenz. 63. 1823; Fl. Brit. India 1: 498. 1875; For. Trees Travancore 65. 1908; Fl. Madras 152. 1915.

Small evergreen trees, bark greyish-yellow, dull red with darker streaks inside. Leaves oblong-lanceolate or elliptic-lanceolate, shortly obtusely acuminate, base acute, 7.5-15 x 3-5 cm. Peduncles 6-12 cm long, flowers yellowish. Drupe subglobose, obscurely lobed, to 1 cm across.

Common in semi-evergreen forests.

NS 10533, 10665 (Kattalappara)

Fl. & Fr. March-November

D i s t. Indo-Malesia

ATALANTIA *Corr. nom. cons.*

Atalantia racemosa Wt. & Arn., Prodr. 91. 1834. var. *bourdillonii* Narayanan & Nayar, Indian J. For. 13: 69. 1990.

Small evergreen trees. Leaves elliptic-oblong or ovate-oblong, obtusely acuminate, shortly emarginate, base broadly cuneate to 12 x 5 cm. Flowers shortly pedicelled, in axillary racemes. Calyx 4-lobed, ciliate along the margins. Petals 4, oblong. Berry subglobose, 2 cm across.

Common in semi-evergreen forests.

NS 11308 (Rosemala)

Fl. & Fr. April-June

D i s t. Southern W. Ghats : endemic

CLAUSENA *Burm. f.*

1. Flowers 4-merous, in axillary compound racemes

: *C. dentata*

1. Flowers 5-merous, in terminal thyrsoid panicles

: *C. austroindica*

Clausena austroindica Stone & Nair, Nordic J. Bot. 14: 491. 1994. *C. heptaphylla* sensu Gamble, Fl. Madras 155. 1957 (Rep. ed.), non Wt. & Arn., 1834.

Much branched shrubs, young shoots glabrous. Leaves with pleasant aromatic smell; leaflets 5-11, ovate-lanceolate, acuminate, base unequal and oblique, subentire, glabrous, to 12 x 5 cm. Calyx 5-lobed, lobes acute. Petals glandular.

Fairly common in semi-evergreen forests

NS 10214 (Choodal); 10322 (Kattalappara); 10910 (Rosemala)

Fl. March-April

D i s t. India and Burma

Clausena dentata (Willd.) Roem. var. *pubescens* (Wt. & Arn.) Tanaka, J. Bot. 68: 277. 1930. *C. willdenowii* Wt. & Arn. var. *pubescens* (Wt. & Arn.) Hook. f., Fl. Brit. India 1: 506. 1875; For. Trees Travancore 67. 1908.

Small deciduous trees, young shoots and leaves pubescent. Leaflets ovate-oblong or ovate-lanceolate, acute to acuminate, base oblique, serrulate, membranous, 4-6 x 3-4 cm. Flowers greenish-white. Calyx lobes ciliate along the margins.

Occasional in semi-evergreen forests.

Fl. April

Dist. Peninsular India and Sri Lanka

GLYCOSMIS Corr.

1. Petals glandular; berry globose, less than 1 cm across : *G. pentaphylla*
 1. Petals eglandular; berry depressed globose, more than 1 cm across : *G. macrocarpa*

Glycosmis macrocarpa Wt., Ill. 1: 109. 1840; Subram. & Henry, Bull.Bot. Surv. India 12: 3. 1972. *G. pentaphylla* Hook. f. var. *macrocarpa* (Wt.) Hook. f., Fl. Brit. India 1: 500. 1875.

Large shrubs. Leaves 5 or 3-foliolate, rarely 1-foliolate; leaflets oblong-lanceolate, acuminate, glabrous, 8-10 x 2.5-6cm. Panicles terminal; pedicels minutely brown pubescent. Berry 1.2-2 cm across.

Occasional in evergreen forests.

NS 10780 (Kallar)

Fl. & Fr. March-April

Dist. South India and Burma

Glycosmis pentaphylla (Retz.) DC., Prodr. 1: 538. 1824; Mitra & Subram., J. Arnold Arbor. 50: 155. 1969; For. Trees Travancore 65. 1908. *Limonia pentaphylla* Retz., Obs. Bot. 5: 24. 1788. *L. arborea* Roxb., Pl. Corom. t. 85. 1798. *Glycosmis cochinchinensis* sensu Gamble, Fl. Madras 153. 1915 p.p.

Shrubs to small trees. Leaves pinnate; leaflets 3-7, elliptic or oblong, acute, acuminate or obtuse, finely serrate or entire, glabrous, 7-15 x 2.5-6 cm; lateral nerves faint. Flowers creamy white. Peduncle brown tomentose. Berry white, turning to dull pink, 6-8 mm across.

Common in moist deciduous forests and in forest plantations

NS 10949 (Kattalappara); 11321 (Rosemala)

Fl. & Fr. September-April

Dist. Indo-Malesia

LUVUNGA Ham. ex Wt. & Arn.

Luvunga eleutherandra Dalz. in Hook.'s, J. Bot. Kew. Gard. Misc. 2: 258. 1850; Fl. Brit. India 1: 509. 1875; Gamble, Fl. Madras 157. 1915.

Lianas with sharp stout thorns, bark brown, rough. Leaflets oblong, acute or acuminate, base acute, glabrous coriaceous, margin shortly recurved, 6-14 x 2.5-4.5 cm. Calyx subentire or shortly 4-lobed. Petals 4, white, oblong, 6 mm long.

Occasional in semi-evergreen and evergreen forests.

NS 11041 (Rosemala)

Fl. & Fr. December-April

Dist. Throughout W. Ghats : endemic

MURRAYA Koenig ex L. nom. cons.

Murraya paniculata (L.) Jack., Malay. Misc. 1: 31. 1820; Swingle, Citrus Ind. 1: 232. 1967; Matthew, Fl. Tamil Nadu Carnatic 3, I: 212. 1983. *Chalacas paniculata* L., Mant. 68. 1767. *Murraya exotica* auct. non L. 1753, sensu Wt., Ic. t. 96. 1838; Fl. Brit. India 1: 502. 1875; For. Trees Travancore 66. 1908; Fl. Madras 155. 1915.

Shrubs to small evergreen trees, bark greyish-brown, shallowly fissured. Leaflets 3-5 or 7, ovate or ovate-elliptic, acuminate, base acute, 3.5-6 x 2-3 cm; Panicles few-flowered, from the axils of upper leaves. Petals white, ca. 1.2 cm long. Berry ellipsoid, acute, red, 1-1.2 cm long.

Fairly in common evergreen forests.

NS 10225 (Pandimotta); 10882, 11307 (Rosemala); 11415 (Alvarakurichi)

Fl. & Fr. March-April

D i s t. Indo-Malesia

Note: Matthew(l.c.) has concluded that *M. paniculata* is wild in India and *M. exotica* occurs mostly in cultivation.

NARINGI Adans.

Naringi crenulata (Roxb.) Nicols. in Sald. & Nicols., Fl. Hassan Dist. 387. 1976. *Limonia crenulata* Roxb., Pl. Corom. t. 86. 1798; Fl. Madras 157. 1915. *L. acidissima* sensu Hook. f., Fl. Brit. India 1: 507. 1875, non L. 1762.

Small deciduous trees with sharp solitary or paired axillary spines. Leaflets 3-7, ovate or obliquely oblong, obtuse to emarginate, base acute, subsessile. Petals white, oblong-ovate, 3 mm long.

Occasional in moist deciduous forests.

NS 10987 (Kattalappara)

Fl. June-September

D i s t. Indo-Malesia

ZANTHOXYLUM L.

Zanthoxylum rhetsa (Roxb.) DC., Prodr. 1: 728. 1824; Fl. Brit. India 1: 495. 1875; For. Trees Travancore 63. 1908; Fl. Madras 150. 1915; Fl. Thenmala 53. 1995. *Fagara rhetsa* Roxb., Fl. Ind. 1: 438. 1820. *F. budrunga* Roxb., Fl. Ind. 1: 437. 1820.

Medium sized deciduous trees, armed with prickles; prickles on trunk conical, 3-5 cm long. Leaves imparipinnate, clustered at apex of the branches, 25-35 cm long; leaflets 13-21, opposite. Flowers pedicelled, 2-3 mm across, greenish-yellow, in terminal cymose panicles.

Occasional in moist deciduous forests.

KNS 63174-IFGTB (Ettapadappu)

Fl. December-August

D i s t. Indo-Malesia

Several species of *Citrus* and *Murraya koenigii* (L.) Spreng. are often cultivated in the settlement

SIMAROUBACEAE

AILANTHUS Desf. *nom. cons.*

Ailanthus triphysa (Dennst.) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.), 41. 1931; Nooteb. in Steenis, Fl. Males. I, 6; 219. 1962; Basak, Fl. India Fasc. 4: 5. 1980. *Adenanthera triphysa* Dennst., Schluss. Hort. Ind. Malab. 15, 18, 32. 1818. *Ailanthus malabarica* DC., Prodr. 2; 89. 1825; Fl. Brit. India 1; 518. 1875; For. Trees Travancore 73. 1908; Fl. Madras 163. 1915.

Very large trees, bark thick, greyish, smooth, lenticulate. Leaves crowded towards the apex of branches, to 1 m long; leaflets 11-21, ovate-oblong or oblong-lanceolate, acuminate, base unequal sided, entire, glabrous. Flowers greenish-yellow in axillary panicles. Samaras 1-5, oblong, 5-6 x 1.5-2.5 cm, prominently veined.

Rare, in semi-evergreen forests.

NS 3932

Fl. & Fr. February-April

D i s t. Indo-Malesia

Note: A few trees were found at Kulathupuzha and Choondippara

OCHNACEAE

GOMPHIA Schreb.

Gomphia serrata (Gaertn.) Kanis, Taxon 16: 422. 1967. *Meesia serrata* Gaertn., Fruct. 1: 344, t. 70, f. 6. 1788. *Gomphia angustifolia* Vahl, Symb. Bot. 2: 49. 1791; Fl. Brit. India 1: 525. 1875. *Ouratea angustifolia* (Vahl) Baill. ex Laness., Pl. Utl. Col. Fr. 607. 1886; Fl. Madras 167. 1915.

Small trees. Leaves oblong-lanceolate, acuminate, base obtuse, glabrous and shining, finely serrate, to 18 x 5 cm, lateral nerves numerous, slender, close and parallel, connected by intra-marginal nerves. Flowers in axillary and terminal racemes. Sepals red. Petals yellow. Stamens 10, anther dehiscence by apical pores. Fruit of reniform drupes.

Occasional in semi-evergreen forests.

NS 10484 (Kattalappara)

Fl. & Fr. January-June

D i s t. 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 | : 3 |
| 2. Filaments united to form staminal tube | : Chukrasia |
| 2. Filaments free | : Toona |
| 3. Petals 2.5 cm or more long | : 4 |
| 3. Petals less than 1.5 cm long | : 5 |
| 4. Leaves simple | : Turraea |
| 4. Leaves 3-foliolate | : Naregamia |

5. Leaflets toothed	: Cipadessa
5. Leaflets entire	: 6
6. Filaments united throughout to form a distinct tube	: 7
6. Filaments free or united towards the basal half only	: 9
7. Petals 3	: Aphanamixis
7. Petals 4 or 5	: 8
8. Staminal tube oblong, elongated	: Dysoxylum
8. Staminal tube globose	: Aglaia
9. Leaves 3-foliolate; berry tomentose	: Walsura
9. Leaves pinnate, leaflets 7-13; berry glabrous	: Trichilia

AGLAIA Lour. nom. cons.

1. Petals 5	: 2
1. Petals 4	: A. lawii
2. Leaves 1-foliolate	: A. simplicifolia
2. Leaves 3 or more foliolate	: 3
3. Leaf rachis and nerves of leaflets below densely brown tomentose	: A. tomentosa
3. Leaf rachis and nerves glabrous or lepidote scaly	: 4
4. Leaflets oblong, more than 3 cm broad	: 5
4. Leaflets lanceolate or elliptic-lanceolate, less than 2.5 cm broad	: A. barberi
5. Young shoots and leaves brown with pettate scales on the midrib and nerves beneath	: 6
5. Young leaves green, without pettate scales; fruits oblong, slightly oblique, smooth, 1.5-2 cm long	: A. perviridis
6. Fruits, longitudinally ridged, 3.5-4.5 cm long	: A. malabarica
6. Fruits smooth, ca. 2 cm across, tomentose	: A. bourdillonii

Aglaia barberi Gamble, Kew Bull. 1915; 346. 1915 & Fl. Madras 180. 1915.

Medium sized trees, bark smooth, reddish-brown, young shoots reddish-brown tomentose. Leaves to 25 cm long; leaflets 5-7, lanceolate, acuminate, base acute or obtuse, glabrous above and glabrescent below. Male flowers in panicles from the axils of upper leaves. Female flowers in few flowered racemes, axillary or from axils of fallen leaves.

Fairly common in semi-evergreen and evergreen forests.

NS 10675 (Kattalappara)

Fl. January-June

D i s t. Southern W. Ghats : endemic

Agalia bourdillonii Gamble, Kew Bull. 1915: 346. 1915 & Fl. Madras 180. 1915; Pannell, Kew Bull. (Addl. ser.) 120. 1992. *A. roxburghiana* sensu Bedd; Fl. Sylv.t. 130 B. 1871, non (Wt.& Arn.) Miq. 1868; For. Trees Travancore 84. 1908.

Small to medium sized trees, bark reddish brown; branchlets covered with orange-brown scales with fimbriate margins. Leaves to 18 cm long; leaflets 5-7 obovate or elliptic, acute, cuneate at base, green above and reddish-brown below. Inflorescence to 15 cm long. Flowers ca. 1.5 cm long. Petals ovate. Anthers attached to the middle of the staminal tube. Fruits obovoid, 2-2.5 cm long, densely minutely scaly.

Occasional in evergreen forests above 1,500 m elevation.

NS 10250, 10251 (Pongumala); 11430 (Alvarakurichi)

Fl. & Fr. December-May.

D i s t. Southern W. Ghats : endemic

Aglaia lawii (Wt.) Sald. in Sald. & Nicols., Fl. Hassan Dist. 392. 1976; Pannell, Kew Bull. (Addl. ser.) 16: 97. 1992. *Nimmonia lawii* Wt., Calcutta J. Nat. Hist. 7; 13. 1847. *Amoora lawii* (Wt.) Bedd., Fl. Sylv. t. 133. 1871; Fl. Brit. India 1; 561. 1875; Fl. Madras 182. 1915. *Oraoma canarana* Turcz., Bull. Soc. Imp. Naturalists Moscou. 1: 411. 1858. *Amoora canarana* (Turcz.) Hiern in Hook. f., Fl. Brit. India 1; 560. 1875; For. Trees Travancore 87. 1908; Fl. Madras 182. 1915.

Medium sized trees, bark greyish-brown, mottled with green, smooth, exfoliation thin, creamy-yellow inside. Leaves to 20 cm long; leaflets 5, ovate-lanceolate, acuminate, base acute, glabrous. Male flowers in panicles from upper leaves, to 15 cm long; female flowers in spikes or panicles, to 7 cm long.

Occasional in evergreen and semi-evergreen forests.

NS 10295 (Pandimotta)

Fl. January-June

D i s t. Indo-Malesia to Polynesia

Aglaia malabarica Sasi., Kew Bull. (Addl. ser.) 16: 369. 1992.

Trees to 25 m tall, bark smooth, brown, 4-5 mm thick; reddish-brown inside, young shoots golden brown, densely peltate scaly. Leaves to 35 cm long, petiole, rachis and petiolules ridged and covered with peltate scales; leaflets 7-11, alternate, oblong-lanceolate, acuminate, rounded at the asymmetrical base, upper surface minutely pitted and with peltate scales, lower surface with numerous peltate scales on the midrib and lateral nerves, 6-21 x 2.5-8 cm; lateral nerves 10-19 pairs, ascending and curved upwards near the margin; petiolules 10-20 mm long. Male 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, rounded, densely scaly. Petals 5, yellow. Staminal tube 2 mm long, aperture 0.4-0.5 mm wide, entire; anthers 5, included; ovary 3-celled, each 1-ovuled. Female inflorescence to 5.5 cm long, covered with reddish-brown peltate scales; flowers 4.5 mm long; pedicels 3-4.5 mm long. Calyx 3.5 mm long, thick and fleshy at base, lobes 5, rounded, densely scaly. Corolla 2 mm long; staminodes 5, included. Ovary depressed globose, with dense reddish-brown scales; 3-celled, each 1-ovuled; stigma subglobose with an apical depression. Infructescens to 8 cm long, with 1-3 fruits on a stout peduncle; fruits 3.5-4.5 x 2.7-4 cm, obovoid or subglobose

with an apical depression, indehiscent, pericarp with numerous irregular longitudinal ridges and dense peltate scales, 0.5 cm thick and granular; seeds one to three, 1.7-2.5 x 1.5 x 0.7-1 cm, completely surrounded by thin pale pink translucent aril.

Occasional in evergreen forests.

NS 10957 (Rosemala)

Fl. & Fr. December-June

D i s t. Was known only from the type locality, Thrissur, the present collection from the Sanctuary is an additional distribution area.

Aglaia perviridis Hiern in Hook. f., *Fl. Brit. India* 1; 556. 1876; Pannell, *Kew Bull. (Addl. ser.)* 16: 198. 1992. *A. maiiae* Bourd., *J. Bombay Nat. Hist. Soc.* 12: 350, t. 3. 1899; *For. Trees Travancore* 84. 1908; *Fl. Madras* 180. 1915. *A. canarensis* Gamble, *Kew Bull.* 1915: 347. 1915 & *Fl. Madras* 180. 1915.

Medium sized to large trees, bark smooth, greyish-brown, young shoots reddish-brown lepidote. Leaves to 40 cm long; leaflets 11-13, oblong or oblong-lanceolate, acuminate, base obtuse, unequal sided, glabrous on both sides. Flowers yellow, in panicles from axils of upper leaves, to 30 cm long.

Occasional in evergreen forests.

NS 10964 (Rosemala)

Fl. March-August

D i s t. Indo-Malesia and China

Aglaia simplicifolia (Bedd.) Harms in Engl. & Prantl; *Planzenf.* 3(4): 300. 1896; Pannell, *Kew Bull. (Addl. ser.)* 16: 306. 1992. *Beddomea simplicifolia* Bedd., *Fl. Sylv.* t. 135. 1871; *Fl. Brit. India* 1: 566. 1875; *For. Trees Travancore* 89. 1908; *Fl. Madras* 184. 1915.

Small trees, to 8 m tall, bark reddish-brown, smooth, young shoots lepidote-scaly. Leaves simple, oblong, acuminate to caudate-acuminate, to 20 x 7 cm. Inflorescence to 15 cm long, branches and pedicels lepidote-scaly. Petals yellow, obovate. Staminal tube as long as the petals; anthers at level with the staminal tube.

Fairly common in evergreen forests.

NS 10781 (Kallar); 11245 (Rosemala)

Fl. November-June

D i s t. Indo-Malesia.

Aglaia tomentosa Teijsm & Binn., *Not. Tijdschr. Ned. Ind.* 27: 43. 1864; Pannell, *Kew Bull. (Addl. ser.)* 16: 331. 1992. *A. minutiflora* Bedd., *l.c.* t. 193. 1868-1874; *For. Trees Travancore* 85. 1908; *Fl. Madras* 181. 1915. *A. minutiflora* Bedd. var. *travancorica* Hiern in Hook. f., *Fl. Brit. India* 1: 557. 1875.

Small to medium sized slender trees, bark brown, rough, young shoots densely brown tomentose. Leaves to 50 cm long; leaflets 11-13, oblong or obovate-lanceolate, finely acuminate, base acute or rounded, glabrous above and densely brown tomentose below. Flowers very small, in axillary panicles which are nearly as long as the leaves.

Occasional in evergreen forests.

NS 10660 (Kallar); 10952 (Rosemala)

Fl. August-September

D i s t. India to Malesia and Australia

APHANAMIXIS BL.

Aphanamixis polystachya (Wall.) Parker, Indian For. 57: 486. 1931; *Aglaia polystachya* Wall. in Roxb., Fl. Ind. 2: 429. 1824. *Amoora rohituca* (Roxb.) Wt. & Arn., Prodr. 119. 1834; Bedd., Fl. Sylv. t. 132. 1871; Fl. Brit. India 1: 559. 1875; For. Trees Travancore 86. 1908; Fl. Madras 181. 1915. *Andersonia rohituca* Roxb., Fl. Ind. 2: 213. 1832.

Small to medium sized trees, bark brown, often mottled with green, reddish inside. Leaves to 50 cm long; leaflets 9-15, oblong, acute or acuminate, base oblique, entire, glabrous. Panicles usually as long as the leaves, drooping.

Occasional in semi-evergreen and evergreen forests.

NS 11226 (Rosemala)

Fl. December-April

D i s t. Indo-Malesia

CHUKRASIA A. Juss.

Chukrasia tabularis A. Juss., in Mem. Mus. Natl. Nat. 19: 251. t. 22. 1830; Bedd., Fl. Sylv. t. 9. 1869 '*chikrassia*'; Fl. Brit. India 1: 568. 1875; Fl. Madras 186. 1915.

Large evergreen trees, bark dark brown, rough, flaking off in thin rectangular flakes, pink-red inside, young shoots lenticellate, tomentose. Leaves crowded towards the apex of branchlets, to 35 cm long (in young trees very large); leaflets 6-12, ovate or ovate oblong, finely acuminate, base unequal, velvety tomentose when young, upper surface becoming glabrous. Flowers ca. 1.3 cm long, in terminal panicles, shorter than the leaves. Petals pale yellow, oblong, contorted. Capsule ovoid, 4-5cm long.

Occasional in semi-evergreen forests.

NS 10938 (Rosemala)

Fl. & Fr. March-February

D i s t. Indo-Malesia

CIPADESSA BL.

Cipadessa baccifera (Roth) Miq., Ann. Mus. Bot. Lugduno-Batavum. 4: 6. 1868; Fl. Madras 176. 1915; Fl. Thenmala 59. 1995. . *Melia baccifera* Roth, Nov. Pl. Sp. 215. 1821. *Cipadessa fruticosa* Bl., Bijdr. 162. 1825; Fl. Brit. India 1: 545. 1875; For. Trees Travancore 81. 1908.

Large shrubs to small trees, young shoots glabrous. Leaves to 20 cm long; leaflets opposite, 5-11, elliptic-lanceolate, acute at both ends, base often unequal, entire or coarsely serrate. Petals creamy-white. Berry red, subglobose, 4-5 mm across.

Common in moist deciduous and semi-evergreen forests, mostly in disturbed areas.

NS 10319, 10514 (Kattalappara)

Fl. & Fr. Throughout the year

D i s t. Indo-Malesia

DYSOXYLUM Bl.

Dysoxylum malabaricum Bedd. ex Hiern in Hook. f., *Fl. Brit. India* 1: 544. 1875; *For. Trees Travancore* 81. 1908; *Fl. Madras* 178. 1915; *Fl. Thenmala* 60. 1995.

Very large trees, bark pale grey, rough with warty lenticels, shallowly fissured, creamy yellow inside, aromatic, young shoots sericeous. Leaves to 40 cm long; leaflets 7-11, lanceolate, acuminate, base asymmetric, oblique, glabrous, rachis and petiolule sericeous when young. Flowers greenish-yellow, 6-7 mm long. Calyx deeply lobed, lobes acute. Capsule pear-shaped, 5-7.5 cm long, yellow, vertically ridged and furrowed.

Fairly common in evergreen forests, mostly above 600 m.

NS 10873 (Kallar)

Fl. & Fr. March-July

D i s t. Southern W. Ghats : endemic

NAREGAMIA Wt. & Arn.

Naregamia alata Wt. & Arn., *Prodr.* 117. 1834; *Wt., Ic. t.* 90. 1838; *Fl. Brit. India* 1: 542. 1875; *Fl. Madras* 174. 1915; *Fl. Thenmala* 58. 1995.

Herbs with decumbent branches. Leaves to 7.5 cm long; leaflets obovate, obtuse, base cuneate, 2-5 cm long, glabrous. Flowers white, 2.5-3 cm long. Calyx tomentose outside. Petals linear-spathulate.

Common in moist deciduous forests.

NS 10310 (Kattalappara)

Fl. & Fr. May-December

D i s t. Peninsular India

TOONA (Endl.) Roem.

Toona ciliata Roem., *Syn. Hesper.* 139. 1846. *Cedrela toona* Roxb. ex Rottl., *Ges. Naturf. Freunde Berlin Neue Schriften.* 2: 198. 1803; *Wt., Ic. t.* 161. 1839; *Bedd., Fl. Sylv. t.* 10. 1869; *Fl. Brit. India* 1: 568. 1875; *For. Trees Travancore* 91. 1908; *Fl. Madras* 186. 1915.

Large trees with a short leafless period, bark dark brown, rough, fissured, pink red inside, young shoots glabrous, lenticellate. Leaves to 45 cm long; leaflets 8-14 pairs, opposite or alternate, ovate-lanceolate or lanceolate, acuminate, base very unequal and oblique. Flowers white, 5 mm long.

Occasional in semi-evergreen and evergreen forests.

NS 10085 (Kattalappara)

Fl. December-November

D i s t. Indo-Malesia and Australia

TRICHILIA P. Br.

Trichilia connaroides (Wt. & Arn.) Benth., *Acta Bot. Neerl.* 11: 13. 1962. *Zanthoxylum connaroides* Wt. & Arn., *Prodr.* 148. 1834 ('*Zanthoxylon*'). *Heynea trijuga* Roxb. ex Sims, *Bot. Mag.* 4 1. t. 1738. 1815; *Fl. Brit. India* 1: 565. 1875; *For. Trees Travancore* 88. 1908;

Fl. Madras 183. 1915. *H. affinis* A. Juss., Mem. Mus. Hist. Paris. 19: 235, 275. 1830; Bedd., Fl. Sylv. t. 134. 1871.

Medium sized trees, bark dark brown, slightly rough, pale-red inside, young shoots glabrous. Leaves to 40 cm long; leaflets 9-13 pairs, opposite, elliptic or obovate, caudate-acuminate, glabrous above, dull and glaucous below. Flowers creamy white in corymbose panicles. Capsule red; seeds covered with white aril.

Occasional in semi-evergreen and evergreen forests.

NS 11428 (Alvarakurichi)

Fl. & Fr. March-December

D i s t. Indo-Malesia

TURRAEA L.

Turraea villosa Benn., Fl. Jav. Rar. 1: 182.1840; Wt., Ic. t. 1593. 1850; Fl. Brit. India 1: 542. 1875; Fl. Madras 174. 1915; Fl. Thenmala 58. 1995.

Large deciduous shrubs. Leaves ovate or elliptic, acuminate, base acute or obtuse, entire, glabrescent above and villous below, 5-10 x 3-6 cm. Flowers white, changing to yellow, ca. 4 cm long. Capsule subglobose 1-1.5 cm across.

Occasional in semi-evergreen forests.

NS 10179 (Choodal)

Fl. & Fr. March-August

D i s t. India and Malaysia

WALSURA Roxb.

Walsura trifolia (A. Juss.) Harms in Engl. & Prantl, Pflazenf. (ed. 2) 196: 119, 177. 1940; Fl. Thenmala 60. 1995. *Heynea trifolia* A. Juss., Mem. Mus. Hist. Nat. Paris. 19: 230. 1830. *Walsura piscidia* Roxb., Fl. Ind. 2: 387. 1832; Wt. Ill. 1: t. 55. 1840; Fl. Brit. India 1: 564. 1875; For. Trees Travancore 87. 1908; Fl. Madras 183. 1915.

Medium sized trees, bark pale brown, smooth. Leaves 3-foliolate; leaflets oblong, acuminate, base narrowed, glabrous, dull glaucous below. Flowers greenish-yellow, 0.4 mm long. Berry ovoid, brown tomentose, ca. 1.5 cm long.

Fairly common in semi-evergreen and evergreen forests.

NS 10751, 10686 (Kattalappara)

Fl. & Fr. December-April

D i s t. Peninsular India and Sri Lanka

Azadirachta indica A. Juss. and *Swietenia macrophylla* King are found growing occasionally.

DICHAPETALACEAE

DICHAPETALUM D. Thous.

Dichapetalum gelonioides (Roxb.) Engl. in Engl. & Prantl, Pflazenf. 3(4): 348. 1891; Fl. Madras 188. 1915; Fl. Thenmala 62. 1995. *Moacurra gelonioides* Roxb., Fl. Ind. 2: 69.

1832; *Chailletia gelonioides* (Roxb.) Bedd., For. Man. Bot. 59. Anal. Gen. T. 9. F. 1. 1871; Fl. Brit. India 1: 570. 1875; For. Trees Travancore 93. 1908.

Large shrubs, young shoots tomentose. Leaves elliptic or oblong-elliptic, acuminate, base acute, glabrous above and tomentose beneath, to 14 x 4.5 cm. Flowers shortly pedicelled in axillary or extra axillary clusters. Petals notched at apex. Ovary tomentose; styles 2. Drupe obcordate or 2-lobed, grey tomentose; seeds covered with reddish mezocarp.

Common in semi-evergreen forests.

NS 10191, 10494 (Kattalappara); 11272 (Rosemala)

Fl. & Fr. Throughout the year

D i s t. Indo-Malesia

OLACACEAE

- | | |
|---|----------------|
| 1. Trees; stamens 3, staminodes absent | : Strombosia |
| 1. Climbers or scandent shrubs; stamens 5, staminodes present | : 2 |
| 2. Tendril climbers; petiole slender, 3 cm or more long | : Erythropalum |
| 2. Scandent shrubs; petiole thick, less than 1.5 cm long | : Olax |

ERYTHROPALUM BL.

Erythropalum scandens Bl., Bijdr. 922. 1826; Fl. Brit. India 1: 578. 1875; Sleumer, Blumea 26: 151. 1980. *Mackaya populifolia* Arn., Jard. Mag. Zool. Bot. 2: 531. 1838. *Erythropalum populifolium* (Arn.) Mast. in Hook. f., Fl. Brit. India 1: 578. 1875; Fl. Madras 191. 1915; Fl. Thenmala 62. 1992.

Climbing shrubs. Leaves peltate, ovate-deltoid, shortly acuminate, base truncate, glabrous above, glaucous below, 3-7 cm long. Flowers yellow, pedicels slender. Fruit red; seed one, bluish.

Fairly common in semi-evergreen and evergreen forests.

NS 10344, 10762 (Kallar)

Fl. & Fr. December-April

D i s t. Indo-Malesia to Philippines and China

OLAX L.

Olax imbricata Roxb., Fl. Ind. 1: 69. 1820; Fl. Brit. India 1: 575. 1875; Sleumer, Blumea 26: 156. 1980. *O. wightiana* Wall. ex Wt. & Arn., Prodr. 89. 1834; Fl. Madras 190. 1915; Fl. Thenmala 63. 1992.

Scandent shrubs. Leaves elliptic-oblong, acute or obtuse, base rounded or truncate, glabrous and chartaceous, to 12 x 6 cm. Petals creamy white, 1 cm long. Drupe yellow, oblong, 1.5-2 cm long.

Fairly common in semi-evergreen and moist deciduous forests.

NS 10081 (Kattalappara)

Fl. & Fr. January-April

D i s t. Indo-Malaya

STROMBOSIA Bl.

Strombosia ceylanica Gard., Calcutta J. Nat. Hist. 6: 350. 1846; Bedd., Fl. Sylv. t. 137. 1872; Fl. Brit. India 1: 579. 1875; Fl. Madras 191. 1915; Sleumer, Blumea 26: 165. 1980.

Medium sized to large trees, bark smooth with shallow annular depressions, pinkish-grey, pink with green shades inside. Leaves oblong-lanceolate, acute or obtuse, base acute or obtuse, often unequal sided, coriaceous, to 18 x 7 cm. Flowers small, yellow, fascicled on axillary scaly tubercles. Drupe subglobose, rugose, purple, 1 cm across.

Common in semi-evergreen and evergreen forests.

NS 10684 (Kattalappara)

Fl. & Fr. February-May

D i s t. South West India and Sri Lanka

ICACINACEAE

- | | |
|---|-----------------------|
| 1. Stamens opposite to the petals | : <i>Sarcostigma</i> |
| 1. Stamens alternate with the petals | : 2 |
| 2. Flowers in terminal panicles; petals densely villous | : <i>Nothapodytes</i> |
| 2. Flowers in axillary cymes; petals glabrous | : <i>Gomphandra</i> |

GOMPHANDRA Wall. ex Lindl.

- | | |
|--|-----------------------|
| 1. Cymes axillary; leaves membranous | : <i>G. tetrandra</i> |
| 1. Cymes leaf-opposed; leaves coriaceous | : <i>G. coriacea</i> |

Gomphandra coriacea Wt., Ill. 1: 103. 1840; Bedd., Ic. t. 61. 1868-1874; Fl. Madras 195. 1915; Sleumer, Blumea 17: 206. 1969. *G. polymorpha* Wt., Ill. 1: 103. 1840 p.p. & Ic. tt. 953, 954. 1843; Fl. Brit. India 1: 586. 1875.

Small trees. Leaves elliptic-oblong or oblanceolate, acute or acuminate, base cuneate, coriaceous, to 11 x 4 cm. Cymes glabrous; flowers greenish-yellow.

Common in evergreen forests above 700 m.

NS 10108 (Kallar); 11280 (Rosemala)

Fl. & Fr. November-April

D i s t. Throughout W. Ghats : endemic

Gomphandra tetrandra (Wall.) Sleumer, Notizbl. Bot. Gart. Berlin-Dahlem. 15: 238. 1940 & Blumea 17: 204. 1969; Fl. Thenmala 65. 1992. *Lasianthera tetrandra* Wall. in Roxb., Fl. Ind. 2: 238. 1824. *Gomphandra axillaris* Wall. ex Bedd., Fl. Sylv. t. 61. 1870; Fl. Brit. India 1: 586. 1875. *G. polymorpha* Wt., Ill. 1: 103. 1840 pp.; Fl. Madras 195. 1915.

Large shrubs to small trees. Leaves oblong-lanceolate, acuminate to caudate-acuminate, base rounded or acute, membranous, to 13 x 3.5 cm. Cymes puberulous, flowers greenish-yellow. Calyx teeth ciliolate.

Common in semi-evergreen and evergreen forests.

NS 5841 (Choondippara)

Fl. & Fr. September-December

D i s t. South West India and Sri Lanka

NOTHAPODYTES BL.

Nothapodytes nimmoniana (Grah.) Mabb. in Manilal, Bot. Hist. Hort. Malab. 88. 1980. *Premna nimmoniana* Grah., Cat. Pl. Bombay 155. 1839. *Stemonurus foetidus* Wt., Ic. t. 955. 1845. *Mappia foetida* (Wt.) Miers, Ann. Mag. Nat. Hist. (ser. 2) 9: 395. 1852; Fl. Brit. India 1: 589. 1875; Fl. Madras 196. 1915. *Nothapodytes foetida* (Wt.) Sleumer, Notzbl. Bot. Gart. Berlin-Dahlem 15: 247. 1940 & Blumea 17: 232. 1969.

Small trees, branchlets prominently lenticellate. Leaves broadly ovate or elliptic, acute or acuminate, base unequal sided, tomentose along the veins beneath and glabrous above, to 17 x 9 cm. Flowers creamy yellow, foul smelling. Calyx, pedicels and petals tomentose outside. Petals connate, villous within, apex inflexed.

Occasional in evergreen forests.

NS 10638 (Kallar)

Fl. August

D i s t. Indo-Malesia and China

SARCOSTIGMA Wt. & Arn.

Sarcostigma kleinii Wt. & Arn., Edinburgh New Philos. J. 14: 299. 1833; Wt., Ic. t. 1854. 1852; Fl. Brit. India 1: 594. 1875; Fl. Madras 199. 1915; Sleumer, Blumea 17: 254. 1969; Fl. Thenmala 65. 1995.

Climbing shrubs, bark smooth, brown. Leaves oblong-lanceolate, acuminate, base rounded or obtuse, coriaceous, to 17 x 8 cm; Flowers 3 mm long, dull orange-yellow, fascicled on slender spikes. Ovary villous. Drupe brownish-yellow, ca. 3 x 1.7 cm.

Fairly common in semi-evergreen forests.

NS 10830 (Rosemala)

Fl. & Fr. October-August

D i s t. Indo-Malesia

CELASTRACEAE

- | | |
|---------------------|-----|
| 1. Leaves alternate | : 2 |
| 1. Leaves opposite | : 3 |

2. Climbing shrubs; leaves estipulate	: Celastrus
2. Large trees; leaves with large foliaceous stipules	: Bhesa
3. Flowers sessile, in axillary clusters	: Microtropis
3. Flowers pedicelled, in dichasial cymes	: 4
4. Ovules many in each cell	: Lophopetalum
4. Ovules 1 or 2 in each cell	: 5
5. Fruits indehiscent, entire	: Pleurostyliia
5. Fruits dehiscent, 3-5 lobed or angled	: Euonymus

BHESA Ham. ex Arn.

Bhesa indica (Bedd.) Ding Hou, Blumea (Suppl.) 4: 152. 1958. *Trochisandra indica* Bedd., Fl. Sylv. t. 120. 1871. *Kurrimia bipartita* Laws. in Hook. f., Fl. Brit. India 1: 622. 1875. *K. indica* (Bedd.) Gamble, Fl. Madras 209. 1918.

Large evergreen trees, bark smooth, grey, mottled with white, dull brown inside; branchlets with prominent stipular scars. Leaves oblong, obtusely acuminate, base rounded, coriaceous, to 25 x 12 cm; lateral nerves prominent and parallel; stipules 3 cm long. Flowers yellowish-white. Capsule deeply 2-lobed.

Occasional in evergreen forests, above 700 m.

NS 11351 (Alvarakurichi)

Fr. March-April

D i s t. Southern W. Ghats : endemic

CELASTRUS L.

Celastrus paniculatus Willd., Sp. Pl. 1: 1125. 1797; Wt., Ic. t. 158. 1839; Fl. Brit. India 1: 617. 1875; Fl. Madras 208. 1918; Fl. Thenmala 67. 1995.

Lianas, bark brown; branchlets prominently lenticellate. Leaves ovate, elliptic or obovate, acute or acuminate. Flowers white, in terminal panicles. Capsule obovoid, 0.8 cm long, seeds smooth, aril yellow.

Occasional in moist deciduous and semi-evergreen forests.

NS 10067 (Kallar)

Fl. & Fr. May-September

D i s t. Indo-Malesia to Australia

EUONYMUS L.

1. Cymes 1-3 flowered, petals fimbriate	: E. indicus
2. Cymes many flowered, petals entire	: E. paniculatus

Euonymus indicus Heyne ex Wall. in Roxb., Fl. Ind. 2: 409. 1824; Fl. Brit. India 1: 608. 1875; Fl. Madras 202. 1918; Blakelock, Kew Bull. 6: 251. 1951. *E. gouhii* Wt., Ic. t. 215. 1839 & Ill. 178. 1840.

Small evergreen trees, bark greyish-brown, pinkish-red inside; branchlets terete. Leaves elliptic-acuminate, base acute, glabrous and glossy, to 9 x 5 cm. Flowers yellowish-red, 1 cm across. Capsule obcordate, orange yellow, 1.5 cm long; seeds covered with red aril.

Occasional in evergreen forests.

NS 10941 (Rosemala); 10052 (Kallar)

Fl. & Fr. September-March

D i s t. W. Ghats, Konkan Southwards : endemic

Euonymus paniculatus Wt. ex Laws. in Hook. f., Fl. Brit. India 1: 609. 1875; Fl. Madras 203. 1918. *E. crenulatus* Wall. ex Wt. & Arn. var. *laxiflora* Wt., Ic. 214. 1839.

Large shrubs. Leaves elliptic, serrate towards the distal half, to 8 x 4.5 cm. Cymes to 10 cm long; flowers red. Petals orbicular, 3 mm across.

Occasional in evergreen forests.

NS 10234, 5851 (Pongumala)

Fl. & Fr. January-June

D i s t. Peninsular India : endemic

LOPHOPETALUM Arn.

Lophopetalum wightianum Arn., Ann. Nat. Hist. 3: 151. 1839; Wt., Ic. t. 162. 1839; Bedd., Fl. Sylv. t. 142. 1871; Fl. Brit. India 1: 615. 1875; Fl. Madras 205. 1918; Fl. Thenmala 68. 1995.

Very large trees, often buttressed, bark grey, mottled with yellow, dull red inside. Leaves oblong or broadly elliptic, acuminate, base rounded, chartaceous, to 15 x 6 cm. Flowers 1.5 cm across, yellow. Disc purple-red, 5-lobed, adherent to the calyx.

Common in evergreen forests.

NS 10841 (Rosemala)

Fl. January

D i s t. Indo-Malesia

MICROTROPIS Wall. ex Meissn. *nom. cons.*

Microtropis wallichiana Wt. ex Thw., Enum. Pl. 71. 1858; Fl. Brit. India 1: 613. 1875; Fl. Madras 206. 1918.

Small trees. Leaves elliptic or oblanceolate, obtusely acute, base acute or attenuate, margins recurved, thinly coriaceous, to 10 x 5 cm. Flowers pale yellow, 2 mm across, in axillary fascicles. Capsule oblong, 1.3 x 0.6 cm; seed covered with red aril.

Occasional in evergreen forests.

NS 10399 (Kallar); 10805 (Rosemala)

Fl. & Fr. December-January

D i s t. South West India and Sri Lanka

PLEUROSTYLIA Wt. & Arn.

*Pleurostyli*a *opposita* (Wall.) Alston in Trim., Handb. Fl. Ceylon 6 (Suppl.) 48. 1931; Fl. Thenmala 67. 1995. *Celastrus opposita* Wall. in Roxb., Fl. Ind. 2: 398. 1824. *Pleurostyli*a *wightii* Wt. & Arn., Prodr. 157. 1834; Wt., Ic.t. 155. 1839; Fl. Brit. India 1: 617. 1875; Fl. Madras 211. 1918.

Small trees, bark pale brown, rough. Leaves elliptic-oblong or obovate, base crenate, to 5 x 2 cm. Flowers yellow, 3 mm across, in small axillary paniculate cymes. Drupes obovoid, 6-8 mm long.

Fairly common in semi-evergreen and evergreen forests.

NS 10136 (Kallar) 10530 (Kattalappara)

Fl. & Fr. November-June

D i s t. Indo-Malesia and Africa

HIPPOCRATEACEAE

1. Fruit indehiscent; seeds not winged

: *Salacia*

1. Fruit dehiscent; seeds winged

: *Reissantia*

REISSANTIA Halle

Reissantia grahamii (Wt.) Ding Hou, Blumea 12: 33. 1963; Subram. *et al.*, J. Econ. Tax. Bot. 3: 663. 1982. *Hippocratea grahamii* Wt., Ill. 1: 134. 1840 & Ic. t. 380. 1840; Fl. Brit. India 1: 624. 1875.

Climbing shrubs. Leaves elliptic or elliptic-ovate, acute or acuminate, base rounded, margins subentire, coriaceous, glabrous and glossy, to 14 x 7.5 cm. Flowers in panicled cymes. Calyx lobes ciliate along the margins. Petals greenish-yellow, oblong, concave.

Rare in semi-evergreen forests.

NS 10173 (Kattalappara)

Fl. March

D i s t. Southern W. Ghats : endemic

SALACIA L.

1. Flowers on axillary or extra-axillary tubercles

: *S. beddomei*

1. Flowers on axillary pedunculate cymes

: *S. fruticosa*

Salacia beddomei Gamble, Kew Bull. 1916: 133. 1916; Fl. Madras 215. 1918; Nair & Ramachandran, Indian J. For. 5 : 330. 1982.

Scandent shrubs. Leaves elliptic-oblong, abruptly acute, base truncate, margin distantly crenate, glabrous and glossy, to 15 x 7 cm. Flowers in axillary tubercles. Pedicels 5 mm long. Calyx fimbriate along margins. Petals ovate, glabrous, yellow, 3 mm long.

Occasional in semi-evergreen forests.

NS 10220 (Choodal)

Fl. January-March

Dist. Southern W. Ghats : endemic

Salacia fruticosa Heyne ex Laws. in Hook. f., Fl. Brit. India 1: 628. 1875; Fl. Madras 215. 1918; Nair & Ramachandran, Indian J. For. 5: 331. 1982.

Climbing shrubs, branchlets looped, young shoots puberulous. Leaves elliptic-oblong, acuminate, base rounded, to 9 x 4 cm. Petals yellow, orbicular, 2 mm across. Berry globose, orange-red, 2.5-3 cm across; seeds 1-3.

Fairly common in evergreen and semi-evergreen forests.

NS 10118 (Kallar); 10935 (Rosemala)

Fl. & Fr. Throughout the year

Dist. W. Ghats : endemic

RHAMNACEAE

- | | |
|-----------------------------------|-------------|
| 1. Fruits with linear wings | : Ventilago |
| 1. Fruits without linear wings | : 2 |
| 2. Stem armed with thorns | : Ziziphus |
| 2. Stem unarmed, tendril climbers | : Gouania |

GOUANIA Jacq.

Gouania microcarpa DC., Prodr. 2: 40. 1825; Fl. Brit. India 1: 643. 1875; Fl. Madras 225. 1918; Fl. Thenmala 68. 1995.

Large glabrous climbing shrubs. Leaves elliptic or ovate, acuminate, base rounded, margins subentire, to 7.5 x 4 cm; Flowers in terminal paniculate spikes. Calyx densely tomentose outside. Petals white, spatulate, clawed, 1.5 x 1 mm. Disc villous, lobed. Fruit obconic, mericarps with rounded margins.

Fairly common in semi-evergreen forests.

NS 10092 (Kallar)

Fl. & Fr. December-March

Dist. South West India and Sri Lanka

VENTILAGO Gaertn.

Ventilago bombaiensis Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 3: 36. 1851; Fl. Brit. India 1: 631. 1875; Fl. Madras 217. 1918; Oza, J. Bombay Nat. Hist. Soc. 70: 591. 1973. *Smythea bombaiensis* (Dalz.) Banerj. & Mukh., Indian For. 96: 214. 1970; Fl. Thenmala 70. 1995.

Lianas, bark smooth, brownish-black often with pale green blotches. Leaves elliptic-lanceolate, acuminate, base acute, serrate, glabrous and glossy, to 10 x 3.5 cm. Flowers in axillary fascicles. Pedicels and calyx brown tomentose. Petals yellow, obovate, truncate at apex, 1.5 mm long. Disc villous. Fruit wing *ca.* 5 x 1 cm.

Occasional in semi-evergreen and evergreen forests.

NS 10443 (Kattalappara)

Fl. & Fr. January-March

D i s t. W. Ghats, North Kanara southwards : endemic

ZIZIPHUS Mill.

- | | |
|--|----------------------|
| 1. Mature leaves glabrous beneath; petals absent | : <i>Z. rugosa</i> |
| 1. Mature leaves silky pubescent beneath; petals present | : <i>Z. oenoplia</i> |

Ziziphus oenoplia (L.) Mill., Gard. Dict. (ed. 8) no. 3. 1768; Fl. Brit. India 1: 634. 1875; Fl. Madras 220. 1918; Fl. Thenmala 69. 1995. *Rhamnus oenoplia* L., Sp. Pl. 194. 1753.

Scandent shrubs with sharp recurved spines, branchlets brown tomentose. Leaves ovate or elliptic, base oblique, margins entire, 5 x 3 cm; basally 3-ribbed. Flowers in axillary fascicles. Petals greenish-yellow, obovate, cuneate, 1 mm long. Drupe obovoid, purple, 5 mm long.

Common in moist deciduous forests and in forest plantations.

NS 11130 (Kattalappara)

Fl. & Fr. October-December

D i s t. Tropical Asia to Australia

Ziziphus rugosa Lamk., Encyl. 3: 319. 1789; Wt., Ic. t. 339. 1840; Fl. Brit. India 1: 636. 1875; Fl. Madras 221. 1918; Fl. Thenmala 69. 1995.

Lianas, stem with sharp spines. Leaves ovate or elliptic, obtuse to acute, base rounded or subcordate, margin finely serrate, to 15 x 8 cm; basally 3 or 4 ribbed; Flowers in terminal and axillary tomentose panicles. Pedicels and calyx densely tomentose. Drupe obovoid, white, 6 mm long.

Occasional in moist deciduous and semi-evergreen forests.

NS 10874 (Moolakkayam)

Fl. & Fr. January-May

D i s t. South Asia

VITACEAE

- | | |
|--|-----------------------|
| 1. Leaves simple | : 2 |
| 1. Leaves 3-9 foliolate | : 3 |
| 2. Flowers 5-merous; peduncles tendril bearing | : Ampelocissus |
| 2. Flowers 4-merous; tendrils leaf-opposed | : Cissus |
| 3. Flowers bisexual | : Cayratia |
| 3. Flowers unisexual | : Tetrastigma |

AMPELOCISSUS Planch. *nom. cons.*

Ampelocissus tomentosa (Heyne. ex Roth.) Planch., Vigne Amer. Eur. 8: 375. 1884; Fl. Madras 230. 1918. *Vitis tomentosa* Heyne., ex Roth., Nov. Pl. Sp. 157. 1821; Fl. Brit. India 1: 650. 1875.

Climbing shrubs. Leaves orbicular, base cordate, 3-lobed; lobes acuminate, serrate along the margins, woolly tomentose when young, to 18 cm long; 5-7 ribbed at base; petiole to 10 cm long. Flowers nearly sessile in dense clusters or racemose cymes. Peduncle and pedicels woolly. Petals oblong, brownish-red. Ovary grooved.

Occasional in evergreen forests.

NS 11277 (Rosemala)

Fl. & Fr. April-July

D i s t. South India and Sri Lanka

CAYRATIA A. Juss. *nom. cons.*

- | | |
|---|------------------------|
| 1. Berries black, seed with sharp angles | : C. tenuifolia |
| 1. Berries white, seed without sharp angles | : C. mollissima |

Cayratia mollissima (Wall.) Gagn. in Lecomte, Notul. Syst. (Paris) 1: 345. 1911; Fl. Madras 237. 1918. *Vitis mollissima* Wall. in Roxb., Fl. Ind. 2: 482. 1824; Fl. Brit. India 1: 656. 1875.

Slender climbers. Leaves 3-foliolate; leaflets oblong or elliptic, acuminate, the lateral leaflets subcordate at base and terminal one rounded at base, margin subentire, glabrous except the nerves beneath, to 13 x 5.5 cm. Peduncles and pedicels softly villous. Petals greenish, oblong, 3 mm long. Disc yellow, entire. Berry *ca.* 2 cm across; seeds planoconvex.

Fairly common in semi-evergreen and evergreen forests.

NS 10349 (Kallar); 10531, 11127 (Kattalappara)

Fl. & Fr. October-December

D i s t. Indo-Malesia

Cayratia tenuifolia (Wt. & Arn.) Gagn. in Lecomte, Notul. Syst. (Paris) 1: 343. 1911; Fl. Madras 237. 1918; Fl. Thenmala 72. 1995; Fl. Tamil Nadu I, 1: 80. 1983. *Vitis tenuifolia* Wt. & Arn., Prodr. 129. 1834 p. p.; Fl. Brit. India 1: 660. 1875.

Slender climbers. Leaves pedately 5-foliolate; leaflets elliptic or obovate, acute or obtuse, crenate, glabrous, the terminal leaflets to 4-5 x 2 cm; petiole 2.5-3 cm long. Flowers in axillary dichotomous cymes; pedicels very slender. Calyx truncate. Petals white, ovate-oblong, hooded at apex, 2.5 mm long. Disc lobed. Berry obovoid, 1 cm across; seeds 1-4.

Common in evergreen forests.

NS 10135, 10475 (Kallar)

Fl. & Fr. July-August

D i s t. Indo-Malesia, China and Japan

CISSUS L.

- | | |
|---|-------------------------|
| 1. Pedicels, calyx and undersurface of leaves reddish | : <i>C. discolor</i> |
| 1. Pedicels, calyx and under surface of leaves green | : 2 |
| 2. Branchlets 4-angled; leaf margins bristly serrate | : <i>C. heyneana</i> |
| 2. Branchlets 4-angled and winged; leaf margins crenate | : <i>C. glyptocarpa</i> |

Cissus discolor Bl., Cat. Gew. Buitenz. 39. 1823; Fl. Madras 235. 1918. *Vitis discolor* (Bl.) Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 2: 39. 1850; Fl. Brit. India 1: 648. 1875.

Scandent shrubs, branchlets 5-6 angled. Leaves ovate-oblong, acuminate, base cordate, sometimes oblique, bristly-serrate, glabrous, to 12 x 5 cm. Calyx glandular. Petals red, ovate-acute, 1.8 mm long. Disc subentire. Berries pyriform, ca. 0.5 cm long; seed one.

Common in semi-evergreen and moist deciduous forests.

NS 10616 (Thenmala)

Fl. & Fr. September-December

D i s t. Indo-Malesia

Cissus glyptocarpa (Thw.) Planch. in DC., Monog. Phan. 5: 477. 1887; Fl. Madras 235: 1918; Fl. Thenmala 71. 1995. *Vitis glyptocarpa* Thw., Enum. Pl. Zeyl. 62. 1858; Fl. Brit. India 1: 645. 1875.

Climbing shrubs, bark rough. Leaves ovate-oblong, caudate-acuminate, base subcordate or truncate, distantly crenate along the margins, glabrous, to 10 x 5 cm. Calyx shortly lobed. Petals greenish-white, ovate, 2 mm long. Berry pyriform, ca. 7 mm long; seed one.

Occasional in semi-evergreen and evergreen forests.

NS 10401, 10471 (Kallar)

Fl. & Fr. March-April

D i s t. South India and Sri Lanka

Cissus heyneana (Wall. ex Laws.) Planch. in DC., Monog. Phan. 5: 476. 1887; Fl. Madras 234. 1918. *Vitis heyneana* Wall. ex Laws. in Hook. f., Fl. Brit. India 1: 645. 1875.

Large climbing shrubs, bark brown rough, vertically fissured. Leaves ovate-cordate, caudate-acuminate, distantly crenate along the margins, glabrous and glaucous, to 15 x 10 cm; petiole to 2.5 cm long. Calyx red, minutely lobed. Petals greenish-yellow, ovate, 2 mm long. Berry pyriform, ca. 7 mm long; seed one.

Occasional in semi-evergreen forests.

NS 11329 (Rosemala)

Fl. April-June

D i s t. South India and Sri Lanka

TETRASTIGMA (Miq.) Planch.

Tetrastigma sulcatum (Laws.) Gamble, Fl. Madras 229. 1918. *Vitis sulcata* Laws. in Hook. f., Fl. Brit. India 1: 661. 1875.

Climbing shrubs, stem with tuberculate lenticels, branchlets 4-angled. Leaves pedately 5-foliolate; leaflets elliptic-oblong, acuminate, lateral leaflets oblique at base, margins serrate, glabrous on both sides, to 14 x 6 cm. Cymes axillary, with several bracts towards the base. Petals greenish, oblong, acute, 1.2 mm long. Disc thick, pitted. Berry globose, 1.5-2 cm across; seeds 2-4.

Occasional in evergreen forests.

NS 10383 (Kallar)

Fl. & Fr. April-December

D i s t. Peninsular India

LEEACEAE

LEEA Royen ex L. *nom. cons.*

- | | |
|-------------------------------------|------------------------|
| 1. Flowers crimson red | : <i>L. guineensis</i> |
| 1. Flowers greenish-yellow or white | : <i>L. indica</i> |

Leea guineensis G. Don, Gen. Syst. 712. 1831; Ridsd., Blumea 22: 92. 1974; Fl. Thenmala 73. 1995. *L. wightii* Cl. J. Bot. 19: 105. 1881; Fl. Madras 239. 1918. *L. staphylea* Wt., Ill. I. t. 58. 1840, non Roxb. 1832.

Glabrous shrubs. Leaves bipinnate; leaflets ovate-lanceolate, caudate-acuminate, base truncate or acute, serrate; lateral nerves 7-10 pairs, intercostae subscalariform; stipules obovate, ca. 4 cm long. Flowers crimson red. Calyx and corolla glabrous. Staminal tube shortly notched at apex. Berry 6-lobed, 6-7 mm across.

Occasional in evergreen forests.

Fl. & Fr. April-November

D i s t. India to South East Asia and Tropical Africa

Leea indica (Burm. f.) Merr., Philipp. J. Sci. 14. 245. 1919; Ridsd., Blumea 22: 95. 1974; Fl. Thenmala 74. 1995. *Staphylea indica* Burm. f., Fl. Ind. 75, t. 23. f. 2. 1768. *Leea sambucina* Willd., Sp. Pl. 1: 1177. 1798; Wt., Ic. t. 78. 1838; Fl. Brit. India 1: 666. 1875; Fl. Madras 240. 1918.

Shrubs to small trees. Leaves 2 or 3 pinnate; leaflets oblong or elliptic-lanceolate, caudate-acuminate, serrate-dentate; lateral nerves 12-15 pairs, intercostae not prominent; stipules obovate-obtuse, 5 x 4 cm. Young leaves bright-red. Flowers greenish-white. Staminal tube shortly lobed at apex. Berry purple, *ca.* 6 mm across.

A very variable species, common in secondary and disturbed semi-evergreen forests.

NS 10385 (Kallar)

Fl. & Fr. March-August

D i s t. Indo-Malesia to Northern Australia and China.

STAPHYLEACEAE

TURPINIA Vent. *nom. cons.*

- | | |
|---|------------------------|
| 1. Leaflets lanceolate; staminal filaments glabrous | : <i>T. nepalensis</i> |
| 1. Leaflets elliptic; staminal filaments hairy | : <i>T. malabarica</i> |

Turpinia malabarica Gamble, Kew Bull. 1916: 135. 1916. & Fl. Madras 241. 1918; Merr. & Perry, J. Arnold Arbor. 22: 547. 1941.

Medium sized buttressed trees, bark greyish-brown. Leaflets 5 or 7 pairs, elliptic or elliptic-lanceolate, acuminate, base rounded, crenate, thickly coriaceous, to 12 x 5 cm. Flowers dull yellow. Staminal filaments pubescent. Berry brown scurfy, 1.5-2 cm across.

Common in evergreen forests.

NS 10408 (Kallar); 11372 (Alvarakurichi)

Fl. & Fr. March-October

D i s t. Southern W. Ghats : endemic

Turpinia nepalensis Wall. ex Wt. & Arn., Prodr. 156. 1834; Wt., Ic. t. 972. 1845; Fl. Madras 241. 1918. *T. pomifera* sensu Hiern, Fl. Brit. India 1: 698. 1895. *p. p.* non (Roxb.) DC. 1825.

Small trees. Leaves pinnate; leaflets 3-7, lanceolate, obtusely acuminate, serrate, to 8 x 4 cm, chartaceous. Flowers yellow, 2.5 mm across, in axillary panicles. Ovary 3-lobed.

Occasional in evergreen forests, above 1500 m elevation.

NS 10240 (Pongumala)

Fl. March-April

D i s t. Indo-Malaysia

SAPINDACEAE

- | | |
|---|------------------------|
| 1. Herbaceous climbers; inflorescence with a pair of tendrils | : Cardiospermum |
| 1. Woody shrubs or trees; inflorescence without tendrils | : 2 |
| 2. Cells of ovary 2-ovuled | : Harpullia |
| 2. Cells of ovary 1-ovuled | : 3 |
| 3. Leaves trifoliolate, margins serrate | : Allophylus |
| 3. Leaves pinnate, leaflets 4 or more, margins entire | : 4 |
| 4. The lowest pair of leaflets reniform and stipule like | : Otonophelium |
| 4. All leaflets similar | : 5 |
| 5. Petals absent | : Schleichera |
| 5. Petals present | : 6 |
| 6. Fruits tubercled | : Dimocarpus |
| 6. Fruits smooth | : 7 |
| 7. Petals clawed, with 1 or 2 scales | : Lepisanthes |
| 7. Petals not clawed, without scales | : Sapindus |

ALLOPHYLUS L.

Allophylus concanicus Radlk. in Sitzungsber. Maths.-Phys. Cl. Koenigl. Bayer. Akad. Wiss. Muenchen 20: 230. 1890. var. **concanicus**; Fl. Madras 246. 1918.

Large shrubs, branchlets brown, glabrous. Leaflets elliptic, acuminate, entire or crenate towards distal half, glabrous, to 15 x 7 cm. Thyrses longer than the leaves. Fruit subglobose, 8 mm across.

Occasional in evergreen forests.

NS 11436 (Alvarakurichi)

Fl. & Fr. October-February

D i s t. Peninsular India : endemic

CARDIOSPERMUM L.

Cardiospermum halicacabum L., Sp. Pl. 366. 1753; Wt., Ic. t. 508. 1841; Fl. Brit. India 1: 670. 1875; Fl. Madras 244. 1918; Fl. Thenmala 74. 1995.

Slender herbaceous climbers. Leaflets ovate-lanceolate, shortly decurrent on the petiolule, membranous, to 3.5 x 2 cm. Flowers white in axillary racemes. Capsule shortly

winged at angles, pubescent, 1.5 x 2 cm.; seeds globose, 3 mm across, black with a small white aril.

Occasional in forest plantations.

NS 10365 (Kattalappara)

Fl. & Fr. July-February

D i s t. Throughout the Tropics

DIMOCARPUS Lour.

Dimocarpus longan Lour., Fl. Cochinch. 233. 1790; Leenh., Blumea 19: 125. 1971. *Euphoria longana* Lamk., Encyl. 3: 574. 1792; Bedd., Fl. Sylv. t. 156. 1871; Fl. Thenmala 77. 1995. *Nephelium longana* (Lamk.) Camb., Mem. Mus. Natl. Hist. Nat. 18: 30. 1829; Fl. Brit. India 1: 688. 1875; Fl. Madras 252. 1918.

Medium sized to large trees, bark reddish-brown, flaking off in thin scales, reddish inside; branchlets reddish-brown tomentose. Leaves to 30 cm long; leaflets ca. 4-10 pairs, oblong-lanceolate, acute, base oblique, entire, glabrous above and glaucous below. Panicles brown tomentose. Petals yellowish-white, pilose at base. Shizocarp 1-1.5 cm across; 1-seeded.

Common in evergreen and semi-evergreen forests.

NS 10517 (Kattalappara); 11303 (Rosemala)

Fl. & Fr. March-August

D i s t. Indo-Malesia

HARPULLIA Roxb.

Harpullia arborea (Blanco) Radlk., Sitzungsber. Math.-Phys. Cl. Koenigl. Bayer. Akad. Wiss. Muenchen 16: 404. 1890; Leenh. & Vente, Blumea 28: 11. 1982; Fl. Thenmala 77. 1995. *Ptelea arborea* Blanco, Fl. Philipp. (ed. 1) 63. 1837. *Harpullia imbricata* Thw., Enum. Pl. 56. 1858; Fl. Madras 253. 1918. *H. cupanoides* Hiern in Hook. f., Fl. Brit. India 1: 692. 1875 p.p.

Medium sized much branched trees, bole fluted, bark smooth, greyish. Leaflets 8-12, subopposite, oblong-lanceolate, acuminate, base oblique, glabrous, to 15 x 5 cm. Flowers greenish-yellow, 1 cm long. Stamens 5. Capsule obcordate, bright red, 5 x 3 cm; seeds ovoid, black, smooth and shining.

Fairly common in semi-evergreen forests.

NS 10372 (Kallar); 11305 (Rosemala)

Fl. & Fr. February-March

D i s t. Indo-Malesia

Note: Leenhouts & Vente have discussed the variability of this species in some detail. For a discussion on a natural classification of the genus, refer Leenhouts (Blumea 31: 219-234. 1985).

LEPISANTHES Bl.

1. Flowers regular; stigma 3-lobed : *L. erecta*
1. Flowers irregular; stigma not lobed : *L. tetraphylla*

Lepisanthes erecta (Thw.) Leenh., *Blumea* 17: 69. 1969. *Nepheium erectum* Thw., *Enum. Pl.* 57. 1858. *Sapindus erecta* (Thw.) Hiern in Hook. f., *Fl. Brit. India* 1: 683. 1875, 'erectus'. *Thraulococcus erectus* (Thw.) Radlk. in *Sitzungsber. Math.-Phys. Koenigl. Bayer Akad. Wiss. Muenchen.* 8: 300. 1878; *Fl. Madras* 251. 1918.

Erect shrubs. Leaves to 40 cm long; leaflets 3-5 pairs, oblong or oblong-lanceolate, acute or acuminate, base acute, glabrous. Flowers dull yellow, in terminal large panicles. Fruit of 1-3 drupes, ellipsoidal, connate by their bases.

Fairly common in evergreen forests.

NS 10073 (Kallar); *10908* (Rosemala)

Fl. & Fr. October-January

D i s t. South India and Sri Lanka

Lepisanthes tetraphylla (Vahl) Radlk., *Sitzungsber. Maths.-Phys. Bayer. Akad. Wiss. Muenchen.* 8: 276. 1878; *Fl. Madras* 247. 1918; Leenh., *Blumea* 17: 63. 1969; *Fl. Thenmala* 76. 1995. *Sapindus tetraphylla* Vahl, *Symb. Bot.* 3: 54. 1794. *Hemigyrosa deficiens* (Wt. & Arn.) Bedd., *Fl. Sylv. t.* 231. 1872. *H. canescens* (Roxb.) Bl., *Rumphia* 3: 166. 1847; Bedd., *Fl. Sylv. t.* 151. 1871; *Fl. Brit. India* 1: 671. 1875.

Small scandant to medium sized erect trees. Leaflets 2-5 pairs, alternate or subopposite, oblong to lanceolate, acuminate, glabrous, very variable in size and texture; rachis shortly winged or terete. Flowers creamy-yellow in panicles, axillary or terminal. Drupe orange-yellow, subglobose or trigonus.

Fairly common in semi-evergreen and evergreen forests.

NS 10445, 10671 (Kattalappara); *10883* (Rosemala)

Fl. & Fr. February-July

D i s t. Indo-Malesia

OTONEPHELIUM Radlk.

Otonepheium stipulaceum (Bedd.) Radlk., *Sapind. Holl.-Ind.* 71. 1879 & in *Engl. & Prantl., Pflanzenf.* 3, 5: 329. 1895; Leenh., *Blumea* 31: 429. 1986. *Nepheium stipulaceum* Bedd., *Trans. Linn. Soc. London* 25: 212. 1865 & *Fl. Sylv. t.* 155. 1871; *Fl. Brit. India* 1: 690. 1875; *Fl. Madras* 252. 1918.

Medium sized evergreen trees, bark pale-brown, peels off in irregular thin scales. Leaflets obovate or elliptic, acuminate, base cuneate to obtuse, glabrous above and glaucous beneath, to 18 x 10 cm; the lower pair of reniform leaflets to 2.5 x 2 cm. Flowers creamy

yellow, clustered along the panicles. Drupe ellipsoid 2.5 x 2 cm; seeds smooth.

Common in evergreen forests.

NS 11240 (Rosemala)

Fl. & Fr. February-July

D i s t. W. Ghats, Kanara Southwards : endemic

SAPINDUS L.

Sapindus trifoliata L., Sp. Pl. 367. 1753; Fl. Brit. India 1: 682. 1875; Nicols. *et al.*, Interp. Hort. Malab. 237. 1988. *S. laurifolia* Vahl, Symb. Bot. 3: 54. 1794, *nom. illeg.*; Fl. Madras 250. 1918; Fl. Thenmala 78. 1995.

Small to medium sized trees, bark smooth, grey. Leaflets 3-4 pairs, elliptic-lanceolate or elliptic, acuminate, glabrous, to 15 x 7 cm. Panicles terminal, tomentose. Petals linear-lanceolate, villous, 5 mm long. Ovary tomentose.

Occasional in semi-evergreen and moist deciduous forests.

NS 10682 (Kattalappara)

Fl. & Fr. December-April

D i s t. India and Sri Lanka

SCHLEICHERA Willd. *nom. cons.*

Schleichera oleosa (Lour.) Oken, Alleg. Naturgesch. 3(2): 1341. 1841; Fl. Thenmala 78. 1995. *Pistacia oleosa* Lour., Fl. Cochinch. 615. 1790. *S. trijuga* Willd., Sp. Pl. 4: 1096. 1806; Bedd., Fl. Sylv. t. 119. 1871; Fl. Brit. India 1: 681. 1875; Fl. Madras 248. 1918.

Large deciduous trees, bark grey, reddish inside. Young leaves bright red. Leaflets oblong or oblong-elliptic, acute, base unequal, rachis and nerves pubescent beneath. Flowers small, greenish. Ovary tomentose. Drupe globose, glabrous, sparsely echinate.

Occasional in moist deciduous forests.

NS 10180 (Kattalappara)

Fl. & Fr. March-August

D i s t. Indo-Malesia

SABIACEAE

MELIOSMA Bl.

1. Leaves simple, glabrous

: *M. simplicifolia*

1. Leaves pinnate, tomentose

: *M. pinnata*

ssp. *arnottiana*

Meliosma pinnata (Roxb.) Maxim. ssp. *arnottiana* (Wt.) Beus., *Blumea* 19: 499. 1971. *Millingtonia pinnata* Roxb., *Fl. Ind.* 1: 103. 1820. *M. arnottiana* Wt., *Ill. t.* 53. 1840. *Meliosma arnottiana* (Wt.) Walp. *Repert.* 1: 423. 1842; *Bedd., Fl. Sylv. t.* 160. 1871; *Fl. Brit. India* 2: 6. 1876; *Fl. Madras* 256. 1918.

Medium sized evergreen trees; branchlets brown villous, prominently lenticellate. Leaflets 9-11, lanceolate, acuminate, chartaceous, tawny tomentose beneath, to 10 x 4 cm. Flowers in large terminal and axillary tomentose panicles; bracteoles sepaloid. Sepals ciliate along margins. Petals creamy-white, the outer 3 larger orbicular and entire, the inner 2 shorter ones notched. Ovary tomentose, style single.

Occasional in evergreen forests.

NS 11394 (Alvarakurichi)

Fl. December-January

D i s t. Indo-Malesia

Meliosma simplicifolia (Roxb.) Walp. ssp. *simplicifolia*: *Fl. Brit. India* 2: 5. 1876; *Fl. Madras* 256. 1918; Beus., *Blumea* 19: 462. 1971. *Millingtonia simplicifolia* Roxb., *Pl. Corom.* 3: 50. t. 254. 1820.

Small trees, bark smooth, branchlets glabrescent. Leaves oblanceolate, acuminate, base attenuate, glabrous, glandular beneath, to 20 x 7 cm. Flowers subsessile in terminal and axillary panicles. Sepals ciliate along the margins. Petals yellow, outer 3 larger, 1.5 cm across, the inner petals 2-fid. Ovary glabrous. Drupe globose, 5 mm across.

Common in evergreen forests.

NS 10381 (Kallar) 10912 (Rosemala)

Fl. & Fr. March-June

D i s t. Indo-Malesia and China

ANACARDIACEAE

1. Leaves compound	: 2
1. Leaves simple	: 4
2. Leaflets with intramarginal nerve	: 3
2. Leaflets without intramarginal nerve	: Lanea
3. Leaflets serrulate; style 1	: Solenocarpus
3. Leaflets entire; styles 5	: Spondias
4. Carpel 5, distinct (only 1 fertile)	: Buchanania
4. Carpel 1	: 5
5. Style 1	: 6
5. Styles 3	: 8
6. Style short, stigma 3-lobed	: Nothopogia
6. Style slender, stigma undivided	: 7

7. Fertile stamens 5; fruit dry, with hard brittle rind : **Gluta**
 7. Fertile stamen 1; fruit fleshy : **Mangifera**
 8. Leaves with petiolar appendages; drupe partly enclosed by the
 hypocarp : **Holigarna**
 8. Leaves without petiolar appendages; drupe seated on the basal
 hypocarp : **Semecarpus**

BUCHANANIA Spreng.

1. Leaves glabrous, less than 3 cm broad : **B. lanceolata**
 1. Leaves pubescent below, over 5 cm broad : **B. lanzan**

Buchanania lanceolata Wt., Ic. t. 237. 1839; Fl. Brit. India 2: 24. 1876; For Trees Travancore 123. 1908; Fl. Madras 259. 1918; Fl. Thenmala 82. 1995.

Medium sized trees, bark brownish black, rough. Leaves oblong, acute or acuminate, base obtuse or acute, to 12 x 2.5 cm. Flowers 6 mm across, yellow in tomentose short panicles.

Occasional in semi-evergreen forests

NS 10693 (Kattalappara)

Fl. & Fr. December-January

D i s t. Southern W. Ghats : endemic

Buchanania lanzan Spreng., J. Bot. (Shrader) 2: 234. 1800; Fl. Madras 258. 1918; Fl. Thenmala 81. 1995. *B. latifolia* Roxb., Fl. Ind. 2: 385. 1832; Fl. Sylv. t. 165. 1871; Fl. Brit. India 2: 23. 1976.

Small to medium sized trees, bark rough fissured and cracked. Leaves oblong, obtuse, villous along the nerves, to 20 x 6 cm. Flowers 1 cm across, greenish-white, in pubescent panicles.

Fairly common in moist deciduous forests.

NS 10084 (Kattalappara)

Fl. January-March

D i s t. India and Burma

GLUTA L.

Gluta travancorica Bedd., Fl. Sylv. t. 60. 1870; Fl. Brit. India 2: 22. 1876; For Trees Travancore 118. 1908; Fl. Madras 261. 1918; Fl. Thenmala 84. 1995.

Very large trees, bark smooth, greyish-brown. Leaves crowded towards apex of branchlets, obovate, oblong, obtuse to acute, coriaceous, to 16 x 5 cm. Flowers white, 7 mm

long, in axillary and terminal panicles. Fruit globose, reddish brown, scurfy, 2.5-3.5 cm across.

Fairly common in evergreen forests.

NS 10129 (Kallar); 10301 (Choondippara)

Fl. & Fr. March-January

D i s t. Southern W. Ghats : endemic

HOLIGARNA Ham. ex Roxb. *nom. cons.*

Holigarna arnottiana Hook. f., Fl. Brit. India 2: 36. 1876; For. Trees Travancore 124. 1908; Fl. Madras 268. 1918; Fl. Thenmala 80. 1995. *H. longifolia* Wt. & Arn., Prodr. 169. 1834, non Roxb. 1820; Bedd., Fl. Sylv. t. 167. 1871.

Large evergreen trees, bark smooth, pale brown with grey blotches, dull red inside, latex milky; young shoots brown tomentose. Leaves oblanceolate, acute or shortly acuminate, base attenuate or acute, to 20 x 7 cm; spurs 2, slender. Flowers yellowish-white, in terminal panicles. Petals tomentose without. Drupe obliquely ovoid, dark purple.

Common along the banks of streams in semi-evergreen and evergreen forests.

NS 10730 (Choodal)

Fl. & Fr. February-July

D i s t. Throughout W. Ghats : endemic

LANNEA A. Rich. *nom. cons.*

Lannea coromandelica (Houtt.) Merr., J. Arnold Arbor. 19: 353. 1938; Fl. Thenmala 86. 1995. *Dialium coromandelicum* Houtt., Nat. Hist. (ser. 2) 2: 39. t. 5. f. 2. 1774. *Odina wodier* Roxb., Fl. Ind. 2: 293. 1832; Wt., Ic. t. 60. 1838; Bedd., Fl. Sylv. t. 123. 1871; Fl. Brit. India 2: 29. 1876; For. Trees Travancore 126. 1908; Fl. Madras 263. 1918.

Large trees, bark dark brown, flaking off in thin irregular scales, crimson red inside; young shoots rusty tomentose. Leaflets oblong-lanceolate, acuminate, base oblique, to 8 x 4 cm; Flowers yellow in terminal racemes. Calyx lobes ovate, imbricate. Petals lanceolate, reflexed. Drupe 1 cm long.

Occasional in moist deciduous forests.

NS 10877 (Moolakkayam); 11336 (Rosemala)

Fl. & Fr. March-May

D i s t. South and South East Asia and China

MANGIFERA L.

Mangifera indica L., Sp. Pl. 200. 1753; Bedd., Fl. Sylv. t. 162. 1871; Fl. Brit. India 2: 13. 1876; For. Trees Travancore 117. 1908; Fl. Madras 259. 1918; Ding Hou in Steenis, Fl. Males. I, 8: 427. 1978; Fl. Thenmala 84. 1995.

Very large trees, bark dark grey, rough, exudation yellowish, gummy; young shoots glabrous. Leaves oblong or elliptic-lanceolate, acuminate, base acute, to 25 x 6 cm. Flowers pale-yellow. Drupe 5-6 cm long, ovoid, greenish-yellow.

Occasional in evergreen forests.

NS 11411 (Rosemala)

Fl. & Fr. January-April

D i s t. Indo-Malesia

Note: Besides the wild variety, which has small fruits, several cultivars are grown in forest settlements.

NOTHOPEGIA Bl.

1. Leaves 4-6 cm broad, base rounded or truncate, petiole and young shoots densely yellowish brown pilose

: *N. aureo-fulva*

1. Leaves 2-4 cm broad, base acute or obtuse, petiole and young shoots with short tomentum

: *N. travancorica*

Nothopegia aureo-fulva Bedd. ex Hook. f. in *Fl. Brit. India* 2: 40. 1876; *Fl. Madras* 266. 1918; *Fl. Thenmala* 83. 1995.

Small trees. Leaves oblong, acuminate, glabrous except the petiole, to 20 x 6 cm; young leaves blue. Flowers not seen.

Rare in evergreen forests.

NS 10983 (Rosemala)

D i s t. Southern W. Ghats : endemic

Nothopegia travancorica Bedd. ex Hook. f., *Fl. Brit. India* 2: 40. 1876; *Fl. Madras* 265. 1918.

Shrubs to small trees. Leaves oblong or linear-oblong, obtusely acute or acuminate, coriaceous, to 15 x 4 cm; lateral nerves to 20 pairs, intercostae scalariform. Flowers in short racemes or fascicles. Calyx tomentose. Petals white, hairy within, ciliate along the margins, 1.5 mm long.

Occasional in evergreen forests.

NS 10026 (Choodal)

Fl. December-January

D i s t. Southern W. Ghats : endemic

SEMECARPUS L. f.

Semecarpus auriculata Bedd., *l.c.* t. 187. 1868-1874; *Fl. Brit. India* 2: 32. 1876; *For. Trees Travancore* 121. 1908, *Fl. Madras* 267. 1918.

Medium to large trees, bark smooth, yellowish-brown. Leaves oblanceolate, acute, base narrowed and auricled, glabrous to 20 x 6 cm. Flowers yellow, in axillary slender panicles. Drupes oblique.

Fairly common in evergreen forests.

NS 10132 (Kallar); 10879 (Moolakkayam); 10897 (Rosemala)

Fl. & Fr. January-April

D i s t. Southern W.Ghats : endemic

SOLENOCARPUS Wt. & Arn.

Solenocarpus indicus Wt. & Arn., Prodr. 172. 1834; Bedd., Fl. Sylv. t. 233. 1874; Fl. Brit. India 2: 27. 1876; Fl. Madras 262. 1918; Kosterm., Found. Useful Pl. Asia 1: 73. 1991.

Spondias indica (Wt. & Arn.) Airy Shaw & Forman, Kew Bull. 21: 16. 1967.

Small trees, often growing among the crevices of rocks. Leaflets 9-15, oblong or oblong-lanceolate, acuminate, base oblique, subcoriaceous, 5-10 cm long. Flowers yellowish, 2 mm across. Drupe yellowish, 6 x 4 mm.

Occasional in semi-evergreen and moist deciduous forests.

NS 10863 (Umiyar); 11337 (Rosemala)

Fl. & Fr. March-May

D i s t. W. Ghats from Coorg southwards : endemic

SPONDIAS L.

Spondias pinnata (L. f.) Kurz, Brelim. Rep. Forest Veg. Pegu. A. 44 & B 42. 1875; Kosterm., Found. Useful Pl. Asia 1: 43. 1991; Fl. Thenmala 86. 1995. *Mangifera pinnata* L. f., Suppl. 156. 1781. *Spondias mangifera* Willd., Sp. Pl. 2: 751. 1799; Bedd., Fl. Sylv. t. 169. 1872; Fl. Brit. India 2: 42. 1876; Fl. Madras 261. 1918.

Medium sized to large trees, bark greyish brown, smooth, to 2 cm thick, pink inside. Leaflets 7-11; oblong or oblong-ovate, acuminate, mucronate, base rounded, slightly oblique, coriaceous 5-8 x 3-4 cm, nerves numerous, close and parallel. Flowers yellowish-white, polygamous, subsessile. Drupe ovoid, yellow ca. 3.5 x 2 cm.

Occasional in moist deciduous and semi-evergreen forests.

NS 10904 (Rosemala)

Fl. & Fr. March-December

D i s t. South and South East Asia

Anacardium occidentale L. is widely planted in the forest settlements.

CONNARACEAE

- | | |
|------------------------------------|---------------|
| 1. Leaves simple; trees | : Ellipanthus |
| 1. Leaves pinnate; scandent shrubs | : 2 |

2. Calyx enlarged in fruit; follicle sessile : **Rourea**
 2. Calyx not enlarged in fruit; follicle stipitate : **Connarus**

CONNARUS L.

1. Leaf base rounded, lateral nerves ca. 5 pairs, reticulations faint : **C. monocarpus**
 1. Leaf base acute, lateral nerves ca. 7 pairs, reticulations prominent : **C. wightii**

Connarus monocarpus L., Sp. Pl. 675. 1753; Fl. Brit. India 2: 50. 1876; Fl. Madras 272. 1918; Leenh. in Steenis, Fl. Males. I, 5: 538. 1956.

Scandent shrubs. Leaflets subopposite or opposite, ovate or ovate-oblong, obtusely acuminate, base rounded, glabrous and shining, to 12 x 5.5 cm; lateral nerves ca. 5 pairs, reticulation thin. Panicle brown tomentose. Petals pink. Follicle 3.5-4 cm long, brown, smooth, glossy.

Occasional in semi-evergreen forests.

NS 10171 (Kattalappara)

Fl. & Fr. March-May

D i s t. India and Sri Lanka; in India throughout W. Ghats

Connarus wightii Hook. f., Fl. Brit. India 2: 51. 1876; Fl. Madras 272. 1918; Fl. Thenmala 87. 1995. **C. ritchiei** Hook. f., Fl. Brit. India; Fl. Madras 273. 1918.

Scandent shrubs. Leaflets elliptic, or elliptic lanceolate, obtusely caudate acuminate, glabrous, to 9.5 x 4 cm, prominently reticulate. Panicle tomentose. Flowers yellowish-white. Follicles striated, 1-seeded, aril yellow.

Occasional in evergreen forests.

NS 10940 (Rosemala)

Fl. & Fr. January-May

D i s t. Western Ghats : endemic

ELLIPANTHUS Hook. f.

Ellipanthus tomentosus Kurz., J. Asiat. Soc. Bengal 41: 305. 1872; Fl. Brit. India 2: 56. 1876. **E. neglectus** Gamble, Kew Bull. 1917: 26. 1917 & Fl. Madras 273. 1918 [Fig. 5].

Small trees. Leaves elliptic, caudate, acuminate, glabrous and tomentose below, prominently reticulate, to 12 x 6 cm. Flowers white, 7 mm across, in short axillary tomentose racemes. Stamens alternating with short staminodes.

Occasional in evergreen forests.

NS 10929, 11201 (Rosemala)

Fl. November-January

D i s t. India and Sri Lanka

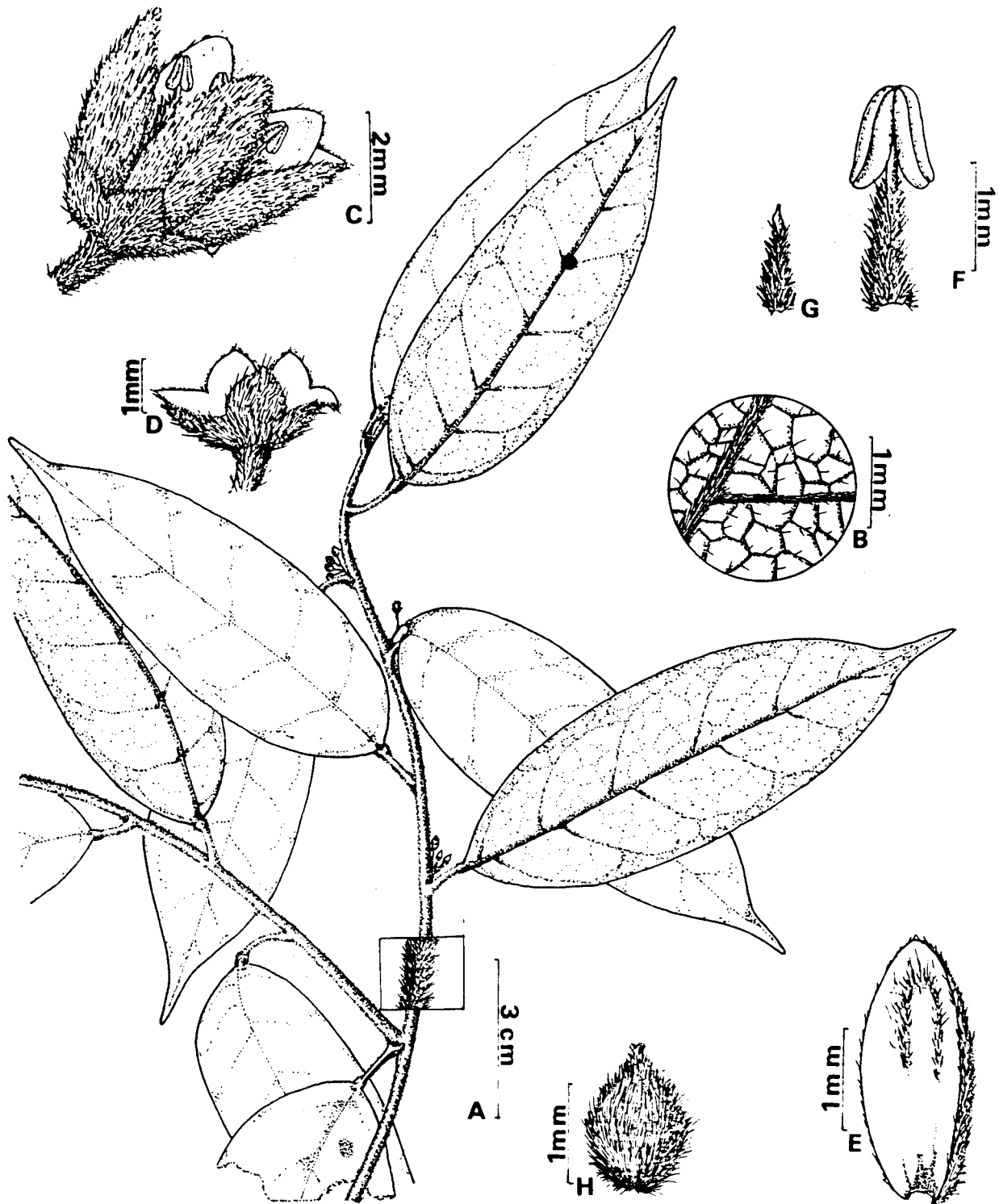


Fig. 5 : *Ellipanthus tomentosus* Kurz A. flowering twig, B. portion of leaf showing tomentum, C. flower, D. calyx, E. petal, F. stamen, G. staminode, H. carpel

ROUREA Aubl.

Rourea minor (Gaertn.) Merr., Interp. Herb. Amboin. 413. 1917; Leenh. in Steenis, Fl. Males. I, 5: 514. 1956; Fl. Thenmala 87. 1995. '*minus*'. *Aegiceras minus* Gaertn., Fruct. 1: 216. t. 46. 1788. *Rourea santaloides* (Vahl) Wt. & Arn., Prodr. 144. 1834; Fl. Brit. India 2: 47. 1876; Fl. Madras 271. 1918. *Connarus santaloides* Vahl, Symb. Bot. 4: 87. 1794.

Lianas, bark brown, smooth; branchlets slender. Leaflets 5-9, elliptic-lanceolate or elliptic, caudate-acuminate, base rounded, glabrous, to 6 x 3 cm; lateral veins and reticulations prominent. Follicle ovoid, orange-yellow, to 2 cm long; aril yellow.

Occasional in evergreen forests.

KNS 5769 (Kulathupuzha)

Fl. & Fr. December-August

D i s t. Indo-Malesia

Note : We have observed this plant at a few locations in the sanctuary but did not come across in the generative state.

FABACEAE

- | | |
|---|--------------------|
| 1. Corolla papilionaceous | : FABOIDEAE |
| 1. Corolla not papilionaceous | : 2 |
| 2. Flowers irregular, sepals and petals imbricate | : CAESALPINIOIDEAE |
| 2. Flowers regular, sepals and petals valvate | : MIMOSOIDEAE |

Subfamily FABOIDEAE

- | | |
|--|---------------|
| 1. Filaments all free | : Ormosia |
| 1. Filaments variously united, monadelphous or diadelphous | : 2 |
| 2. Stamens monadelphous | : 3 |
| 2. Stamens diadelphous 9+1 (the vexillary stamen completely free) or 5+5 | : 17 |
| 3. Anthers dimorphous, alternate anthers short and versatile; longer ones basifixed or alternate sterile | : 4 |
| 3. Anthers uniform and fertile | : 5 |
| 4. Pods inflated; all anthers fertile | : Crotalaria |
| 4. Pods compressed; alternate anthers sterile | : Teramnus |
| 5. Leaves paripinnate | : Abrus |
| 5. Leaves imparipinnate or 1-5 foliolate | : 6 |
| 6. Pods winged | : 7 |
| 6. Pods not winged | : 9 |
| 7. Pods orbicular, 1-seeded | : Pterocarpus |
| 7. Pods oblong or linear, 2 or more-seeded | : 8 |

8. Pods broadly winged on both sutures, subcoriaceous; the vexillary stamen completely free	: Aganope
8. Pods narrowly winged on one or both sutures. coriaceous; the vexillary stamen free only at the base	: Derris
9. Pods glochidiate; leaves bifoliolate	: Zornia
9. Pods not glochidiate; leaves not bifoliolate	: 10
10. Leaflets with many close and parallel veins	: 11
10. Leaflets with reticulate veins	: 12
11. Pods distinctly jointed, 1 or 2 seeded; flowers concealed by upper leaves	: Stylosanthes
11. Pods not jointed; flowers in long peduncled racemes; seeds 7 or more	: Tephrosia
12. Trees	: 13
12. Climbers	: 15
13. Keel petals half the length of standard petal	: Erythrina
13. Keel petals as long as the standard petal	: 14
14. Leaflets opposite; pods woody; calyx truncate, lobes obsolete	: Pongamia
14. Leaflets alternate; pods thin; calyx lobes distinct	: Dalbergia (p.p.)
15. Leaflets 5 or more, pinnate	: 16
15. Leaflets 3	: Pueraria
16. Leaflets opposite; pods woody	: Millettia
16. Leaflets alternate; pods thin	: Dalbergia (p.p.)
17. Stamens 5 + 5	: 18
17. Stamens 9 + 1	: 19
18. Pods twisted, enclosed by the calyx	: Smithia
18. Pods straight, exerted from calyx	: Aeschynomene
19. Ovary 2-ovuled; leaflets 3	: 20
19. Ovary 3 or more ovuled; if 2-ovuled, then leaflets many	: 22
20. Pods samaroid with an oblong wing, seed one, at the distal end	: Spatholobus
20. Pods not samaroid, 2 or 1-seeded	: 21
21. Pods turgid; shrubs	: Flemingia
21. Pods compressed, depressed between seeds; twiners	: Rhynchosia
22. Anthers gland-crested; leaves with biramous hairs	: Indigofera
22. Anthers not gland-crested; leaves without biramous hairs	: 23
23. Pods twisted so that joints come face to face	: Uria
23. Pods not twisted	: 24
24. Pods orbicular, plaited, densely bristly	: Mucuna
24. Pods not plaited and bristly	: 25

25. Pods ribbed along the sutures	: Centrosema
25. Pods not ribbed along the sutures	: 26
26. Pod inflated	: Pycnospora
26. Pods not inflated	: 27
27. Standard petal appendaged	: 28
27. Standard petal not appendaged	: 29
28. Style bearded below the stigma	: Vigna
28. Style glabrous	: Calopogonium
29. Pods depressed or jointed between seeds	: Desmodium
29. Pods not depressed or jointed between seeds	: 30
30. Pods viscid pubescent; leaflets crenate	: Pseudarthria
30. Pods not viscid pubescent; leaflets entire	: Cajanus

ABRUS Adans.

Abrus pulchellus Wall. ex Thw., Enum. Pl. 91. 1859; Fl. Brit. India 2: 175. 1876; Fl. Madras 350. 1918: ssp. **pulchellus** Verdc., Kew Bull. 24: 246. 1970; Sanj., Leg. India 74. 1992; Fl. Thenmala 90. 1995. *A. fruticulosus* sensu Bret., Blumea 10: 612. 1960, p.p.

Twining herbs, stem slender, hispid. Leaves to 12 cm long; leaflets 8-10 pairs, oblong, obtuse, base subcordate, glabrous, to 4 x 1.5 cm. Flowers pink, in short few-flowered axillary racemes. Calyx hispid. Pods to 10 x 1 cm; seeds *ca.* 10.

Fairly common in semi-evergreen forests.

NS 11139 (Kattalappara)

Fl. & Fr. October-March

D i s t. Indo-Malesia and China

AESCHYNOMENE L.

Aeschynomene americana L., Sp. Pl. 713. 1753; Maheswari & Paul, J. Bombay Nat. Hist. Soc. 72 : 165. 1975; Chandrabose & Srinivasan, Bull. Bot. Surv. India 18: 236. 1976 (1979).

Erect or decumbent herbs, branches sparsely strigose. Leaves to 5 cm long; leaflets 20-50; subfalcate, 7 x 1.2 mm, stipules apendiculate, strigose. Flowers orange-yellow, few flowered (2-4) on 1 cm long axillary slender peduncles. Pods 6-8 jointed, slightly curved, glabrous, 2.5 x 0.3 cm.

Occasional along roadsides in moist locations.

NS 10691 (Kattalappara)

Fl. & Fr. September-December

D i s t. Native of West Indies, now recorded from many Asian countries.

AGANOPE Miq.

Aganope thyrsoflora (Benth.) Polhill var. *eualata* (Bedd.) Thoth. & Das, *Rheedea* 2: 63. 1992. *Millettia thyrsoflora* Benth. in Miq., Pl. Jungh. 269. 1852. *Derris eualata* Bedd., Ic. t. 186. 1868-1874; Fl. Brit. India 2: 246. 1878; Fl. Madras 388. 1918.

Large scandent shrubs. Leaflets 9, elliptic-oblong, acuminate, base rounded, to 10 x 5 cm. Panicles terminal, 20-35 cm long, finely silky. Calyx entire, pubescent. Petals greenish-yellow; standard with callus above the claw. Pods oblong, thin, reticulate, glabrous, to 10 x 4 cm; seeds 2 or 3, rarely 1.

Fairly common in semi-evergreen forests.

NS 10427 (Kattalappara)

Fl. & Fr. March-August

D i s t. Throughout W. Ghats : endemic

CAJANUS DC.

Cajanus heynei (Wt. & Arn.) van der Maesen, Agri. Univ. Wagen. 85-4: 129. 1985; Sanj., Leg. India 101. 1992. *Dunbaria heynei* Wt. & Arn., Prodr. 258. 1834; Fl. Brit. India 2: 217. 1876; Fl. Madras 370. 1918.

Twining herbs, stem patently hairy. Leaflets obovate, caudate-acuminate, lateral leaflets oblique, tomentose, to 7 x 4.5 cm. Flowers 2 cm long, confined towards the tip of axillary racemes. Calyx red, pubescent. Petals yellow. Pod villous, 3 cm long; 4-5 seeded.

Occasional in semi-evergreen forests.

NS 10825 (Rosemala)

Fl. & Fr. December-February

D i s t. South-west India and Sri Lanka

CALOPOGONIUM Desv.

Calopogonium mucunoides Desv., Ann. Sci. Nat. (Paris) 9: 423. 1826; D'Arcy, Ann. Missouri Bot. Gard. 67: 560. 1980; Sanj., Leg. India 104. 1992.

Densely strigose-hairy climbers. Leaflets elliptic-rhomboid, acute, mucronate, terminal, to 11 x 8 cm; lateral nerves ca. 4 pairs, basal pair opposite. Calyx lobes unequal. Petals blue. Ovary densely villous. Fruits ferruginous pubescent, 2.5 cm long.

Occasional in forest plantations and moist deciduous forests.

NS 11090 (Kattalappara)

Fl. & Fr. August-December

D i s t. Native of Tropical America; introduced as a cover crop in rubber plantations, now spreading to forests and forest plantations.

CENTROSEMA Benth. nom. cons.

Centrosema pubescens Benth., Comm. Legum. Geb. 55. 1837; D'Arcy, Ann. Missouri Bot. Gard. 67: 576. 1980; Sanj., Leg. India 111. 1992. *C. virginianum* auct. non. (L.) Benth. 1838, Subram., Bull. Bot. Surv. India 3: 201. 1961.

Twining, stem wiry. Leaves 3-foliolate; terminal leaflet obovate or rhomboid, acuminate, to 5 x 2.5 cm; lateral leaflets shorter, ovate-acuminate, pubescent. Flowers 2.5 cm long, in axillary, 3-5 flowered racemes; peduncles 4-5 cm long. Calyx and bracts adpressed tomentose. Petals lilac or pale yellow. Pods linear, acuminate, 10-12 x 0.5 cm; 15-18 seeded.

Fairly common in forest plantations and moist deciduous forests.

NS 10340 (Kallar)

Fl. & Fr. September-January

D i s t. Native of Tropical America, introduced as a cover crop in plantations, now very widespread in Kerala

CROTALARIA L.

- | | |
|--|---------------------|
| 1. Leaves 3-foliolate | : <i>C. pallida</i> |
| 1. Leaves unifoliolate | : 2 |
| 2. Leaves linear-oblong, obtuse or retuse at apex, pubescent below | : <i>C. retusa</i> |
| 2. Leaves ovate or elliptic, acuminate at apex, glabrous | : <i>C. walkeri</i> |

Crotalaria pallida Ait., Hort. Kew. 3: 20. 1789; Polhill, Kew Bull. 22: 262. 1968; Sanj., Leg. India 126. 1992; Fl. Thenmala 97. 1995. *C. mucronata* Desv., J. Bot. 3: 76. 1814; *C. striata* DC., Prodr. 2: 131. 1825; Fl. Brit. India 2: 84. 1876; Fl. Madras 301. 1918.

Subshrubs. Leaflets subequal, obovate or elliptic-ovate, obtuse or acute, mucronate, membranous, glabrous and glaucous below, to 7 x 5 cm; stipules minute, setaceous, deciduous. Flowers 1.2 cm across, in many-flowered terminal or subterminal racemes; bracts subulate, to 3 mm long. Petals yellow with prominent red veins. Pods oblong, glabrous, to 4 x 0.8 cm; seeds 15-20.

Common along road sides in moist deciduous forests and forest plantations.

NS 11448 (Rosemala)

Fl. & Fr. September-January

D i s t. Throughout the tropics

Crotalaria retusa L., Sp. Pl. 715. 1753; Fl. Brit. India 2: 75. 1876; Fl. Madras 293. 1918; Sanj., Leg. India 128. 1992; Fl. Thenmala 96. 1995.

Subshrubs, branches furrowed, puberulous. Leaves narrowly oblong or obovate, obtuse, base cuneate, puberulent and glaucous below, to 12 x 4.5 cm; stipules minute,

subulate. Flowers 2.5 cm across, in few to many-flowered terminal racemes; bracts subulate. Petals yellow. Pods oblong, glabrous, to 3.5 x 1.5 cm; seeds 15-20.

Common in moist deciduous and semi-evergreen forests, also in Grasslands.

NS 11091 (Kattalappara)

Fl. & Fr. September-January

D i s t. Tropics

Crotalaria walkeri Arn., Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 18 (1) : 328. 1840; Fl. Madras 297. 1918; Sanj., Leg. India 131. 1992. *C. semperflorens* Vent. var. *walkeri* (Arn.) Baker in Hook. f., Fl. Brit. India 2: 78. 1876.

Shrubs, branches pubescent. Leaves ovate-acuminate or rhomboidal, base acute, to 12 x 5 cm; stipules semi-lunulate, 0.7 cm long. Flowers 2 cm long, bright yellow, in terminal many-flowered racemes. Pods stipitate, glabrous, 3.5 x 2 cm.

Found in open areas above 700 m.

NS 11445 (Rosemala)

Fl. & Fr. December-January

D i s t. South India and Sri Lanka

DALBERGIA Linn. f.

- | | |
|---|-----------------------|
| 1. Trees; leaflets obovate, 3-5 cm long | : <i>D. sissoides</i> |
| 1. Lianas; leaflets oblong, 1-2 cm long | : <i>D. horrida</i> |

Dalbergia horrida (Dennst.) Mabb., Taxon 26: 538. 1977 var. *horrida* Thoth., Dalberg. Indian Subcont. 105. 1987; Sanj., Leg. India 136. 1992. *Amerimnon horridum* Dennst., Schluss. Hort. Malab. 9, 18, 34. 1818. *Dalbergia sympathetica* Nimmo in Grah. Cat. 55. 1839; Fl. Brit. India 2: 234. 1876. *D. multiflora* Heyne ex Prain, Ann. Roy. Bot. Gard. (Calcutta) 10: 43, t. 18. 1904; Fl. Madras 381. 1918.

Lianas, bark brown, armed with stout sharp thorns, young shoots pubescent. Leaves to 12 cm long; leaflets 11-15, oblong or obovate, emarginate, pubescent below.

Occasional in semi-evergreen and moist deciduous forests.

D i s t. W. Ghats, Konkan Southwards : endemic

Note: This species has been found at Rosemala but specimens in the generative state could not be collected.

Dalbergia sissoides Grah. ex Wt. & Arn., Prodr. 265. 1834; Prain, Ann. Roy. Bot. Gard. (Calcutta) 10: 81, t. 63. 1904; For. Trees Travancore 133. 1908; Fl. Madras 383. 1918; Thoth., Dalberg. Indian Subcont. 53. 1987; Sanj., Leg. India 140. 1992; Fl. Thenmala 92. 1995. *D. latifolia* Roxb. var. *sissoides* (Grah. ex Wt. & Arn.) Baker in Hook. f., Fl. Brit. India 2: 231. 1876.

Large trees with short leafless period, bark brown, fairly smooth, yellow inside. Leaflets 7-11, obovate, acute, glaucous below. Flowers in large terminal panicles. Calyx glabrous, lobes subequal. Petals white. Stamens 9. Pods oblong, stipitate; seeds 2-4.

Common in moist deciduous and sometimes in semi-evergreen forests.

NS 10174 (Kattalappara)

Fl. & Fr. February-March

D i s t. W. Ghats : endemic

DERRIS Lour. *nom. cons.*

Derris brevipes (Benth.) Baker in Hook. f., Fl. Brit. India 2: 244. 1878; Fl. Madras 387. 1918; Thoth., Bull. Bot. Surv. India 3: 184. 1962 & Fasc. Fl. India 8: 11. 1982. *D. heyneana* Benth. var. *brevipes* Benth., J. Linn. Soc. Bot. 4 (suppl.):110. 1860.

Large climbing shrubs. Leaflets 5-9, elliptic-oblong, acuminate, base rounded, to 7.5 x 4.5 cm. Calyx tomentose. Petals white. Stamens 10, five longer and five shorter. Ovary tomentose. Pods oblong, apex rounded, brown tomentose, constricted between seeds; 1 or 2 seeded.

Occasional in evergreen and semi-evergreen forests.

NS 10145 (Kattalappara); 10197 (Kallar)

Fl. & Fr. February-December

D i s t. W. Ghats, North Kanara southwards : endemic

DESMODIUM Desv. *nom. cons.*

Note: Ohashi while revising the Asiatic species of *Desmodium* Desv. and allied genera (Ginkgoana 1: 1-318. 1973) proposed a new systematic treatment. He divided it into 7 genera. However, Ohashi's treatment of the genus is not widely accepted. In this work we have followed Bentham (Genera Plantarum, 1865) and van Meeuwen (Reinwardtia 6: 239-276. 1962).

- | | |
|--|---------------------------|
| 1. Leaves 1-foliolate | : 2 |
| 1. Leaves 3-foliolate | : 5 |
| 2. Petiole broadly winged | : <i>D. triquetrum</i> |
| 2. Petiole not winged | : 3 |
| 3. Joints of pods 4-5 times longer than broad | : <i>D. ormocarpoides</i> |
| 3. Joints of pods nearly as long as broad | : 4 |
| 4. Leaves broadly ovate, densely velutinus below; calyx lobes equal to the tube | : <i>D. velutinum</i> |
| 4. Leaves oblong or elliptic, adpressed tomentose below; calyx lobes twice as long as the tube | : <i>D. gangeticum</i> |
| 5. Flowers in axillary umbels | : <i>D. triangulare</i> |
| 5. Flowers in terminal or axillary racemes or panicles | : 6 |

- | | |
|--|---------------------------|
| 6. Trailing herbs, rooting at lower nodes | : D. heterophyllum |
| 6. Erect herbs or shrubs | : 7 |
| 7. Flowering bracts orbicular, large and enclosing the flowers | : D. pulchellum |
| 7. Flowering bracts small, not enclosing the flowers | : 8 |
| 8. Pods covered with glochidiate hairs, breaking at joints | : D. laxiflorum |
| 8. Pods not covered with glochidiate hairs, not breaking at joints | : 9 |
| 9. Joints of pod, 1-3 semi-obolong, crescent shaped, petals red | : D. repandum |
| 9. Joints of pod, straight, petals bluish-purple or yellow | : 10 |
| 10. Lateral leaflets narrower and much smaller than the terminal leaflet | : D. motorium |
| 10. Lateral leaflets similar to the terminal leaflet | : D. heterocarpon |

Desmodium gangeticum (L.) DC., Prodr. 2: 327. 1825; Wt., lc. t. 271. 1840; Fl. Brit. India 2: 168. 1876; Fl. Madras 345. 1918; Sanj., Leg. India 153. 1992; Fl. Thenmala 100. 1995.

Hedysarum gangeticum L., Sp. Pl. 746. 1753.

Subshrubs, branches angular, tomentose. Leaves ovate to elliptic, acute, base cordate, often blotched with grey, sparsely tomentose beneath, to 10 x 6 cm; lateral nerves 7-9 pairs, petiole to 2.5 cm long; stipules linear-lanceolate, to 8 mm long. Flowers white, fascicled on terminal and axillary, 20-30 cm long racemes. Calyx tomentose without. Pods glochidiate, 2.5 cm long; 6-8 jointed.

Fairly common in moist deciduous forest and forest plantations.

NS 10124, 10690 (Kattalappara)

Fl. & Fr. October-December

D i s t. Tropical Asia, Africa and Australia

Desmodium heterocarpon (L.) DC., Prodr. 2: 337. 1825; Ohashi, Ginkgoana 1: 210. 1973; Sanj., Leg. India 155. 1992; Fl. Thenmala 103. 1995. **Hedysarum heterocarpon** L., Sp. Pl. 474. 1753. **Desmodium polycarpon** (Poir.) DC., Prodr. 2: 334. 1825; Wt., lc. t. 406. 1840; Fl. Brit. India 2: 171. 1876; Fl. Madras 346. 1918.

Subshrubs. Leaflets oblong or obovate, obtuse. Stipules lanceolate, ciliate along the margins, to 15 mm long. Calyx glabrous, lobes subequal, 1 mm long. Flowers purple or purplish-blue, 1 cm long. Pods 5-7 jointed, covered with short glochidiate hairs or glabrous, 2 cm long.

Key to varities

- | | |
|---------------------------|----------------------------|
| 1. Pods with hooked hairs | : var. heterocarpon |
| 2. Pods glabrous | : var. gymnocarpum |

var. **gymnocarpum** Schindler, Fedde, Rep. 21: 5. 1925; Ohashi, Ginkgoana 1: 213. 1973.

Subshrubs. Leaflets ovate-orbicular, obtuse, to 3 x 2.5 cm. Inflorescence congested. Pods glabrous.

Occasional in semi-evergreen forests.

NS 10087 (Kallar)

Fl. & Fr. December-February

D i s t. South India and Sri Lanka.

var. heterocarpon

Common in moist deciduous and semi-evergreen forests.

NS 10642 (Kattalappara)

Fl. & Fr. October-December

D i s t. Indo-Malesia and East Asia

Desmodium heterophyllum (Willd.) DC., Prodr. 2: 334. 1825; Fl. Madras 347. 1918; van Meeuwen, Reinwardtia 6: 251. 1962; Sanj., Leg. India 155. 1992; Fl. Thenmala 101. 1995.

Hedysarum heterophyllum Willd., Sp. Pl. 3: 1201. 1802.

Prostrate herbs, stem slender, angled, patently hairy. Leaflets elliptic-oblong, obtuse, glabrescent above and shortly adpressed below along the nerves, to 2 x 1.4 cm; stipules ovate-lanceolate, cuspidate, to 8 mm long. Flowers in short, 1-4 flowered racemes. Petals bluish-purple. Pods 2-5 jointed, indented along the lower suture, 2 cm long.

Fairly common in disturbed moist deciduous forests.

NS 10576 (Kattalappara)

Fl. & Fr. July-December

D i s t. Indo-Malesia and China

Desmodium laxiflorum DC., Ann. Sci. Nat. (Paris) 4: 100. 1825 & Prodr. 2: 335. 1825; Fl. Brit. India 2: 164. 1876; Fl. Madras 344. 1918; Sanj., Leg. India 156. 1992; Fl. Thenmala 102. 1995. **D. recurvatum** (Roxb.) Grah. ex Wt. & Arn., Prodr. 226. 1834; Wt., Ic. t. 374. 1840.

Subshrubs, stem angular. Leaflets ovate or ovate-lanceolate, acute, mucronate, membranous, glabrous above and adpressed hairy beneath, to 15 x 8 cm; stipules lanceolate. Flowers fascicled on lax 15-25 cm long racemes. Calyx lobes lanceolate, tomentose. Standard petal bluish, others white. Pods 6-8 jointed, covered with hooked hairs, to 3.5 cm long.

Fairly common in moist deciduous forests.

NS 10647, 10689 (Kattalappara)

Fl. & Fr. September-January

D i s t. Indo-Malesia

Desmodium motorium (Houtt.) Merr., J. Arnold Arbor. 19: 348. 1938; Sanj., Leg. India 158. 1992; Fl. Thenmala 103. 1995. *Hedysarum motorium* Houtt., Nat. Hist. 10: 246. 1779. *H. gyrans* L. f., Suppl. Pl. 332. 1781. *Desmodium gyrans* (L. f.) DC., Prodr. 2: 326. 1825; Wt., lc. t. 294. 1840; Fl. Brit. India 2: 174. 1876; Fl. Madras 348. 1918.

Subshrubs, stem glabrous. The terminal leaflet oblong or elliptic-oblong, obtuse, glabrous above and pubescent below, to 9 x 3 cm. Flowers in terminal racemes or panicles, bracts ovate, striated, 4 mm long. Calyx lobes ovate, minute. Petals yellow or bluish-purple, 1 cm long. Pods 6-8 jointed, indented along the lower suture, to 3.5 cm long.

Fairly common in moist deciduous forests.

NS 10605, 10694 (Kattalappara)

Fl. & Fr. October-January

D i s t. Indo-Malesia

Desmodium ormocarpoides DC. Prodr. 2: 327. 1825; Fl. Brit. India 2: 164. 1876; Fl. Madras 345. 1918; Ohashi, Ginkgoana 1: 113. 1973.

Subshrubs, branches terete. Leaves elliptic or oblong-lanceolate, acuminate, base rounded or obtuse, glabrous, to 16 x 6 cm; subulate stipulate. Flowers fascicled on long terminal racemes. Calyx campanulate, 4-lobed, adpressed shortly hairy. Petals white. Pods 4-6 jointed, 10 x 0.4 mm, densely uncinatae hairy.

Occasional in evergreen forests.

NS 10446 (Kallar)

Fl. & Fr. March-June

D i s t. Indo-Malesia

Desmodium pulchellum (L.) Benth., Fl. Hongk. 83. 1861; Fl. Brit. India 2: 162. 1876; Fl. Madras 344. 1918; Sanj., Leg. India 160. 1992; Fl. Thenmala 102. 1995. *Hedysarum pulchellum* L., Sp. Pl. 747. 1753.

Erect shrubs. Leaflets elliptic or oblong, obtuse, glabrous above and tomentose below, margins repand, to 7.5 x 5 cm; stipules ovate-lanceolate. Flowers fascicled in the axils of floral leaves, each with 2 orbicular bract-like leaves and a terminal bristle. Calyx lobes unequal, subulate, tomentose. Petals white. Pods 2-seeded, glabrous, 6 mm long.

Occasional in moist deciduous forests.

NS 10742 (Kattalappara)

Fl. & Fr. September-February

D i s t. Indo-Malesia to Australia

Desmodium repandum (Vahl) DC., Prodr. 2: 334. 1825; Sanj., Leg. India 161. 1992. *Hedysarum repandum* Vahl, Symb. Bot. 2: 82. 1791. *Desmodium scalpe* DC., Prodr. 2:

334. 1825; Fl. Brit. India 2: 165. 1876; Fl. Madras 345. 1918.

Subshrubs with woody root stock. Leaflets rhomboid to ovate, acute to shortly acuminate, base cuneate, adpressed tomentose below; stipules narrowly ovate, acuminate, pubescent. Flowers in terminal or axillary paniculate racemes; rachis tomentose. Calyx campanulate, 4-lobed, tomentose. Pods densely covered with uncinata hairs, sutures thickened.

Occasional in Grasslands.

NS 11418 (Alvarakurichi)

Fl. & Fr. December-April

D i s t. Indo-malesia to Africa.

Desmodium triangulare (Retz.) Merr., J. Arnold Arbor. 23: 170. 1942; Sanj., Leg. India 162. 1992; Fl. Thenmala 102. 1995. *Hedysarum triangulare* Retz., Obs. Bot. 3: 40. 1783. *Desmodium congestum* Wall. ex Wt. & Arn., Prodr. 224. 1834; Wt., lc. t. 209. 1839. *D. cephalotes* Roxb. var. *congestum* (Wt. & Arn.) Prain, J. Asiat. Soc. Bengal 66: 389. 1898; Fl. Madras 344. 1918.

Tall shrubs, branches triangular, adpressed silky. Leaflets elliptic or obovate, acuminate, silky when young, becoming glabrescent, to 9 x 4 cm; stipules ovate-lanceolate, 1 cm long. Flowers in axillary, shortly peduncled umbels. The upper 2 calyx lobes united and longer than the others, silky pubescent. Petals white. Pods 4-6 jointed, indented on both sutures, adpressed tomentose, to 2.5 cm long.

Common in moist deciduous forests.

NS 10581 (Kattalappara)

Fl. & Fr. September-January

D i s t. Indo-Malesia and China

Desmodium triquetrum (L.) DC., Prodr. 2: 326. 1825; Fl. Brit. India 2: 163. 1876; Fl. Madras 345. 1918; Sanj., Leg. India 163. 1992; Fl. Thenmala 99. 1995. *Hedysarum triquetrum* L., Sp. Pl. 746. 1753.

Erect or diffuse subshrubs, branches trigonous. Leaves ovate-lanceolate, acute or acuminate, base subcordate, glabrous above and tomentose below, to 12 x 5 cm; petiole winged; stipules lanceolate, 1.5 cm long. Racemes 20-30 cm long. Upper 2 calyx lobes united and broad. Petals pink or purple. Pods, 5-7 jointed, indented on the lower suture, pubescent, 3.5 cm long.

Common in moist deciduous forests, also in grasslands.

NS 10641 (Kallar)

Fl. & Fr. July-December

D i s t. Indo-Malesia and China

Desmodium velutinum (Willd.) DC., Prodr. 2: 328. 1825; Sanj, Leg. India 165. 1992; Fl. Thenmala 100. 1995. *Hedysarum velutinum* Willd., Sp. Pl. 3: 1174. 1802. *Desmodium latifolium* (Roxb. ex Ker-Gawl.) DC., Prodr. 2: 328. 1825; Wt., lc. t. 270. 1840; Fl. Brit. India 2: 168. 1876; Fl. Madras 346. 1918.

Subshrubs, branches fulvous-tomentose. Leaves broadly ovate, acute or obtuse, mucronate, base truncate, velvety tomentose below, puberulous above, to 16 x 12 cm; stipules ovate-acuminate, 0.5 cm long, tomentose. Flowers 0.4 cm long, in 10-30 cm long axillary and terminal racemes. Calyx lobes unequal, tomentose. Petals pink or pale blue. Pods 4-6 jointed, indented along the lower suture, curved, densely tomentose, 2 cm long.

Common in moist deciduous and semi-evergreen forests.

NS 10741 (Kattalappara)

Fl. & Fr. October-February

D i s t. Indo-Malesia and Africa

ERYTHRINA L.

Erythrina subumbrans (Hassk.) Merr. Philipp. J. Sco. Bot. 5: 113. 1910; Fl. Thenmala 106. 1995. *Hypaphorus subumbrans* Hassk., Hort. Bogor. Desc. 198. 1858. *Erythrina lithosperma* Bl. ex Miq. Fl. Ind. Bat. 1 (2) : 209. 1859; Fl. Brit. India 2 : 190. 1876.

Medium sized deciduous trees, bark greyish-yellow. Leaflets rhomboid-ovate, acute, deltoid or truncate at base, to 12 x 8 cm; petiole to 10 cm long. Flowers 5-6 cm long, clustered on the rachis, in terminal racemes. Petals bright red. Ovary pubescent. Pods flat, turgid; seeds 3-4, towards the apex.

Planted in Coffee and Tea Estates as shade tree.

NS 10649 (Kallar)

Fl. & Fr. January-May

D i s t. India to South East Asia and China

Erythrina variegata L. var. *orientalis* Merr. is grown as support in pepper stands.

FLEMINGIA Roxb. ex Ait. *nom. cons.*

- 1. Leaves 1-foliolate; flowers enclosed in large foliaceous bracts : *F. strobilifera*
- 1. Leaves 3-foliolate; bracts, ovate-acute, not enclosing the flowers : *F. semialata*

Flemingia semialata Roxb., Fl. Ind. 3: 338. 1832; Wt., lc. t. 326. 1840; Fl. Madras 378. 1918; Sanj., Leg. India 178. 1992. *F. congesta* Roxb. var. *semialata* (Roxb.) Fl. Brit. India 2: 229. 1876 p.p.

Erect shrubs, branchlets trigonous, adpressed tomentose. Leaflets subequal, elliptic-lanceolate, caudate-acuminate, base truncate or obtuse, to 15 x 5 cm, basally 3-nerved;

petiole to 7 cm long, narrowly winged. Rachis and bracts densely silky, flowers 1 cm long, reddish. Pods 1.2 cm long, with powdery red coating.

Occasional in moist deciduous forests and grasslands.

NS 10123 (Kallar); 10700 (Kattalappara)

Fl. & Fr. December-February

D i s t. Tropical Asia

Flemingia strobilifera (L.) Ait., Hort. Kew. 4: 350. 1812; Wt., lc. t. 267. 1840; Fl. Brit. India 2:227. 1876; Fl. Madras 377. 1918; Sanj., Leg. India 178. 1992; Fl. Thenmala 94. 1995. *Hedysarum strobiliferum* L., Sp. Pl. 746. 1753.

Shrubs, branchlets tomentose. Leaves oblong-lanceolate, acuminate, base rounded, to 15 x 7 cm; petiole 1-1.5 cm long, tomentose; stipules 0.5 cm long. Racemes simple or branched, flexuous, tomentose; bracts ovate-cordate, membranous, to 3 cm on either way. Calyx lobes narrow, setaceous. Petals white. Pods enclosed by the bracts, 1 cm long.

Occasional in semi-evergreen forests.

KNS 74082 (Eettapadappu)

Fl. & Fr. November-February

D i s t. Tropical Asia and America

INDIGOFERA L

- | | |
|---|------------------------|
| 1. Leaflets 3; racemes under 5 mm long | : <i>I. trifoliata</i> |
| 1. Leaflets 5 or more; racemes over 5 cm long | : <i>I. hirsuta</i> |

Indigofera hirsuta L., Sp. Pl. 751. 1753; Fl. Brit. India 2: 98. 1876; Fl. Madras 312. 1918; Sanj., Leg. India 191. 1992.

Annual erect herbs, stem covered with reddish-brown hairs. Leaflets 5-11, elliptic-oblong or obovate, hirsute on both sides, 2-4 x 1.5-2 cm. Flowers dense on 5-12 cm long hairy racemes. Petals pink. Pods reflexed, densely hairy, to 2 cm long; seeds 6-8.

Occasional in moist deciduous forests, especially in open grassy areas among rocks.

NS 11131 (Thenmala)

Fl. & Fr. July-December

D i s t. Pantropical

Indigofera trifoliata L. in Torner, Cent. II Pl. 29. 1756; Wt., lc. t. 314. 1840; Fl. Brit. India 2: 96. 1876; Fl. Madras 310. 1918.

Much branched herbs. Leaflets 3, oblong or obovate, rounded at apex, apiculate, adpressed hairy beneath, to 2 x 0.5 cm. Flowers in 6-10 flowered congested racemes which are smaller than leaves. Petals red. Pods deflexed, slender, tetragonous, 2.5 cm long; 4-6 seeded.

Occasional in moist deciduous forests, in open grassy areas.

NS 11141 (Kattalappara)

Fl. & Fr. September-December

D i s t. Indo-Malesia, Australia and China

MILLETTIA Wt. & Arn.

Millettia rubiginosa Wt. & Arn., Prodr. 263. 1834; Wt., I.c. t. 207. 1839; Fl. Brit. India 2: 104. 1876; Fl. Madras 322. 1918; Sanj., Leg. India 215. 1992; Fl. Thenmala 93. 1995.

Large woody climbers, young shoots tawny tomentose. Leaflets 5-7, obovate-oblong, caudate-acuminate, base truncate, adpressed tomentose on both sides, to 23 x 10 cm. Flowers 1 cm across, fascicled on short branchlets in axillary and terminal racemes. Calyx cupular, truncate, silky pubescent. Petals pinkish-red. Pods woody, velvety, golden-brown, to 12 x 4 cm; seeds 1-3.

Fairly common in evergreen forests.

NS 10357 (Kallar)

Fl. & Fr. April-August

D i s t. Southern W. Ghats (Kerala and Tamil Nadu) : endemic

MUCUNA Adans. *nom. cons.*

Mucuna monosperma DC. ex Wt., in Bot. Misc. 2: 346. Suppl. t. 12. 1831; Fl. Brit. India 2: 185. 1876; Fl. Madras 355. 1918 ; Sanj., Leg. India 217. 1992.

Large climbing shrubs. Leaflets ovoid-oblong, obtusely acute, to 10 x 6 cm, petiole to 8 cm long. Flowers greenish-white, *ca.* 3 cm long, racemes mostly from mature stem. Petals greenish-white. Pods suborbicular, to 5 cm across, plaited, covered with yellow bristly hairs, 1-seeded.

Occasional in semi-evergreen forests.

NS 10086 (Kallar); 10838 (Rosemala)

Fl. & Fr. January-May

D i s t. India, Sri Lanka and Burma

ORMOSIA Jack.

Ormosia travancorica Bedd., Fl. Sylv. t. 45. 1870; Fl. Brit. India 2: 253. 1878; For. Trees Travancore 137. 1908; Fl. Madras 390. 1918; Sanj., Leg. India 223. 1992.

Large evergreen trees, bark grey, smooth, yellowish-brown inside, young shoots finely grey-downy. Leaves to 35 cm long; leaflets 7-11, oblong, caudate-acuminate, base obtuse or rounded, glabrous above and grey-downy below. Flowers in axillary tomentose racemes. Calyx lobes tomentose. Petals white. Ovary tomentose. Pods woody, oblique, oblong, subacute, glabrous, reddish-brown, 6 x 4 cm; seed scarlet, oblong, 2.5 cm long.

Occasional in evergreen forests.

NS 10172 (Kattalappara)

Fl. & Fr. February-April

D i s t. W. Ghats, Konkan Southwards : endemic

PONGAMIA Vent. *nom. cons.*

Pongamia pinnata (L.) Pierre, *Fl. Forest. Cochinch.* sub. t. 385. 1899; Sanj., *Leg. India* 230. 1992; *Fl. Thenmala* 93. 1995. *Cytisus pinnatus* L., *Sp. Pl.* 741. 1753. *Pongamia glabra* Vent., *Jard. Malm.* 28. t. 28. 1803; *Wt., Ic.* t. 59. 1838; *Bedd., Fl. Sylv.* t. 177. 1872; *Fl. Brit. India* 2: 240. 1876; *For. Trees Travancore* 136. 1908; *Fl. Madras* 385. 1918.

Small to medium sized trees, bark grey, mottled with brown, dull yellow inside. Leaves to 20 cm long; leaflets 3-9, oblong or elliptic-oblong, acuminate, base obtuse or cuneate, glabrous. Flowers pinkish-white, 1.5 cm long. Calyx reddish-brown. Pods to 6 x 3 cm.

Occasional in semi-evergreen forests, mainly along the banks of streams.

NS 10336 (Kattalappara)

Fl. & Fr. April-December

D i s t. Indo-Malesia to Australia and Polynesia

PSEUDARTHRIA Wt. & Arn.

Pseudarthria viscida (L.) Wt. & Arn., *Prodr.* 209. 1834; *Wt., Ic.* t. 286. 1840; *Fl. Brit. India* 2: 154. 1876; *Fl. Madras* 334. 1918; Sanj., *Leg. India* 230. 1992; *Fl. Thenmala* 109. 1995. *Hedysarum viscidum* L., *Sp. Pl.* 747. 1753.

Viscid pubescent subshrubs. Terminal leaflet rhomboid, acute, mucronate, to 9 x 7 cm; laterals obliquely ovate, smaller, glabrescent above and densely woolly below. Flowers *ca.* 3 mm long, paired on the rachis. Ovary tomentose. Pods hooked pubescent, 1.5 x 0.5 cm; seeds 4-6.

Common in moist deciduous forests.

NS 10594 (Kattalappara)

Fl. & Fr. November-March

D i s t. Peninsular India and Sri Lanka

PTEROCARPUS N. J. Jacq. *nom. cons.*

Pterocarpus marsupium Roxb., *Pl. Corom.* t. 116. 1799; *Bedd., Fl. Sylv.* t. 21. 1869; *Fl. Brit. India* 2: 239. 1876; *For. Trees Travancore* 135. 1908; *Fl. Madras* 385. 1918; Sanj., *Leg. India* 232. 1992.

Large deciduous trees, bark brown or greyish-brown, exudes red sap when cut. Leaves to 25 cm long; leaflets 5-7, oblong or elliptic-oblong, retuse or obtuse at apex, base truncate,

coriaceous, glabrous and glossy. Flowers 1.5 cm long in terminal and axillary, many flowered panicles. Calyx lobes unequal, upper two broader, puberulent. Petals bright yellow. Pods stipitate, orbicular, 5-6 cm across.

Common in moist deciduous forests.

NS 11076 (Kattalappara)

Fl. & Fr. September-December

D i s t. Peninsular India and Sri Lanka

PUERARIA A. DC.

Pueraria phaseoloides (Roxb.) Benth., J. Linn. Soc. Bot. 9: 125. 1865; Fl. Brit. India 2: 199. 1876; Sanj., Leg. India 234. 1992. *Dolichos phaseoloides* Roxb., Fl. Ind. 3: 316. 1832.

Twining shrubs, young branches patently hairy. Leaflets subequal, end one rhomboid or ovate-rhomboid, laterals obliquely ovate, obtuse or acute, glabrescent above and densely adpressed hairy beneath, to 7.5 x 6 cm. Flowers 2 cm long, fascicled on lax racemes. Calyx densely adpressed pubescent. Petals blue. Ovary tomentose. Pods linear, glabrescent, 7 cm long.

Introduced as a cover crop in rubber plantations, now spreading into forest areas.

NS 11454 (Rosemala)

Fl. & Fr. October-March

D i s t. Tropical Asia

PYCNOSPORA R. Br. ex Wt. & Arn.

Pycnospora lutescens (Poir.) Schindl., J. Bot. 64: 145. 1926; Fl. Thenmala 107. 1995. *Hedysarum lutescens* Poir. in Lamk., Encyl. 6: 417. 1805. *P. hedysaroides* R. Br. ex Baker in Hook. f., Fl. Brit. India 2: 153. 1876; Fl. Madras 333. 1918.

Trailing herbs, branches many from woody base, pubescent. Leaflets obovate, trineate, base cuneate, finely pubescent, to 2.2 x 1.8 cm. Flowers purple, 0.6 cm long, pedicels filiform, pubescent. Pods 1 x 0.5 cm; seeds 6-8.

Occasional in moist deciduous forests, among grasses.

NS 11143 (Kattalappara)

Fl. & Fr. September-December

D i s t. Indo-Malesia

RHYNCHOSIA Lour. *nom. cons.*

1. Calyx densely greenish-grey tomentose, lobes linear-oblong, obtuse;

petals as long as calyx

: *R. hirta*

1. Calyx sparsely yellowish-brown tomentose, lobes linear lanceolate;

petals longer than calyx

: *R. acutissima*

Rhynchosia acutissima Thw. Enum. Pl. 413. 1859; Fl. Brit. India 2: 226. 1876; Fl. Madras 375. 1918; Sanj., Leg. India 236. 1992.

Herbaceous twiners, branches pubescent. Leaflets ovate-rhomboid, caudate-acuminate, base truncate, puberulent above and sericeous below, to 15 x 11 cm; petiole to 8 cm long. Flowers, 1.2 cm long, paired, in axillary many flowered racemes. Calyx lobes lanceolate, ciliate along the margins. Petals pale yellow with red veins. Pods villous, greenish-yellow, 2 cm long; seeds bluish-black.

Occasional in evergreen forests.

NS 10740 (Kattalappara)

Fl. & Fr. November-April

D i s t. South India and Sri Lanka.

Rhynchosia hirta (Andr.) Meikle & Verdc., Taxson 16: 462. 1967; Fl. Thenmala 104. 1995. **Dolichos hirtus** Andr., Bot. Rep. t. 446. 1807. **Rhynchosia cyanosperma** Baker in Oliver, Fl. Tropical Africa 2: 218. 1871; Fl. Brit. India 2: 222. 1876; Fl. Madras 375. 1918.

Twining shrubs, stem densely ferruginous tomentose. Leaflets ovate, to broadly elliptic, acute, to 10 x 8 cm, prominently reticulate, densely tomentose on both sides. Flowers in axillary dense-flowered, tomentose racemes; bracts ovate-acuminate, 2 cm long. Petals yellowish-white. Pods densely tomentose; seeds 2, bluish-green.

Occasional in evergreen forests.

NS 10160 (Kattalappara)

Fl. & Fr. January-May

D i s t. Indo-Malesia to Africa

SMITHIA Ait. *nom. cons.*

Smithia gracilis Benth., Linnaea 24: 642. 1851; Fl. Brit. India 2: 150. 1876; Fl. Madras 330. 1918; Sanj., Leg. India 248. 1992.

Diffuse slender herbs. Leaflets 3 pairs, obovate, obtuse, 8 x 4 mm, sparsely hairy. Flowers yellow, in few flowered racemes, peduncle and pedicels slender. Calyx lips equal, lower lip entire. Lomentum with 1 or 2 orbicular joints, reticulate.

Fairly common in grasslands.

NS 11409 (Alvarakurichi)

Fl. & Fr. December-March

D i s t. Southern W. Ghats : endemic

SPATHOLOBUS Hassk.

- | | |
|---|-------------------------|
| 1. Flowers subsessile; petals pink; pods tomentose | : S. parviflorus |
| 1. Pedicels 5 mm long; petals purple; pods glabrous | : S. purpureus |

Spatholobus parviflorus (Roxb. ex DC.) O. Ktze., Rev. Gen. Pl. 1: 205. 1891; Sanj., Leg. India 251. 1992. *Butea parviflora* Roxb. ex DC., Prodr. 2: 415. 1825; Wt., Ic. t. 210. 1839; Fl. Rhenmala 105. 1995. *Spatholobus roxburghii* Benth. in Miq., Fl. Jungh. 238. 1852; Fl. Brit. India 2: 193. 1876; Fl. Madras 358. 1918.

Very large and extensive lianas, bark pale brown, exudes red gum when cut, roots with large globose tubers. The terminal leaflet obovate; lateral ones oblong, obtuse or retuse, base oblique, pubescent beneath, to 18 x 12 cm; petiole 10-18 cm long. Panicles terminal. Peduncle and calyx tawny tomentose. Flowers 1 cm long. Pods to 10 x 3 cm.

Common in moist deciduous forests.

NS 10595 (Kattalappara)

Fl. & Fr. September-February

D i s t. India and Sri Lanka

Spatholobus purpureus Benth. ex Baker in Hook. f., Fl. Brit. India 2: 194. 1876; Fl. Madras 359. 1918; Sanj., Leg. India 252. 1992. *Butea purpurea* (Benth. ex Baker) Blatt., J. Indian Bot. Soc. 8: 137. 1929.

Medium sized lianas. Leaflets oblong, caudate-acuminate, truncate at base, glabrous on both sides, to 12 x 5 cm; petiole to 5 cm long. Peduncle and pedicels minutely tomentose. Flowers 0.6 cm long. Pedicels slender. Ovary tomentose. Pods falcately oblong, to 9 x 2 cm, prominently veined.

Occasional in evergreen forests.

NS 1477 (Choodal)

Fl. & Fr. January-March

D i s t. South West India : endemic

STYLOSANTHES Sw.

Stylosanthes fruticosa (Retz.) Alsten in Trimen, Handb; Fl. Ceylon 6 (Suppl.): 77. 1931; Verdc., Kew Bull. 24: 59. 1970. *Arachis fruticosa* Retz., Obs. Fasc. 5: 26. 1788. *Stylosanthes mucronata* Willd., Sp. Pl. 3: 1166. 1803; Fl. Brit. India 2: 148. 1876; Fl. Madras 326. 1918.

Herbs with woody root stock, stem hispid. Leaves 3-foliolate; leaflets elliptic-lanceolate, acute, pubescent below, to 3 x 1 cm; stipules lanceolate, setose hairy. Spikes axillary 4-8 flowered; bracteoles prominent, 1-1.5 cm long. Petals yellow, with red veins, 6 mm long. Pods 1 or 2 jointed, tomentose, 6-8 mm long.

Occasional along roadsides in semi-evergreen forests.

NS 10477 (Kallar)

Fl. & Fr. March-June

D i s t. Paleo-tropics

TEPHROSIA Pers. nom. cons.

Tephrosia tinctoria Pers., Syn. Pl. 2: 329. 1807; Wt., Ic. t. 388. 1840; Fl. Brit. India 2: 111. 1876; Fl. Madras 319. 1918; Sanj., Leg. India 259. 1992; Fl. Thenmala 91. 1995.

Erect subshrubs, branchlets pubescent. Leaves to 13 cm long; leaflets 7-11, oblong or elliptic-oblong, obtuse, glabrescent above, pubescent below, to 4 x 1.5 cm. Flowers 1.5 cm long, confined to the apex of the peduncle which is as long as the leaves. Petals orange-red. Pods 7 x 0.5 cm.

Common in moist deciduous forests in open rocky areas among grasses.

NS 11103 (Kattalappara)

Fl. & Fr. September-December

D i s t. Peninsular India and Sri Lanka

TERAMNUS P. Br.

Teramnus labialis (L. f.) Spreng., Syst. Veg. 3: 235. 1826; Fl. Brit. India 2: 184. 1876; Fl. Madras 352. 1918; Sanj., Leg. India 261. 1992; Fl. Thenmala 109. 1995. *Glycine labialis* L. f., Suppl. Pl. 325. 1782; Wt., Ic. t. 168. 1839.

Slender climbers, branchlets glabrescent. Leaflets ovate or elliptic, acute, membranous, puberulent below, to 6 x 2.5 cm. Flowers 4 mm long, on few-flowered slender racemes. Calyx villous. Petals red. Pods linear, beaked, compressed, 4 x 0.3 cm.

Fairly common in moist deciduous forests.

NS 11087 (Kattalappara)

Fl. & Fr. October-December

D i s t. Indo-Malesia to Micronesia and Africa

URARIA Desv.

Uraria rufescens (DC.) Schind., Repert. Spec. Nov. Regni Veg. 21: 14. 1925; Sanj., Leg. India 268. 1992; Fl. Thenmala 98. 1995. *Desmodium rufescens* DC., Ann. Sci. Nat. (Paris) 4: 101. 1825. *Dododia hamosa* Roxb., Fl. Ind. 3: 367. 1832. *Uraria hamosa* (Roxb.) Sw. ex Wt. & Arn., Prodr. 222. 1834; Wt., Ic. t. 284. 1840; Fl. Brit. India 2: 156. 1876; Fl. Madras 336. 1918.

Subshrubs, branches tomentose. Leaves 3-foliolate; leaflets obovate, obtuse, mucronate, puberulent above and pubescent below, terminal to 8 x 4.5 cm. Flowers 6 mm long, in many flowered 15-20 cm long racemes or panicles, peduncle glandular hairy; bracts ovate-lanceolate, 7 mm long. Petals bluish-pink. Pods twisted and folded up in the calyx, to 1 cm long.

Occasional in moist deciduous and semi-evergreen forests.

NS 10703 (Kattalappara)

Fl. & Fr. November-January

D i s t. Indo-Malesia and China

VIGNA Savi.

Vigna trilobata (L.) Verdc., Taxon 17: 172. 1968 & Kew Bull. 24: 560. 1970; Sanj., Leg. India 276. 1992. *Dolichos trilobatus* L., Mant. Pl. 101. 1767. *Phaseolus trilobatus* auct. non L. 1753, Wt., Ic. t. 94. 1838; Fl. Brit. India 2: 201. 1876; Fl. Madras 362. 1918.

Twining or prostrate herbs, stem tomentose or glabrescent. Leaflets 3-lobed, obovate or spatulate, adpressed-pubescent, margins ciliate, to 8 x 3 cm. Flowers 1.5 cm across, on 5-25 cm long peduncles. Petals yellow. Pods subterete, hirsute or puberulent, to 6 x 0.5 cm.

Common in rocky areas among grasses in moist deciduous forests.

NS 10654 (Kattalappara)

Fl. & Fr. July-December

D i s t. Indo-Malesia

ZORNIA J. F. Gmel.

Zornia gibbosa Span., Linnaea 15: 192. 1841; Sanj., Leg. India 280. 1992; *Z. diphylla* auct. non (L.) Pers., Fl. Brit. India 2: 147. 1876 p.p.; Fl. Madras 325. 1918.

Diffuse herbs, branches slender, pubescent. Leaves 2-foliolate; leaflets ovate or elliptic, acute or obtuse, glabrous, to 2 x 0.8 cm; stipules peltate, acuminate. Petals yellow. Pods with 5-6 joints, scabrid and prickly, 0.8 cm long.

Common in disturbed moist deciduous forests and forest plantations.

NS 10644 (Kattalappara)

Fl. & Fr. September-January

D i s t. Indo-Malesia to Australia and China

Gliricidia sepium (Jack.) Kunth ex Walp. is found growing in the study area.

Subfamily CAESALPINIOIDEAE

- | | |
|--|------------------------|
| 1. Leaves bipinnate, rachis armed | : Caesalpinia |
| 1. Leaves once pinnate or simple, unarmed | : 2 |
| 2. Leaves simple, 2-lobed at apex | : Bauhinia |
| 2. Leaves pinnate | : 3 |
| 3. Leaflets 1 pair | : Cynometra |
| 3. Leaflets 2 or more paired | : 4 |
| 4. Leaves with large foliaceous, appendaged stipules | : Humboldtia |
| 4. Stipules otherwise | : 5 |
| 5. Petals absent | : Kingiodendron |
| 5. Petals present | : 6 |
| 6. Stamens 5 or more, free; petals 5 or 4 | : Cassia |
| 6. Stamens 3, monadelphous; petals 3 | : Tamarindus |

BAUHINIA L.

1. Tendril climbers; flowers white, 6 mm across : **B. scandens**
var. *anguina*
1. Tendrils absent; flowers brick red, 50 mm across : **B. phoenicea**

Bauhinia phoenicea Heyne ex Wt. & Arn., Prodr. 296. 1834; Fl. Brit. India 2: 283. 1878; Fl. Madras 408. 1919; Sanj., Leg. India 4. 1992; Fl. Thenmala 111. 1995. *Phanera phoenicea* (Wt. & Arn.) Benth. in Miq., Pl. Jungh. 262. 1852. *Bauhinia benthamii* Bedd., Ic. t. 107. 1868-1874 (*benthami*).

Lianas, bark brown, young shoots and tender leaves reddish. Leaves truncate at base, lobes oblong, rounded at apex, ferruginous pubescent beneath, to 12 x 10 cm; 7-9 ribbed. Flowers in corymbose racemes. Calyx segments longer than the hypanthium. Petals brick red, clawed. Pods flattened, thickened along the upper suture, to 12 x 2 cm.

Occasional in evergreen forests.

NS 10650 (Kallar); 10432 (Kattalappara)

Fl. & Fr. December-April

D i s t. W. Ghats : endemic

Bauhinia scandens L. var. *anguina* (Roxb.) Ohashi, J. Jap. Bot. 63: 159. 1988; Sanj., Leg. India 5. 1992. *B. scandens* L., Sp. Pl. 374. 1753. *B. anguina* Roxb., Pl. Corom. Pl. t. 285. 1820 & Fl. Ind. 2: 328. 1832; Fl. Brit. India 2: 284. 1878; Fl. Madras 408. 1919.

Lianas, mature stem twisted regularly and ultimately splitting along the middle; tendrils leaf-opposed, young shoots glabrous. Leaves lobed to 1/3 of their length, lobes caudate-acuminate, membranous, glabrous, to 10 x 7 cm; basally 5-7 nerved. Flowers clustered on the branches of terminal panicles. Calyx lobes ovoid, 1 mm long. Petals white, oblong, 3 mm long. Pods oblong, flat, narrowed and oblique at base, to 5 x 2.5 cm; seeds 1 or 2.

Occasional in semi-evergreen forests.

NS 11343 (Rosemala)

Fl. & Fr. September-March

D i s t. India, Burma and Sri Lanka

CAESALPINIA L.

1. Branchlets glandular hairy; leaflets small, 10-15 pairs per pinna;
pods inflated : **C. mimosoides**
1. Branchlets glabrous; 3-4 pairs; pods flattened : **C. cucullata**

Caesalpinia cucullata Roxb., Fl. Ind. 2: 358. 1832; Hattink, Reinwardtia 9: 22. 1974; Sanj., Leg. India 10. 1992. *Mezoneuron cucullatum* (Roxb.) Wt. & Arn., Prodr. 1834; Fl. Brit. India 2: 258. 1878; Fl. Madras 395. 1919.

Lianas, stem armed with stout recurved prickles. Leaves to 40 cm long, pinnae 2-5 pairs; leaflets, subopposite, ovate-elliptic, acuminate, glabrous and glossy. Flowers 1.5 cm across, in terminal and axillary panicles, to 30 cm long. Calyx lobes 5, unequal, oblong or obovate, the lower one hooded, cucullate. Petals bright yellow, shortly clawed. Pods oblong thin, broadly winged along the upper suture, to 10 x 3 cm, indehiscent.

Occasional in evergreen and semi-evergreen forests.

NS 10814 (Rosemala)

Fl. & Fr. December-March

D i s t. Indo-Malesia, Philippines and China

Caesalpinia mimosoides Lamk., *Encyl.* 1: 1785; *Wt., Ic.* t. 392. 1840; *Fl. Brit. India* 2: 256. 1878; *Fl. Madras* 394. 1919; *Sanj., Leg. India* 12. 1992; *Fl. Thenmala* 121. 1995.

Scandent shrubs with tuberous root stock, prickles erect and recurved, twigs glandular hairy. Leaves to 40 cm long, pinnae 12-18 pairs; leaflets 10-15 pairs, oblong or elliptic, obtuse, base unequal, entire, glabrous. Flowers yellow, 2.5 cm across, in axillary, to 40 cm long racemes. Upper sepals oblong, laterals obovate, glandular. Pods oblong-obovoid, turgid, 4.5 x 2.5 cm; seeds 2.

Common in disturbed moist deciduous forests and forest plantations.

NS 10785 (Kallar)

Fl. & Fr. January-March

D i s t. Peninsular India and Sri Lanka

CASSIA L.

Note: Irwin & Barneby (in R. M. Polhill & P. H. Raven, (eds.) *Adv. Leg. Syst.* 1: 97-106. 1981 & *Mem. New York Bot. Gard.* 351: 918. 1982) have split the South American *Cassias* into *Cassia* L. (s.s.), *Senna* Mill. and *Chamaecrista* Moench. Some of the occidental *Cassias* have now established in the Paleotropics. However, the broader concept of the genus is followed here.

- | | |
|--|--------------------------|
| 1. Leaflets over 30 pairs, less than 1 mm wide | : <i>C. mimosoides</i> |
| 1. Leaflets less than 15 pairs, over 10 mm broad | : 2 |
| 2. Pods woody, terete, 40-60 cm long; racemes many-flowered, drooping | : <i>C. fistula</i> |
| 2. Pods flat or subtetragonous, less than 15 cm long; flowers in erect racemes or panicles | : 3 |
| 3. Leaf rachis without glands; leaflets 10-15 pairs, oblong | : <i>C. mantana</i> |
| 3. Leaf rachis with glands; leaflets 5 or less pairs | : 4 |
| 4. Leaflets ovate-lanceolate, acuminate; seeds orbicular | : <i>C. occidentalis</i> |
| 4. Leaflets obovate, obtuse; seeds oblong-longitudinal | : <i>C. tora</i> |

Cassia fistula L., Sp. Pl. 377. 1753; Fl. Brit. India 2:261. 1878; For. Trees Travancore 140. 1908; Fl. Madras 400. 1919; Sanj., Leg. India 15. 1992; Fl. Thenmala 118. 1995. *C. rhombifolia* Roxb., Fl. Ind. 2: 334. 1832; Wt., Ic. t. 269. 1840.

Medium sized trees, bark smooth, yellowish-brown, reddish inside. Leaves 20-40 cm long; leaflets 4-6 pairs, oblong or oblong-ovate, acuminate, base obtuse or rounded. Flowers bright yellow, 4 cm across, in many flowered drooping, 15-40 cm long racemes. Stamens 10, all fertile, unequal. Pods oblong-terete, woody, to 40 x 2 cm; seeds orbicular, many.

Common in moist deciduous forests.

NS 10434 (Kattalappara)

Fl. & Fr. March-April

D i s t. India, Sri Lanka and Burma; widely planted as an ornamental tree

Cassia mimosoides L., Sp. Pl. 379. 1753; Fl. Brit. India 2: 266. 1878; Fl. Madras 403. 1919; Sanj., Leg. India 17. 1992; Fl. Thenmala 116. 1996.

Diffuse herbs, branchlets hispid. Leaves 7-10 cm long; leaflets 30-50 pairs, oblong-elliptic, obtuse, base unequal, glabrescent, to 5 x 1 mm; petiole with a sessile gland near the base. Flowers yellow, 6 mm across, solitary or in axillary racemes of 2 or 3. Pods flat, sericeous, compressed, to 5 x 0.5 cm; seeds *ca.* 20, longitudinal.

Common in open grassy patches in moist deciduous forests and also in Grasslands.

NS 10705 (Kattalappara)

Fl. & Fr. July-December

D i s t. Paleotropics

Cassia montana Heyne ex Roth, Nov. Pl. Sp. 214. 1821; Fl. Brit. India 2: 264. 1878; Fl. Madras 402. 1919; Fl. Thenmala 119. 1995.

Large shrubs to small trees, young shoots yellow tomentose. Leaves to 18 cm long; leaflets oblong, obtuse mucronate, base rounded, to 3 x 1.2 cm. Flowers 2.5 cm across, yellow, in axillary and terminal short corymbose panicles. Petals obovate. Stamens 10, upper 3 staminodes. Fruit compressed, beaked; seeds *ca.* 20, ovoid, longitudinal.

Occasional in semi-evergreen forests, mostly in disturbed areas.

NS 10640 (Kallar); 11323 (Rosemala)

Fl. & Fr. August-May

D i s t. Peninsular India

Cassia occidentalis L., Sp. Pl. 377. 1753; Fl. Brit. India 2: 262. 1878; Fl. Madras 401. 1919; Sanj., Leg. India 19. 1992; Fl. Thenmala 117. 1995.

Subshrubs. Leaves to 18 cm long; leaflets 4 or 5 pairs, ovate-lanceolate, acuminate, base unequal; petiole with a gland at base. Flowers yellow, 2 cm across, in terminal and

axillary, to 3 cm long racemes. Stamens 10, unequal, only 7 fertile. Pods compressed, to 12 x 0.7 cm; seeds 20-25 orbicular.

Common along roadsides and disturbed areas in moist deciduous forests.

NS 10623 (Kattalappara)

Fl. & Fr. July-September

D i s t. Pantropical

Cassia tora L., Sp. Pl. 376. 1753; Fl. Brit. India 2: 263. 1878 p. p., Fl. Madras 401. 1919; Sanj., Leg. India 22. 1992; Fl. Thenmala 116. 1995.

Glabrous annual subshrubs. Leaves to 15 cm long; leaflets 3 pairs, obovate, obtuse, base oblique, glabrous above and pubescent below, petiole eglandular, rachis with 2 glands between the lower pair of leaflets. Flowers yellow, 1.5 cm across, in few flowered axillary racemes. Stamens 10, unequal, only 7 fertile. Ovary pubescent. Pods linear, septate between seeds, to 15 x 0.3 cm; seeds 20-30, oblong.

Common along road sides in moist deciduous forests and forest plantations.

NS 11188 (Kattalappara)

Fl. & Fr. August-December

D i s t. Indo-Malesia to Polynesia

Cassia siamea Lamk., native of South East Asia is sometimes seen planted in forest areas.

CYNOMETRA L.

Cynometra travancorica Bedd., Fl. Sylv. t. 316. 1872; Fl. Brit. India 2: 267. 1876; Fl. Madras 413. 1919; van Meeuwen, Blumea 18: 29. 1970; Nayar & Sastry, Red Data Book Indian Pl. 2: 119. 1988; Sanj., Leg. India 27. 1992.

Large buttressed evergreen trees, bark smooth, greyish-brown, 3-4 mm thick, reddish-brown inside. Leaflets 1 pair, obliquely oblong-lanceolate, acute or acuminate, base very unequal, glabrous, to 12 x 4 cm. Flowers white, 0.7 cm across, in short dense flowered axillary racemes. Ovary glabrous, semi-lunar; stigma capitate. Pods flat, smooth, rugose along the margins, semi-circular, 2.5-3 cm long.

Occasional in semi-evergreen and evergreen forests.

NS 10104 (Kallar)

Fl. & Fr. September-April

D i s t. Southern W. Ghats : endemic

Note: Nayar & Sastry (l.c.) reported that the species is rare.

HUMBOLDTIA Vahl *nom. cons.*

- | | |
|---|-----------------------|
| 1. Leaf rachis prominently winged; leaflets sessile | : <i>H. decurrens</i> |
| 1. Leaf rachis not winged; leaflets petiolulate | : <i>H. vahliana</i> |

Humboldtia decurrens Bedd. ex Oliver in Hook., Ic. Pl. t. 2368. 1890; For. Trees Travancore 148. 1908; Fl. Madras 411. 1919; Sanj., Leg. India 30. 1992; Fl. Thenmala 115. 1995.

Moderate sized tree, bark brown with prominent lenticels. Leaves to 40 cm long; leaflets 5 or 6 pairi, oblong, acute or acuminate, base cordate, with prominent intramarginal nerve, to 15 x 6 cm; stipules to 5 cm long. Flowers white, 2 cm across, in 5-8 cm long pendulous racemes, often from mature stem. Stamens pink.

Fairly common in evergreen forests.

NS 10101 (Kallar); 10187, 10320 (Kattalappara)

Fl. January-April.

D i s t. Southern W. Ghats : endemic.

Humboldtia vahliana Wt., Ic. tt. 1607, 1608. 1850; Fl. Brit. India 2: 274. 1878; For. Trees Travancore 148. 1908; Fl. Madras 411. 1919; Sanj., Leg. India 30. 1992; Fl. Thenmala 114. 1995.

Small to medium sized trees, bark rough, dark brown, mottled with grey. Leaves to 30 cm long; leaflets 3 or 4 pairs, oblong-lanceolate or lanceolate, acuminate, base obtuse, glabrous; petiolule 0.5 cm long; stipule foliaceous, ovate with reniform appendage at base, to 2.5 cm long. Flowers white, 2.5 cm across, in many flowered reflexed, to 15 cm long racemes; bracts ovate, acute, brown tomentose. Pods oblong, compressed, adpressed reddish-brown tomentose, margins thickened, reticulate, to 15 x 4.5 cm.

Fairly common along river banks in semi-evergreen and evergreen forests.

NS 10222 (Choodal)

Fl. & Fr. February-April

D i s t. Southern W. Ghats : endemic

KINGIODENDRON Harms.

Kingiodendron pinnatum (Roxb. ex DC.) Harms in Engl. & Prantl., Pflanzenf. 1: 194. 1897; Fl. Madras 412. 1919; Nayar & Sastry, Red Data Book Indian Pl. 3: 142. 1990; Sanj., Leg. India 32. 1992; Fl. Thenmala 119. 1995. *Hardwickia pinnata* Roxb. ex DC., Prodr. 2: 487. 1825; Bedd., Fl. Sylv. t. 255. 1872; Fl. Brit. India 2: 270. 1878; For. Trees Travancore 145. 1908.

Large to very large evergreen trees, bark smooth, brownish-grey, mottled with green, dull red inside. Leaves to 18 cm long; leaflets 5-7, oblong-lanceolate, acuminate, base truncate, glabrous on both sides, to 11 x 4 cm. Flowers sessile, white, 4 mm across, in axillary and terminal paniculate spikes. Sepals broadly ovate. Stamens longer than the sepals.

Fairly common in evergreen forests.

NS 10812 (Rosemala); N. G. Nair 2799 (Kattalappara)

Fl. & Fr. February-December

D i s t. Peninsular India : endemic

Note: Nayar & Sastry(l.c.) have reported that the distribution of this species is scattered and recent collections are from Karnataka and Tamil Nadu. In the study area the species is fairly common.

TAMARINDUS L.

Tamarindus indica L., Sp. Pl. 34. 1753; Bedd., Fl. Sylv. t. 184. 1872; Fl. Brit. India 2: 273. 1878; Fl. Madras 409. 1919; Sanj., Leg. India 36. 1992; Fl. Thenmala 114. 1995.

Bark brownish-black, rough with vertical fissures. Leaves to 8 cm long; leaflets 12-17 pairs, narrowly oblong, obtuse, glabrous, to 1.5 x 0.6 cm, sessile. Flowers 1 cm across yellow with reddish-pink dots on petals, in terminal, to 5 cm long racemes; bracts and bracteoles oblong. Pods oblong, to 15 x 2 cm.

Rare in disturbed moist deciduous forests, often grown in settlements.

NS 10481 (Kallar)

Fl. April

D i s t. Native of Tropical West Africa, widely cultivated, naturalised in many countries

Delonix regia (Hook. f.) Rafin., (native of Malagasy Island) and *Peltophorum pterocarpum* (DC.) Baker ex Heyne (native of South East Asia) are occasionally found growing in forest areas.

Subfamily MIMOSOIDEAE

- | | |
|---|-----------------------|
| 1. Plants armed with prickles or spines | : 2 |
| 1. Plants unarmed | : 4 |
| 2. Leaves with 1 pair of leaflets; trees | : Calliandra |
| 2. Leaves bipinnate, leaflets many; herbs or climbers | : 3 |
| 3. Pods bristly, 2.5 x 0.5 cm or less | : Mimosa |
| 3. Pods not bristly, 5 x 1 cm or more | : Acacia |
| 4. Leaves with 1 pair of pinnae; pods circinate | : Archidendron |
| 4. Leaves with over 4 pairs of pinnae; pods straight | : 5 |
| 5. Trees, leaves without tendrils | : Albizia |
| 5. Climbers, leaf rachis ending in hooked tendrils | : Entada |

ACACIA P. Mill.

- | | |
|---|----------------------|
| 1. Pods rugose, wrinkled; flowers red | : A. concinna |
| 1. Pods not rugose or wrinkled, thin; flowers yellowish | : A. torta |

Acacia concinna (Willd.) DC., Prodr. 2: 464. 1825; Fl. Brit. India 2: 296. 1876; Sanj., Leg. India 38. 1992. *Mimosa concinna* Willd., Sp. Pl. 4: 1039. 1806. *Acacia rugata* (Lamk.)

Voigt., Hort. Suburb. Calcutta 263. 1845; Fl. Madras 429. 1919, non Benth. 1842.

Scandent shrubs with stout recurved prickles, bark dark brown with warty tubercles. Leaves to 10 cm long, pinnae 5-9 pairs; leaflets 25-30 pairs, oblong-acute, to 8 x 1.3 mm. Flower heads 1 cm across, in terminal and axillary racemes. Calyx dull red, 3 mm long. Petals white, longer than the calyx. Pods oblong, compressed, rugose and wrinkled, reddish-brown, to 10 x 1.8 cm; seeds 7-12.

Common in semi-evergreen and moist deciduous forests.

NS 10876 (Moolakkayam)

Fl. & Fr. February-March

D i s t. Indo-Malesia

Acacia torta (Roxb.) Craib, Kew Bull. 1915: 410. 1915; Fl. Madras 428. 1919; Sanj., Leg. India 44. 1992. *Mimosa torta* Roxb., Fl. Ind. 2: 566. 1832. *Acacia caesia* auct. non Willd., 1806; Wt. & Arn. Prodr. 278. 1834.

Scandent shrubs with recurved prickles, bark yellowish-brown. Leaves to 12 cm long, rachis with a few glands between pinnae; pinnae 6-10 pairs; leaflets 25-30 pairs, oblong, acute, pubescent below, 6 x 2.5 mm. Flower heads 1 cm across, solitary or in clusters of 2 or 3. Petals oblong, 2 mm long. Pods flat, thin, to 12 x 2 cm; seeds 6-8.

Common in moist deciduous and semi-evergreen forests.

NS 10612 (Thenmala)

Fl. & Fr. April-December

D i s t. India and Pakistan

Note: *A. pennata* (L.) Willd. *A. auriculiformis* A. Cunn. ex Benth. natives of Australia, have been recently planted in several forest areas.

ALBIZIA Duraz.

1. Stipule large, foliaceous; pinnae 13-18 pairs, leaflets 5-7 mm long : **A. chinensis**

1. Stipule minute; pinnae 4-6 pairs, leaflets 1.5-2 cm long : **A. odoratissima**

Albizia chinensis (Osborne) Merr., J. Bot. 3: 575. 1916; Sanj., Leg. India 54. 1992; Fl. Thenmala 124. 1995. *Mimosa chinensis* Osb., Dag. Ostind Resa. 233. 1757. *M. stipulata* Roxb. Fl. Ind. 2: 549. 1832. *Albizia stipulata* (Roxb.) Boivn., Encyl. 19. Siecle 2: 33. 1838; Bedd., Ic. t. 55. 1868-1874; Fl. Brit. India 2: 300. 1878; For. Trees Travancore 160. 1908; *A. marginata* Merr., Philipp. J. Sc. 5: 23. 1910; Fl. Madras 433. 1919.

Small to medium sized trees, bark brown with prominent pustular lenticels, young shoots pubescent. Leaves to 23 cm long; pinnae 13-18 pairs, glandular between pinnae; leaflets 30-35 pairs, oblong, obliquely acute at apex, to 7 x 1 mm. Flower heads in axillary

and terminal panicles. Corolla 4 mm long, yellowish-white. Filaments pink towards upper half and white in the lower half. Pods oblong, flat, pale brown, to 20 x 4 cm; seeds 8-12.

Occasional in moist deciduous forests.

NS 10363 (Kallar)

Fl. & Fr. March-April

D i s t. Indo-Malesia and China

Albizia odoratissima (L. f.) Benth., London J. Bot. 3: 88. 1844; Bedd., Fl. Sylv. t. 54. 1870; Fl. Brit. India 2: 299. 1878; For. Trees Travancore 159. 1908; Fl. Madras 431. 1919; Sanj., Leg. India 57. 1992. *Mimosa odoratissima* L. f., Suppl. Pl. 437. 1782.

Large deciduous trees, bark brown, rough, irregularly flaky. Leaves to 28 cm long, pinnae 4-6 pairs; leaflets 15-20 pairs, obliquely-oblong, rounded at apex, to 2 x 0.5 cm. Flower heads in terminal panicles. Corolla 3 mm long, white. Filaments pale-yellow, to 1 cm long. Pods oblong, flat, glabrous, blackish-brown, to 18 x 2.8 cm; seeds 8-12.

Very common in moist deciduous forests.

NS 10418 (Kattalappara)

Fl. & Fr. April-January

D i s t. India and Sri Lanka

ARCHIDENDRON F. v. Muell.

Archidendron monadelphum (Roxb.) Nielson, Adansonia 19: 21. 1979; Sanj., Leg. India 61. 1992. *Mimosa monadelpha* Roxb., Fl. Ind. 2: 544. 1832. *Pithecellobium bigeminum* auct. non (L.) Mart. ex Benth., 1844; Fl. Brit. India 2: 303. 1878; For. Trees Travancore 162. 1908; Fl. Madras 435. 1919. *Pithecellobium monadelphum* (Roxb.) Kosterm., Reinwardtia 3: 11. 1954; Fl. Thenmala 123. 1995

Small to medium sized trees, bark reddish-brown, prominently lenticellate; young shoots pubescent. Leaves to 40 cm long; leaflets 3 or 4 pairs, elliptic-acuminate, base unequally acute, glabrous, to 12 x 5 cm. Flower heads in terminal and axillary panicles. Petals 4 mm long, lobes ovate-acute. Pods flat, circinate, to 10 x 1.5 cm; seeds 3-6.

Fairly common in semi-evergreen forests.

NS 10483 (Kallar)

Fl. & Fr. April-December

D i s t. South West India and Eastern Himalayas

CALLIANDRA Benth.

Calliandra cynometroides Bedd., Fl. Sylv. t. 317. 1873; For. Trees Travancore 161. 1908. *Inga cynometroides* (Bedd.) Bedd. ex Baker in Hook. f., Fl. Brit. India 2: 306. 1876; Fl. Madras 435. 1919; Red Data Book Indian Pl. 3: 141. 1990.

Small trees with stipular spines. Leaves pinnate; leaflets 2, elliptic or elliptic-oblong, acute or acuminate, base oblique, attenuate, glabrous, to 13 x 5 cm. Flowers in axillary solitary heads. Calyx 3-lobed. Petals connate greenish-yellow, 1 cm long. Stamens many, connate at base to form a short tube. Pods sessile, linear-oblong, base narrowed, sutures thickened, glabrous to 13 x 1.5 cm; seeds 2-6.

Very rare in evergreen forests.

NS 10003, 10807, 10965 (Rosemala)

Fl. March-June; Fr. January-February.

Dist. Southern W.Ghats : endemic.

Note : This species was first collected by Beddome in 1868 from Rosemala, the type locality. After the type collection it is recollected for the first time after 100 years.

ENTADA Adans. *nom. cons.*

Entada rheedii Spreng., Syst. Veg. 2: 325. 1825 (*rheedii*); Britto & Matthew, Fl. Tamil Nadu Carn. 3(1): 542. 1983; Sanj., Leg. India 66. 1992. *E. scandens* auct. non Benth., sensu Baker in Hook. f., Fl. Brit. India 2: 287. 1878; Fl. Madras 417. 1919.

Very large woody climber, stem spirally twisted, angular, dark brown, rough. Leaves to 30 cm long, pinnae 2 pairs; leaflets ca. 5 pairs, oblong or obovate-oblong, retuse, base subacute, glabrous, to 6 x 3.5 cm. Flowers in axillary pendulous, to 35 cm long spikes. Petals oblong, acute, glabrous. Pods woody, to 60 x 9 cm; seeds to 10, ovoid-elliptic, 4 cm across, reddish-brown, smooth, hard, shining.

Occasional in evergreen and semi-evergreen forests.

NS 10186 (Kattalappara); 10891 (Rosemala)

Fl. & Fr. December-April

Dist. Indo-Malesia

MIMOSA L.

1. Pinnae 1 or 2 pairs; stamens 4

: *M. pudica*

1. Pinnae 5 or 6 pairs; stamens 8

: *M. diplotricha*

Mimosa diplotricha C. Wight & Sanvalle, Anal. Real Acad. Ci. Habana 5: 405. 1865; Barneby, Brittonia 39: 50. 1987; Sanj., Leg. India 67. 1992. *M. invis*a Mart., Flora 20: Biebl. 8: 121. 1837; Benth., Fl. Brazil 15: 379. t. 97. 1876; Nair, J. Bombay Nat. Hist. Soc. 61: 649. 1964.

Scandent pubescent herbs, prickles recurved. Leaves to 14 cm long; pinnae 5 or 6 pairs; leaflets oblong-obtuse, to 5 x 1.5 mm, pubescent. Flower heads in terminal racemes, 1-1.5 cm across, pink. Petals 4, oblong-acute, basally connate. Pods linear-oblong, compressed, bristly along the margins, to 2.5 x 0.5 cm; seeds 4 or 5.

Mostly seen along road sides and in forest plantations.

NS 10698 (Kattalappara)

Fl. & Fr. October-December

D i s t. Native of Tropical America, now a fast spreading weed in several Asian tropical countries

Mimosa pudica L., Sp. Pl. 518. 1753; Fl. Brit. India 2: 291. 1878; Fl. Madras 421. 1919; Sanj., Leg. India 69. 1992; Fl. Thenmala 122. 1995.

Diffuse herbs, with sharp prickles. Leaves to 7 cm long; pinnae 2-4; leaflets 14-20 pairs, oblong-obtuse, margins ciliate, to 5 x 1.5 mm. Flowers 4-merous, in axillary globose, 1.5 cm across heads. Pods linear-oblong, 2-3 jointed, 1.5 x 0.5 cm; seeds 2 or 3.

Common in disturbed forests as well as in forest plantations.

NS 11190 (Kattalappara)

Fl. & Fr. July-January

D i s t. Native of Tropical America, introduced, now run wild

Paraserianthus falcataria (L.) Neilson is sometimes raised in forest plantations. *Leucaena leucocephala* (Lamk.) de Wit., and *Samanea saman* (Jacq.) Merr. are often found growing in the study area.

ROSACEAE

- | | |
|---|-----------------|
| 1. Fruit transversely oblong, two lobed | : Prunus |
| 1. Fruit ovoid or suborbicular, entire | : Atuna |

ATUNA Rafin.

Atuna travancorica (Bedd.) Kosterm., Reinwardtia 7: 423. 1969; Nayar & Sastry, Red Data Book Indian Pl. 2: 90. 1988; *Parinarium travancoricum* Bedd., Ic. t. 189. 1868-1874; Fl. Brit. India 2: 311. 1878; For. Trees Travancore 164. 1908; Fl. Madras 437. 1919.

Small to medium sized evergreen trees, bark thin, brownish, branchlets pubescent. Leaves lanceolate, acuminate, base acute, glabrous, to 15 x 4 cm. Flowers 1.5 cm across, racemes silky-villous, drooping; bracts ovate-lanceolate, villous. Drupe suborbicular, compressed, 3.5 x 3 cm, brown, smooth.

Fairly common, but localised in evergreen forests.

NS 10806 (Kallar)

Fl. & Fr. February-May

D i s t. Southern W. Ghats (Kerala) : endemic

Note: Nayar and Sastry (l.c.) assert that this species was last collected by Bourdillon in 1895 from Kulathupuzha, the type locality and suspect that it might have already gone extinct. The present collection from the Sanctuary does not support this view.

PRUNUS L.

Prunus ceylanica (Wt.) Miq., Fl. Ind. Bat. 1: 336. 1855; Kalkman, Blumea 13: 52. 1965. *Polydontia ceylanica* Wt., Ill. 203. 1840 & Ic. t. 256. 1840. *Pygeum zeylanicum* Gaertn., Fruct. 218. t. 46. 1788; Bedd., Fl. Sylv. t. 59. 1870. *P. acuminatum* Colebr., Trans. Linn. Soc. London 12: 360. t. 18. 1818; Fl. Brit. India 2: 318. 1878; Fl. Madras 439. 1919, non *Prunus acuminata* (Wall.) Dietr., 1803. *Pygeum wightianum* Bl. ex Muell. in Walp. Ann. 4: 642. 1857; Fl. Brit. India 2: 319. 1878; For. Trees Travancore 165. 1908; Fl. Madras 439. 1919. *P. gardneri* Hook. f., Fl. Brit. India 2: 321. 1878; Fl. Madras 439. 1919.

Large evergreen trees, bark brownish-black, rough. Leaves ovate or oblong-lanceolate, acuminate, base oblique, to 16 x 8 cm, with two pitted glands at base on either side of the midrib. Flowers 7 mm across, slightly fragrant. Petals white, oblong, villous, 2 mm long. Drupe transversely oblong, 2-lobed, 2.2 x 1.2 cm.

Fairly common in evergreen and semi-evergreen forests.

NS 10004 (Dharpakulam); 10276 (Charupara); 10637 (Kattalappara)

Fl. & Fr. September-April

D i s t. Indo-Malesia

RHIZOPHORACEAE

1. Calyx 4-lobed; leaves crenate

: *Blepharistemma*

1. Calyx 7 or 8 lobed; leaves entire

: *Carallia*

BLEPHARISTEMMA Wall. ex Benth.

Blepharistemma serratum (Dennst.) Suresh in Nicols. *et al.*, Interp. Hort. Malab. 214. 1988. *Rodschedia serrata* Dennst., Schluss. 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; Fl. Brit. India 2: 441. 1878; For. Trees Travancore 172. 1908; Fl. Madras 460. 1919.

Small trees, bark smooth, yellowish-brown; branchlets lenticellate. Leaves oblong, acute or obtusely acuminate, crenate, glabrous, to 15 x 7 cm. Flowers 4 mm across. Petals white.

Occasional in moist deciduous and semi-evergreen forests.

NS 10188 (Kattalappara)

Fl. February-July

D i s t. South India (Kerala and Karnataka) : endemic

CARALLIA Roxb.

Carallia brachiata (Lour.) Merr., Philipp. J. Sci. 15. 249. 1919; Ding Hou in Steenis, Fl. Males. I, 5: 485. 1958; *Diatoma brachiata* Lour., Fl. Cochinch. 296. 1790. *Carallia*

integerrima DC., Prodr. 3: 33. 1828; Bedd., Fl. Sylv. t. 193. 1872; Fl. Brit. India 2: 439. 1878; Gamble, Fl. Madras 459. 1919.

Medium to large evergreen trees. Leaves obovate, obtuse or acute, base attenuate or acute, margins revolute, serrate in seedlings, glabrous and glossy, coriaceous, to 12 x 6 cm. Flowers 3 mm across, in axillary pedunculate cymes. Petals white, lacerate at apex.

Fairly common in semi-evergreen forests.

NS 10199 (Choodal); 10338 (Kattalappara)

Fl. October-April

D i s t. Indo-Malesia to Northern Australia and Malagasy Island; in India mostly in the Peninsular region

COMBRETACEAE

- | | |
|--|-----------------------|
| 1. Woody climbers | : 2 |
| 1. Trees | : 4 |
| 2. Petals 0, staminal filaments blue | : Calycopteris |
| 2. Petals 4 or 5, staminal filaments not blue | : 3 |
| 3. Fruit laterally 4-winged; calyx tube not produced above the ovary | : Combretum |
| 3. Fruit 5-ribbed; calyx tube produced above the ovary | : Quisqualis |
| 4. Flowers in heads | : Anogeissus |
| 4. Flowers in spikes or panicles | : Terminalia |

ANOGEISSUS (DC.) Guill. & Perr.

Anogeissus latifolia (Roxb. ex DC.) Wall. ex Gill. & Perr., Fl. Seneg. Tent. 7: 280. 1832; Bedd., Fl. Sylv. t. 15. 1869; Wt., Ic. t. 994. 1845; Fl. Brit. India 2: 450. 1878; For. Trees Travancore 179. 1908; Fl. Madras 466. 1919; A.J. Scott, Kew Bull. 33: 560. 1979.

Conocarpus latifolia Roxb. ex DC., Prodr. 3: 16. 1828.

Medium sized deciduous trees, bark smooth, yellowish-white with pink shades. Leaves subopposite, elliptic, obtuse or acute, base rounded or truncate, subcoriaceous, to 7 x 4.5 cm. Flowers 2 mm across, greenish-yellow, in axillary peduncled heads; peduncle 1 cm long. Fruit 5 mm across, beaked.

Occasional in moist deciduous forests.

NS 10603 (Kattalappara)

Fl. & Fr. October-December

D i s t. India and Sri Lanka

CALYCOPTERIS Lamk.

Calycopteris floribunda (Roxb.) Poir. in Lamk., Encyl. (suppl.) 2: 41. 1811; Fl. Brit. India

2: 449. 1878; Fl. Madras 469. 1919; Exell in Steenis, Fl. Males. I. 4: 584. 1954. *Getonia floribunda* Roxb., Pl. Corom. t. 87. 1798.

Large woody climbers, bark pale brown, often variously twisted. Leaves elliptic-acuminate, base rounded, glabrescent above and tomentose along the veins beneath, minutely glandular-pitted below, to 10 x 5 cm, in flowering branches much smaller. Flowers greenish, in dense axillary and terminal panicles. Fruit oblong, 5-ribbed, 8 mm long, tomentose.

Common in moist deciduous forests.

NS 11450 (Kattalappara)

Fl. & Fr. December-April

D i s t. Indo-Malesia

COMBRETUM Loeffl. *nom. cons.*

Combretum latifolium Bl., Bijdr. 641. 1825; Exell in Steenis, Fl. Males. I. 4: 542. 1954. *C. extensum* Roxb. ex G. Don, Trans. Linn. Soc. London 15: 414. 1827; Fl. Brit. India 2: 458. 1878; Fl. Madras 469. 1919.

Lianas, bark dark brown, rough; young shoots glabrous. Leaves ovate or elliptic, acute or shortly acuminate, base obtuse or rounded, to 13 x 8 cm. Flowers 1 cm long, greenish-yellow, in axillary often paniced spikes. Petals smaller than the calyx lobes. Fruits 4-winged, wings horizontally veined, 4 x 3.5 cm (including the wings).

Fairly common in semi-evergreen and evergreen forests.

NS 10311 (Kattalappara); 10894, 11301 (Rosemala)

Fl. & Fr. December-April

D i s t. Indo-Malesia

QUISQUALIS L.

1. Calyx tube over 5 cm long at anthesis

: *Q. indica*

1. Calyx tube under 2.5 cm long at anthesis

: *Q. malabarica*

Quisqualis indica L., Sp. Pl. ed. 2. 556. 1762; Fl. Brit. India 2: 459. 1878; Fl. Madras 469. 1919.

Large scandent shrubs. Leaves elliptic, acuminate; base obtuse, minutely tomentose below, to 12 x 6 cm. Flowers white at first, changes to pink or red. Calyx lobes ovate, acute, tomentose, 2 mm long. Petals oblong, obtuse, 2 x 1 cm.

Occasional in forest plantations and along the banks of rivers.

NS 10424 (Kattalappara)

Fl. December-May

D i s t. Native of Burma, introduced as an ornamental plant, now runs wild.

Quisqualis malabarica Bedd., Ic. t. 155. 1868-1874; Fl. Brit. India 2: 460. 1878; Fl. Madras 469. 1919.

Climbing shrubs. Leaves oblong or elliptic-oblong, obtusely acute, glabrous, membranous, to 10 x 6 cm. Flowers red, in terminal few flowered racemes. Calyx lobes ovate, acute, 2 mm long. Petals oblong, acute, 1.2 cm long.

Occasional in evergreen forests.

NS 10845, 10869 (Rosemala)

Fl. January-April

D i s t. Southern W. Ghats : endemic.

TERMINALIA L.

- | | |
|--|------------------------|
| 1. Fruit winged | : 2 |
| 1. Fruit not winged | : T. bellirica |
| 2. Fruit with 3 unequal wings | : T. paniculata |
| 2. Fruit with 5 uniform wings, rarely 4 winged | : T. crenulata |

Terminalia bellirica (Gaertn.) Roxb., Pl. Corom. 2: 54, t. 198. 1805 '*bellerica*'; Wt., Ic. t. 91. 1838 & Ill. t. 91. 1840; Bedd., Fl. Sylv. t. 19. 1869; Fl. Brit. India 2: 445. 1878; For. Trees Travancore 173. 1908; Fl. Madras 463. 1919; Exell in Steenis, Fl. Males. I, 4: 569. 1954.

Large deciduous, buttressed trees, bark yellowish-brown with shallow vertical fissures. Leaves obovate or broadly elliptic, obtuse or acute, base acute, glabrous, to 18 x 10 cm. Flowers appearing along with new leaves, yellow, 2.5 mm across, in axillary spikes. Drupe obovoid or subglobose, ca. 2.5 x 2 cm.

Common in moist deciduous forests.

NS 11449 (Kattalappara)

Fl. & Fr. December-January

D i s t. Indo-Malesia

Terminalia crenulata Heyne ex Roth, Nov. Sp. Pl. 380. 821; Fl. Madras 465. 1919; Bahadur & Gaur, Indian J. For. 3: 368. 1980. *Pentaptera crenulata* Roxb., Fl. Ind. 2: 438. 1832. **Terminalia tomentosa** (DC.) Wt. & Arn. var. *crenulata* (Heyne ex Roth) Cl., in Hook. f., Fl. Brit. India 2: 448. 1878.

Large deciduous trees, bark greyish-brown, vertically fissured and horizontally cracked. Leaves opposite or subopposite, oblong, acute or shortly acuminate, base rounded, unequal, subentire or crenulate, to 25 x 7.5 cm; glands stalked, towards the base of lamina. Flowers yellow, 4 mm across, in terminal and axillary panicles; pedicels and peduncle minutely tomentose. Drupe 3.5 x 4 cm, 5-winged, glabrous.

A very common species in moist deciduous forest.

NS 11134 (Kattalappara)

Fl. & Fr. April-May

Dist. South India : endemic

Terminalia paniculata Roth, Nov. Sp. Pl. 383. 821; Bedd., Fl. Sylv. t. 20. 1869; Fl. Brit. India 2: 448. 1878; For. Trees Travancore 177. 1908; Fl. Madras 465. 1919; *Pentaptera paniculata* (Roth) Roxb., Fl. India 2: 242. 1832.

Large trees with a short leafless period, bark brown with shallow vertical grooves. Leaves opposite or sub-opposite, oblong or ovate-oblong, acute, base rounded or cordate, coriaceous, glabrous, to 15 x 7 cm; glands sessile, at the base of lamina. Flowers yellow, 3 mm across, in terminal and axillary panicles. Drupe yellow or reddish-yellow, 3-winged, wings unequal, larger ones to 15 x 8 mm; smaller ones 5 mm.

Very common in moist deciduous forests.

NS 10431, 10630 (Kattalappara)

Fl. & Fr. August-February

Dist. Throughout Peninsular India

MYRTACEAE

1. Flowers axillary, solitary or in 2 or 3 flowered cymes, less than 7 mm across

: *Eugenia*

1. Flowers in many flowered cymes, if solitary then more than 1 cm across

: *Syzygium*

EUGENIA L.

1. Young shoots, pedicels and calyx brown tomentose

: 2

1. Young shoots, pedicels and calyx glabrous

: *E. thwaitesii*

2. Staminal disc enlarged, flowers solitary on opposite sides

: *E. discifera*

2. Staminal disc not enlarged, flowers in peduncled cymes

: *E. bracteata*

Eugenia bracteata (Willd.) Roxb. ex DC., Prodr. 3: 264. 1828; Fl. Brit. India 2: 502. 1879; For. Trees Travancore 189. 1908; Fl. Madras 484. 1919. *Myrtus bracteata* Willd., Sp. Pl. 2: 969. 1799. *Eugenia willdenowii* Wt., Ic. t. 545. 1842 & Ill. 2: 13. 1850, non DC. 1828.

Small trees or large shrubs. Leaves ovate or elliptic-lanceolate, caudate-acuminate, base acute, glabrous, to 6.5 x 2.5 cm. Flowers 7 mm across, in axillary 2 or 3-flowered cymes; bracteoles linear; pedicels 5 mm long. Petals white, glandular.

Fairly common in evergreen forests above 700 m.

NS 10277 (Pongumala); 11389 (Alvarakurichi)

Fl. March-April

D i s t. Peninsular India and Sri Lanka

Eugenia discifera Gamble, Kew Bull. 1918. 239. 1918 & Fl. Madras 484. 1919.

Small trees, branchlets terete. Leaves ovate-elliptic, obtusely acuminate, base cuneate, glabrous, dull below, to 4.5 x 2.2 cm, lateral nerves faint. Flowers white, in opposite pairs below the nodes of young leaves; pedicels 5 mm long. Disc enlarged, tomentose.

Common in grasslands

NS 5858 (Pandimotta)

Fl. April-May

D i s t. Southern W.Ghats : endemic.

Eugenia thwaitesii Duthie in Hook. f., Fl. Brit. India 2: 506. 1879; Kosterm., Quart. J. Taiwan Mus. 34: 174. 1981. *E. mooniana* Wt., Ic. t. 551. 1842 & Ill. 2: 13. 1850, non Gard., 1843; Fl. Madras 484. 1919.

Large shrubs. Leaves ovate-lanceolate, caudate, base acute or obtuse, glabrous, to 8 x 3.5 cm. Flowers 5 mm across, in axillary and terminal few-flowered clusters; bracts small; pedicels 2-3 mm long. Petals white, glandular. Berry crimson, crowned by calyx lobes, 1.2 cm across.

Occasional in semi-evergreen and evergreen forests.

NS 10133, 10955 (Rosemala)

Fl. & Fr. October-December

D i s t. South West India and Sri Lanka

SYZYGIVM R. Br. ex Gaertn.

- | | |
|--|---------------------------|
| 1. Flowers over 2 cm across | : 2 |
| 1. Flowers less than 1.2 cm across | : 7 |
| 2. Leaves cordate at base | : 3 |
| 2. Leaves acute or attenuate at base | : 4 |
| 3. Branchlets tetragonous, narrowly winged; leaves lanceolate, acuminate at apex | : S. munronii |
| 3. Branchlets subterete; leaves oblong, acute at apex | : S. mundagam |
| 4. Calyx tube less than 8 mm long at anthesis | : 5 |
| 4. Calyx tube over 13 mm long at anthesis | : 6 |
| 5. Calyx tube campanulate; lateral nerves and intramarginal nerves prominent | : S. bourdillonii |
| 5. Calyx tube obconic; lateral nerves and intramarginal nerves faint, gland dotted below | : S. hemisphericum |

6. Leaves linear-lanceolate; acuminate, coriaceous, branchlets
2.5-3 mm thick : **S. jambos**
6. Leaves elliptic, obtusely acuminate, chartaceous; branchlets
1.5-2 mm thick : **S. laetum**
7. Calyx tube funnel-shaped, 1 cm or more long : **S. lanceolatum**
7. Calyx tube turbinate, less than 0.5 cm long : 8
8. Lateral nerves less than 15 pairs, 5 mm or more apart in the
middle of leaf : **S. travancoricum**
8. Lateral nerves numerous, 3 mm or less apart : 9
9. Leaf apex obtuse or sub-acute : 10
9. Leaf apex acuminate : 11
10. Leaf base obtuse or truncate : **S. caryophyllum**
10. Leaf base acute or cuneate : **S. rubicundam**
11. Inflorescence terminal, leaf apex obtusely acuminate : **S. gardneri**
11. Inflorescence axillary or from leaf scars; leaf apex acuminate : **S. cumini**

Syzygium bourdillonii (Gamble) Rathakr. & Nair, J. Econ. Tax. Bot. 4: 287. 1983; Nayar & Sastry, Red Data Book Indian Pl. 1: 211. 1987. *Jambosa bourdillonii* Gamble, Kew Bull. 1918: 239. 1918 & Fl. Madras 414. 1919.

Medium sized trees. Leaves elliptic-lanceolate, acuminate, base acute, chartaceous, to 12 x 4 cm; lateral nerves about 12 pairs, connected by intramarginal nerve, prominent below. Flowers white, in few flowered terminal cymes. Petals orbicular, 1 cm across, gland-dotted.

Rare in evergreen forests.

NS 10379 (Kallar)

Fl. March-April

D i s t. Southern W. Ghats.

Note: This species is known only by the type collection made in 1895 by Bourdillon and is considered endangered and possibly extinct. It is the first record of collection after a century.

Syzygium caryophyllum (L.) Alston in Trimen, Handb. Fl. Ceylon 6: (Suppl.) 116. 1931. *Myrtus caryophyllata* L., Sp. Pl. 472. 1753. *Syzygium caryophyllaeum* auct. non Gaertn. 1788; Fl. Madras 480. 1919. *Eugenia caryophyllaea* (Gaertn.) Wt., Ic. t. 540. 1842; Fl. Brit. India 2: 490. 1878.

Small to medium trees, bark reddish brown. Leaves oblong or obovate-oblong, obtuse or acute, base truncate, to 8 x 3.5 cm. Flowers white, 5 mm across, in terminal corymbose cymes. Fruit globose, 5 mm across.

Fairly common in forests above 1,200 m.

NS 10272 (Pongumala)

Fl. & Fr. February-June

D i s t. Indo-Malesia.

Syzygium cumini (L.) Skeels, U.S.D.A. Bur. Pl. Industr. Bull. 248. 25. 1912; Kosterm., Quart. J. Taiwan Mus. 34: 134. 1981. *Myrtus cumini* L., Sp. Pl. 471. 1753. *Eugenia jambolana* Lamk., Encyl. 3: 198. 1789; Wt., Ic. t. 535. 1842; Fl. Brit. India 2: 499. 1879. *Syzygium jambolanum* (Lamk.) DC., Prodr. 3: 259. 1828; Fl. Madras 481. 1919.

Medium to large trees, bark greyish-brown, reddish inside. Leaves elliptic to ovate-lanceolate, acuminate, base acute, coriaceous, minutely punctate, to 12 x 5 cm. Cymes to 10 cm long, mostly from axils of leaf scars, sometimes terminal. Berry oblong, purple, to 2 x 1.5 cm.

Occasional in evergreen forests.

NS 10411 (Choodal)

Fl. & Fr. December-May

D i s t. Indo-Malesia, China and Pacific Islands

Syzygium gardneri Thw., Enum. Pl. 117. 1859; Fl. Madras 479. 1919; Fl. Thenmala 135. 1995. Kosterm., Quart. J. Taiwan Mus. 34: 139. 1981. *Eugenia gardneri* (Thw.) Bedd., For. Man. Bot. 108. 1874; Fl. Brit. India 2: 489. 1878. *E. cymosa* Lamk. var. *rostrata* Duthie in Hook. f., Fl. Brit. India 2: 482. 1878.

Very large trees, bark yellowish-grey or yellowish-white, smooth, brown inside. Leaves ovate or elliptic-lanceolate, acuminate, base obtuse or acute, glabrous and glossy, membranous, to 10 x 4 cm. Cymes terminal, to 3.5 cm long. Calyx lobes obscure. Petals calyprate, white.

Fairly common in evergreen forests.

NS 10809 (Rosemala); *10778* (Kallar)

Fl. March-April

D i s t. South India and Sri Lanka

Syzygium hemisphericum (Wt.) Alston in Trimen, Handb. Fl. Ceylon 6: (Suppl.) 115. 1931. *Eugenia hemispherica* Wt., Ic. t. 525. 1842; Fl. Brit. India 2: 477. 1878; For Trees Travancore 183. 1908. *Jambosa hemispherica* (Wt.) Walp., Rep. 2: 191. 1843; Fl. Madras 474. 1919.

Large trees, bark brown, smooth. Leaves elliptic-lanceolate, obtusely acuminate, base narrowed, to 11 x 4 cm; lateral nerves slender. Flowers white with pink shades, 2 cm across, in terminal panicle cymes. Fruit purple, globose, 2 cm across.

Fairly common in evergreen forests.

10317 (Kattalappara)

Fl. & Fr. February-June

D i s t. South India and Sri Lanka

Syzygium jambos (L.) Alston in Trimen, Handb. Fl. Ceylon 6: (Suppl.) 115. 1931.

Eugenia jambos L., Sp. Pl. 470. 1753; For. Trees Travancore 191. 1908; *Jambosa*

vulgaris DC., Prodr. 3: 286. 1826. 1828; Wt., Ic. t. 435. 1840; Fl. Madras 474. 1919.

Small trees. Leaves lanceolate, acuminate, base attenuate, coriaceous, to 16 x 3.5 cm. Flowers greenish white, 5-6 cm across, in terminal and axillary few flowered cymes. Fruit globose, 3-4 cm across.

Occasional in semi-evergreen forests.

NS 10005 (Dharpakulam)

Fl. & Fr. October-January

D i s t. Introduced and cultivated, now grows wild in abandoned cultivated areas.

Syzygium laetum (Buch.-Ham.) Gandhi in Sald. & Nicols., Fl. Hassan Dist. 282. 1976.

Eugenia laeta Buch.-Ham., Mem. Wern. Nat. Hist. Soc. 5: 338. 1826; Fl. Brit. India 2:

479. 1878. *Jambosa laeta* (Buch.-Ham.) Bl., Mus. Bot. 1: 104. 1849; Fl. Madras 474.

1919; Fl. Thenmala 134. 1995. *Eugenia pauciflora* Wt., Ic. t. 526. 1842.

Small to medium sized trees. Leaves elliptic or ovate, obtusely acuminate, base cuneate, pellucid-punctate, to 11 x 5 cm. Flowers 4-5 cm across, solitary or in few-flowered cymes. terminal or axillary. Calyx tube 1.5-2 cm long, lobes obtuse, 0.5 x 0.6 cm. Stamens crimson or creamy-white. Berry oblong, 2 x 1.5 cm, calyx lobes reflexed.

Very common in evergreen forests.

NS 10831 (Rosemala); *10717* (Umiyar); *10105* (Kallar)

Fl. & Fr. December-July

D i s t. Southern W. Ghats : endemic

Syzygium lanceolatum (Lamk.) Wt. & Arn., Prodr. 330. 1834; Ashton in Dassan. & Fosb.,

Rev. Handb. Fl. Ceylon 2: 443. 1981. *Eugenia lanceolata* Lamk., Encyl. 3: 200. 1789; Wt.,

Ic. t. 530. 1842. *Syzygium wightianum* Wall. ex Wt. & Arn., Prodr. 330. 1834; Fl. Madras

478. 1919. *Eugenia wightiana* (Wall. ex Wt. & Arn.) Wt., Ic. t. 529. 1842; Fl. Brit. India 2:

485. 1878.

Medium sized trees, bark greyish-brown, smooth. Leaves narrowly elliptic-lanceolate, acute or acuminate, base cuneate, chartaceous, to 10 x 3 cm. Flowers in short terminal or axillary cymes, to 2 cm long. Calyx tube 12 x 3 mm, lobes short. Petals suborbicular, 3 x 3 mm.

Occasional in evergreen forests.

NS 1724 (Choodal)

Fl. March-April

D i s t. South India and Sri Lanka

Note: The taxonomy of this Indo-Sri Lankan taxon is controversial. While Ashton (l.c.) has considered the Indian *S. lanceolatum* and Sri Lankan *S. wightianum* as conspecific, Kostermans (l.c.) keeps them as distinct.

Syzygium mundagam (Bourd.) Chithra in Nair & Henry, *Fl. Tamil Nadu I*, 1: 157. 1983. *Eugenia mundagam* Bourd., *For. Trees Travancore* 182. 1908. *Jambosa mundagam* (Bourd.) Gamble, *Fl. Madras* 473. 1919.

Small to medium sized slender trees, bark brown, reddish inside. Leaves oblong, acute or obtuse, base cordate, coriaceous, to 25 x 8 cm; lateral nerves prominent on both sides, midrib deeply channeled above. Flowers 2.5 cm across, in terminal, many-flowered corymbs. Calyx lobes suborbicular. Petals orbicular, 1.2 x 1.5 cm.

Common in evergreen forests.

NS 10169, 10307 (Kattalappara); *10022* (Kallar)

Fl. February-October

D i s t. Southern W. Ghats : endemic

Syzygium munronii (Wt.) Chandr. in *Biol. Mem.* 2: 58. 1977. *Eugenia munronii* Wt., *l.c.* t. 546. 1842; *Fl. Brit. India* 2: 472. 1878. *Jambosa munronii* (Wt.) Walp., *Rep.* 2: 191. 1843; *Fl. Madras* 473. 1919.

Small trees, branchlets 4-angled. Leaves lanceolate, acuminate, base cordate, coriaceous, to 20 x 5 cm. Flowers 2.5 cm across, in terminal corymbose cymes. Calyx funnel-shaped, 1.2 cm long, lobes ovate, 5 mm long. Petals white, orbicular. Berry obovoid, pinkish-green.

Fairly common in evergreen forests.

NS 11004, 10767 (Kallar)

Fl. & Fr. December-May

D i s t. South and Central W. Ghats : endemic

Syzygium rubicundam Wt. & Arn., *Prodr.* 330. 1830; *For. Trees Travancore* 186. 1908; *Fl. Madras* 479. 1919. *Eugenia rubicunda* (Wt. & Arn.) Wt., *l.c.* t. 538. 1242; *Fl. Brit. India* 2: 495. 1878.

Medium sized trees, bark smooth, pale brown, branchlets 4-angled. Leaves ovate lanceolate or obovate, acute, base cuneate, to 8 x 4.5 cm. Flowers 5 mm across, sessile, in terminal and axillary corymbose cymes.

Occasional in grasslands.

NS 11070 (Dharppakulam)

Fl. March-April

D i s t. South India and Sri Lanka.

Syzygium travancoricum Gamble, Kew Bull. 1918: 240. 1918 & Fl. Madras 480. 1919; Nair & Mohanan, J. Econ. Tax. Bot. 2: 233. 1981; Nayar & Sastry, Red Data Book Indian Pl. 1: 217. 1987 [Fig. 6].

Small trees, branchlets 4-angled. Leaves ovate, obtusely acute, shortly decurrent on the petiole, chartaceous, to 15 x 8.5 cm; lateral nerves 12-15 pairs; petiole to 2 cm long. Flowers 3 mm across, in 5-8 cm long peduncled corymbose cymes, axillary. Petals white, calyptrate.

Fairly common in the *Myristica* swamp forests.

NS 11455 (Kattalappara)

Fl. April

D i s t. Southern W. Ghats (Kerala) : endemic

Note: Nayar & Sastry (l.c.) reported that there are no surviving trees at present in the type locality. Recently the species could be located in a Sacred Groove in Quilon District (Nair & Mohanan, l.c.). The present collection from the Sanctuary demonstrates that the species has not become extinct in the type locality.

Eucalyptus tereticornis, Sm. native of Australia, is raised in plantations. *Psidium guajava* L., native of Tropical America is grown in settlements in the forests.

LECYTHIDACEAE

CAREYA Roxb. *nom. cons.*

Careya arborea Roxb., Pl. Corom. 3: 14, t. 218. 1811; Bedd., Fl. Sylv. t. 205. 1872; Fl. Brit. India 2: 511. 1879; For. Trees Travancore 193. 1908; Fl. Madras 488. 1919; Fl. Thenmala 136. 1995.

Medium sized deciduous trees, bark rough, brownish, red inside. Leaves obovate, obtuse, base attenuate and decurrent on petiole, coriaceous, to 25 x 12 cm. Flowers 5 cm across, in short terminal spikes. Calyx lobes suborbicular, 5 mm long. Berry 4-5 cm across.

Common in moist deciduous forests.

NS 10192 (Kattalappara)

Fl. & Fr. February-July

D i s t. Tropical Asia

MELASTOMATACEAE

1. Ovary 1-celled, ovules few

: **Memecylon**

1. Ovary 4 or 5-celled, ovules many

: 2

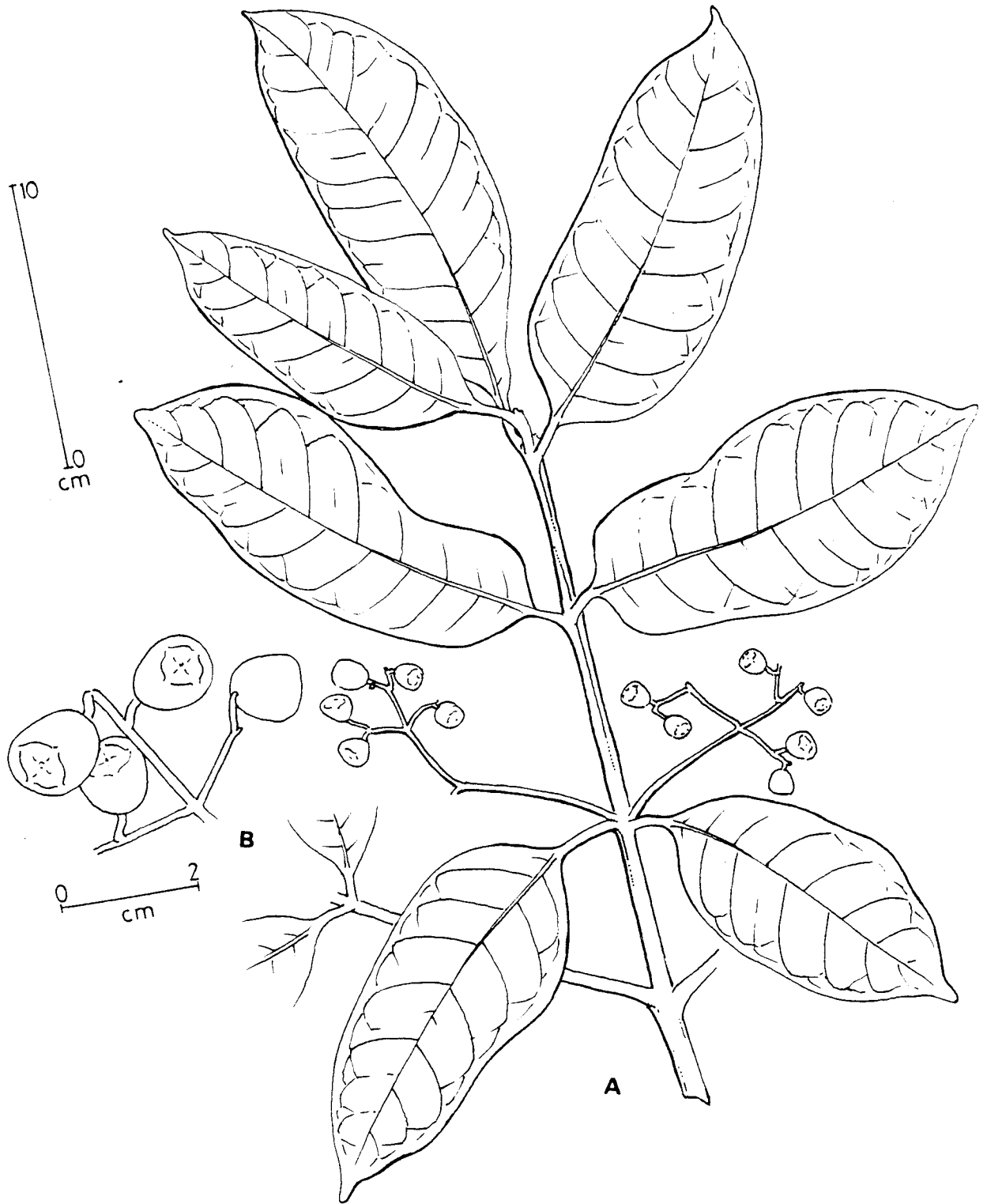


Fig. 6 : *Syzygium travancoricum* Gamble A. fruiting twig, B. fruits

- | | |
|-----------------------------------|--------------------|
| 2. Petals and stamens 3 each | : Sonerila |
| 2. Petals 4 or 5; stamens 8 or 10 | : 3 |
| 3. Stamens similar | : Osbeckia |
| 3. Stamens dimorphic | : Melastoma |

MELASTOMA L.

Melastoma malabathricum L., Sp. Pl. 390. 1753; Wt., III. I, t. 95. 840; Fl. Brit. India 2: 523. 1879; Fl. Madras 495. 1919; Fl. Thenmala 140. 1995.

Shrubs, branchlets covered with adpressed fimbriate brownish scales. Leaves elliptic, acute, adpressed hairy on both sides with fimbriate scales on the petiole and veins beneath, to 13 x 5 cm. Flowers 4 cm across, hypanthium covered with adpressed fimbriate scales; intersepalal emergences subulate. Petals purple.

Mostly seen along the banks of streams.

NS 10209 (Kulathupuzha); *10331* (Kattalappara)

Fl. & Fr. Throughout the year

D i s t. India, Sri Lanka and South East Asia

MEMECYLON L.

- | | |
|--|---------------------------|
| 1. Leaf base rounded or subcordate | : 2 |
| 1. Leaf base acute or attenuate | : 3 |
| 2. Disc rays faint; branchlets terete; petiole 2 mm long | : M. deccanense |
| 2. Disc rays prominent; branchlets quadrangular; leaves sessile | : M. depressum |
| 3. Leaves obovate or elliptic, acute or obtuse | : 4 |
| 3. Leaves lanceolate or oblong lanceolate, acuminate | : 5 |
| 4. Leaves elliptic; obtusely acute, (7-9 x 4-6 cm); bracteoles campanulate | : M. talbotianum |
| 4. Leaves obovate, obtuse or emarginate (2-3 x 1.5-2 cm); bracteoles inconspicuous | : M. flavescens |
| 5. Leaves under 1.5 cm broad; lateral nerves obscure | : 6 |
| 5. Leaves over 2.5 cm broad; lateral nerves visible, forming an intramarginal nerve | : 7 |
| 6. Leaves linear-lanceolate, 5-8 cm long; cymes 10 or more flowered | : M. angustifolium |
| 6. Leaves ovate-lanceolate, 3-4.5 cm long; cymes 1-3 flowered | : M. gracile |
| 7. Cymes sessile, 2 or 3 flowered, bracts ovate; leaves with midrib raised above, 15 cm long | : M. lawsonii |
| 7. Cymes shortly peduncled, 4-6 flowered, bracts lanceolate; leaves with midrib impressed above, to 23 cm long | : M. heyneanum |

Memecylon angustifolium Wt., Ill. 1: 215. 1840 & Ic. t. 276. 1840; Fl. Brit. India 2: 562. 1879; For. Trees Travancore 195. 1908; Fl. Madras 504. 1919.

Large shrubs to small trees; branchlets slender, subterete. Leaves linear-lanceolate, acuminate, base cuneate, glabrous, glossy, to 8 x 1.5 cm, lateral nerves not prominent. Flowers blue, mostly from mature stem. Cymes shortly peduncled.

Occasional in evergreen forests, along stream banks.

NS 10764 (Kallar)

Fl. April-May.

D i s t. South India and Sri Lanka.

Memecylon deccanense Cl. in Hook. f., Fl. Brit. India 2: 560. 1879; Fl. Madras 505. 1919; Fl. Thenmala 138. 1995.

Large shrubs to small slender trees, branchlets subterete. Leaves oblong-lanceolate or elliptic-oblong, acute or acuminate, base rounded, glabrous, brown on drying, to 12 x 4.5 cm; lateral nerves ca. 15 pairs, slender, faint. Flowers mostly fascicled on tubercles; pedicels slender, 2.5 mm long. Calyx cupular, lobes obscure, pink. Petals blue.

Fairly common in semi-evergreen forests below 500 m.

NS 10157 (Kattalappara); 10213 (Choodal)

Fl. January-March

D i s t. Southern W. Ghats : endemic

Memecylon depressum Benth. ex Triana, Trans. Linn. Soc. London 25: 158. 1865-1866; Fl. Madras 505. 1919. *M. amplexicaule* Roxb. var. *malabarica* Cl. in Hook. f., Fl. Brit. India 2: 559. 1879, p.p.

Large shrubs to small trees; branchlets 4-angled. Leaves sessile, lanceolate or oblong-lanceolate, acuminate, to 10 x 3.2 cm; lateral nerves faint, midrib impressed above. Flowers fascicled in axillary tubercles. Pedicels 3 mm long. Fruits globose, 5 mm across.

Occasional in evergreen forests.

NS 11375 (Alvarakurichi)

Fl. & Fr. February-March

D i s t. South-west India : endemic.

Memecylon flavescens Gamble, Kew Bull. 1919: 226. 1926 & Fl. Madras 504. 1919; Nayar & Sastry, Red Data Book Indian Pl. 3: 179. 1990.

Large branched shrubs. Leaves obovate, obtuse or emarginate, base cuneate, to 3 x 2.2 cm; lateral nerves obscure; petiole to 3 mm long. Flowers in axillary fascicles.

Occasional in shola forests.

NS 11347 (Alvarakurichi)

Fl. March-April.

D i s t. Southern W.Ghats : endemic.

Memecylon gracile Bedd., *Ic. t.* 164. 1868-1874; *Fl. Brit. India* 2: 563. 1879 p. p.; *Fl. Madras* 504. 1919.

Shrubs, branches very slender. Leaves ovate-lanceolate, caudate-acuminate, base acute, glabrous, lateral nerves obscure; petiole 2-3 mm long. Flowers axillary short peduncled cymes. Calyx white. Petals pale blue.

Fairly common in evergreen forests.

NS 10019, 10460 (Kallar)

Fl. February-June

D i s t. Southern W.Ghats : endemic.

Memecylon heyneanum Benth. ex Wt. & Arn., *Prodr.* 319. 1834; *Fl. Brit. India* 2: 560. 1879; *Fl. Madras* 503. 1919; *Fl. Thenmala* 138. 1995. *M. jambosoides* Wt., *Ic. t.* 277. 1840.

Shrubs. Leaves lanceolate, caudate-acuminate, coriaceous, margins thickened and curved, to 23 x 6 cm; lateral nerves prominent, 15-20 pairs, connected by intramarginal nerve; petiole to 1.3 cm long. Flowers in axillary pedunculate cymes. Fruits globose, 1 cm across, pink-red.

Fairly common in evergreen forests.

NS 10074 (Kallar); 10871 (Rosemala)

Fl. & Fr. March-June

D i s t. Peninsular India, Sri Lanka

Memecylon lawsonii Gamble, *Kew Bull.* 1919: 226. 1919 & *Fl. Madras* 503. 1919; *Fl. Thenmala* 138. 1995.

Large shrubs, branchlets terete. Leaves ovate or oblong-lanceolate, acuminate, base acute, margins slightly thickened, to 15 x 4.5 cm, lateral nerves faint, connected by an intramarginal nerve; petiole 0.5-1 cm long. Flowers in axillary clusters of 2 or 3. Petals blue, obovate. Berry globose, yellow, 7-11 mm across.

Rare, in evergreen forests.

NS 10056 (Kallar)

Fl. & Fr. September-March

D i s t. Southern W. Ghats : endemic

Note: Ahmedullah & Nayar (*Endemic Pl. Indian Region* 109. 1987) recorded this species as rare and endangered.

Memecylon talbotianum Brandis in Talb., Bombay ed. 2: Append 1902 & Indian Trees 336. 1906; Fl. Madras 503. 1919.

Trees, to 15 m tall. Leaves elliptic, obtusely acute, base acute, thickly coriaceous; lateral nerves obscure. Flowers in pedunculate cymes; peduncles *ca.* 1 cm long, clustered, axillary to leaves or leafscars.

Occasional in semi-evergreen forests.

NS 10308 (Kattalappara)

Fl. March

D i s t. South-west India : endemic.

OSBECKIA L.

- | | |
|---|--------------------------|
| 1. Herbs; petals 4; stamens 8 | : <i>O. brachystemon</i> |
| 1. Shrubs; petals 5; stamens 10 | : 2 |
| 2. Leaves elliptic, bristles on the upper surface lineate, adenate to the surface | : <i>O. gracilis</i> |
| 2. Leaves thin, lanceolate, sparsely bristly or glabrous above | : <i>O. virgata</i> |

Osbeckia brachystemon Naud., Ann. Sci. Nat. Bot. Ser. 3, 14: 457. 1850; Hansen, Ginkgoana 4: 100. 1977. *O. truncata* D. Don ex Wt. & Arn., Prodr. 322. 1834 p.p.; Fl. Brit. India 2: 514. 1879; Fl. Madras 494. 1919. *O. cupulairs* D. Don ex Wt. & Arn., Prodr. 323. 1834. p.p.; Fl. Brit. India 2: 514. 1879; Fl. Madras 494. 1919.

Erect annual herbs, stem patently hairy. Leaves elliptic or elliptic-oblong, acute, to 4 x 2 cm. 3-5 ribbed; petiole 2-3 mm. Flowers 0.6 cm across, in terminal clusters. Hypanthium with simple hairs only. Calyx lobes and intersepalar emergences bristly at apex. Petals light purple, 3 mm long.

Occasional in moist deciduous forests.

NS 10600 (Kattalappara)

Fl. October-December

D i s t. South India : endemic.

Osbeckia gracilis Bedd., Madras J. Lit. Sci. Ser. 3, 1: 45. 1864 & Trans. Linn. Soc. London 25: 216. 1865; Fl. Brit. India 2: 518. 1879; Fl. Madras 494. 1919; Hansen, Ginkgoana 4: 77. 1977. *O. sublaevis* Cogn. in DC., Monog. Phan. 7: 321. 1891; Fl. Madras 492. 1919. *O. lineolata* Gamble, Kew Bull. 1918: 241. 1918 & Fl. Madras 492. 1919.

Shrubs, branches glabrescent. Leaves elliptic, obtusely shortly acute, base obtuse, 5 ribbed, outer rib faint, lineolate on upper surface, to 2.5 x 2 cm; petiole very short. Flowers

3.5 cm across, dark purple. Calyx lobe ovate-lanceolate; appendages with few bristles at apex.

Common in shola forests.

NS 10241 (Pongumala)

Fl. January-April

D i s t. South India : endemic.

Osbeckia virgata D. Don ex Wt. & Arn., Prodr. 323. 1834; Hansen Ginkgoana 4: 107. 1977. *O. octandra* auct. non (L.) DC., 1828, sensu Cl. in Hook. f., Fl. Brit. India 2: 521. 1879; Fl. Madras 493. 1919; Fl. Thenmala 141. 1995.

Shrubs with slender branches, covered with short adpressed bristles. Leaves ovate to elliptic, acute to acuminate, base acute or rounded, sparsely adpressed bristly, to 4 x 2.2 cm. Flowers 2 cm across, in terminal rather lax few-flowered paniced cymes. Hypanthium covered with stalked stellate and simple bristles. Sepals ovate, 3 mm long, bristly on the dorsal nerve, ciliate along margin; intersepalal emergences narrow, terete, 1 mm long. Petals pink, broadly ovate.

Occasional in open grassy areas in moist deciduous forests.

NS 10024, 10346 (Kallar)

Fl. August-March

D i s t. South India: endemic

SONERILA Roxb.

- | | |
|---|--------------------------|
| 1. Stem very short, under 5 cm long; fruit hemispheric | : <i>S. rheedei</i> |
| 1. Stem elongated, over 15 cm long; fruit oblong | : 2 |
| 2. Leaves ferrugineous-silky on both sides; capsule hairy | : <i>S. travancorica</i> |
| 2. Leaves glabrous or glabrescent; capsule glabrous | : 3 |
| 3. Leaves with 5 prominent nerves from base, petiole shortly winged, base rounded | : <i>S. brunonis</i> |
| 3. Leaves with 3 prominent nerves from base, outer pairs obscure or absent, petiole not winged, base obtuse | : <i>S. clarkei</i> |

Sonerila brunonis Wt. & Arn., Prodr. 321. 1834; Wt., Ic. t. 1059. 1846; Fl. Brit. India 2: 531. 1879; Fl. Madras 499. 1919; Fl. Thenmala 142. 1995.

Woody herbs, branches 4-angled. Leaves ovate-lanceolate, base rounded, slightly oblique, margins bristly. Flowers pink-purple. Capsule funnel-shaped, glabrous.

Fairly common in grasslands.

NS 11066 (Rosemala); 10783 (Kallar)

Fl. & Fr. October-January

D i s t. South India and Sri Lanka.

Sonerila clarkei Cogn. in DC., Monogr. Phan . 7: 501. 1891; Fl. Madras 499. 1919. *S. amabilis* Bedd. ex Cl. in Hook. f., Fl. Brit. India 2: 533. 1879, non Kurz 1871.

Small herbs, branches subterete. Leaves elliptic, acute, base obtuse, margins serrulate, to 2.5 x 2 cm. Flowers pink-purple, 1 cm across. Capsule oblong, base narrowed, ribbed.

Fairly common in evergreen forests, in open areas and grasslands.

NS 10044 (Rockwood); 10719 (Umiyar)

Fl. & Fr. October-January

D i s t. South India : endemic.

Sonerila rheedei Wt. & Arn., Prodr. 321. 1834 (*rheedii*); Gamble, Fl. Madras 500. 1919; Nayar, J. Bombay Nat. Hist. Soc. 48: 324. 1969. *S. wallichii* sensu Cl. in Hook. f., Fl. Brit. India 2: 538. 1879, p.p., non Benn., 1844.

Annual herbs, stem, 4-angled. Leaves ovate or elliptic, acute or shortly acuminate, base unequally cordate, serrulate along margins, crispate hairy on both sides, to 11 x 5 cm; petiole to 3 cm. Flowers 1.2 cm across in scorpioid cymes; peduncle to 8 cm long. Pedicels and calyx tube sparsely hairy. Petals pink, orbicular, 0.5 cm across.

Common in evergreen forests.

NS 10547, 10548 (Kattalappara)

Fl. & Fr. August-December

D i s t. Southern W. Ghats : endemic

Sonerila travancorica Bedd., Ic. t. 156. 1868-1874; Fl. Brit. India 2: 534. 1879; Fl. Madras 499. 1919.

Subshrubs, branches adpressed tomentose. Leaves elliptic, acute, subentire, to 5 x 2.5 cm. Peduncle, pedicels and calyx sparsely hairy. Petals elliptic, 1 cm long, purple. Capsule trigonus, ribbed.

Occasional in grasslands.

NS 11434 (Alvarakurichi)

Fl. & Fr. January-March

D i s t. South India : endemic.

LYTHRACEAE

LAGERSTROEMIA L.

1. Flowers 5-6 cm across; calyx ribbed

: *L. hirsuta*

1. Flowers 1 cm across; calyx smooth

: *L. microcarpa*

Lagerstroemia hirsuta (Lamk.) Willd., Sp. Pl. 2: 1178. 1799; Nicols. *et al.*, Interp. Hort.

Malab. 166. 1988. *Adambea hirsuta* Lamk., Encyl. 1: 39. 1783. *Lagerstroemia flosreginae* Retz., Obs. Bot. 5: 25. 1788; Fl. Brit. India 2: 577. 1879; For. Trees Travancore 198. 1908; Fl. Madras 513. 1919. *L. reginae* Roxb., Pl. Corom. t. 65. 1795; Wt., Ic. t. 413. 1843; Bedd., Fl. Sylv. t. 29. 1869; Fl. Thenmala 143. 1995.

Medium-sized trees, bark smooth, yellowish-grey. Leaves subopposite, elliptic-oblong, acute or acuminate, base obtuse, coriaceous, to 20 x 8.5 cm. Calyx tube many-ribbed, lobes ovate-acuminate, glabrous. Petals mauve to pink, rhomboid, 2.5 x 2 cm. Capsule globose, 6-valved. 2 cm across.

Fairly common in evergreen forests, mostly along the sides of streams and rivers.

NS 10990 (Kattalappara)

Fl. & Fr. March-August

D i s t. India and Burma; often grown as an ornamental tree

Lagerstroemia microcarpa Wt., Ic. t. 109. 1839; Bedd., Fl. Sylv. t. 30. 1869; Fl. Thenmala 144. 1995. *L. lanceolata* Wall. ex Cl. in Hook. f., Fl. Brit. India 2: 576. 1879; For. Trees Travancore 197. 1908; Fl. Madras 513. 1919. *L. thomsonii* Koehne in Engl., Pflanzenr. 17: 257. 1903; Fl. Madras 513. 1919.

Large deciduous trees with a leafless period up to 5 months, bark smooth, greyish-white or yellowish-grey, peels off in long linear flakes. Leaves elliptic, acute to acuminate, base acute, glabrous, glaucous below, to 11 x 4.5 cm. Calyx lobes ovate-acute, reflexed, tomentose. Petals pinkish-white, obovate, 4 mm long. Capsule ellipsoid, 4-valved, 1 cm long.

Common in moist deciduous forests.

NS 10969 (Rosemala)

Fl. & Fr. June-December

D i s t. South West India

Lawsonia inermis L., the henna plant, is sometimes grown in forest settlements.

ONAGRACEAE

LUDWIGIA L.

- | | |
|---|--------------------------|
| 1. Stem and leaves glabrous; petals 3 mm long | : <i>L. hyssopifolia</i> |
| 1. Stem and leaves villous; petals 10 mm long | : <i>L. octovalvis</i> |

Ludwigia hyssopifolia (G. Don) Exell, Garcia de Orta 5: 471. 1957; Raven, Reinwardtia 6: 339. 1963. *Jussiaea hyssopifolia* G. Don, Gen. Syst. 2: 693. 1832. *J. linifolia* Vahl, Ecolg. Amer. 2: 32. 1798, non *Ludwigia linifolia* Poir., 1813, Fischer in Gamble, Fl. Madras 1875. 1936.

Herbs or subshrubs, branchlets angled or winged. Leaves elliptic-lanceolate, base cuneate, glabrous, membranous, to 6 x 2 cm. Flowers solitary, axillary. Petals 4, yellow, obovate. Capsule to 2 x 0.2 cm; seeds dimorphic, upper ones larger.

Occasional in moist areas in moist deciduous forests.

NS 10578 (Choodal)

Fl. & Fr. July-December

D i s t. Pantropical

Ludwigia octovalvis (Jacq.) Raven ssp. *sessiliflora* (Mich.) Raven, Kew Bull. 15: 476. 1962; Fl. Thenmala 147. 1995. *Jussiaea villosa* Lamk., Encyl. 3: 331. 1789; Fl. Madras 1875. 1935. *J. suffruticosa* sensu Cl. Fl. Brit. India 587. 1879. p.p. non L. 1753.

Shrubs, stem and leaves grey villous. Leaves narrowly elliptic, acute at both ends, to 5 x 1.2 cm. Flowers yellow, 2-2.5 cm across, axillary. Fruits narrowly turbinate, terete, villous.

Occasional along the sides of streams.

NS 11173 (Choodal)

Fl. & Fr. October-December

D i s t. Pantropical.

PASSIFLORACEAE

1. Flowers bisexual, solitary, axillary

: *Passiflora*

1. Flowers unisexual, in paniculate cymes

: *Adenia*

ADENIA Forsk.

Adenia hondala (Gaertn.) de Wilde, Blumea 15: 265. 1967; Fl. Thenmala 148. 1995. *Granadilla hondala* Gaertn., Fruct. 2: 480. 1791. *Modecca palmata* Lamk., Encyl. 4: 209. 1797; Wt., Ic. t. 201. 1839; Fl. Brit. India 2: 601. 1879. *Adenia palmata* (Lamk.) Engl., Bot. Jahrb. 14: 375. 1892; Fl. Madras 525. 1919.

Plants with large tuberous rootstock. Leaves palmately 3-4 lobed, lobes elliptic, acute, entire, to 18 x 20 cm; petiole to 8 cm. Calyx campanulate, tube 1 cm long, lobes minute. Petals greenish-yellow, linear-lanceolate, pilose along the margins.

Fairly common in moist deciduous and semi-evergreen forests.

NS 10474 (Kallar)

Fl. March-August

D i s t. South India and Sri Lanka

PASSIFLORA L.

Passiflora foetida L., Sp. Pl. 959. 1753; Fl. Madras 524. 1919; de Wilde in Steeins, Fl. Males. I, 7: 410. 1972; Fl. Thenmala 148. 1995.

Climbing herbs, stem densely glandular-hispid. Leaves orbicular-ovate, 3-5 lobed, lobes ovate, base cordate, membranous, adpressed glandular-pubescent, margins serrulate, to 7.5 x 7 cm. Flowers 3.5 cm across; bracts and bracteoles glandular-pubescent. Petals white, shorter than the calyx lobes. Coronal segments in 2 whorls. Berry subglobose, yellow, 2 cm across, subtended by the bracts and bracteoles.

Fairly common in moist deciduous, semi-evergreen forests and in disturbed areas.

NS 10478 (Kallar)

Fl. & Fr. July-December

D i s t. Native of Tropical America; now naturalized in many tropical countries in Asia and Africa

CUCURBITACEAE

- | | |
|--|------------------------|
| 1. Tendrils simple | : 2 |
| 1. Tendrils branched | : Trichosanthes |
| 2. All stamens 2-celled | : Zehneria |
| 2. All stamens not 2-celled, one 1-celled and two 2-celled | : 3 |
| 3. Calyx tube elongated; anther cells conduplicate | : Gymnopetalum |
| 3. Calyx tube short; anther cells straight | : Mukia |

GYMNOPETALUM Arn.

Gymnopetalum wightii Arn., Madras J. Lit. Sci. 12: 52. 1840; Fl. Brit. India 2: 611. 1879; Fl. Madras 530. 1919; Chakrav., Fl. India Fasc. 11: 54. 1982.

Stem hispid. Leaves ovate-acute, 5-angled or lobed, base cordate, dentate, hirsute, to 8 x 5 cm; petiole to 3 cm. Male flowers in axillary umbels, pedicels to 1 cm long. Calyx tube 2.5 cm long. Corolla white. Fruit ellipsoid, 2.5 cm long.

Occasional in evergreen forests.

NS 10247, 11402 (Pandimotta)

Fl. & Fr. September-October

D i s t. South West India and Sri Lanka

MUKIA Arn.

Mukia maderaspatana (L.) M. Roem., Syn. Monogr. 2: 47. 1846; Jeffrey, Kew Bull. 34: 802. 1980; Fl. Thenmala 145. 1995. *Cucumis maderaspatanus* L., Sp. Pl. 1012. 1753. **Mukia scabrella** (L. f.) Arn. in Hook. J. Bot. 3: 276. 1841; Fl. Brit. India 2: 623. 1879. **Melothria maderaspatana** (L.) Cogn. in A. & C. DC., Monogr. Phan. 3: 623. 1881; Fl. Madras 539. 1919; Chakrav., Fl. India Fasc. 11: 83. 1982.

Scandent scabrid herbs. Leaves ovate, angular, acute, base cordate, membranous, dentate-crenate, scabrid on both sides, to 8 x 10 cm; petiole to 6 cm. Calyx villous. Corolla 3 mm long, yellow. Anthers oblong, ciliate. Berry globose, red, 1.2 cm across; seeds rugose.

Common in moist deciduous forests and forest plantations.

NS 10008 (Kallar)

Fl. & Fr. August-December

D i s t. Indo-Malesia to Newzealand, Africa and China

TRICHOSANTHES L.

- | | |
|---|----------------------------|
| 1. Leaves irregularly and deeply serrate, fruit globose | : <i>T. anaimalaiensis</i> |
| 2. Leaves margins denticulate, fruit ovoid | : <i>T. nervifolia</i> |

Trichosanthes anaimalaiensis Bedd., Madras J. Lit. Sci. ser. 3, 1: 47. 1864 & Trans. Linn. Soc. London 25: 217. 1865; Fl. Madras 530. 1919.

Climbing shrubs. Leaves 3-5 lobed, lobes acuminate, serrate, tomentose or glabrescent, to 12 cm on either way. Female flowers solitary, axillary, 8 cm long; bracts laciniate. Calyx lobes lanceolate. Petals pink.

Occasional in evergreen forests.

NS 10482 (Kallar)

Fl. & Fr. April-October

D i s t. Southern W. Ghats : endemic

Trichosanthes nervifolia L., Sp. Pl. 1008. 1753; Fl. Madras 529. 1919; Chakrav., Fl. India Fasc. 11: 119. 1982; Fl. Thenmala 140. 1995. *T. cuspidata* Lamk., Encyl. 1: 190. 1789; Fl. Madras 529. 1919; Chakrav., Fl. India Fasc. 11: 112. 1982.

Stem glabrous. Leaves ovate-cordate, acute, cuspidate, denticulate, membranous, 3-ribbed from base, to 9 x 5 cm. Male flowers: pedicels slender, calyx tube oblong 1.2 cm long, lobes filiform, 3 mm long, anther cells oblong. Fruit ovoid, 5 x 3 cm, yellow.

Occasional in evergreen and semi-evergreen forests.

NS 10985 (Kallar)

Fl. & Fr. September-February

D i s t. Peninsular India and Sri Lanka

ZEHNERIA Endl.

Zehneria maysorensis (Wt. & Arn.) Arn., Hook. J. Bot. 3: 275. 1841; Jeffrey, Kew Bull. 15: 366. 1962 & 34: 795. 1980. *Bryonia maysorensis* Wt. & Arn., Prodr. 345. 1834; Wt., Ic. t. 758. 1844 & t. 1609. 1850. *Melothria perpusilla* (Bl.) Cogn. var. *subtruncata* Cogn. in A. & C. DC., Monogr. Phan. 3: 608. 1881; Fl. Madras 538. 1919.

Plants glabrous. Leaves ovate, acute, mucronate, base truncate or subcordate, margins dentate, membranous, basally 5-7 nerved, to 8 x 8 cm. Calyx glabrous, lobes ovate-oblong. Corolla 2 mm long, white. Anthers ovate, densely papillose. Berry 1 cm across; seeds smooth.

Occasional in semi-evergreen and evergreen forests.

NS 10066 (Kallar); 11217 (Rosemala)

Fl. & Fr. November-December

D i s t. Indo-Malesia and South West China

BEGONIACEAE

BEGONIA L.

- | | |
|---|---------------------------|
| 1. Plants without aerial stem, scapigerous herbs | : 2 |
| 1. Plants with aerial stem, terrestrial herbs | : B. malabarica |
| 2. Placenta two in each cell; stipules under 1 cm long | : B. cordifolia |
| 2. Placenta undivided; stipules foliaceous, 3-5 cm long | : 3 |
| 3. Leaves peltate, suborbicular, entire | : B. albo-coccinea |
| 3. Leaves ovate, base deeply cordate, margin serrate | : B. floccifera |

Begonia albo-coccinea Hook., Bot. Mag. t. 4172. 1845; Fl. Brit. India 2: 654. 1879; Fl. Madras 546. 1919; Fl. Thenmala 155. 1995. **B. grahamiana** Wt., Ic. t. 1811. 1848.

Succulent scapigerous herbs. Leaves suborbicular, usually border than long, peltate, glabrous when mature; petiole to 15 cm long; stipules ovate-lanceolate, cuspidate. Flowers pink in dichotomous cymes; peduncles to 20 cm long. Capsule subequally 3-winged.

Fairly common in evergreen forests.

NS 10017 (Kallar); 10837, 10926 (Rosemala)

Fl. & Fr. October-April

D i s t. Southern W.Ghats : endemic.

Begonia cordifolia (Wt.) Thw., Enum. Pl. Zey. 129. 1859; Fl. Brit. India 2: 641. 1879; Fl. Madras 546. 1919; Nayar & Sastry, Red Data Book Indian Pl. 3: 72. 1990.

Scapigerous herbs with tuberous roots. Leaves orbicular or ovate-cordate, acute or obtuse, to 10 cm across; margins ciliate, petiole to 10 cm long; stipules ovate, acute. Flowers pale-pink in cymes; bracts ovate acute; peduncle to 12 cm long.

Occasional in evergreen forests.

NS 10567 (Kattalappara)

Fl. July-August

D i s t. South India and Sri Lanka.

Note : A very rare species; not collected from India after Wight's collections in 1857 (Nayar & Sastry, i.c.).

Begonia floccifera Bedd., Ic. 23, t. 111. 1868-1874; Fl. Brit. India 2: 654. 1879; Fl. Madras 546. 1919; Smith *et al.*, Smithson. Contrb. Bot. 60: 168. 1986.

Stem rhizomatous. Leaves alternate, cauline, orbicular-cordate, dentate or subentire, subcoriaceous, densely yellowish-white, tomentose on both sides when young, becoming glabrescent except the nerves beneath, greenish above and dull white below, to 12 x 20 cm, 7-9 nerved from base; petiole to 15 cm, brown tomentose; stipules ovate, long cuspidate. Flowers pink, in compound cymes, peduncles to 30 cm long. Tepals 2 in male flowers, orbicular, 8 mm across. Capsule to 1.8 x 1.5 cm, 3-winged.

Occasional in evergreen forests, often in rock crevices.

NS 11328 (Alvarakurichi)

Fl. & Fr. January-February

D i s t. Southern W. Ghats : endemic

Begonia malabarica Lamk., Encyl. 1: 39. 1785; Fl. Brit. India 2: 655. 1879; Fl. Madras 546. 1919, p.p.; Ansari & Nair, J. Econ. Tax. Bot. 5: 126. 1984; Smith *et al.*, Smithson. Contrb. Bot. 60: 196. 1986; Fl. Thenmala 155. 1995.

Perennial herbs, to 50 cm tall, stem fleshy. Leaves lanceolate, acute or acuminate, base unequally cordate, margin serrate-dentate, membranous, spiculate along the upper surface, to 18 x 5 cm, 4 or 5-nerved from base; petiole to 3.5 cm; stipule lanceolate, 8 x 2 mm. Flowers pink, in axillary cymes. Tepals 1 cm across. Capsule 1.8 x 1.5 cm, 3-winged.

Fairly common in semi-evergreen and evergreen forests.

NS 10098 (Kallar)

Fl. & Fr. August-December

D i s t. Peninsular India : endemic

DATISCACEAE

TETRAMELES R. Br.

Tetrameles nudiflora R. Br. in Bemm., Pl. Jav. Rar. 79. t. 17. 1838; Bedd., Fl. Sylv. t. 212. 1872; Fl. Brit. India 2: 657. 1879; For. Trees Travancore 203. 1908; Fl. Madras 544. 1919; Fl. Thenmala 156. 1995. *T. grahamiana* Wt., Ic. t. 1956. 1853.

Large deciduous trees, bark greyish-white. Leaves broadly ovate, acuminate, base cordate, irregularly serrate-dentate, subcoriaceous, glabrous above, pubescent beneath, 3-5 nerved from base, to 12 x 10 cm. Male flowers greenish-yellow, subsessile, in pubescent panicles. Female flowers sessile, in spicate pendulous peduncles. Capsule faintly 8-ribbed, glandular, urceolate, 0.4 cm long.

Common in moist deciduous forests; occasionally in semi-evergreen forests.

NS 10931 (Rosemala)

Fl. & Fr. March-May

D i s t. Indo-Malesia to Australia

MOLLUGINACEAE

MOLLUGO L.

Mollugo pentaphylla L., Sp. Pl. 89. 1753; Fl. Madras 553. 1919; Sivar. & Usha. Taxon. 32: 125. 1983; Sivar., J. Taiwan Mus. 41: 86. 1988; Fl. Thenmala 157. 1995.

Ascending herbs. Leaves in whorls of 2-9, obovate-obtuse, base attenuate, upper leaves elliptic-lanceolate, subsessile. Flowers 3 mm across, in lax terminal cymose panicles; pedicels filiform, 5-8 mm long. Tepals elliptic-oblong, obtuse. Capsule 3-valved; seeds areolate.

Occasional in moist deciduous forests.

NS 10542 (Kattalappara)

Fl. & Fr. September-December

D i s t. Throughout tropics and subtropics

APIACEAE

- | | |
|-----------------------------------|----------------------|
| 1. Prostrate herbs, leaves simple | : 2 |
| 1. Erect herbs, leaves pinnate | : <i>Pimpinella</i> |
| 2. Leaves digitately 7-9 lobed | : <i>Hydrocotyle</i> |
| 2. Leaves not lobed | : <i>Centella</i> |

CENTELLA L.

Centella asiatica (L.) Urban in Mart., Fl. Braz. 11:287. 1879; Fl. Madras 556. 1919; Fl. Thenmala 158. 1995. *Hydrocotyle asiatica* L., Sp. Pl. 1753: Wt., Ic. t. 565. 1842; Fl. Brit. India 2: 669. 1879.

Leaves orbicular-reniform, crenate or subentire, glabrous, to 5 cm across; petiole to 12 cm long, sheathing at base. Flowers sessile, pink, in 2-5 flowered umbels. Fruit ovoid, 3-4 mm long, reticulate-rugose, 7-9 ribbed.

Occasional in semi-evergreen forests, often in moist areas.

NS 10454 (Kallar)

Fl. & Fr. August-November

D i s t. Tropics and Subtropics of both Old and New world

HYDROCOTYLE L.

Hydrocotyle javanica Thunb., Diss. Hydroc. no. 17, Pl. 6, t. 2. 1798; Fl. Brit. India 2: 667.

1879; Fl. Madras 556. 1919; *H. polycephala* Wt. & Arn., Prodr. 366. 1834; Wt., Ic. t. 1003. 1845.

Leaves orbicular-cordate, 7-9 lobed, crenate; sparsely hairy on nerves beneath, basally 7-9 nerved, to 7 cm across; petiole to 15 cm long. Flowers white, very small, in 15-25 flowered, globose umbels. Petals lanceolate, acute. Fruit subquadrate; mericarps compressed, 2 mm long.

Very common in evergreen forests above 600 m.

NS 10761 (Rockwood); 11045 (Rosemala)

Fl. & Fr. July-December

D i s t. Indo-Malesia and Tropical Africa

PIMPINELLA L.

Pimpinella heyneana (DC.) Kurz, J. Asiat. Soc. Bengal, Pt. 2, (Nat. Hist.) 46: 115. 1877; Fl. Brit. India 2: 684. 1879; Fl. Madras 560. 1919; Fl. Thenmala 159. 1995 *Helosciadium heyneanum* DC., Prodr. 4: 106. 1830; Wt. & Arn., Prodr. 368. 1834.

Herbs, to 1.5 m tall, branches slender, glabrous. Leaves to 10 cm long; 2-pinnate; leaflets sessile, ovate-lanceolate, acuminate, membranous, deeply serrate, glabrous; sheathed at base. Flowers white, 1 mm across, in 10-15 flowered rays; bracts lanceolate. Fruit subglobose, 1.5 mm across, glabrous.

Occasional in semi-evergreen forests.

NS 10031 (Kallar)

Fl. & Fr. October-January

D i s t. India, Sri Lanka and Burma

ARALIACEAE

- | | |
|--|--------------|
| 1. Leaves 2-pinnate, leaves and stem prickly | : Aralia |
| 1. Leaves digitate or simple pinnate leaves and stem unarmed | : 2 |
| 2. Leaves imparipinnate | : Polyscias |
| 2. Leaves digitate | : Schefflera |

ARALIA L.

Aralia malabarica Bedd., Fl. Sylv. 121, Pl. 15, f. 2. 1871; Fl. Brit. India 2: 722. 1879; For. Trees Travancore 204. 1908; Fl. Madras 567. 1919.

Large shrubs, stem prickly. Leaves 2-pinnate, to 60 cm long; pinnae 7-11, leaflets 5-9 in each pinnae, elliptic-acuminate, base acute, serrate and ciliate along margins, to 10 x 4 cm; subsessile. Umbels in large spreading panicles, flowers to 30 per umbel. Petals oblong, greenish-white.

Occasional in evergreen forests above 700 m.

NS 11002 (Kallar)

Fl. August-September

D i s t. Southern W. Ghats : endemic

POLYSCIAS J. R. & G. Forst.

Polyscias acuminata (Wt.) Seem. in J. Bot. 3: 181. 1865; Fl. Brit. India 2: 727. 1879; For. Trees Travancore 206. 1908; Fl. Madras 568. 1919. *Hedera acuminata* Wt., Ic. t. 1062. 1846.

Small glabrous trees. Leaves to 25 cm long; leaflets 5-7, lanceolate, acute, glabrous, coriaceous, to 12 x 5 cm. Umbels in terminal panicles. Petals greenish-yellow.

Occasional in grasslands.

NS 11405 (Alvarakurichi)

Fl. January-February

D i s t. South India and Sri Lanka.

SCHEFFLERA J. R. & G. Forst.

1. Lateral nerves of leaves oblique; petiole less than 15 cm long : *S. venulosa*

1. Lateral nerves of leaves nearly right angle to the midrib; petiole to 25 cm long : *S. wallichiana*

Schefflera venulosa (Wt. & Arn.) Harms in Engl. & Prantl, Pflanzenf. 3(8):39. 1894. var. *venulosa* Fl. Madras 570. 1919; Fl. Thenmala 159. 1995. *Paratropia venulosa* Wt. & Arn., Prodr. 377. 1834; Wt., Ill. 2: t. 118. 1850. *Heptapleurum venulosum* (Wt. & Arn.) Seem., J. Bot. 3: 80. 1865; Fl. Brit. India 2:729. 1879, p.p.

Scandent shrubs, often epiphytic. Leaflets 4 or 5, broadly elliptic, acuminate, base truncate or acute, coriaceous, to 15 x 9 cm; lateral nerves 4-7 pairs, reticulations prominent. Panicles of umbels terminal, to 15 x 25 cm. Flowers 4 or 5 per umbel; pedicels 0.5 cm long. Petals greenish-yellow, 1 mm long.

Common in semi-evergreen and evergreen forests.

NS 10472 (Kallar); 10974 (Rosemala)

Fl. April-May

D i s t. Indo-Malesia

Schefflera wallichiana (Wt. & Arn.) Harms in Engl. & Prantl, Pflanzenf. 3(8): 38. 1894; Fl. Madras 570. 1919. *Paratropia wallichiana* Wt. & Arn., Prodr. 377. 1834. *Heptapleurum wallichianum* (Wt. & Arn.) Cl. in Hook. f., Fl. Brit. India 2: 730. 1879; For. Trees Travancore 206. 1908.

Small trees or robust epiphytic shrubs. Leaflets 5-8, oblong or obovate, acute, base truncate or subcordate, coriaceous, to 15 x 7.5 cm; lateral nerves ca. 10 pairs, reticulations

not prominent; petiolule to 5 cm, puberulous. Panicles terminal, 18 x 25 cm, umbels 6-12 flowered; pedicels 0.5 to 1 cm long. Petals 5, ovate-oblong, greenish-yellow. Styles 5, free.

Occasional in evergreen forests above 700 m.

NS 10395 (Rockwood); 11400 (Pandimotta)

Fl. April

D i s t. South India and Sri Lanka

CORNACEAE

MASTIXIA Bl.

Mastixia arborea (Wt.) Bedd., ssp. *meziana* (Wang.) Matthew, *Blumea* 23: 89. 1976 & *Fl. India Fasc.* 19: 27. 1988. *M. meziana* Wang., *Feddes Repert.* 4: 336. 1907. *Bursinopetalum arboreum* Wt., *l.c.* 3, t. 956. 1845. *Mastixia pentandra* auct. non Bl., *Fl. Brit. India* 2: 746. 1879; *For. Trees Travancore* 208. 1908; *Fl. Madras.* 574. 1919.

Large trees, bark greyish-brown, smooth. Leaves elliptic or oblong, acuminate, base attenuate, chartaceous, to 12 x 5 cm. Flowers 3 mm across, greenish-yellow, in terminal panicles, to 8 cm long, adpressed tomentose. Petals thick, puberulous outside, 2 mm long. Drupe oblong, 3.5 x 2 cm.

Occasional in evergreen forests.

NS 3434 (Choodal)

Fl. & Fr. February-May

D i s t. Southern W. Ghats : endemic

ALANGIACEAE

ALANGIUM Lamk.

Alangium salvifolium (L. f.) Wang. ssp. *sundanum* (Miq.) Bloem., *Bull. Jard. Bot. Buitenz.* III, 16: 156. 1939; Matthew, *Fl. India Fasc.* 19: 5. 1988. *A. sundanum* Miq., *Fl. Ind. Bat.* 1: 774. 1856. *A. hexapetalum* Lamk., *Encyl.* 1: 174. 1783. ssp. *hexapetalum* (Lamk.) Wang.; *Fl. Madras* 572. 1919; *Fl. Thenmala* 160. 1995.

Scandent or climbing shrubs. Leaves oblong-obovate to elliptic, obtusely caudate-acuminate, base truncate or obtuse, chartaceous, entire, to 15 x 6 cm. Flowers white, fascicled, axillary to leaves or leaf scars. Petals 7, linear, 1.8 cm long, tomentose outside. Stamens 15, filaments villous. Ovary 1-celled; stigma capitate. Drupe subglobose, 1.2 cm across.

Common in semi-evergreen and moist deciduous forests.

NS 10184 (Choodal); 10989 (Kattalappara)

Fl. & Fr. March-August

D i s t. Indo-Malesia

RUBIACEAE

- | | |
|--|------------------------|
| 1. Flowers in globose heads; trees or climbers | : 2 |
| 1. Flowers not in globose heads, if so, small herbs | : 5 |
| 2. Calyx tubes confluent | : Morinda |
| 2. Calyx tubes not confluent | : 3 |
| 3. Corolla lobes imbricate; flowers ebracteate | : Neolamarckia |
| 3. Corolla lobes valvate; flowers bracteate | : 4 |
| 4. Leaves cordate at base; calyx 5 lobed | : Haldina |
| 4. Leaves truncate at base; calyx entire | : Mitragyna |
| 5. Cells of ovary 2 or more-ovuled | : 6 |
| 5. Cells of ovary 1-ovuled | : 18 |
| 6. Inflorescence spicate; seeds winged | : Hymenodictyon |
| 6. Inflorescence otherwise; seeds not winged | : 7 |
| 7. Some of the bracts in a cyme enlarged and leafy | : Mussaenda |
| 7. None of the bracts leafy | : 8 |
| 8. Ovary 5-6 celled | : Mycetia |
| 8. Ovary 2 or 4-celled | : 9 |
| 9. Ovules immersed in placenta attached to septum | : 10 |
| 9. Ovules not immersed in the placenta | : 12 |
| 10. Climbing shrubs | : Pseudaidia |
| 10. Erect trees or large shrubs | : 11 |
| 11. Plants with axillary solitary spines; fruits oblong, 2.5-3 cm long | : Catunaregam |
| 11. Plants without spines; fruits globose 1 cm across | : Aidia |
| 12. Anther dehiscence by apical pores | : Argostemma |
| 12. Anther dehiscence by lateral slits | : 13 |
| 13. Inflorescence pendulous; calyx winged | : Neurocalyx |
| 13. Inflorescence not as above; calyx not winged | : 14 |
| 14. Flowers unisexual | : Byrsophyllum |
| 14. Flowers bisexual | : 15 |
| 15. Calyx 5 lobed | : 16 |
| 15. Calyx 4-lobed or dentate | : 17 |
| 16. Fruits capsule, compressed, obcordate | : Ophiorrhiza |
| 16. Fruits berry, fleshy | : Acrantnera |
| 17. Fruits few-seeded, seeds with a central cavity | : Neanotis |
| 17. Fruits many-seeded, seeds without a central cavity | : Hedyotis |
| 18. Ovary 4-celled | : Lasianthus |
| 18. Ovary 1 or 2-celled | : 19 |
| 19. Ovary 1-celled | : Octotropis |
| 19. Ovary 2-celled | : 20 |

20. Herbs, erect or creeping	: 21
20. Trees or Shrubs	: 24
21. Stipules pectinate or with long marginal bristles; erect herbs	: 22
21. Stipules entire; creeping herbs	: Geophila
22. Flowers in terminal corymbs; fruit of two indehiscent mericarps	: Knoxia
22. Flowers in axillary fascicles or heads; fruit dehiscent	: 23
23. Fruits dehiscence apical	: Spermacoce
23. Fruits dehiscence circumcissile	: Mitracarpus
24. Flowers axillary, solitary or fascicled, cymes or umbels	: 25
24. Flowers terminal, corymbs, panicles or cymes	: 27
25. Bracts glandular within; flowers sessile	: 26
25. Bracts eglandular; flowers distinctly pedicelled; plants often armed	: Canthium
26. Corolla lobes 5, tube longer than the lobes	: Psilanthus
26. Corolla lobes 4, tube shorter than the lobes	: Nostolachma
27. Corolla lobes valvate in bud	: 28
27. Corolla lobes twisted in bud	: 30
28. Leaves with fetid smell when bruised	: Saprosma
28. Leaves without fetid smell	: 29
29. Corolla tube elongated, curved	: Chassalia
29. Corolla tube short, straight	: Psychotria
30. Corolla 5-lobed	: Tarenna
30. Corolla 4-lobed	: 31
31. Style much longer than the corolla, stigma entire	: Pavetta
31. Style equal to corolla, stigmas 2	: Ixora

AIDIA Lour.

Aidia gardneri (Thw.) Tirveng., Bull. Mus. Hist. Nat. (Paris) 35: 11. 1978. *Griffithia gardneri* Thw., Enum. Pl. Zey. 158. 1859; Bedd., Ic. t. 38. 1868-1874. *Randia gardneri* (Thw.) Hook. f. in Benth. & Hook. f., Gen. Pl. 2: 88. 1873; Fl. Brit. India 3: 112. 1880; For. Trees Travancore 219. 1908; Fl. Madras 617. 1921.

Small trees. Leaves narrowly elliptic or oblong-lanceolate, acuminate, base acute or obtuse, to 16 x 3 cm. Flowers white, in axillary cymes. Calyx shortly 5 lobed. Corolla 1.5 cm long, hairy at mouth.

Fairly common in evergreen forests.

NS 10144 (Kattalappara); *10384, 10406* (Kallar)

Fl. April-January

D i s t. South India and Sri Lanka

ACRANTHERA Arn. ex Meissn. *nom cons.*

Acranthera grandiflora Bedd., Ic. t. 25. 1868-1874; Fl. Brit. India 3: 93. 1880; Fl. Madras 611. 1921; Bremek., J. Arnold Arbor. 28: 280. 1947; Nayar & Sastry, Red Data Book Indian Pl. 1: 322. 1987.

Herbs, stem silky-villous. Leaves obovate or oblong-obovate, base attenuate, glabrous above and pubescent along the veins beneath, to 17 x 6 cm. Flowers pale-blue, funnel-shaped, tomentose. 6 cm long, in subterminal racemes.

Occasional in evergreen forests.

NS 10945 (Rosemala)

Fl. April-May

D i s t. Southern W. Ghats : endemic

ARGOSTEMMA Wall.

Argostemma courtallense Arn., Ann. Nat. Hist. 3: 22. 1839; Wt., Ic. t. 1160. 1846; Fl. Brit. India 3: 42. 1880; Fl. Madras 590. 1921.

Annual subsucculent herbs, often scapigerous. Leaves opposite or in whorls of 4, broadly ovate, acute, base truncate or cuneate, membranous, sparsely hispid, to 7 x 5 cm. Flowers white, 0.8 cm across, in long peduncled terminal umbels. Calyx ovate, acute, hispid.

Occasional in semi-evergreen and evergreen forests.

NS 10561 (Kattalappara)

Fl. July-September

D i s t. Southern W. Ghats : endemic

BYRSOPHYLLUM Hook. f.

Byrsophyllum tetrandrum (Bedd.) Hook. f. ex Bedd., Fl. Sylv. t. 326. 1873; Fl. Brit. India 3: 107. 1880; For. Trees Travancore 217. 1908; Fl. Madras 613. 1921. *Gardenia tetrandra* Bedd., Ic. t. 20. 1868-1874.

Large shrubs to small trees. Leaves mostly confined towards the apex of branchlets, elliptic-obovate, obtuse, base attenuate, margins often recurved, thickly coriaceous, shining, to 8 x 3.5 cm. Flowers dioecious, 1 or 2, terminal, white with pink tinge. Berry subglobose, 2 cm across.

Rare in shola forests.

NS 11363 (Alvarakurichi)

Fl. & Fr. September-December

D i s t. Southern W. Ghats : endemic

CANTHIUM Lamk.

1. Unarmed trees, young shoots glabrous

: 2

1. Armed shrubs or small trees, young shoots tomentose

: *C. angustifolium*

2. Fruits 7 mm across; leaves thickly coriaceous : *C. dicoccum*
var. *lanceolata*
2. Fruits 2 cm across; leaves chartaceous : *C. pergracile*

Canthium angustifolium Roxb., Fl. Ind. 2: 169. 1824; Fl. Brit. India 3: 135. 1880.
Plectronia rheedei DC. var. *angustifolia* (Roxb.) Gamble, Fl. Madras 625. 1921.
Canthium leschenaultii (DC.) Wt., & Arn. in Wt., Cat. 77. 1833 & Prodr. 426. 1834; Wt.,
Ic. t. 826. 1844.

Scandent shrubs. Leaves elliptic-lanceolate, acuminate, base obtuse or rounded, glabrous and glossy above, to 10 x 4.5 cm. Flowers in axillary short cymes. Calyx cupular, shortly 5-toothed. Corolla greenish-yellow, 0.8 cm across, lobes lanceolate, reflexed. Drupe obcordate, compressed, bluish-black, 1 cm long.

Fairly common in moist deciduous and semi-evergreen forests.

NS 10297 (Choondippara); *10626* (Kattalappara)

Fl. & Fr. March-May

D i s t. India and Burma

Canthium dicoccum (Gaertn.) Teijsm. & Binn. var. *lanceolata* (Arn.) Swamin. in Henry *et al.* Fl. Tamil Nadu Ser. I (2) : 2. 1987. *C. lanceolatum* Arn. in Nova Acta Phys. Med. Acad. Caes. Leop.-Carol. Nat. Cur. 18: 342. 1836. *Plectronia didyma* (Gaertn. f.) Kurz var. *lanceolata* (Arn.) Gamble, Fl. Madras 624. 1921.

Small to medium sized evergreen trees, bark yellowish-grey, shallowly fissured. Leaves lanceolate, caudate-acuminate, base cuneate, glabrous and glossy, to 10 x 2.5 cm. Flowers 3 mm across in few-flowered, short umbels. Calyx glabrous, shortly 5-lobed. Corolla greenish-yellow, lobes oblong, acute, 1.5 mm long.

Occasional in semi-evergreen forests.

NG. Nair 6124 (Rosemala)

Fl. & Fr. March-June

D i s t. India and Burma

Canthium pergracile Bourd., J. Bombay Nat. Hist. Soc. 12: 352. t. 4. 1899; For. Trees Travancore 221. 1908. *Plectronia pergracilis* (Bourd.) Gamble, Fl. Madras 626. 1921.

Small trees, bark smooth, yellowish-brown, branches slender. Leaves narrowly elliptic, caudate-acuminate, base acute, glabrous and glossy, to 9 x 3.5 cm, lateral nerves slender. Flowers 5-merous, greenish yellow, in axillary few-flowered umbels. Fruit *ca.* 2 cm across.

Occasional in evergreen forests.

NG. Nair 6140 (Shenduruny)

Fl. & Fr. March-October

D i s t. Southern W.Ghats : endemic

CATUNAREGAM Wolf

Catunaregam spinosa (Thunb.) Tirveng., Bull. Mus. Hist. Nat. (Paris) Ser. 3. 35: 13. 1978. *Gardenia spinosa* Thunb., Diss. Gard. 7: 16. t. 2. f. 4. 1780. *Randia dumetorum* (Retz.) Poir. in Lamk., Encyl. (Suppl). 2: 829. 1811; Wt., Ic. t. 580. 1843; Fl. Brit. India 3: 110. 1880; For. Trees Travancore 218. 1908; Fl. Madras 616. 1921. *Gardenia dumetorum* Retz., Obs. Bot. 2: 14. 1781. *Randia dumetorum* (Retz.) Poir. var. *floribunda* (DC.) Gamble, Fl. Madras 616. 1921. *R. floribunda* DC., Prodr. 4: 386. 1830. *R. longispina* (Roxb.) DC., Prodr. 4: 386. 1830; Wt., Ic. t. 582. 1842; Fl. Madras 616. 1921. *Xeromphis spinosa* (Thunb.) Keay, Bull. Jard. Bot. Brux. 28: 37. 1958. *Randia brandisii* Gamble, Fl. Madras 616. 1921.

Small trees, spines, to 2.5 cm long. Leaves elliptic or obovate, obtuse, base cuneate, glabrescent above, tomentose below, to 7.5 x 3.8 cm; domatia present in the nerve axils. Flowers 2 cm across, axillary and terminal, solitary or in fascicles of few. Calyx lobes ovate, 4 mm long, tomentose. Corolla white, turning yellow.

Common in moist deciduous forests.

NS 11451 (Kattalappara)

Fl. & Fr. April-December

D i s t. Tropical Asia and Africa

CHASSALIA Comm. ex Poir.

Chassalia curviflora (Wall. ex Kurz) Thw. var. *ophioxylodes* (Wall.) Deb & Krishna, Bull. Bot. Surv. India 24: 222. 1983. *Psychotria ophioxylodes* Wall. in Roxb., Fl. Ind. 2: 167. 1824. *Chassalia curviflora* Wall. ex Kurz, For. Fl. Burma 2: 14. 1877; Fl. Brit. India 3: 176. 1880, p.p.; Fl. Madras 643. 1921.

Subshrubs, to 2 m tall, young shoots glabrous. Leaves elliptic to obovate or oblanceolate, acuminate, coriaceous, glabrous above and glaucous below, to 18 x 6 cm. Inflorescence to 5 cm long. Pedicels and calyx often white. Corolla 1.2 cm long, tube purple outside, mouth yellow, lobes acute. Berry purple, 0.6 cm across.

Fairly common in all types of forests.

NS 10243 (Pongumala)

Fl. & Fr. July-February

D i s t. Indo-Malesia

GEOPHILA D. Don *nom. cons.*

Geophila repens (L.) Johnst., Sargentia 8: 281. 1949; Raiz., Indian For. 94: 444. 1968; *Rondeletia repens* L., Syst. Nat. (ed. 10) 928. 1759. *Geophila reniformis* D. Don, Prodr. 136. 1825; Wt., Ic. t. 54. 1838; Fl. Brit. India 3: 178. 1880; Fl. Madras 643. 1921.

Stem slender, stolon-like. Leaves opposite and alternate, orbicular-cordate, to 3 cm across, petiole to 5 cm long, villous. Flowers solitary or in few-flowered umbels, peduncles to 4 cm long. Calyx lobes subulate, 3 mm long. Corolla white, 1.8 cm across. Berry scarlet, 0.7 cm across.

Occasional in semi-evergreen forests, in moist localities.

NS 11233 (Kallar)

Fl. & Fr. October-April

D i s t. Pantropical

HALDINA Ridsd.

Haldina cordifolia (Roxb.) Ridsd., Blumea 24: 361. 1978; Fl. Thenmala 183. 1995. *Nauclea cordifolia* Roxb., Pl. Corom. t. 53. 1796; Bedd., Fl. Sylv. t. 33. 1869. *Adina cordifolia* (Roxb.) Hook. f. ex Brand., For. Fl. 263, t. 33. 1874; Fl. Brit. India 3: 24. 1880; For. Trees Travancore 212. 1908; Fl. Madras 584. 1921.

Large deciduous trees, bark greyish-brown, thick. Branches horizontal, branching monopodial. Leaves orbicular-cordate, acuminate, glabrous above and pubescent below, to 18 cm on either way, basally 5-7 nerved; petiole to 10 cm long. Heads 2-2.5 cm across, peduncle 3-5 cm long. Calyx tomentose. Corolla yellow, 0.5 cm long, lobes small, recurved, pubescent. Capsule ca. 4 mm long, densely downy.

Common in moist deciduous forests.

NG. Nair 6126 (Choodal)

Fl. & Fr. October-March

D i s t. India, Sri Lanka and Burma

HEDYOTIS L.

Note: Linnaeus (Sp. Pl. 1753) distinguished *Oldenlandia* L. and *Hedyotis* based on the nature of fruiting calyx, dehiscence of fruits and seeds. Bremekamp (Verh. Kon. Ned. Akad. Wet. 48: 1-297. 1952) separated *Hedyotis auricularia* L. into a new genus *Exallage* Bremek., based on the indehiscent character of fruits. A few species were transferred to *Thecagonum* (Babu, Bull. Bot. Surv. India 11: 214. 1969) and to *Gonotheca* Bl. ex. DC. 1830 non Rafin. 1808 (Sant. & Wagh, Bull. Bot. Surv. India 5: 107. 1963). But studies carried out by Fosberg (J. Sci. 2: 106-111. 1941); Lewis (Rhodora 63: 216-223. 1961) and Bakhuizen (Fl. Java 2: 284-288. 1965) revealed that the characters for splitting the genera is untenable as the taxa treated under *Hedyotis* exhibit continuous range of variation.

- | | |
|---|------------------------|
| 1. Flowers in paniculate cymes | : 2 |
| 1. Flowers in axillary fascicles or cymes; cymes smaller than the leaves | : 5 |
| 2. Calyx lobes in fruit obscure, herbs, under 15 cm long | : H. ovatifolia |
| 2. Calyx lobes in fruit lanceolate, 2 mm or more long, shrubs over 50 cm long | : 3 |

- | | |
|--|--------------------------|
| 3. Cymes and calyx pubescent | : H. pruinosa |
| 3. Cymes and calyx glabrous | : 4 |
| 4. Stem 4 angled, capsule depressed globose | : H. eualata |
| 4. Stem terete, capsule linear-oblong | : H. purpurescens |
| 5. Leaves ovate or elliptic-oblong, over 1 cm broad | : 6 |
| 5. Leaves linear under 5 mm broad | : 8 |
| 6. Leaves with 7-9 prominent, parallel nerves; stipules with few erect teeth | : 7 |
| 6. Lateral nerves of leaves obscure; stipules with many long hairy bristles | : H. nitida |
| 7. Fruit indehiscent; leaves glabrous; trailing herbs | : H. auricularia |
| 7. Fruit dehiscent; leaves tomentose, erect shrubs | : H. ramarowii |
| 8. Flowers in pedunculate umbels; leaves scabrous, corolla with a ring of hairs inside | : H. puberula |
| 8. Flowers solitary or paired on the peduncles, corolla glabrous inside | : 9 |
| 9. Flowers solitary | : H. herbacea |
| 9. Flowers 2 or 3 on peduncles | : H. corymbosa |

Hedyotis auricularia L., Sp. Pl. 101. 1753; Bedd., Ic. t. 27. 1868. 1874; Fl. Brit. India 3: 58. 1880; Rao & Hemadri, Indian For. 99: 375. 1973. *Oldenlandia auricularia* (L.) K. Schum. in Engl. & Prantl, Pflanzenf. 4(4): 25. 1891; Fl. Madras 597. 1921.

Diffuse to trailing herbs, young shoots hispid. Leaves shortly petioled, ovate or elliptic-acuminate, base obtuse to acute, glabrous, to 6 x 3 cm. Flowers in axillary fascicles. Calyx pubescent. Corolla white, 1.5 mm long. Fruits globose, pubescent, 1.5 mm across.

Fairly common in moist deciduous forests and forest plantations.

NS 10207 (Kattalappara)

Fl. & Fr. October-December

D i s t. Indo-Malesia

Hedyotis corymbosa (L.) Lamk., Encyl. 1: 272. 1791; Rao & Hemadri, Indian For. 99. 375. 1973; Fl. Thenmala 169. 1995. *Oldenlandia corymbosa* L., Sp. Pl. 119. 1753; Fl. Brit. India 3: 64. 187. 1880; Fl. Madras 600. 1921.

Erect small glabrous herbs. Leaves elliptic or oblong lanceolate, to 2 x 0.5 cm, glabrous. Flowers white, corolla 2 mm long. Capsule depressed globose.

Fairly common in open disturbed areas in moist deciduous forests.

NS 10541 (Kattalappara)

Fl. & Fr. July-November

D i s t. Indo-Malesia

Hedyotis eualata (Gamble) Henry & Subram., Proc. Indian Acad. Sci. 76 B: 28. 1972. *Oldenlandia eualata* Gamble, Kew Bull. 1919: 404. 1919 & Fl. Madras 598. 1921; Nayar & Sastry, Red Data Book Indian Pl. 2: 211. 1988 [Fig. 7].

Subshrubs, branches 4-angled. Leaves lanceolate, acuminate, base acute, to 15 x 4 cm. glabrous; stipules scarious, margins toothed, glabrous. Flowers white, 2 mm long, in large terminal glabrous panicles, pedicels slender. Caspsule globose, glabrous.

Occasional in shola forests.

NS 10242 (Pongumala); 11398 (Alvarakurichi)

Fl. & Fr. January-March

D i s t. Southern W.Ghats : endemic

Hedyotis herbacea L., Sp. Pl. 102. 1753; Rao & Hemadri, Indian For. 99: 376. 1973. *Oldenlandia heynei* R. Br. ex G. Don, Gen. Syst. 3: 531. 1834; Fl. Brit. India 3: 65. 1880. *O. herbacea* (L.) Roxb., Fl. Ind. 1: 445. 1820; Fl. Madras 601. 1921.

Erect herbs, stem 4-angled, glabrous. Leaves sessile, linear-lanceolate, to 3 x 0.2 cm. glabrous; stipules short, minutely setose. Flowers solitary or 2-nate, axillary. Calyx lobes triangular-subulate. Corolla white, funnel-shaped. 3 mm long. Fruits subglobose, didymous.

Fairly common in grasslands and open areas in moist deciduous forests.

NS 11107 (Kattalappara)

Fl. & Fr. July-December

D i s t. Paleotropics

Hedyotis nitida Wt. & Arn., Prodr. 412. 1834; Fl. Brit. India 3: 61. 1880. *H. glabrella* R. Br. ex Bedd., Ic. t. 36. 1868-1874. *Oldenlandia nitida* (Wt. & Arn.) Gamble, Fl. Madras 597. 1921.

Trailing herbs, stem 4-angled, glabrous. Leaves subsessile, elliptic-lanceolate, acute, margins recurved, rigid, to 6 x 1.5 cm. Flowers axillary, fascicled or solitary, sessile. Calyx glabrous, lobes triangular, with stiff hairs. Corolla white, 2.5 mm long. Fruits ovoid, glabrous, fruiting calyx lobes erect, stiff.

Fairly common in moist deciduous forests, mostly in open areas.

NS 11126 (Kattalappara)

Fl. & Fr. September-December

D i s t. South West India and Sri Lanka

Hedyotis ovatifolia Cav., Ic. 6: 52. 1801. *Oldenlandia nudicaulis* Roth, Nov. Pl. Sp. 95. 1821; Fl. Brit. India 3: 70. 1880; Fl. Madras 602. 1921. *Hedyotis nudicaulis* (Roth) Wt. & Arn., Prodr. 416. 1834; Bedd., Ic. t. 34. 1868-1874. *Thecagonum ovatifolium* (Cav.) Babu, Bull. Bot. Surv. India 11: 214. 1971.

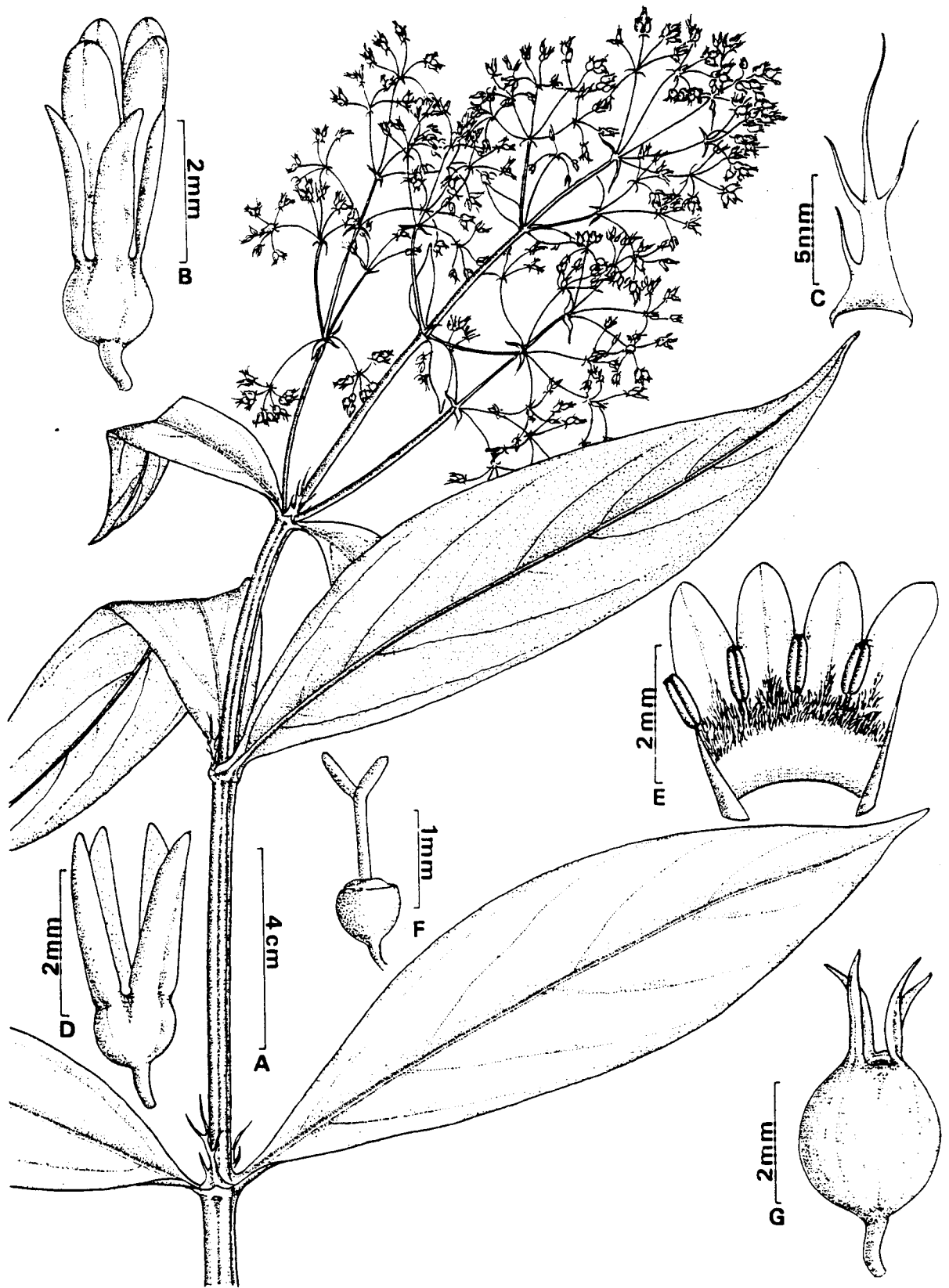


Fig. 7: *Hedyotis eualata* (Gamble) Henry & Subram. A. habit, B. flower, C. stipule, D. calyx, E. corolla, F. pistil, G. fruit

Annual small slender herbs, stem 4-angled. Leaves ovate or ovate-oblong, acute, base obtuse, minutely hispid, to 5 x 2.5 cm; lateral nerves 5-7 pairs, petiole to 0.5 cm long; upper leaves sessile and fascicled. Peduncles terminal, 2 or 3, slender, dichotomously branched, to 7 cm long, pedicels slender, 1 cm long. Calyx lobes indistinct. Corolla white, with a ring of hairs at mouth, 1 mm long. Fruit subglobose, 2.5 x 3 mm.

Occasional in moist deciduous forests.

NS 11024 (Rosemala)

Fl. & Fr. August-September

D i s t. Indo-Malesia

Hedyotis pruinosa Wt. & Arn., Prodr. 408. 1834; Fl. Brit. India 3: 53. 1880. *H. lentiginosa* Bedd., Ic. t. 6. 1868-1874. *Oldenlandia pruinosa* (Wt. & Arn.) O. Ktze., Rev. Gen. Pl. 1: 292. 1891; Fl. Madras 589. 1921.

Erect shrubs, branches adpressed shortly tomentose. Leaves narrowly elliptic, acuminate, base cuneate, glabrous above and shortly tomentose below, greenish-yellow when dry, to 10 x 2.5 cm. Flowers pale purple. Calyx tomentose, lobes linear, recurved.

Common in grasslands and open areas in forests.

NS 10617 (Thenmala); 11335 (Rosemala)

Fl & Fr. October-March

D i s t. Southern W.Ghats : endemic

Hedyotis puberula (G. Don) R. Br. ex Arn., Nov. Act. Phys. Med. Acad. Caes. 18: 342. 1836; Mabber. in Manilal, Bot. Hist. Hort. Malab. 108. 1980. *Oldenlandia puberula* G. Don., Gen. Syst. 3: 530. 1834. *O. umbellata* L., Sp. Pl. 119. 1753. p.p., Fl. Brit. India 3: 66. 1880; Fl. Madras 601. 1921.

Herbs with many branches from woody base, branches and leaves scaberulous. Leaves linear; margins recurved, to 2 x 0.3 cm; stipules small, bristly. Flowers white, 2 mm long, in umbels. Capsule ovoid, puberulous.

Occasional in grassy patches in moist deciduous forests.

NS 11204 (Rosemala)

Fl. & Fr. November-March

D i s t. India, Burma and Sri Lanka

Hedyotis purpurescens Hook. f., Fl. Brit. India 3: 50. 1880. *H. purpurea* Bedd., Ic. t. 5. 1868-1874. *Oldenlandia purpurescens* (Hook. f.) O. Ktze., Rev. Gen. Pl. 1: 292. 1891; Fl. Madras 597. 1921.

Erect shrubs, branches with prominent leaf scars. Leaves elliptic-lanceolate, acuminate, base acute, glabrous, to 6 x 1.5 cm; stipules pectinate. Flowers purple. Calyx lobes oblong. Corolla 5 mm long.

Occasional in grasslands.

NS 11424 (Alvarakurichi)

Fl. & Fr. October-December

D i s t. Peninsular India

Hedyotis ramarowii (Gamble) Rao & Hemadri, Indian For. 99: 378. 1973. *Oldenlandia ramarowii* Gamble, Kew Bull. 1919: 405. 1919 & Fl. Madras 599. 1921; Nayar & Sastry, Red Data Book Indian Pl. 1: 329. 1987 [Fig. 8].

Shrubs, branches subterete, puberulous. Leaves elliptic, acute, base acute or attenuate, tomentose, to 8 x 3 cm, lateral nerves prominent; stipules ovate, pectinate. Flowers white, fascicled in axillary sessile cymes. Fruits ovoid, subglabrous.

Fairly common in grasslands and shola forests.

NS 10238, 11416 (Pongumala)

Fl. & Fr. January-April

D i s t. Southern W.Ghats : endemic.

Note: Nayar & Sastry(l.c.) have placed this species under the category vulnerable. According to them, the species has not been collected during recent years.

HYMENODICTYON Wall. *nom. cons.*

- | | |
|--|----------------------|
| 1. Leaves obovate or elliptic, glabrous; seeds 0.5 cm long | : <i>H. obovatum</i> |
| 1. Leaves ovate, pubescent on both sides; seeds 1 cm long | : <i>H. orixense</i> |

Hymenodictyon obovatum Wall. in Roxb., Fl. Ind. 2: 153. 1824; Wt., Ic. t. 1159. 1846; Bedd., Fl. Sylv. t. 219. 1872; Fl. Brit. India 3: 36. 1880; For. Trees Travancore 214. 1908; Fl. Madras 589. 1921.

Medium sized deciduous trees. Leaves obovate, obtusely acuminate, base obtuse to cuneate, to 12 x 8.5 cm. Flowers creamy-yellow with unpleasant odour, in erect, to 9 cm long tomentose spikes. Capsule ellipsoid, 1.5 cm long; seed wings narrowed at both ends.

Occasional in semi-evergreen and moist deciduous forests.

NS 10707, 11081 (Kattalappara)

Fl. & Fr. June-October

D i s t. South West India

Hymenodictyon orixense (Roxb.) Mabb., Taxon 31: 66. 1982. *Cinchona orixensis* Roxb. Bot. Deser. Swietenia 21: 1793 & in Med. Facts Obs. 6: 152. 1795. *Hymenodictyon*

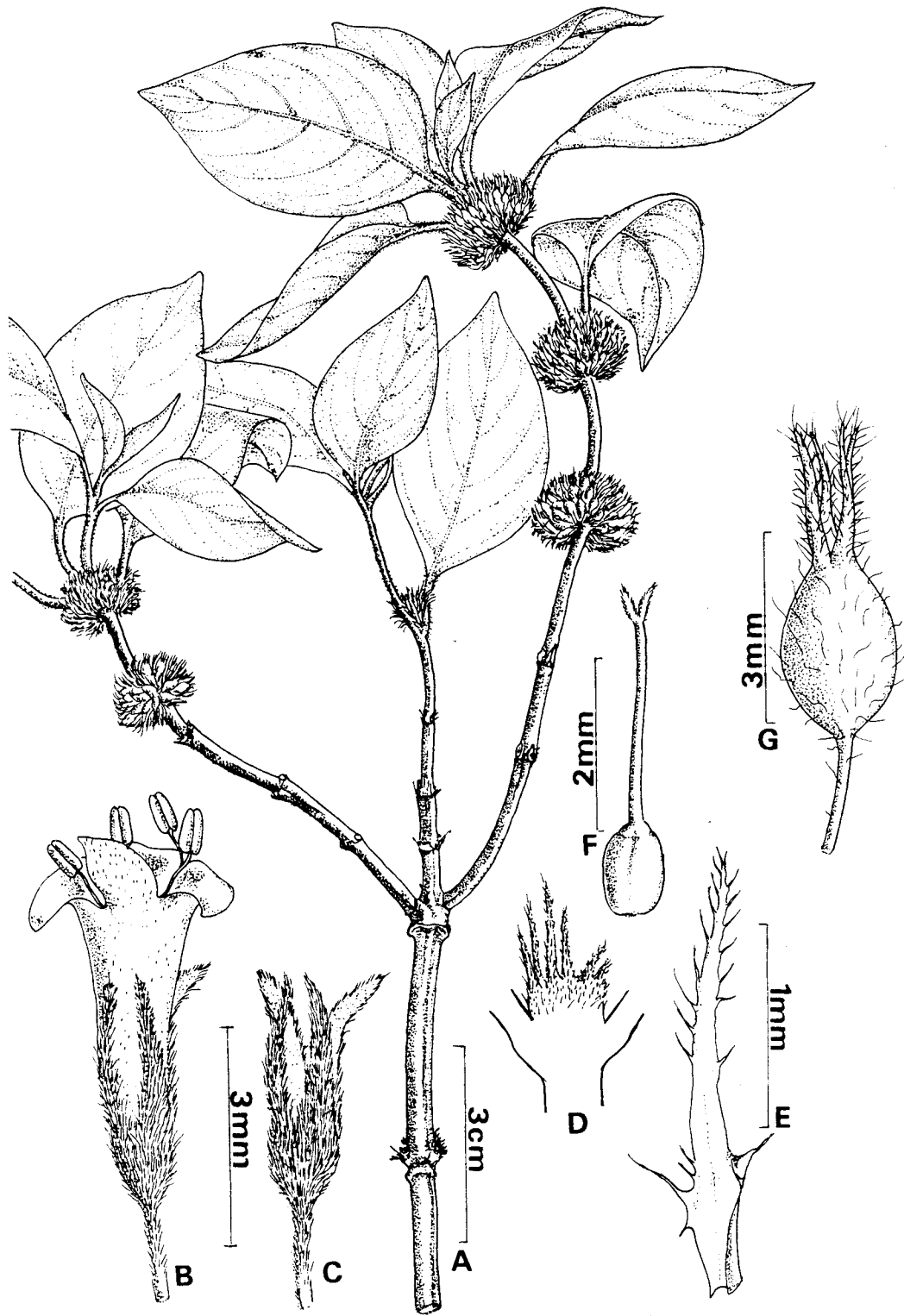


Fig. 8 : *Hedyotis ramarowii* (Gamble) Rao & Hamadri A. habit, B. flower, C. calyx, D. stipule, E. stipules tooth, F. pistil, G. fruit

excelsum (Roxb.) Wall. ex DC., Prodr. 4: 358. 1830; Wt., Ic. t. 79. 1838; Fl. Brit. India 3: 35. 1880; For. Trees Travancore 214. 1908; Fl. Madras 589. 1921.

Medium to large deciduous trees, bark greyish-brown, rough to 2 cm thick, dull yellow inside; branchlets pubescent. Leaves broadly ovate, acuminate, base truncate, unequal sided, to 18 x 12 cm. Flowers greenish-yellow in drooping terminal and axillary paniculate spikes. Calyx puberulous, lobes ovate, acute. Capsule ovoid, 2 x 1 cm; seed wings orbicular.

Fairly common in moist deciduous forests.

NG. Nair 6130 (Rosemala)

Fl. & Fr. August-January

D i s t. Indo-Malesia

IXORA L.

- | | |
|--|------------------------|
| 1. Corolla 0.6 cm long; calyx lobes less than 1 mm long | : <i>I. brachiata</i> |
| 1. Corolla 1 cm or more long; calyx lobes 2 mm or more long | : 2 |
| 2. Corolla white; calyx glabrous; leaves drying black | : <i>I. nigricans</i> |
| 2. Corolla pale-yellow; calyx tomentose; leaves drying yellowish-brown | : <i>I. malabarica</i> |

Ixora brachiata Roxb. ex DC., Prodr. 4: 488. 1830; Wt., Ic. t. 710. 1843; Fl. Brit. India 3: 142. 1880; Fl. Madras 631. 1921; Husain & Paul, J. Econ. Tax. Bot. (Addl. Ser.) 6: 161. 1989; Fl. Thenmala 176. 1995.

Small evergreen trees, bark smooth, grey, young shoots glabrous. Leaves elliptic-oblong, obtuse, base acute to attenuate, glabrous, to 12 x 5 cm. Flowers in sessile or shortly peduncled cymes; buds globose. Calyx lobes minute, membranous. Corolla white, lobes oblong, deflexed. Style sparsely hairy. Drupe didymous, red-purple, 0.6 x 0.8 cm.

A very common species in semi-evergreen forests.

NS 10139, 10304 (Kattalappara); 10902 (Rosemala)

Fl. & Fr. January-May

D i s t. W. Ghats, Konkan Southwards : endemic

Ixora malabarica (Dennst.) Mabb., Taxon 26: 539. 1977; Husain & Paul, J. Econ. Tax. Bot. (Addl. Ser.) 6: 145. 1989; Fl. Thenmala 175. 1995. *Chiococca malabarica* Dennst., Schluss. 12, 19, 37. 1818. *Ixora lanceolaria* Colebr. ex Roxb., Fl. Ind. 1: 397. 1820; Wt., Ic. t. 827. 1844-1845; Fl. Brit. India 3: 138. 1880 p.p.; Fl. Madras 630. 1921.

Shrubs, young shoots pubescent. Leaves elliptic or elliptic-lanceolate, acuminate, base obtuse or truncate, glabrous above and sparsely pubescent beneath, to 10 x 4 cm. Flowers in dense pubescent cymes. Calyx lobes lanceolate, pubescent. Corolla pale-yellow, tube to 1.8 cm long, lobes reflexed, to 1 cm long.

Fairly common in semi-evergreen and moist deciduous forests.

NS 10028, 10599 (Kattalappara); 10458 (Kallar)

Fl. & Fr. October-March

D i s t. Southern W. Ghats : endemic

Ixora nigricans R. Br. ex Wt. & Arn., Prodr. 428. 1834; Wt., Ic. t. 318. 1840; Fl. Brit. India 3: 148. 1880; Fl. Madras 631. 1921; Husain & Paul, J. Econ. Tax. Bot. (Addl. Ser.) 6: 111. 1989; Fl. Thenmala 176. 1995.

Shrubs, young shoots glabrous. Leaves oblanceolate, acute, or acuminate, base attenuate or obtuse, subcoriaceous, glabrous, to 16 x 5 cm. Flowers in dense brachiate glabrous cymes, peduncle to 2.5 cm long. Calyx lobes subulate. Corolla white, tube slender, to 1.8 cm long, lobes oblong, spreading, 4 mm long.

Common in evergreen and semi-evergreen forests.

NS 10183 (Choodal); *10215* (Kattalappara); *10461* (Kallar)

Fl. & Fr. December-March

D i s t. Indo-Malesia

KNOXIA L.

1. Stipule bristles hirsute; leaf linear lanceolate, under 2 cm broad : *K. sumatrensis*
var. *sumatrensis*
1. Stipule bristles glabrous; leaves elliptic-lanceolate, to 4.5 cm broad : *K. sumatrensis*
var. *glaberrima*

Knoxia sumatrensis (Retz.) DC. var. *glaberrima* Bhattach. & Deb, J. Econ. Tax. Bot. 6: 92. 1985. *K. heyneana* auct. non DC. 1830; Wt. & Arn., Prodr. 439. 1834; Fl. Brit. India 3: 129. 1880; Fl. Madras 622. 1921.

Erect herbs, branches glabrous. Leaves elliptic-lanceolate, acuminate base cuneate, glabrous to 15 x 4.5 cm; stipule glabrous, bristles to 2 cm long. Flowers pale pink.

Rare in grasslands.

NS 10262 (Pandimotta)

Fl. & Fr. March-April

D i s t. Peninsular India : endemic

Knoxia sumatrensis ((Retz.) DC., Prodr. 4: 560. 1830, var. *sumatrensis* : Bhattach. & Deb, J. Econ. Tax. Bot. 6: 89. 1985. *Spermacoce sumatrensis* Retz., Obs. Bot. 4: 23. 1786. *Knoxia corymbosa* auct. non Willd. 1797, sensu Wt., Ill. t. 126. 1850; Fl. Brit. India 3: 128. 1880; Fl. Madras 622. 1921.

Erect or diffuse pubescent herbs. Leaves linear-lanceolate to oblanceolate, acuminate, base acute, glabrescent above and pubescent below, to 10 x 3 cm. Cymes lax. Calyx lobes

subequal. Corolla 3 mm long, pale-violet, funnel shaped, lobes small. Mericarps 4-angled, 2 mm long, tomentose.

Fairly common in moist deciduous and semi-evergreen forests.

NS 10504 (Kattalappara)

Fl. & Fr. August-September

D i s t. Indo-Malesia to Australia

LASIANTHUS W. Jack.

- | | |
|--|---------------------------|
| 1. Flowers in shortly peduncled axillary cymes | : <i>L. cinereus</i> |
| 1. Flowers in axillary sessile fascicles | : 2 |
| 2. Stipules and petiole strigose villous; lateral nerves of leaves ca. 7 pairs | : <i>L. oblongifolius</i> |
| 2. Stipules puberulous, petiole glabrous; lateral nerves of leaves ca. 4 pairs | : <i>L. blumeanus</i> |

Lasianthus blumeanus Wt., *Calcutta J. Nat. Hist.* 6: 507; *Bedd., Ic. t.* 22. 1868-1874; *Fl. Brit. India* 3: 184. 1880; *Fl. Madras* 646. 1921; *Deb & Gangopadhay, J. Econ. Tax. Bot.* 15: 278. 1991.

Shrubs, branches slender, glabrous. Leaves elliptic-oblong, acuminate, base obtuse, glabrous, to 10 x 4 cm, transverse nervules slender, faint. Bracts linear, pubescent, caducous. Calyx lobes lanceolate, 2 mm long; puberulous. Corolla white, glabrous, 2.5 mm long.

Occasional in evergreen forests.

NS 11268 (Rosemala)

Fl. & Fr. December-January

D i s t. Southern W.Ghats : endemic

Lasianthus cinereus Gamble, *Kew Bull.* 1920. 249. 1920 & *Fl. Madras* 648. 1921.

Erect shrubs, branchlets pubescent. Leaves oblong-lanceolate, caudate-acuminate, base obtuse, glabrous above and puberulous below, to 12 x 3 cm. Flowers white. Calyx puberulous.

Common in evergreen forests.

NS 10464 (Kallar); 11417, 11353 (Alvarakurichy)

Fl. January-March

D i s t. Southern W.Ghats : endemic

Lasianthus oblongifolius Bedd., *Ic. t. II.* 1868-1874; *Fl. Brit. India* 3: 183. 1880; *Fl. Madras* 646. 1921; *Deb. & Gangopadhay, J. Econ. Tax. Bot.* 15: 292. 1991.

Erect shrubs, branches glabrous. Leaves oblong, caudate-acuminate, base obtuse, slightly unequal sided, glabrous except the hairy veins beneath, transverse nervules very

prominent, to 15 x 4 cm. Bracts small, villous. Calyx lanceolate, strigose. Berry tomentose, globose 1.3 cm across, surface pitted when dry.

Occasional in evergreen forests.

NS 10015, 10057 (Kallar)

Fl. & Fr. August-November

D i s t. Southern W.Ghats : endemic

MITRACARPUS Zucc.

Mitracarpus villosus (Sw.) DC., Prodr. 4: 572. 1830; Verdc., Kew Bull. 30: 317-322. 1975. *Spermacoce villosa* Sw., Prodr. 29. 1788. *Mitracarpus verticillatus* (Schum. & Thonn.) Vatke, Linnaea 40: 196. 1876; Sebastine & Ramam., Bull. Bot. Surv. India 9: 921. 1968.

Pubescent herbs. Leaves sessile, ovate or elliptic, acute, base obtuse, membranous, to 4 x 1.8 cm; basally 5-7 nerved. Flowers white in axillary capitate clusters. Calyx lobes lanceolate. Corolla 1.5 mm long. Seeds furrowed on one side.

Common in open areas in moist deciduous forests and along road sides.

NS 11186 (Kattalappara)

Fl. & Fr. July-December

D i s t. Native of Tropical Africa and America, spreading to many tropical Asian countries

Note: Verdcourt (l.c.) has concluded that the taxa widespread in tropical Africa, America and Asia belong to the same species and that the correct name of the species is *M. villosus* (Sw.) DC.

MITRAGYNA Korth.

1. Leaves rounded or obtuse at apex; calyx tube elongated, lobes obscure : **M. tubulosa**

1. Leaves acuminate or acute at apex; calyx tube short, lobes distinct : **M. parvifolia**

Mitragyna parvifolia (Roxb.) Korth., Obs. Naocl. Ind. 19. 1839; Fl. Madras 585. 1921; Fl. Thenmala 183. 1995. *Nauclea parvifolia* Roxb., Pl. Corom. t. 52. 1975; Bedd., Fl. Sylv. t. 34. 1869. *Stephegyne parvifolia* (Roxb.) Korth., Verh. Nat. Gesch. Ned. Bezitt., Bot. 161. 1840; Fl. Brit. India 3: 25. 1880; For. Trees Travancore 213. 1908.

Large deciduous trees, bark greyish, smooth, pink-red inside, branchlets subterete. Leaves obovate or elliptic, obtuse, base truncate or acute, glabrous, to 10 x 8 cm; domatia present in the nerve axils; stipules ovate-oblong or obovate, 1 cm long. Flower heads 3 cm at anthesis. Corolla yellow, tube 4 mm long, lobes reflexed.

Common in moist deciduous forests.

NS 10421 (Kattalappara)

Fl. & Fr. March-December

D i s t. Indo-Malesia

Mitragyna tubulosa (Arn.) Hav., J. Linn. Soc. Bot. 33: 71. 1897; Fl. Madras 585. 1921; Fl. Thenmala 184. 1995. *Nauclea tubulosa* Arn. in Thw., Enum. Pl. 137. 1859; Bedd., Ic. t. 18. 1868-1874. *Stephegyne tubulosa* (Arn.) Hook. f. ex Bedd., Fl. Sylv. t. 29. f. 1. 1869; Fl. Brit. India 3: 25. 1880; For. Trees Travancore 213. 1908.

Medium sized deciduous trees, bark greyish, branches horizontal. Leaves ovate-oblong or ovate, acute to acuminate, base truncate or obtuse, to 20 x 8 cm; domatia absent; stipules oblong, obtuse, 0.8 cm long. Flower heads 2 cm across. Corolla funnel-shaped, yellow with purple tinge, tube 3 mm long, lobes reflexed.

Occasional in semi-evergreen forests.

NS 10433 (Kattalappara); 1431 (Choodal)

Fl. & Fr. April-May

D i s t. Peninsular India

MORINDA L.

- | | |
|---|------------------------|
| 1. Trees; bark with corky outer layer; corolla over 1.5 cm long | : <i>M. pubescens</i> |
| 1. Climbing shrubs; bark smooth; corolla 4 mm long | : <i>M. reticulata</i> |

Morinda pubescens J. E. Sm. in Rees, Cyclop. 24: 3. 1813; Verdc., Kew Bull. 37. 543. 1983. *M. tinctoria* Roxb., Fl. Ind. 2: 197. 1824, non Noronha 1790; Fl. Brit. India 3: 156. 1880; For. Trees Travancore 223. 1908; Fl. Madras 652. 1921. *M. tinctoria* var. *tomentosa* (Heyne ex Roth) Hook. f., Fl. Brit. India 3: 156. 1880; Fl. Madras 652. 1921.

Small evergreen trees, bark pale-brown, thick, vertically fissured and irregularly cracked, turmeric-yellow inside. Leaves elliptic-lanceolate or oblanceolate, acuminate, to 13 x 5.5 cm; stipules bifid at apex. Flowers white, in globose heads. Calyx limb truncate. Corolla mouth hairy. Syncarpium globose, 2.5 cm across.

Occasional in moist deciduous forests.

NS 10685 (Kattalappara)

Fl. & Fr. March-May

D i s t. Indo-Malesia

Morinda reticulata Gamble, Kew Bull. 1920. 248. 1920 & Fl. Madras 652. 1921; Fl. Thenmala 172. 1995.

Climbing shrubs, branches yellowish-white. Leaves oblong or oblanceolate, caudate-acuminate, glabrous, shining, nerves and nervules very prominent, to 13 x 4.5 cm. Flowers white, in umbellate heads. Calyx annular, fleshy. Corolla hairy inside. Syncarpium orange-yellow, 1.5 cm across.

Fairly common in evergreen forests.

NS 10177, 10476 (Kallar); 10208 (Choodal)

MUSSAENDA L.

Mussaenda belilla Buch.-Ham., Trans. Linn. Soc. London 14: 203. 1824; Ridsd. in Manilal, Bot. Hist. Hort. Malab. 131. 1980; Fl. Thenmala 171. 1995. *M. laxa* (Hook. f.) Hutch. ex Gamble, Fl. Madras 610. 1921. *M. frondosa* L. var. *laxa* Hook. f., Fl. Brit. India 3: 89. 1880.

Scandent shrubs, branchlets pubescent. Leaves broadly ovate, acuminate, truncate or obtuse at base, pubescent on both sides, to 11 x 8 cm; stipules ovate, bifid at apex. Cymes lax, tomentose; the leafy lobe white, as long as the leaves. Calyx tomentose. Corolla orange-yellow, to 3 cm long, tomentose outside, villous at mouth, lobes broadly ovate, cuspidate.

Fairly common in moist deciduous and semi-evergreen forests.

NS 10528 (Kattalappara)

Fl. & Fr. August-April

D i s t. South West India : endemic

MYCETIA Reinwardt.

Mycetia acuminata (Wt.) O. Ktze., Rev. Gen. Pl. 1: 289. 1891; Fl. Madras 612. 1921; Fl. Thenmala 182. 1995. *Lawia acuminata* Wt., Ic. t. 1070. 1846. *Adenosacme lawii* Hook. f., Fl. Brit. India 3: 96. 1880.

Herbs. Leaves mostly confined towards the apex of stem, ovate or elliptic-lanceolate, acuminate, base attenuate, decurrent on the petiole, membranous, to 30 x 11 cm; petiole to 5 cm, stipule 0.5 cm long, puberulous. Flowers yellow in puberulous corymbs. Calyx lobes 4 or 5, linear, puberulous, 2 mm long, persistent. Berry globose, 0.7 cm across, obscurely 5-lobed.

Occasional in evergreen forests.

NS 10829 (Rosemala)

Fl. & Fr. August-January

D i s t. South West India : endemic

NEANOTIS W. H. Lewis

Neanotis indica (DC.) W. H. Lewis var. *affinis* (Wall. ex Wt. & Arn.) W. H. Lewis, Ann. Missouri Bot. Gard. 53: 39. 1966. *Hedyotis affinis* Wall. ex Wt. & Arn., Prodr. 411. 1834; Wt., Ic. t. 1030. 1845. *Anotis leschenaultiana* (Wall. ex Wt. & Arn.) Hook. f. var. *affinis* (Wall. ex Wt. & Arn.) Hook. f., Fl. Brit. India 3: 72. 1880; Fl. Madras 604. 1921.

Diffuse pubescent herbs, rooting at lower nodes. Leaves ovate, acute or shortly acuminate, base obtuse or acute, strigose on both sides, to 4 x 2.5 cm; stipules villous, lobes subulate. Flowers in terminal and axillary tomentose cymes. Calyx lobes ovate-lanceolate. Corolla pale pink, tomentose, funnel shaped, 3 mm long. Stigma 2-lobed.

Fairly common in grasslands.

NS 11396 (Alvarakurichi)

Fl. & Fr. October-December

D i s t. Peninsular India

NEOLAMARCKIA Bosser

Neolamarckia cadamba (Roxb.) Bosser, *Adansonia* 6: 247. 1984 (1985). *Nauclea cadamba* Roxb., *Fl. Ind.* 2: 121. 1824. *Anthocephalus cadamba* (Roxb.) Miq., *Fl. Ind. Bat.* 2: 135. 1856; *Fl. Brit. India* 3: 23. 1880; *For. Trees Travancore* 211. 1908. *A. indicus* A. Rich., *Mem. Rubiac.* 157. 1830; *Fl. Madras* 583. 1921.

Large evergreen trees, bark, pale-brown, vertically shallowly grooved; branches horizontal. Leaves ovate or elliptic-oblong, abruptly acuminate, base truncate or obtuse, glabrous, to 25 x 12 cm; stipules caducous. Heads globose, to 4.5 cm across. Corolla yellow, tube 3 mm long, glabrous. Fruits orange-yellow.

Occasional in evergreen forests, often along banks of streams.

NS 10996 (Kattalappara)

Fl. & Fr. April-August

D i s t. Indo-Malesia to Australia and Pacific Islands

Note: Bosser (l.c.) concluded that *Anthocephalus* A. Rich. is a synonym of *Breonia* A. Rich. ex DC., endemic to Malagasy Island and hence the Asiatic species included under *Anthocephalus* have been assigned to the new genus *Neolamarckia*.

NEUROCALYX Hook.

Neurocalyx calycinus (R. Br. ex Benn.) Robins., *Proc. American Acad. Arts* 45: 402. 1910. *Argostemma calycinum* R. Br. ex Benn., *Pl. Jav. Rar.* 97. 1838. *Neurocalyx wightii* Arn., *Ann. Nat. Hist. Ser. 1, 3:* 22. 1839; *Fl. Brit. India* 3: 47. 1880; *Fl. Madras* 591. 1921.

Herbs, to 60 cm tall. Leaves oblanceolate, acuminate, base attenuate, glabrescent, membranous, to 25 x 5 cm; stipules lanceolate, 2-fid at apex, ca. 2 cm long. Flowers pink-white, 1 cm across, in axillary racemes, peduncles tomentose. Calyx lobes broadly ovate, membranous. Anthers connate.

Fairly common in evergreen forests.

NS 10013, 10400 (Kallar); 11412 (Alvarakurichi)

Fl. & Fr. September-March.

D i s t. Indo-Malesia.

NOSTOLACHMA Durand

Nostolachma crassifolia (Gamble) Deb & Lahiri, *Bull. Bot. Surv. India* 17: 162. 1975 (1978). *Coffea crassifolia* Gamble, *Kew Bull.* 1920: 248. 1920 & *Fl. Madras* 637. 1921.

Small trees, branchlets compressed, becoming terete, glabrous. Leaves elliptic, obtusely acute, base acute, to 9 x 4 cm. Flowers white, in subsessile axillary cymes. Corolla 5-6 mm long, mouth hairy. Fruit ellipsoid.

Occasional in evergreen forests, above 1000 m.

NS 10278 (Pandimotta); 11271 (Soochimala)

Fl. & Fr. January-October

D i s t. Southern W.Ghats : endemic

Note: The species is not collected after the type collections by CA. Barber from Anamalais in 1903 and by A. Meebold from Peerumade in 1910.

OCTOTROPIS Bedd.

Octotropis travancorica Bedd., *Fl. Sylv.* t. 327. 1873; *Fl. Brit. India* 3: 131. 1880; *Fl. Madras* 627. 1921.

Large shrubs. Leaves elliptic or oblong-lanceolate, caudate-acuminate, mucronate, base rounded or acute, 15 x 5.5 cm. Flowers white with pink shade, 1 cm across, in axillary racemes, flowers towards the distal end of peduncles. Calyx 4-toothed. Berry ellipsoid, 1.2-1.5 cm long.

Fairly common in evergreen forests

NS 10231 (Pandimotta); 10723 (Umiyar); 11390 (Alvarakurichi)

Fl. & Fr. January-April

D i s t. Southern W.Ghats : endemic

OPHIORRHIZA L.

- | | |
|---|---|
| 1. Bracteoles oblong, persistent | : <i>O. pectinata</i> |
| 1. Bracteoles linear; filiform, deciduous or persistent or absent | : 2 |
| 2. Corolla tube 1 cm or less long | : 3 |
| 2. Corolla tube over 1.5 cm long | : 5 |
| 3. Bracteoles filiform, glabrous, as long as the corolla | : <i>O. brunonis</i> |
| 3. Bracteoles under 2 mm long; tomentose or absent | : 4 |
| 4. Capsule 5 mm broad, prostrate herbs, leaves small
(1.5-5 x 1-2.5 cm) | : <i>O. rugosa</i>
var. <i>prostrata</i> |
| 4. Capsule 8-10 mm broad, erect herbs, bracteoles absent, leaves
large (8-17 x 4-6.5 cm) | : <i>O. mungos</i> |
| 5. Bracteoles glabrescent, cymes puberulous; stipules ovate-lanceolate | : <i>O. roxburghiana</i> |
| 5. Bracteoles and cymes villous; stipules linear-lanceolate | : <i>O. oriantha</i> |

Ophiorrhiza brunonis Wt. & Arn., *Prodr.* 404. 1834; *Fl. Brit. India* 3: 79. 1880; *Fl. Madras* 608. 1921; *Fl. Thenmala* 165. 1995.

Erect herbs, young shoots puberulous. Leaves elliptic or elliptic-lanceolate, caudate acuminate, base attenuate, glabrous, dull below, membranous, to 15 x 5.5 cm; stipules subulate, 1 cm long. Calyx lobes obtuse. Corolla white. Capsule faintly ribbed.

Common in evergreen forests.

NS 10351 (Kallar)

Fl. & Fr. August-December

D i s t. South West India : endemic

Ophiorrhiza eriantha Wt., Ic. t. 1067. 1846; *Fl. Brit. India* 3: 81. 1880; *Fl. Madras* 608. 1921.

Erect subshrubs, stem hirsute. Leaves elliptic-lanceolate, acuminate, base attenuate or cuneate, sparsely puberulous below, glabrous above, to 17 x 5 cm. Flowers in terminal hirsute cymes; bracteoles linear, to 1 cm long. Corolla pale red. Capsule villous.

Fairly common in evergreen forests.

NS 10923, 11297 (Rosemala)

Fl. & Fr. January-February

D i s t. South India : endemic

Ophiorrhiza mungos L., Sp. Pl. 150. 1753; *Fl. Brit. India* 3: 77. 1880; *Fl. Madras* 607. 1921; *Fl. Thenmala* 165. 1995.

Erect herbs. Leaves elliptic, acute, base attenuate, glabrous, glaucous below, membranous, to 15 x 4.5 cm; stipules subulate, 0.5 cm long. Cymes glabrescent, peduncle to 2.5 cm long. Calyx lobes obscure. Corolla 3 mm long, white.

Fairly common in semi-evergreen and evergreen forests.

NS 10549 (Kattalappara)

Fl. & Fr. August-October

D i s t. Indo-Malesia

Ophiorrhiza pectinata Am., Nova Acta. Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 18: 338. 1836; *Fl. Brit. India* 3: 81. 1880; *Fl. Madras* 608. 1921.

Erect subshrubs; stem glabrous. Leaves elliptic-lanceolate, acuminate, base attenuate, glabrous, to 15 x 4.5 cm. Flowers in terminal and axillary glabrous cymes; peduncles about 5 cm long. Bracteoles oblong, acute 6-7 mm long, glabrous. Corolla pink-red. Capsule glabrous.

Occasional in evergreen forests.

NS 11008 (Rosemala)

Fl. & Fr. July-September

D i s t. South India and Sri Lanka

Ophiorrhiza roxburghiana Wt., Ic. t. 1068. 1846; Fl. Brit. India 3: 81. 1880; Fl. Madras 608. 1921.

Erect subshrubs, stem puberulous. Leaves elliptic-lanceolate, acuminate, base cuneate, glabrous except the nerves below and petioles when young, to 15 x 5 cm. Flowers in terminal hirsute cymes; peduncle about 3 cm long. Bracteoles linear, sparsely pubescent. Corolla shortly hirsute, yellowish-white.

Rare, in evergreen forests.

NS 10722 (Umiyar)

Fl. December-January

D i s t. South India : endemic

Ophiorrhiza rugosa Wall. var. **prostrata** (D. Don) Deb & Mondal, Bull. Bot. Surv. India 24: 228. 1982 (1983). *O. prostrata* D. Don, Prodr. Fl. Nep. 136. 1825 pp. *O. harissiana* Heyne ex G. Don, Gen. Syst. 3: 523. 1834; Wt., Ic. t. 1162. 1846; Fl. Brit. India 3: 78. 1880; Fl. Madras 607. 1921.

Herbs, rooting at nodes, stem sparsely tomentose. Leaves ovate or ovate-oblong; obtuse, base acute or truncate, tomentose on veins below, to 5 x 2.5 cm. Flowers in terminal sparsely tomentose cymes; peduncle to 5 cm long. Calyx tomentose. Corolla white, 1 cm long.

Very common in semi-evergreen and evergreen forests.

NS 10016 (Kallar); 10063 (Rockwood); 10951 (Rosemala)

Fl. & Fr. September-February.

D i s t. Indo-Malesia.

PAVETTA L.

- | | |
|--|--------------------------|
| 1. Calyx shortly toothed | : <i>P. thomsonii</i> |
| | var. <i>puberula</i> |
| 1. Calyx distinctly lobed | : 2 |
| 2. Pedicels, calyx and lower surface of leaves tomentose | : <i>P. praeterita</i> |
| 2. Calyx, pedicels and leaves glabrous | : <i>P. oblanceolata</i> |

Pavetta oblanceolata Bremek., Fedd. Repert. 37. 91. 1934; Fl. Madras 1878. 1936.

Shrubs, branches terete. Leaves oblanceolate, shortly acuminate, base attenuate glabrous, gland-dotted, to 17 x 5 cm. Flowers in terminal, short peduncled cymes. Corolla 3 cm long, greenish-white.

Occasional in shola forests.

NS 11395 (Alvarakurichi)

Fl. February-March

D i s t. Southern W. Ghats : endemic

Pavetta praeterita Bremek., Fedd. Repert. 37: 92. 1934; Fl. Madras 1878. 1936

Subshrubs, branchlets terete, hispidus. Leaves oblanceolate, caudate-acuminate, base attenuate, to 17 x 4.5 cm. Flowers in terminal cymes. Corolla creamy-white, 3.5 cm long.

Occasional in evergreen forests.

NS 10440 (Kattalappara)

Fl. April-May

D i s t. Southern W.Ghats : endemic

Pavetta thomsonii Bremek. var. *puberula* (Bremek.) Bremek., Fedd. Repert. 37: 99. 1934; Fl. Madras 1879. 1936.

Shrubs, branchlets slender, puberulous. Leaves elliptic lanceolate, acute, base acute or cuneate, to 10 x 3.5 cm, glabrous. Flowers in terminal, paniculate puberulous cymes. Calyx and pedicels puberulous. Corolla white, 1.5 cm long.

Common in evergreen forests.

NS 10956 (Rosemala)

Fl. April-May

D i s t. India

PSEUDAIDIA Tirveng.

Pseudaidia speciosa (Bedd.) Tirveng., Adansonia 3: 287. 1986. *Griffithia speciosa* Bedd., Ic. t. 37. 1868-1874. *Randia speciosa* auct. non DC. 1830, Bedd., For. Man. Bot. 133. 1872. *Randia rugulosa* auct. non Thw. 1859, Fl. Brit. India 3: 113. 1880, p.p.; Fl. Madras 617. 1921.

Woody climbers. Leaves ovate or elliptic, obtusely acuminate, base acute, or attenuate, glabrous, chartaceous, to 18 x 10 cm; stipules ovate-cuspidate, glabrous, 0.5 cm long. Bracts persistent. Pedicels to 1.5 cm long. Calyx puberulous, limb 5-toothed. Corolla white with pink shades, tube to 1 cm long, lobes as long as the tube, reflexed. Stamens exserted. Berry globose, to 1 cm across.

Common in evergreen forests.

NS 10765 (Kallar); 11255 (Rosemala)

Fl. & Fr. January-June

D i s t. South West India and Sri Lanka

PSILANTHUS Hook. f.

Psilanthus wightianus (Wt. & Arn.) Leroy, Bull. Mus. Hist. Nat. (Paris) ser. (4) 3. Sect. B. Adansonia 3: 252. 1981; Bridson, Kew Bull. 42. 455. 1987. *Coffea wightiana* Wt. & Arn., Prodr. 436. 1834; Wt., Ic. t. 1598. 1850; Fl. Brit. India 3: 154. 1880; Fl. Madras 636. 1921.

Shrubs, branches often spinescent. Leaves elliptic or ovate, acute or acuminate, base acute, glabrous, to 8 x 4 cm. Flowers white, solitary, axillary and terminal. Corolla 3 cm long. Style glabrous.

Occasional in evergreen forests.

NS 10911 (Rosemala)

Fl. & Fr. March-April.

D i s t. Peninsular India and Sri Lanka

PSYCHOTRIA L. nom. cons.

- | | |
|---|-----------------|
| 1. Flowers mixed with rufous hairs | : P. nigra |
| 1. Flowers not mixed with rufous hairs | : 2 |
| 2. Branches of inflorescence opposite | : 3 |
| 2. Branches of inflorescence whorled | : 4 |
| 3. Fruiting pedicels and peduncle yellow; stipules ovate acute 5 mm long | : P. flavida |
| 3. Pedicels and peduncle greenish; stipules oblong, cuspidate, 1 cm long | : P. subintegra |
| 4. Fruits globose; calyx truncate; leaves brown when dried | : P. nudiflora |
| 4. Fruits ellipsoid; calyx shortly lobed; leaves yellowish-green when dried | : P. macrocarpa |

Psychotria flavida Talbot, Trees & Shrubs Bombay, 113. 1894; Fl. Madras 641. 1921; Deb & Gang., J. Econ. Tax. Bot. (Addl. Ser.) 7: 89. 1989; Fl. Thenmala 178. 1995.

Shrubs, branchlets terete, glabrous. Leaves elliptic-acuminate or obovate, shortly acuminate, base attenuate, glabrous, to 18 x 5 cm; stipules ovate, to 6 mm long, deciduous. Flowers in corymbose cymes. Calyx shortly toothed. Drupe subglobose, 5 mm across, pyrenes smooth.

Occasional in evergreen forests.

NS 10027 (Kattalappara)

Fl. & Fr. April-July

D i s t. South West India : endemic

Psychotria macrocarpa Hook. f., Fl. Brit. India 3: 162. 1880; Fl. Madras 641. 1921.

Shrubs, leaves oblong or obovate, shortly acuminate; base cuneate, glabrous, to 15 x 5 cm, petiole 1 to 1.5 cm; lateral nerves upto 12 pairs. Flowers in terminal panicles of cymes, panicles 7 cm long, pedicels stout, fruit ellipsoid, 1.3 cm long.

Occasional in evergreen forests.

NS 10055 (Kallar)

Fl. & Fr. October-November

D i s t. South West India : endemic

Psychotria nigra (Gaertn.) Alston in Trim. Handb. Fl. Ceylon 6 (Suppl.): 152. 1931; Deb & Gang., J. Econ. Tax. Bot (Addl. Ser.) 7: 48. 1989; Fl. Thenmala 177. 1995. *Grumitea nigra* Gaertn., Fruct. 1: 138. t. 28. 1788. *Psychotria thwaitesii* Hook. f., Fl. Brit. India 3: 162. 1880; Fl. Madras 640. 1921.

Large shrubs, branchlets compressed, glabrous. Leaves obovate, shortly acuminate, base attenuate, chartaceous, glabrous, to 15 x 5 cm; stipules suborbicular, cuspidate, woolly inside. Flowers white, sessile in peduncled heads. Calyx lobes serrulate along the margins. Drupe subglobose, 6 mm across; pyrenes smooth.

Fairly common in semi-evergreen forests.

NS 10029 (Kattalappara)

Fl. & Fr. March-October

D i s t. South West India and Sri Lanka

Psychotria nudiflora Wt. & Arn., Prodr. 434. 1834; Fl. Brit. India 3: 175. 1880; Fl. Madras 641. 1921; Deb & Gang., J. Econ. Tax. Bot (Addl. Ser.) 7: 56. 1989; Fl. Thenmala 178. 1995.

Shrubs, branchlets glabrous. Leaves lanceolate to oblanceolate, acute, base attenuate, coriaceous, glaucous below, to 17 x 4 cm; stipule ovate, acute or bifid at apex. Cymes dichotomously corymbose, to 7 cm long. Corolla white, 4 mm long. Stamens attached to mouth of corolla. Fruits globose, 1.2 cm across.

Fairly common in semi-evergreen and evergreen forests.

NS 10021, 10347 (Kallar); 10176, 10211 (Kattalappara)

Fl. & Fr. October-April

D i s t. South West India: endemic

Psychotria subintegra (Wt. & Arn.) Hook. f., Fl. Brit. India 3: 162. 1880; Fl. Madras 641. 1921; Fl. Thenmala 178. 1995.

Shrubs. Leaves oblong or oblong-obovate, acute, glabrous, lateral nerves *ca.* 12 pairs, domatia present in the nerve axils. Inflorescence in terminal panicles of cymes, lower branches of inflorescence upto 9 cm long. Corolla white, 4 mm long.

Occasional in evergreen forests.

NS 5837 (Choondippara); 10327 (Kattalappara)

Fl. March-October

D i s t. Southern W.Ghats : endemic

SAPROSMA BI.

Saprosma corymbosum (Bedd.) Bedd., For. Man. 134/12. 1872; Fl. Brit. India 3: 194. 1881; Fl. Madras 649. 1921. *Serissa corymbosa* Bedd., Ic. t. 17. 1868-1874.

Large shrubs, branchlets angular, glabrous. Leaves elliptic-lanceolate, acuminate, base cuneate, with offensive smell when bruised, to 12 x 4 cm. Flowers white, 3 mm long, in terminal and axillary corymbose cymes. Calyx glabrous outside and tomentose within. Corolla mouth densely wooly.

Occasional in evergreen forests.

NS 10273 (Panidmotta)

Fl. March-May

D i s t. Southern W.Ghats : endemic

SPERMACOCE L.

Note: For a recent review on the delimitation and circumscription of the genus, see Sivarajan *et al.* (Proc. Indian Acad. Sci. (Pl. Sci.) 97: 347-358. 1987).

- | | |
|------------------------|-------------------------|
| 1. Calyx lobes 2 | : <i>S. mauritiana</i> |
| 1. Calyx lobes 4 | : 2 |
| 2. Stem broadly winged | : <i>S. latifolia</i> |
| 2. Stem not winged | : <i>S. articularis</i> |

Spermacoce articularis L. f., Suppl. Pl. 119. 1782; Sivar. *et al.*, Proc. Indian Acad. Sci. (Pl. Sci.) 97: 349. 1987. *Borreria articularis* (L. f.) F. N. Will., Bull. Herb. Boiss. Ser. 5. 2: 88. 1905. *Spermacoce hispida* auct. non L. 1753, sensu Hook. f., Fl. Brit. India 3: 200. 1881.

Diffuse or prostrate herbs, stem 4-angled, adpressed minutely hairy. Leaves elliptic or obovate, to 2.5 x 1.8 cm; stipules with long subulate hispid bristles. Calyx lobes equal, obovate, 1.5 mm long. Corolla pinkish-white, tube 2.5 mm long, with a ring of hairs inside. Capsule globose, hispid; seeds oblong, reticulate.

Common in forest plantations and moist deciduous forests.

NS 10450 (Kattalappara)

Fl. & Fr. October-December

D i s t. Indo-Malesia, China, Philippines and Tropical Africa

Spermacoce latifolia Aublet, Hist. Pl. Guiane Fr. 1: 55. t. 19/1. 1775; Sivar. *et al.*, Proc. Indian Acad. Sci. (Pl. Sci.) 97: 355. 1987. *Borreria eradii* Ravi, J. Bombay Nat. Hist. Soc. 66: 539. 1970.

Diffuse herbs, branches elongated, 4-angled and prominently winged, hispid. Leaves broadly elliptic or ovate, acute, base cuneate, scabrid on both sides, to 5 x 3 cm; lateral nerves 5 or 6 pairs; stipules with subulate hispid bristles. Flowers in axillary few-flowered cymes. Calyx pubescent. Corolla pinkish-white. Capsule densely pubescent.

Common in forest plantations and moist deciduous forests.

NS 10529 (Kattalappara)

Fl. & Fr. August-October

D i s t. Native of Tropical America, now recorded from many tropical Asian and African countries

Spermacoce mauritiana Osea Gideon ex Verdc., *Kew Bull.* 37: 547. 1983; Sivar. *et al.*, *Proc. Indian Acad. Sci. (Pl. Sci.)* 97: 356. 1987. *S. ocymoides* acut. non Burm. f. 1768, sensu Hook. f., *Fl. Brit. India* 3: 200. 1881, p.p. *Borreria ocymoides* acut. non (Burm. f.) DC. 1830, *Fl. Madras* 654. 1921.

Erect or diffuse herbs, stem 4-angled, winged, ciliate along the margins. Leaves ovate to elliptic, acute, base cuneate, sparsely hispid below, to 3 x 1.5 cm; lateral nerves 6-8 pairs, faint; stipule bristles subulate. Flowers in axillary whorls or terminal heads. Corolla white, 2 mm long. Capsule truncate, compressed, pubescent, 0.7 mm long.

Common in moist deciduous forests, mostly in disturbed areas.

NS 11187 (Kattalappara)

Fl. & Fr. September-October

D i s t. Indo-Malesia

TARENNA Gaertn.

- | | |
|--|------------------------|
| 1. Corolla 2.5 cm or more long; berry 1-seeded | : <i>T. monosperma</i> |
| 1. Corolla less than 2 cm long; berry 2 or more seeded | : 2 |
| 2. Cells of ovary 1-ovuled; leaves under 9 cm long | : <i>T. alpestris</i> |
| 2. Cells of ovary 3 or more ovuled; leaves usually over 12 cm long | : <i>T. asiatica</i> |

Tarenna alpestris (Wt.) Balakr., *Bull. Bot. Surv. India* 22: 175. 1980 (1982). *Coffea alpestris* Wt., *Ic. t.* 1040. 1845. *C. grumelioides* Wt., *Ic. t.* 1041. 1845. *Webera lucens* Hook. f., *Fl. Brit. India* 3: 106. 1880; *For. Trees Travancore* 216. 1908. *Stylocoryne lucens* (Hook. f.) Gamble, *Fl. Madras* 635. 1921.

Small trees. Leaves elliptic or oblanceolate, acute, base cuneate, to 9 x 2 cm. Flowers white, 1.5 cm long, in terminal corymbose cymes. Calyx glabrous. Corolla lobes equal to the tube.

Occasional in shola forests.

NS 11366 (Alvarakurichi)

Fl. February-March

D i s t. South India : endemic

Tarenna asiatica (L.) O. Ktze. ex K. Schum., *Bot. Tidsskr.* 24: 332. 1902; *Fl. Thenmala* 172. 1995. *Rondeletia asiatica* L., *Sp. Pl.* 172. 1753. *Webera corymbosa* Willd., *Sp. Pl.*

1224. 1798; Fl. Brit. India 3: 102. 1880. *Chomelia asiatica* (L.) O. Ktze., Rev. Gen. Pl. 1: 278. 1891; Fl. Madras 613. 1921.

Large shrubs, young shoots resiniferous. Leaves elliptic-lanceolate, acuminate, base attenuate, glabrous, to 20 x 5 cm; stipule ovate-lanceolate, to 0.8 cm long. Flowers 0.8 cm long, cymes to 4 cm long. Calyx tomentose, teeth triangular. Corolla lobes reflexed.

Common in moist deciduous and semi-evergreen forests.

NS 10643 (Kattalappara); 10866, 11302 (Kallar)

Fl. March

D i s t. South West India

Tarenna monosperma (Wt. & Arn.) Raju, Sci. & Cult. 32: 554. 1966. *Stylocoryne monosperma* Wt. & Arn., Prodr. 401. 1834; Wt., Ic. t. 317. 1840; Fl. Madras 635. 1921.

Webera monosperma (Wt. & Arn.) Hook. f., Fl. Brit. India 3: 103. 1880.

Shrubs, branchlets subtetragonous. Leaves elliptic-obovate or elliptic, abruptly acuminate, attenuate at base, chartaceous, to 20 x 8 cm; stipule ovate, acuminate, 0.5 cm long. Cymes shortly tomentose, to 6 cm long. Calyx tomentose, lobes ovate, 1 mm long. Corolla lobes shorter than the tube. Berry globose, 1 cm across.

Occasional in evergreen forests.

NS 10375 (Kallar)

Fl. & Fr. April-August

D i s t. Southern W. Ghats : endemic

ASTERACEAE

- | | |
|--|----------------------|
| 1. Leaves opposite | : 2 |
| 1. Leaves alternate | : 10 |
| 2. Leaves compound, imparipinnate | : Bidens |
| 2. Leaves simple | : 3 |
| 3. Florets all tubular | : 4 |
| 3. Outer florets rayed | : 7 |
| 4. Papus of 5 paleaceous scales broadened at base; leaves opposite and alternate | : Ageratum |
| 4. Papus otherwise | : 5 |
| 5. Papus of 3 or 4 thick gland-tipped bristles | : Adenostemma |
| 5. Papus of several slender bristles, not gland-tipped | : 6 |
| 6. Phyllaries uni-seriate, climbing or twining shrubs | : Mikania |
| 6. Phyllaries 2 or more-seriate, erect shrubs | : Chromolaena |
| 7. Papus bristles plumose | : Tridax |
| 7. Papus bristles not plumose or absent | : 8 |

8. Papus absent, achenes ciliate along margins : **Spilanthes**
8. Papus of 2 or 3 bristles or scales, achenes not ciliate along margins : 9
9. Heads sessile; papus of 2 stout bristles : **Synedrella**
9. Heads peduncled; papus scaly : **Eclipta**
10. Leaves sessile, base amplexicaule : **Vicoa**
10. Leaves petiolate, base otherwise : 11
11. Anthers tailed or sagitate at base : 12
11. Anthers obtuse at base : 15
12. Papus biseriate, inner larger : **Vernonia**
12. Papus uniseriate : 13
13. Leaves radical; capitula 4-flowered; papus rigid, basally dilated : **Elephantopus**
13. Leaves cauline; capitula 8 or more flowered; papus linear, not rigid : 14
14. Heads 1-3 per peduncles, homogamous; outer phyllaries foliaceous : **Phyllocephalum**
14. Heads many, in panicles or corymbs, heterogamous; outer
phyllaries narrow : **Blumea**
15. Basal leaves deeply pinnatisect : 16
15. Leaves crenate, dentate or serrate : 18
16. Involucral phyllaries 1-seriate : 17
16. Involucral phyllaries 2 or more seriate : **Dichrocephala**
17. Small herbs, leaves glabrous, flowers pink : **Emilia**
17. Climbing shrubs, leaves cottony tomentose when young
flowers yellow : **Cissampelopsis**
18. Papus of 5 paleaceous scales, broadened at base : **Ageratum**
18. Papus of several slender bristles : 19
19. Leaves sessile, auricled or subamplexicaule : **Gynura**
19. Leaves narrowed at base, not amplexicaule : 20
20. Heads heterogamous not rayed; involucral phyllaries 3-seriate : **Conyza**
20. Heads homogamous not rayed; involucral phyllaries 1-seriate : **Crassocephalum**

ADENOSTEMMA J. R. & G. Forst.

Adenostemma lavenia (L.) O. Ktze., Rev. Gen. Pl. 1: 304. 1891; Fl. Madras 677. 1921; Koster, Blumea 1: 471. 1935; Fl. Thenmala 187. 1995. *Verbesina lavenia* L., Sp. Pl. 902. 1753.

Leaves oblong-obovate, acute to acuminate, base cuneate, decurrent on the petiole, membranous, to 15 x 13 cm; petiole to 5 cm long. Heads 7-9 mm across. Corolla tomentose outside. Achenes minutely tuberculate.

Occasional in semi-evergreen forests.

NS 10113 (Kallar)

Fl. & Fr. October-December

D i s t. Pakistan to Japan and Polynesia

AGERATUM L.

Ageratum conyzoides L., Sp. Pl. 839. 1753; Fl. Brit. India 3: 243. 1881; Fl. Madras 677. 1921; Koster, Blumea 1: 484. 1935; Fl. Thenmala 186. 1995.

Annual herbs, stem terete, pilose. Leaves ovate, obtuse or subacute, base truncate or obtuse, hirsute on both sides, dentate, to 6 x 4 cm. Heads 3-4 mm across. Corolla white. Achenes black, sparsely hirsute along the angles.

Common in disturbed moist deciduous forests and in forest plantations.

NS 11179 (Kattalappara)

Fl. & Fr. August-December

D i s t. Native of Tropical America; now a common weed in many other tropical countries

BIDENS L.

Bidens biternata (Lour.) Merr. & Scherff, Bot. Gaz. 88: 293. 1929; Gandhi in Sald. & Nicols., Fl. Hassan Dist. 602. 1976; Fl. Thenmala 195. 1995. *Coreopsis biternata* Lour., Fl. Cochinch. 508. 1790. *Bidens pilosa* auct. non L. 1753, sensu Gamble, Fl. Madras 709. 1921.

Herbs to 1.5 m tall, young shoots pubescent. Leaves 3-5-foliolate; leaflets ovate, acuminate, base attenuate, serrate, to 6 x 1.5 cm. Heads several, peduncle to 10 cm long. Corolla of ray florets yellow or white; disc florets yellow. Achenes 4-angled, black, 1 cm long; papus bristles 3.5 mm long.

Mostly in disturbed forests and along road sides.

NS 10059 (Rockwood); *10540* (Kattalappara)

Fl. & Fr. July-October

D i s t. Indo-Malesia to Australia and Tropical Africa

BLUMEA DC. *nom. cons.*

- | | |
|--|--------------------------|
| 1. Stem winged, leaf base decurrent on stem | : <i>B. alata</i> |
| 1. Stem not winged, leaf base not decurrent on stem | : 2 |
| 2. Leaves white silky on lower surface | : <i>B. belangeriana</i> |
| 2. Leaves glabrescent or tomentose on lower surface | : 3 |
| 3. Peduncles and outer phyllaries glandular; heads 0.8 cm across | : <i>B. lacera</i> |
| 3. Peduncles and phyllaries eglandular; heads 1.2 cm across | : <i>B. hieracifolia</i> |
| | var. <i>flexuosa</i> |

Blumea alata (D. Don) DC., Prodr. 5: 488. 1936. *Erigeron alatum* D. Don, Prodr. Fl. Nepal. 171. 1825. *Laggera alata* (D. Don) Sch.-Bip. ex Oliver, Trans. Linn. Soc. London 29: 94. 1873; Fl. Brit. India 3: 271. 1881; Fl. Madras 689. 1921.

Erect herbs, wings entire, brown pubescent. Leaves oblong, obtuse or acute, base decurrent, margins serrate, to 10 x 2 cm. Heads 7 mm across, phyllaries linear-lanceolate, puberulous. Flowers pale purple. Achenes 5-6 ribbed, puberulous.

Occasional in evergreen forests, in open areas.

NS 10898 (Kallar)

Fl. & Fr. November-February

D i s t. Indo-Malesia and Africa

Blumea belangeriana DC., Prodr. 5: 444. 1836; Fl. Brit. India 3: 226. 1881; Fl. Madras 686. 1921. *Randiera*, *Blumea* 10: 277. 1960.

Stem reddish-brown, young shoots villous, mixed with gland-tipped hairs. Leaves sessile, elliptic or obovate, acute or obtuse, base attenuate, irregularly dentate, to 6.5 x 4.5 cm. Heads 7 mm across, peduncles and phyllaries villous, mixed with gland-tipped hairs. Corolla yellow. Achenes ribbed, hairy along the ribs.

Occasional in moist deciduous forests and plantations.

NS 11184 (Kattalappara)

Fl. & Fr. October-December

D i s t. Peninsular India : endemic

Blumea hieracifolia (D. Don) DC. var. *flexuosa* (Cl.) *Randiera*, *Blumea* 10: 249. 1960. *B. flexuosa* Cl., Comp. Ind. 86. 1876; Fl. Brit. India 3: 267. 1876; Fl. Madras 687. 1921.

Erect stout herbs, to 1.5 m tall. Leaves elliptic-lanceolate, acuminate, irregularly dentate, pubescent. Heads in terminal paniculate racemes. Phyllaries linear-lanceolate, eglandular. Achenes glabrous.

Occasional in evergreen forests above 1200 m.

NS 10267 (Charupara)

Fl. & Fr. January-April

D i s t. South India and Sri Lanka

Blumea lacera (Burm. f.) DC. in Wt., Contrb. Bot. India 14. 1834; Fl. Brit. India 3: 263. 1881; *Randiera*, *Blumea* 10: 264. 1960; Fl. Thenmala 190. 1995. *Conyza lacera* Burm. f., Fl. Ind. 180, t. 59. f. 1. 1768. *Blumea lacera* (Burm. f.) DC. var. *glandulosa* (DC.) Hook. f., Fl. Brit. India 3: 263. 1881; Fl. Madras 687. 1921.

Erect herbs, young shoots glandular. Leaves obovate or oblanceolate, acute, base cuneate, dentate, membranous, lower leaves petiolate, upper sessile. Outer phyllaries glandular. Corolla yellow. Achenes subterete, hairy.

Fairly common in forest plantations and disturbed moist deciduous forests.

NS 11006 (Kallar)

Fl. & Fr. January-March

D i s t. Indo-Malesia to Australia, Africa and China

CHROMOLAENA DC.

Chromolaena odorata (L.) King & Robins., *Phytologia* 20: 204. 1970; Ramam. in Sald. & Nicols., *Fl. Hassan Dist.* 608. 1976. *Eupatorium odoratum* L., *Syst. Nat.* (ed. 10) 1205. 1759; *Fl. Brit. India* 3: 244. 1881.

Scandent shrubs. Leaves opposite, deltoid-ovate, acuminate, base cuneate, coarsely toothed, pubescent on both sides, to 10 x 6 cm; 3-nerved from little above the base. Heads oblong, outer phyllaries smaller, tomentose, inner glabrescent. Corolla white. Achenes black, 4-angled, ciliate along the angles; papus white, barbellate.

Very common in moist deciduous forests and forest plantations.

NS 10743 (Kattalappara)

Fl. & Fr. November-January

D i s t. Native of Tropical America, now a weed in many tropical Asian countries

Note: Gautiev (*Candollea* 47:645-662. 1992) has dealt with the taxonomy and distribution of this tropical weed in great detail.

CISSAMPELOPSIS (DC.) Miq.

Cissampelopsis ansteadii (Tadul. & Jacob) Jeffrey & Chen, *Kew Bull.* 39: 341. 1984. *Senecio ansteadii* Tadul. & Jacob, *J. Inidan Bot. Soc.* 9: 40. 1930; *Fl. Madras* 1936.

Climbing shrubs. Leaves ovate, obtusely acute to acuminate base truncate, margin dentate, densely white tomentose below when young, basally 5-nerved, to 9 x 7 cm. Flowers in axillary and terminal corymbs. Involucral bracts 5, glabrous. Corolla yellow. Achenes glabrous.

Occasional in shola forests.

NS 10232 (Pongumala)

Fl. & Fr. January-April.

D i s t. Southern W.Ghats : endemic

Note : This rare species has not been collected earlier from Kerala.

CONYZA Less. *nom. cons.*

Conyza bonariensis (L.) Cronquist, *Bull. Torrey Bot. Club* 70: 632. 1943. *Erigeron bonariensis* L., *Sp. Pl.* 863. 1753. *E. linifolius* Willd., *Sp. Pl.* 3: 1955. 1803; *Fl. Brit. India* 3: 254. 1881. *Conyza ambigua* DC., *Fl. Fr.* 6: 648. 1815; *Fl. Madras* 683. 1921.

Annual herbs to 50 cm tall, stem minutely ribbed, sparsely pubescent. Leaves linear or oblanceolate, entire or remotely toothed, sparsely crispate pubescent on both sides, to 7 x 2 cm, membranous. Heads in terminal corymbs. Corolla dull yellow. Achenes puberulous.

Occasional in disturbed evergreen forests above 800 m.

NS 10259 (Pandimotta); 11300 (Rosemala)

Fl. & Fr. March-April

D i s t. Native of South America, introduced and naturalised elsewhere.

CRASSOCEPHALUM Moench.

Crassocephalum crepidioides (Benth.) S. Moore, J. Bot. 5: 211. 1912; Nair & Srinivasan, J. Econ. Tax. Bot. 3: 289. 1982; Fl. Thenmala 191. 1995. *Gynura crepidioides* Benth. in Hook., Niger Fl. 438. 1849. *Erechites valerianifolia* sensu Fischer, Fl. Madras 1882. 1936, non DC. 1838.

Erect herbs, young shoot puberulous. Leaves elliptic-lanceolate, crenate, glabrous, membranous, to 8 x 4 cm; lower leaves often pinnatisect. Heads in few-flowered racemes. Corolla orange-red. Achenes 10-ribbed; papus white, silky.

Common along road sides and in disturbed forests.

NS 10836 (Rosemala)

Fl. & Fr. August-December

D i s t. Native of Africa, now pantropical

DICHROCEPHALA DC.

Dichrocephala integrifolia (L. f.) O. Ktze., Rev. Gen. Pl. 1: 333. 1891. *Hippiu integrifolia* L. f., Suppl. 389. 1781. *Dichrocephala latifolia* DC., Arch. Bot. (Paris) 2: 518. 1833. & in Wt., Contrb. Bot. India 11. 1834; Wt., Ic. t. 1096. 1846; Fl. Brit. India 3: 245. 1881; Fl. Madras 679. 1921.

Decumbent villous herbs, lower branches rooting at nodes. Basal leaves lyrate-pinnatisect, to 6 cm long; upper leaves coarsely toothed, to 3 cm long, pubescent on both sides. Heads 3-4 mm across. Corolla of female flowers white, 2-lobed; of bisexual flowers yellowish, 4-lobed. Achenes glabrous or minutely glandular at apex.

Occasional in grasslands and shola forests.

NS 10264 (Pandimotta)

Fl. & Fr. May-June

D i s t. Indo-Malesia to Australia, China and Africa

ECLIPTA L.

Eclipta prostrata (L.) L., Mant. 2: 286. 1771; Sant., J. Bombay Nat. Hist. Soc. 54: 475. 1957; Fl. Thenmala 196. 1995. *Verbesina prostrata* L., Sp. Pl. 902. 1753. *Ēclipta alba* (L.)

Hassk., Pl. Jav. Rar. 528. 1848; Fl. Brit. India 3: 304. 1881; Fl. Madras 705. 1921.
Verbesina alba L., Sp. Pl. 902. 1753.

Stem and leaves sparsely strigose with bulbous based hairs. Leaves elliptic or oblong-lanceolate, serrate to subentire, petiolate or sessile; leaves of erect plants much larger, to 7.5 x 1.2 cm. Heads axillary. Phyllaries of outer series 5, broader; inner series 3, narrower. Achenes black; pappus scales dentate.

Occasional in disturbed moist deciduous forests and also along the banks of reservoir.

NS 10551 (Kattalappara)

Fl. & Fr. August-December

D i s t. Throughout tropics

ELEPHANTOPUS L.

Elephantopus scaber L., Sp. Pl. 814. 1753; Wt., Ic. t. 1086. 1846; Fl. Brit. India 3: 242. 1881; Fl. Madras 676. 1921; Koster, Blumea 1: 456. 1935; Fl. Thenmala 188. 1995.

Rootstock rhizomatous, creeping. Radical leaves oblong or oblanceolate, acute, crenate-serrate, base narrowed, petiole sheathing at base, strigose on both sides, to 20 x 6 cm. Glomerules surrounded by three leafy bracts; phyllaries white hirsute. Corolla lilac or white, lobes linear. Achenes oblong, 4 mm long; pappus setae 5 mm long.

Very common in moist deciduous forests.

NS 11080 (Kattalappara)

Fl. & Fr. October-January

D i s t. Indo-Malesia to Australia, Philippines, Tropical Africa and Western China

EMILIA Cass.

Emilia sonchifolia (L.) DC. ex Wt., Contrb. Bot. India 24. 1834; Fl. Brit. India 3: 336. 1881; Fl. Madras 716. 1921; Fl. Thenmala 191. 1995. *Cacalia sonchifolia* L., Sp. Pl. 835. 1753.

Erect or diffuse herbs. Lower leaves lyrate or obovate, entire or toothed, upper ovate or oblong, dentate. Phyllaries puberulous at apex. Corolla 8 mm long. Style arm 0.75 mm long. Achenes pale brown.

Fairly common in disturbed moist deciduous forests and in forest plantations.

NS 11178, 11065 (Rosemala)

Fl. & Fr. July-December

D i s t. Pantropical

GYNURA Cass. *nom. cons.*

Gynura nitida DC. in Wt., Contrb. Bot. India 24. 1834; Wt., Ic. t. 1121. 1846; Fl. Brit. India 3: 333. 1881; Fl. Madras 714. 1921; Davies, Kew Bull. 35: 366. 1980; Fl. Thenmala 187. 1995.

Stout herbs, to 1 m tall, stem angular, striate. Lower leaves entire, oblanceolate, to 15 x 3 cm; upper oblong, crenate, amplexicaule at base. Heads to 2 cm long. Flowers yellow. Achenes oblong, pappus white.

Occasional in open grassy patches.

NS 11061 (Rosemala)

Fl. & Fr. October-November

D i s t. Southern W. Ghats : endemic

MIKANIA Willd.

Mikania cordata (Burm. f.) Robins., Contrb. Gray Herb. 104. 65. 1934; Koster, Blumea 1: 504. 1935; Nair, Rubb. Board Bull. 9: 28. 1968. *Eupatorium cordatum* Burm. f., Fl. Ind. 176, t. 58. fig. 2. 1768. *Mikania scandens* auct. non L. 1753, sensu Hook. f., Fl. Brit. India 3: 244. 1881.

Climbing shrubs. Leaves ovate-cordate, acute or acuminate, margin dentate or subentire, glabrescent; petiole to 4 cm. Heads numerous on corymbs, 4-flowered. Corolla greenish-white. Achenes brown, glabrous, glandular.

A fast spreading weed in forest plantations and disturbed forests, often smothering the trees.

NS 10709 (Umiyar)

Fl. & Fr. February-April

D i s t. Indo-Malesia to Philippines and Tropical Africa

PHYLLOCEPHALUM BI.

1. Peduncle elongated; outer phyllaries tomentose; achenes pubescent : *P. scabridum*

1. Peduncle short; outer phyllaries densely white tomentose; achenes

glabrous

: *P. courtallense*

Phyllocephalum courtallense (Wt.) Narayana, Curr. Sci. 51: 438. 1982. *Decaneurum courtallense* Wt., Ic. t. 1081. 1846. *Centratherum courtallense* (Wt.) Benth. ex Hook. f., Fl. Brit. India 3: 227. 1881; Fl. Madras 666. 1921; Fl. Thenmala 192. 1995.

Small erect or diffuse herbs, stem sparsely hirsute. Leaves elliptic-ovate, acuminate, base attenuate, densely white tomentose below and hispid above, to 5 x 3 cm, reticulations invisible on lower surface. Heads 1.5-2 cm across. Outer phyllaries elliptic oblong, mucronate. Corolla bluish-purple.

Common in grasslands.

NS 10263 (Pandimotta)

Fl. & Fr. October-November

D i s t. Southern W. Ghats : endemic

Phyllocephalum scabridum (DC.) Kirkman, *Rhodora* 83: 10. 1981. *Decaneurum scabridum* DC. in Wt., *Contrib. Bot. India* 7. 1834; *Centratherum molle* (DC.) Benth. in Benth. & Hook. f., *Gen. Pl.* 2: 225. 1873; *Fl. Brit. India* 3: 227. 1881; *Fl. Madras* 666. 1921. *Decaneurum molle* DC., *Prodr.* 5: 67. 1838; Wt., *Ic. t.* 1082. 1846.

Erect herbs, stem sparsely hispid. Leaves elliptic, acuminate, base cuneate, margins serrate, densely white tomentose beneath and sparsely hispid above, to 5 x 3 cm; reticulations visible on lower surface; petiole to 0.5 cm long. Heads to 1 cm across. Outer phyllaries oblong, acute, cuspidate. Corolla bluish.

Occasional in moist deciduous forests, in open areas.

NS 11133 (Kattalappara)

Fl. & Fr. September-November

D i s t. South India : endemic

SPILANTHES Jacq.

- | | |
|---|----------------------|
| 1. Heads rayed | : <i>S. ciliata</i> |
| 1. Heads not rayed | : 2 |
| 2. Margins of achenes winged and with long cilia, terminal cilia 1 mm long; flowers white | : <i>S. radicans</i> |
| 2. Margins of achenes not winged, glabrous; flowers pale yellow | : <i>S. calva</i> |

Spilanthes calva DC. in Wt., *Contrib. Bot.* 19. 1834; Wt., *Ic. t.* 1109. 1846. Koster & Philip., *Blumea* 6: 354. 1950; *Fl. Thenmala* 196. 1995. *S. acmella* auct. non (L.) Murr. 1844; *Fl. Brit. India* 3: 307. 1881; *Fl. Madras* 708. 1921.

Diffuse herbs, rooting at lower nodes, stem sparsely pubescent. Leaves ovate, acute, base truncate, serrate, sparsely hispid on both sides, to 5 x 3 cm. Heads terminal, peduncle to 10 cm long. Corolla yellow. Achenes narrowly obovate.

Fairly common in grasslands.

NS 11357 (Alvarakurichi)

Fl. & Fr. September-December

D i s t. Indo-Malesia

Spilanthes ciliata H. B. & K., *Nov. Gen. & Sp. Pl.* 4: 621. 1836; A. H. Moore, *Proc. Amer. Acad. Art. Sci.* 42: 538. 1907; Sivar. & P. Mathew, *Ancient Sci. Life* 3: 171. 1984.

Diffuse herbs, rooting at lower nodes. Leaves ovate-acute, base rounded, margin crenate, to 6 x 3.5 cm. Heads axillary and terminal, peduncle to 5 cm long. Ray florets 8-12, female, corolla 3-dentate. Achenes of ray florets 3-angled, margin ciliate; of ray florets laterally compressed, margin thickened, prominently ciliate, papus of 2 weak narrow bristles.

Occasional in disturbed forests in moist localities.

NS 10667 (Kallar)

Fl. & Fr. October-December

D i s t. Native of Neotropics, now fairly common in Kerala along sides of water courses and marshy places

Spilanthes radicans Jacq., *Collect. Bot. Chem. Hist. Nat.* 11. 1714. 1804; Sivar. & P. Mathew, *Ancient Sci. Life* 3: 169. 1984. *S. ocymifolia* (Lam.) A. H. Moore, *Proc. Amer. Acad. Sci.* 42: 531. 1907;

Erect herbs, stem minutely pubescent. Leaves ovate-acute, base acute, margin subentire, membranous, to 7.5 x 5 cm. Heads axillary, solitary or paired, peduncle to 4 cm long. Corolla creamy white. Achenes of marginal florets trigonous and of disc florets laterally compressed, ellipsoid or obcordate with a wide sinus at apex, margins thickened and densely long ciliate; papus bristles 1 mm long.

Common in forest plantations and disturbed moist deciduous forests.

NS 10699 (Kattalappara)

Fl. & Fr. October-March

D i s t. Native of Tropical America; now a common weed in Asia

SYNEDRELLA Gaertn. *nom. cons.*

Synedrella nodiflora (L.) Gaertn., *Fruct.* 2: 456, t. 171. 1791; *Fl. Brit. India* 3: 308. 1881; *Fl. Madras* 708. 1921; *Fl. Thenmala* 196. 1995. *Verbesina nodiflora* L. in Juslenius, *Cent. I. Pl.* 28. 1755.

Erect herbs, stem adpressed hairy. Leaves ovate-acute, base cuneate to truncate, narrowly winged on the petiole, margin serrate-dentate, adpressed hairy on both sides, to 7 x 5 cm. Outer phyllaries pilose. Corolla yellow. Achenes black.

Common in forest plantations and disturbed moist deciduous forests.

NS 11086 (Kattalappara)

Fl. & Fr. August-February

D i s t. Native of West Indies, now established in Indo-Malesia to Polynesia and China

TRIDAX L.

Tridax procumbens L., *Sp. Pl.* 900. 1753; *Fl. Brit. India* 3: 311. 1881; *Fl. Madras* 676. 1921; Powell, *Brittonia* 17: 80. 1965; *Fl. Thenmala* 195. 1995.

Procumbent herbs, rooting at lower nodes, stem pilose. Leaves ovate-acute, base cuneate, margin coarsely dentate or trilobed, hirsute on both sides. Heads to 1.2 cm long, peduncle hirsute and glandular. Corolla of ray florets creamy white. Alternate papus hairs short.

Occasional in disturbed moist deciduous forests and forest plantations.

NS 11192 (Kattalappara)

Fl. & Fr. Throughout the year

D i s t. Native of Tropical America, now widespread throughout tropics and subtropics

VERNONIA Schreb. *nom. cons.*

- | | |
|--|--------------------------|
| 1. Achenes 4-5 angled, herbs | : <i>V. cinerea</i> |
| 1. Achenes 10 ribbed | : 2 |
| 2. Heads 1-3, 2-2.5 cm across | : <i>V. beddomei</i> |
| 2. Heads many in corymbs. less than 1 cm across | : 3 |
| 3. Trees, leaves glabrous, involucre bracts obtuse | : <i>V. travancorica</i> |
| 3. Subshrubs, leaves white adpressed tomentose below, involucre bracts mucronate | : <i>V. heynei</i> |

Vernonia beddomei Hook. f., *Fl. Brit. India* 3: 231. 1881; *Fl. Madras* 674. 1921 [Fig. 9].

Scandent subshrubs with elongated slender, angular, glabrous branches. Leaves lanceolate, caudate-acuminate, base obtuse, distantly serrate, membranous, upper ones to 11 x 2 cm. Involucre bracts lanceolate, glabrous. Achenes hairy.

Occasional in grasslands.

NS 10823 (Rosemala)

Fl. & Fr. December-February

D i s t. Southern W. Ghats : endemic

Vernonia cinerea (L.) Less., *Linnaea* 4: 291. 1829; *Fl. Brit. India* 3: 233. 1881; *Fl. Madras* 676. 1921; *Fl. Thenmala* 193. 1995. *Conyza cinerea* L., *Sp. Pl.* 862. 1753.

Erect herbs. Leaves ovate to obovate-acute to acuminate, irregularly crenate-serrate, sparsely hispid on both sides, very variable in size, to 3 x 2 cm. Heads in small terminal corymbs. Corolla bluish-purple. Achenes 4 or 5 angled, villous.

Occasional in disturbed moist deciduous forests.

NS 11180 (Kattalappara)

Fl. & Fr. July-March

D i s t. Indo-Malesia to Australia and also in Africa

Vernonia heynei Bedd. ex Gamble, *Kew Bull.* 1920: 340. 1920 & *Fl. Madras* 673. 1921.

Subshrubs, branchlets angular, with adpressed grey tomentum. Leaves elliptic, acute, base acute or obtuse, serrate, glabrous above and white tomentose below, to 9 x 3.5 cm; lateral nerves 8-10 pairs. Heads many, in terminal corymbose panicles. Corolla bluish-purple. Achenes glandular between ribs, sparsely hairy

Rare in grasslands.

NS 11064 (Rosemala)

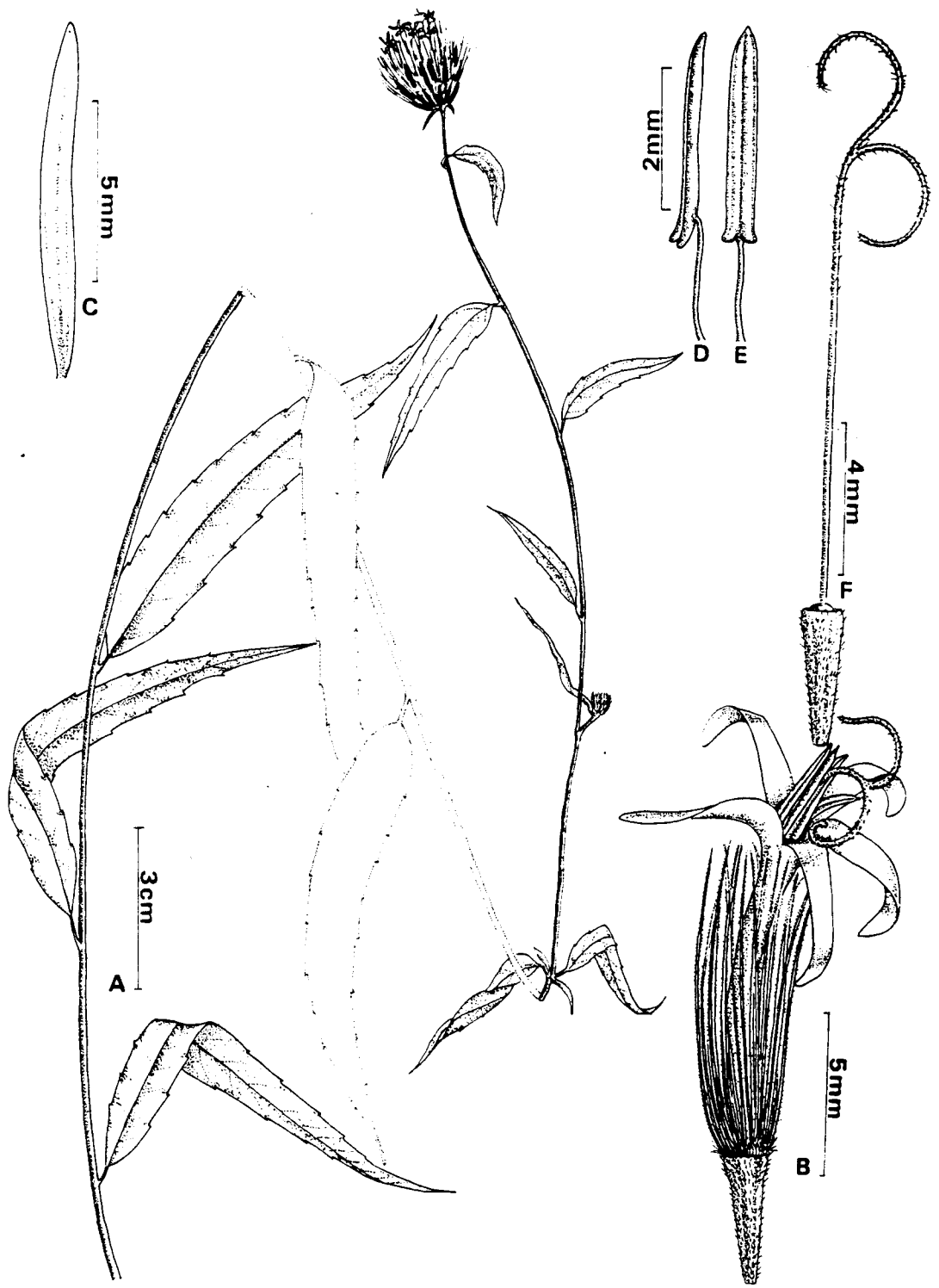


Fig. 9: *Vernonia beddomei* Hook. f. A. habit, B. flower, C. involucre bract, D. & E. anthers, F. Pistil

Fl. & Fr. September-November

D i s t. Southern W. Ghats : endemic, considered as rare and endangered.

Vernonia travancorica Hook. f., *Fl. Brit. India* 3: 240. 1881; *For. Trees Travancore* 227. 1908; *Fl. Madras* 673. 1921. *V. volkameriaefolia* sensu Bedd., *Fl. Sylv. t.* 225. 1872, non DC. 1836.

Small to medium sized trees. Leaves ovate or obovate, obtuse, base cuneate, margins wavy towards apex, glabrous to 17 x 12 cm. Heads in terminal cymose cymes. Involucral bracts tomentose. Achenes tomentose.

Fairly common in evergreen forests above 1000 m.

NS 10235 (Pandimotta); *10828* (Rosemala)

Fl. & Fr. December-April

D i s t. Southern W. Ghats : endemic

VICOA Cass.

Vicoa indica (L.) DC. in *Wt., Contrb. Bot. India* 10. 1834; *Wt., Ic. t.* 1148. 1846; *Fl. Madras* 701. 1921; *Fl. Thenmala* 194. 1995. *Inula indica* L., *Sp. Pl. (ed. 2)* 1236. 1762. *Vicoa auriculata* Cass., *Ann. Sci. Nat. (Paris) Ser. I.* 17: 418. 1829; *Fl. Brit. India* 3: 297. 1881.

Erect herbs, branches slender, terete, sparsely pubescent. Leaves oblong-acute, base rounded, auricled and amplexicaule, margins serrate, pubescent on both sides, to 6 x 1.5 cm, sessile. Heads to 1.2 cm across, peduncle slender. Florets yellow. Achenes of ray florets glabrous; of disc florets pubescent.

Occasional in disturbed moist deciduous forests and forest plantations.

NS 11193 (Kattalappara)

Fl. & Fr. November-February

D i s t. Indo-Malesia and tropical West Africa

LOBELIACEAE

LOBELIA L.

1. Tall herbs; basal leaves 10 cm or more long; corolla over 1.5 cm

long

: *L. nicotianaefolia*

1. Small herbs; basal leaves less than 3 cm long; corolla under

1 cm long

: *L. alsinoides*

Lobelia alsinoides Lamk., *Encyl.* 3: 588. 1792; *Haridas. & Mukh., Fl. India Fasc.* 19: 42. 1988; *Fl. Thenmala* 198. 1995. *L. trigona* Roxb. *Fl. Ind.* 2: 111. 1824; *Wt., Ic. t.* 1170. 1848; *Fl. Brit. India* 3: 423. 1881; *Fl. Madras* 736. 1921.

Annual glabrous herbs, stem triolate. Leaves ovate or elliptic, acute, base truncate, crenate, to 2 x 1.5 cm, lower petiolate and upper sessile. Flowers solitary, axillary, pedicels slender, to 2.5 cm long. Calyx teeth subulate, 3-4 mm long. Filaments free to half of their length. Seeds trigonous, smooth.

Common in disturbed moist deciduous forests.

NS 11185 (Kattalappara)

Fl. & Fr. August-October

D i s t. Indo-Malesia

Lobelia nicotianaefolia Roth ex Roem. & Schult., Syst., Veg. 5: 47. 1819; Fl. Brit. India 3: 427. 1881; Fl. Madras 736. 1921; Fl. Thenmala 198. 1995; Haridas. & Mukh., Fl. India Fasc. 19: 53. 1988. *L. trichandra* Wt., Ic. t. 1171. 1848.

Erect herbs, to 1.5 m tall. Leaves lanceolate or narrowly elliptic, acute or acuminate, base attenuate, serrate to denticulate, lower leaves to 25 x 6 cm; upper smaller. Flowers in terminal many flowered racemes, pedicels to 2.5 cm long. Calyx lobes linear, acuminate, 1 cm long. Corolla white, 3-3.5 cm long. Filaments basally free; anthers puberulous. Seeds ovoid.

Occasional in grasslands, also in disturbed forests.

NS 10109 (Kallar); 11429 (Alvarakurichi)

Fl. & Fr. October-March

D i s t. Indo-Malesia

MYRSINACEAE

- | | |
|-------------------------------------|------------------|
| 1. Fruit many-seeded, seeds angular | : Maesa |
| 1. Fruit 1-seeded, seed globose | : 2 |
| 2. Climbing or scandent shrubs | : Embelia |
| 2. Erect small trees or shrubs | : Ardisia |

ARDISIA Sw. *nom. cons.*

- | | |
|--|------------------------|
| 1. Flowers 1-3 on racemes | : 2 |
| 1. Flowers many on umbellate racemes | : A. blatteri |
| 2. Lateral nerves of leaves indistinct | : A. pauciflora |
| 2. Lateral nerves of leaves prominent | : A. stonei |

Ardisia blatteri Gamble, Kew Bull. 1921. 121. 1921 & Fl. Madras 755. 1921.

Small trees. Leaves elliptic-lanceolate or oblanceolate, acuminate, base cuneate, margin crenate-serrate, lateral nerves many, forming an intramarginal nerve, to 11 x 4 cm. Flowers pink, 0.7 cm across, in umbellate racemes. Calyx tomentose.

Fairly common in shola forests.

NS 10224 (Pandimotta); 11431 (Alvarakurichi)

Fl. January-May

Dist. Southern W. Ghats : endemic

Ardisia pauciflora Heyne ex Roxb., *Fl. Ind.* 2: 279. 1824; *Wt., Ic. t.* 1214. 1848; *Fl. Brit. India* 3: 529. 1882; *For. Trees Travancore* 233. 1908; *Fl. Madras* 755. 1921.

Small slender trees. Leaves lanceolate, acuminate, base acute or obtuse, chartaceous, to 13 x 3.5 cm. Peduncles terminal and axillary, 1-3 mm long, rusty tomentose. Flowers 0.6 cm across. Calyx lobes narrowly ovate, acute, 1 mm long. Corolla pink-white. Berry pink. 4-5 mm across.

Common in evergreen forests.

NS 10050 (Kallar); 10382, 10900 (Rockwood)

Fl. & Fr. February-May

Dist. South India and Sri Lanka

Ardisia stonei Sasi. & Sivar., *Rheedea* 4: 116. 1994 & *Fl. Pl. Thrissur For.* 260. 1996 [Fig. 10].

Subshrubs, erect stem to 50 cm tall, branches terete or angular, young shoots covered with brown lepidote tomentum. Leaves elliptic-oblong or obovate, acute to acuminate, base cuneate and unequally cordate, margin denticulate to subentire, punctate, 7-14 x 2-5 cm; lateral nerves 12-16 pairs, forming an intramarginal nerve. Flowers solitary or in 2-4 flowered pendulous racemes; bracts cymbiform, tomentose. Calyx lobes imbricate, ovate-acuminate. Corolla pink or pale purple, lobes ovate-lanceolate, 6-7 mm long, tomentose except the hyaline margins. Stamens spreading, dehiscence longitudinal. Ovules 9 or 10, uniseriate along the margins at the centre of the placentum; style glabrous, stigma punctiform. Drupe globose, red, 5-7 mm across; seed one, subglobose, vertically striate.

This newly described species is so far known only from Thrissur and Shenduruny.

NS 10061 (Kallar); 10954 (Rosemala)

Fl. & Fr. Throughout the year

Dist. Southern W. Ghats (Kerala) : endemic

EMBELIA Burm.f. *nom. cons.*

- | | |
|---|--------------------|
| 1. Flowers in axillary short racemes; fruits over 6 mm across | : <i>E. basaal</i> |
| 1. Flowers in large terminal panicles; fruits 4 mm across | : <i>E. ribes</i> |

Embelia basaal (Roem. & Schult.) A. DC., *Trans. Linn. Soc. London* 17: 131. 1834; *Fl. Madras* 753. 1921. *Ardisia basaal* Roem. & Schult., *Syst.* 4: 517. 1819. *Embelia viridiflora* sensu Cl., *Fl. Brit. India* 3: 516. 1882, non Scheff. 1867.

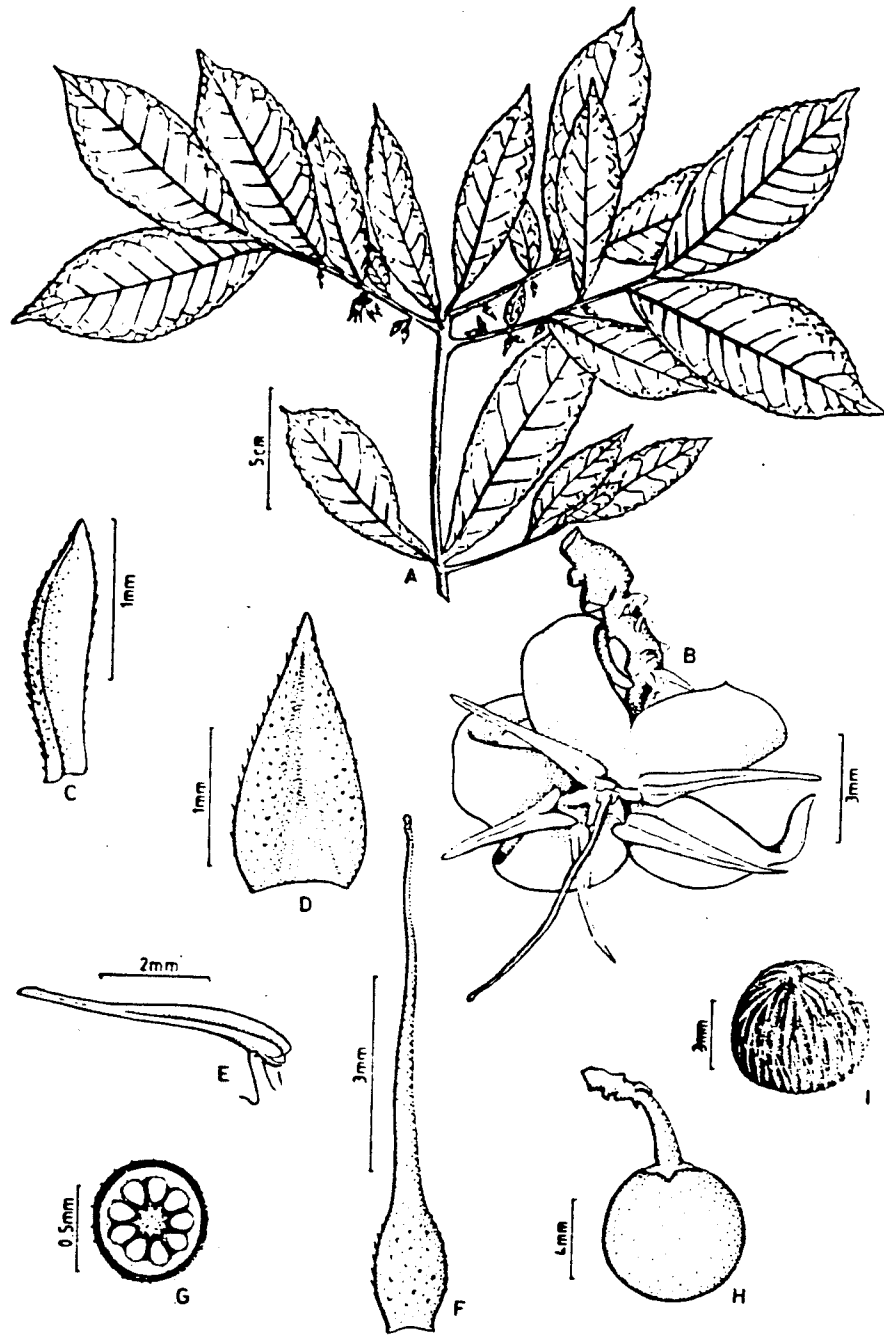


Fig. 10 : *Ardisia stonei* Sasi. & Sivar. A. flowering twig, B. flower, C. bract, D. sepal, E. stamen, F. carpel, G. T. S. of ovary, H. fruit, I. seed

Scandent shrubs, branches lenticellate. Leaves elliptic or obovate, obtuse, base acute, thickly coriaceous, to 12 x 8 cm. Racemes 2-3 cm long. Petals 4, pink, oblong, 3 mm long. Berry globose, pink.

Occasional in grasslands.

NS 11319 (Rosemala); 11391 (Pandimotta)

Fl. & Fr. November-March

D i s t. Indo-Malesia

Embelia ribes Burm. f., Fl. Ind. 62. t. 23. 1768; Wt., Ic. t. 1207. 1848; Fl. Brit. India 3: 513. 1882; Fl. Madras 752. 1921; Fl. Thenmala 199. 1995.

Lianas, stem brown, smooth; branchlets slender, green. Leaves oblong, acute to shortly acuminate, base rounded, chartaceous, glabrous, to 8.5 x 3.5 cm. Peduncle pubescent. Calyx lobes ovate, ciliate along margins. Petals 2 mm long, greenish-white, villous inside. Berry globose, 4 mm across.

Fairly common in evergreen forests.

NS 10489 (Kallar)

Fl. & Fr. March-August

D i s t. Indo-Malesia and South China

MAESA Forssk.

Maesa indica (Roxb.) A. DC., Trans. Linn. Soc. London 17: 134. 1834; Wt., Ic. t. 1206. 1848; For. Trees Travancore 230. 1908; Fl. Thenmala 200. 1995. *Baeobotrys indica* Roxb., Fl. Ind. 2: 230. 1824. *Maesa perrottetiana* A. DC., Prodr. 8: 80. 1844; Fl. Madras 749. 1921. *M. indica* (Roxb.) A. DC. var. *perrottetiana* (A. DC.) Cl. in Hook. f., Fl. Brit. India 3: 509. 1882.

Small slender trees. Leaves elliptic to obovate, acute to shortly acuminate, base rounded or acute, margins serrate, to 12 x 5 cm. Flowers in terminal and axillary short panicles. Calyx lobes 5, ovate. Corolla white, 3 mm across. Berry subglobose, 8 x 7 mm.

Fairly common in disturbed forests above 600 m. and occasionally in grasslands.

NS 10775 (Kallar)

Fl. & Fr. September-May

D i s t. Indo-Malesia

SAPOTACEAE

- | | |
|--|------------------------|
| 1. Stamens as many as the number of calyx lobes | : <i>Chrysophyllum</i> |
| 1. Stamens twice or more the number of calyx lobes | : 2 |
| 2. Calyx lobes 6 | : <i>Palaquium</i> |
| 2. Calyx lobes 4 | : 3 |
| 3. Corolla lobes 4; stamens 8 | : <i>Isonandra</i> |
| 3. Corolla lobes 8 or 12; stamens more than 16 | : <i>Madhuca</i> |

CHRYSOPHYLLUM L.

Chrysophyllum roxburghii G. Don, Gen. Syst. 4: 33. 1838; Bedd., Fl. Sylv. t. 236. 1872; Fl. Brit. India 3: 535. 1882; For. Trees Travancore 235. 1908; Fl. Madras 758. 1921; Fl. Thenmala 201. 1995. *C. lanceolatum* (Bl.) DC., Prodr. 8: 162. 188, non Cassar. 1843; Vink, Blumea 9: 28. 1958. *Nycterrisition lanceolatum* Bl., Bijdr. 676. 1826.

Large evergreen trees, young shoots densely brown tomentose. Leaves oblong, caudate-acuminate, base acute, oblique, unequal sided, glabrous and glossy, to 15 x 3.5 cm. Calyx puberulous. Corolla creamy-white, lobes densely ciliate along margins. Berry glabrous, greenish-yellow, 4 cm across.

Fairly common in evergreen forests.

NS 10151 (Kattalappara)

Fl. & Fr. April-November

D i s t. Indo-Malesia

ISONANDRA Wt.

1. Leaves oblong or oblong-lanceolate, caudate-acuminate, base
cuneate

: I. lanceolata

1. Leaves obovate or oblong-obovate, obtuse or emarginate, base
obtuse or truncate

: I. stocksii

Isonandra lanceolata Wt., Ic. t. 359. 1840, forma *lanceolata*: Cl. in Hook. f., Fl. Brit. India 3: 539. 1882; For. Trees Travancore 236. 1908; Fl. Madras 761. 1921; Jeuken, Blumea 6: 568. 1952; Fl. Thenmala 202. 1995.

Large shrubs to small slender trees; branchlets slender. Leaves very variable in size, glabrous and glossy, to 20 x 8 cm, intercostae parallel, prominent. Flowers in fascicles up to 7, very shortly pedicelled. Calyx lobe ovate-acute, tomentose, 3 mm long. Corolla yellow. Berry ellipsoid, orange-yellow, 1 cm long.

Common in semi-evergreen and evergreen forests.

NS 10051, 10377 (Kallar); 11414 (Alvarakurichi)

Fl. & Fr. Throughout the year

D i s t. South India and Sri Lanka

Isonandra stocksii Cl. in Hook. f., Fl. Brit. India 3: 539. 1882; Fl. Madras 761. 1921; Jeuken, Blumea 6: 570. 1952.

Trees to 8 m tall, branchlets stout. Leaves obovate, obtuse, glabrous, to 7.5 x 5 cm; intercostae not clearly parallel. Flowers in fascicles, to 6. Calyx lobes ovate, obtuse, 1.5 mm long. Corolla yellow. Stamens 8.

Rare in shola forests.

Fl. March-April

Dist. Southern W. Ghats: endemic

MADHUCA Gmel.

- | | |
|---|--------------------------|
| 1. Undersurface of leaves, pedicels and outer calyx lobes tomentose;
fruit globose | : M. bourdillonii |
| 1. Leaves, pedicels and calyx lobes glabrous; fruit ellipsoid | : M. neriifolia |

Madhuca bourdillonii (Gamble) H. J. Lam, Bull. Bot. Buitenz. (ser. 3) 7: 463. 1927; van Royan, Blumea 10: 81. 1960; Nayar & Sastry, Red Data Book Indian Pl. 3: 243. 1990; Fl. Pl. Thrissur For. 265. 1996. *Bassia bourdillonii* Gamble, Kew Bull. 1921: 121. 1921 & Fl. Madras 763. 1921 [Fig. 11].

Very large trees, bark pale brown, slightly rough, pink inside, latex milky, young branchlets densely fulvous-tomentose. Leaves linear-elliptic or spatulate, acute or shortly obtusely acuminate at apex, base cuneate, fulvous tomentose when young, becoming glabrous above and glabrescent below, except the midrib, to 22 x 6.5 cm; lateral nerves 20-25 pairs, nearly right angle to the midrib, intercostae reticulate, faint; petiole to 4.5 cm. pubescent. Flowers in axillary fascicles, appear along with new flush; pedicels 1.5-2 cm long, densely brown tomentose. Calyx lobes ovate, outer 0.7 x 0.6 cm, brown tomentose. Corolla 12-lobed. Stamens 24, in two whorls; anthers 3.5 mm long, glabrous, ovate, connective appendage 1 mm long. Ovary ovoid, glabrous, 11 or 12-celled. Berry subglobose, 3-4 cm across; stalk 3.5 cm long.

Rare in semi-evergreen forests.

NS 10634 (Kattalappara)

Fl. & Fr. November-July

Dist. Southern W. Ghats (Kerala) : endemic

Note: The species, restricted to the Arienkavu and Shendurney Valley, has not been collected since 1894-95.

The present collection is redicoverly from the type locality.

Madhuca neriifolia (Moon) H. J. Lam, Bull. Jard. Bot. Buitenz. Ser. 3, 7. 182, 265. 1925. van Royan, Blumea 10: 98. 1960; Fl. Thenmala 203. 1995. *Bassia neriifolia* Moon, Cat. Pl. Ceylon 36. 1824. *B. malabarica* Bedd., For. Man. Bot. 140. 1872; Fl. Brit. India 3: 544. 1882; For. Trees Travancore 238. 1908; Fl. Madras 763. 1921.

Small to medium sized evergreen trees, bark pale-brown, reddish inside, latex milky; young shoots glabrous. Leaves linear-oblong or elliptic-oblong, acute or obtuse at apex, base acute, glabrous, to 14 x 5.5 cm. Flowers in fascicles up to 20; pedicels minutely tomentose,

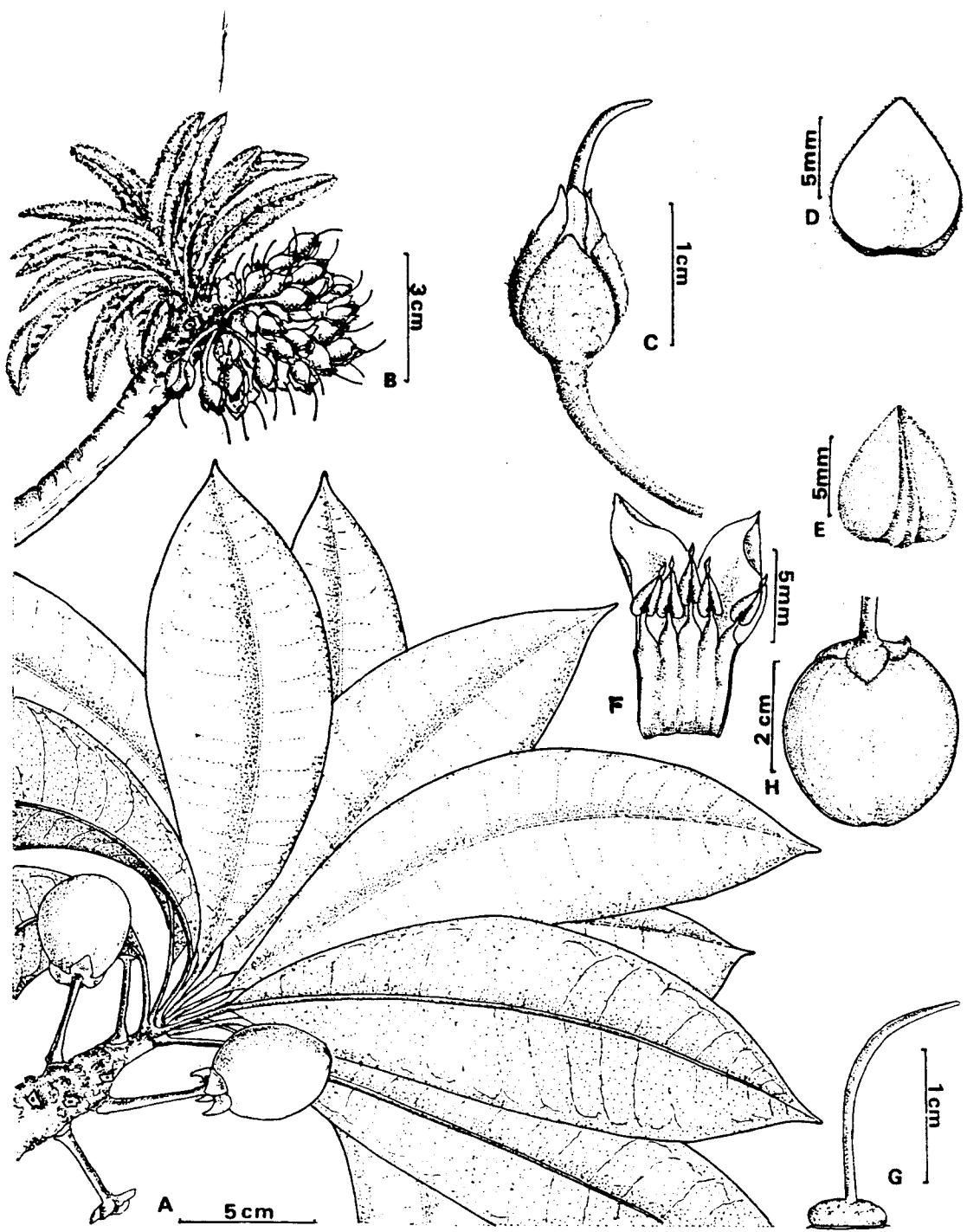


Fig. 11: *Madhuca bourdillonii* (Gamble) H. J. Lam A. fruiting twig, B. flowering twig, C. flower, D. & E. Inner and outer views of sepals, F. portion of corolla with stamens, G. carpel, H. fruit

2-2.5 cm at anthesis, enlarges in fruit. Corolla creamy-yellow, lobes tomentose outside except the margins. Stamens 16. Berry ellipsoid, beaked, to 3 cm long; 1-seeded.

Common along the banks of rivers.

NS 10770 (Choodal)

Fl. & Fr. December-September

D i s t. South India and Sri Lanka

PALAQIUM Blanco

1. Leaves obovate or oblanceolate; anthers not hairy at apex : *P. bourdillonii*

1. Leaves elliptic or elliptic-obovate; anthers hairy at apex : *P. ellipticum*

Palaquium bourdillonii Brandis, Indian Trees 424. 1906; Fl. Madras 765. 1921; Nayar & Sastry, Red Data Book Indian Pl. 239. 1988; For. Trees Travancore 240. 1908; Fl. Thenmala 204. 1995 [Fig. 12].

Medium sized trees. Leaves oblanceolate, coriaceous, glossy, obtusely acuminate, to 20 x 8.5 cm, lateral nerves 10-14 pairs; petiole *ca.* 1.2 cm long. Flowers axillary, solitary or in groups upto 3. Calyx ovate-acute, tomentose. Corolla lobes 6, glabrous; tube densely hairy inside below the stamens. Stamens 12. Fruits ellipsoid, beaked, to 3.5 x 1.5 cm.

Occasional in evergreen forests.

NS 10002 (Rosemala); 10217 (Choodal)

Fl. & Fr. March-October.

D i s t. Southern W. Ghats : endemic, known only from the type locality

Palaquium ellipticum (Dalz.) Baill., Traite. Bot. Med. Phan. 1500. 1884; For. Trees Travancore 239. 1908; Fl. Madras 764. 1921; van Royan, Blumea 10: 509. 1960; Fl. Thenmala 204. 1995. *Bassia elliptica* Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 3: 36. 1851; Bedd., Fl. Sylv. t. 43. 1870. *Dichopsis elliptica* Benth., Gen. Pl. 2: 658. 1876; Fl. Brit. India 3: 542. 1882.

Large to very large trees, shortly buttressed. Leaves coriaceous, glaucous below, to 12 x 7 cm; lateral nerves 10-12 pairs, almost right angle to midrib. Calyx lobes ovate, obtuse or acute, tomentose. Corolla creamy white, to 1 cm long, hairy just below the lobes inside. Stamens 18, filaments hairy. Berry to 5 x 2 cm.

Common in evergreen forests above 600 m.

NS 10194 (Choodal); 10808 (Rosemala)

Fl. & Fr. February-July

D i s t. W. Ghats : endemic

Achras sapota L., the sapota is sometimes found growing in the study area.

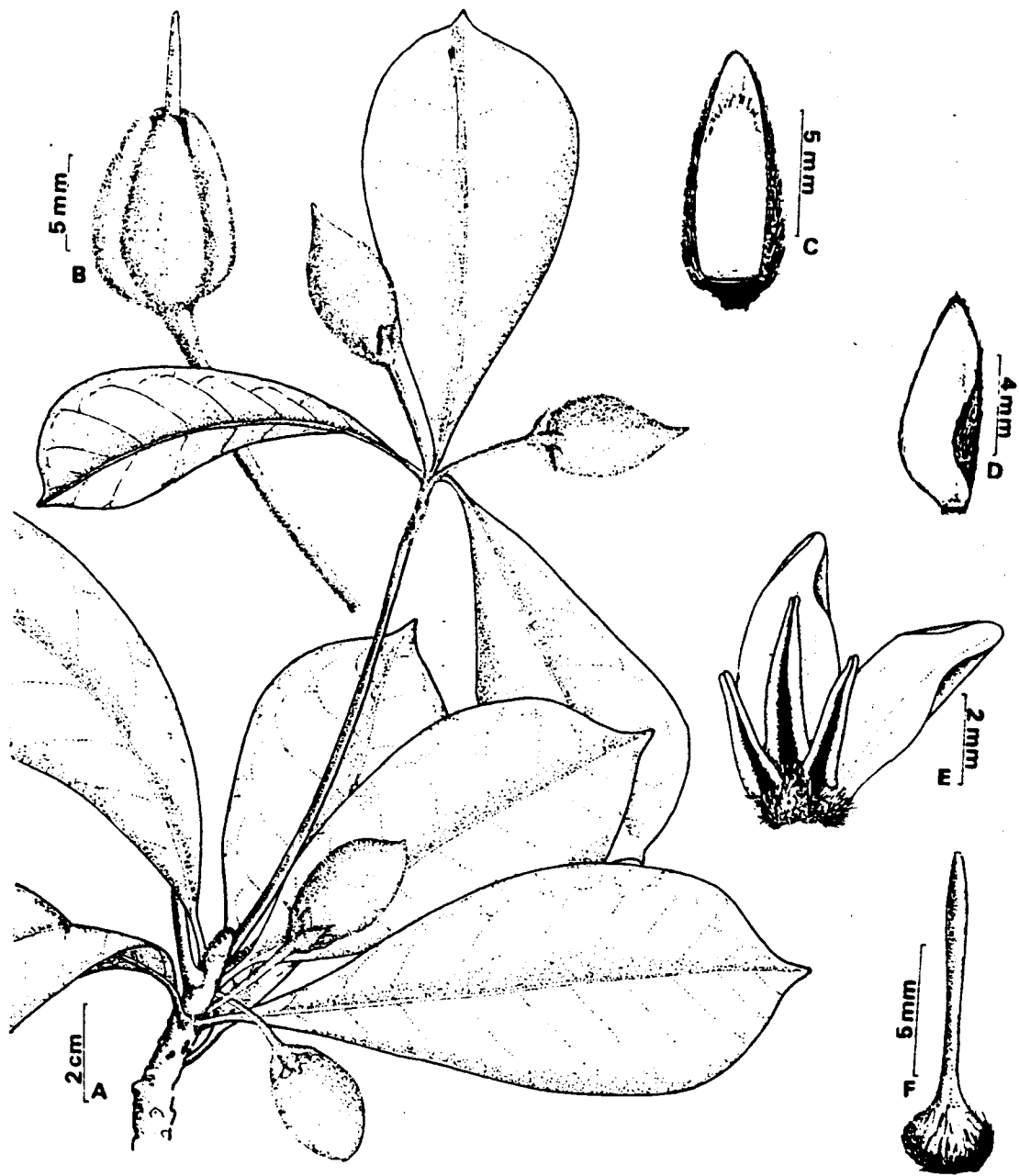


Fig. 12: *Palaquium bourdillonii* Brand. A. fruiting twig, B. flower, C. outer sepal, D. inner sepal, E. portion of corolla with stamens, F. carpel

EBENACEAE

DIOSPYROS L.

- | | |
|--|-------------------------|
| 1. Calyx 5-lobed | : 2 |
| 1. Calyx 4-lobed | : 3 |
| 2. Male flowers in paniculate cymes; bracts foliaceous | : <i>D. paniculata</i> |
| 2. Male flowers in sessile axillary fascicles; bracts not foliaceous | : <i>D. candolleana</i> |
| 3. Branchlets and young leaves tomentose on the under surface | : 4 |
| 3. Branchlets and leaves glabrous | : 5 |
| 4. Corolla elongated, salver-shaped; leaves to 6 x 2.5 cm | : <i>D. humilis</i> |
| 4. Corolla campanulate, under 3 mm long; leaves to 3.5 x 1.5 cm | : <i>D. buxifolia</i> |
| 5. Endosperm ruminant; leaves black on drying | : <i>D. sylvatica</i> |
| 5. Endosperm smooth; leaves not black on drying | : 6 |
| 6. Fruiting calyx foliaceous, deeply lobed, corolla urceolate | : 7 |
| 6. Fruiting calyx not enlarged and foliaceous, corolla salver-shaped | : <i>D. ghatensis</i> |
| 7. Leaves narrowly lanceolate, base acute; calyx lobes broadly ovate | : <i>D. foliosa</i> |
| 7. Leaves oblong or ovate-elliptic, base obtuse or cordate; calyx lobes oblong | : <i>D. montana</i> |

Diospyros buxifolia (Bl.) Hiern, Trans. Camb. Phil. Soc. 12. 218. 1873; Fl. Thenmala 207. 1995. *Leucoxyllum buxifolium* Bl., Bijdr. 1169. 1827. *Diospyros microphylla* Bedd., Ic. t. 133. 1868-1874; Fl. Brit. India 3: 559. 1882; For. Trees Travancore 246. 1908; Fl. Madras 776. 1923.

Large evergreen trees. Leaves elliptic, acute at both ends, densely tomentose beneath, margin ciliate, glabrous above, to 3.5 x 1.8 cm; subsessile. Male flowers 2-3 mm long, 4-merous, axillary, 1-4 together. Calyx fulvous hairy. Stamens 16, filaments connate. Female flowers solitary. Ovary 4-celled; style 2-lobed.

Common in semi-evergreen and evergreen forests.

NS 10161 (Umiyar); *10738* (Kattalappara)

Fl. March-May

D i s t. Indo-Malesia

Diospyros candolleana Wt., Ic. t. 1221-2, 1848; Fl. Brit. India 3: 556. 1882; For. Trees Travancore 253. 1908; Fl. Madras 773. 1923; Fl. Thenmala 207. 1995. *D. canarica* Bedd., Ic. t. 134. 1874.

Medium sized evergreen trees, bark black, thinly scaly. Leaves oblong or elliptic-oblong, acute to acuminate, base acute glabrous, to 13 x 5 cm; lateral nerves faint. Male

flowers in sessile clusters. Calyx 2 mm long, tomentose, lobes lanceolate. Corolla salver-shaped, creamy-white, tomentose, 8 mm long.

Occasional in semi-evergreen and evergreen forests.

NS 1726 (Choodal)

Fl. March-April

D i s t. Peninsular India

Diospyros foliosa Wall. ex A. DC. in DC., Prodr. 8: 234. 1834; Fl. Brit. India 3: 556. 1882; For. Trees Travancore 252. 1908; Fl. Madras 774. 1923; Fl. Thenmala 205. 1995. *D. calycina* Bedd., Fl. Sylv. t.68. 1870, non Spach 1838.

Medium sized trees, bark brown, branchlets slender. Leaves lanceolate, acuminate or acute, glabrous and glossy, to 10 x 3 cm. Female flowers solitary, axillary. Calyx lobes 1.5 x 1.3 cm. Ovary 4-celled. Fruit greenish-yellow, globose, 2.5-3 cm across.

Fairly common in semi evergreen forests.

NS 1860 (Rosemala)

Fr. April-June

D i s t. Southern W. Ghats : endemic

Diospyros ghatensis Ramesh & Franceschi, Blumea 38: 131. 1993; Fl. Pl. Thrissur For. 271. 1996.

Medium sized trees, bark brownish-black. Leaves elliptic or ovate-lanceolate, acuminate, base acute or truncate, glabrous, to 9 x 4.5 cm. Male flowers in axillary, brown tomentose cymes; bracts suborbicular, persistent. Calyx brown tomentose. Corolla greenish-yellow, tomentose, 8 mm long. Fruits globose, glabrous, 2 cm across; seeds 1.2 cm long, wedge-shaped, endosperm smooth.

Occasional in semi-evergreen and evergreen forests.

NS 10065, 10661 (Kallar)

Fl. & Fr. April-November

D i s t. South West India : endemic

Diospyros humilis Bourd., J. Bombay Nat. Hist. Soc. 12. 352. t. 4. 1899; Fl. Madras. 773. 1923. *D. orixensis* Wt. ex Hiern, Trans. Cambridge Philos. Soc. 12. 264. 1873, non Willd. 1805; Fl. Brit. India 3: 571. 1882; For. Trees Travancore 248. 1908.

Small to medium sized trees, bark greyish-brown, branchlets tomentose. Leaves elliptic, acuminate, base rounded or obtuse, tomentose on lower side. Flowers solitary or in few flowered cymes, axillary or extra-axillary. Calyx tomentose, lobes ciliate along the margins. Corolla greenish-yellow, to 0.8 cm long, tomentose.

Occasional in evergreen forests.

NS 10294 (Pandimotta)

Fl. March-April

D i s t. Southern W. Ghats : endemic

Diospyros montana Roxb., *Pl. Corm.* 37. t. 48. 1795; *Wt., Ic.* t. 1225. 1848; *Fl. Brit. India* 3: 555. 1882 p.p.; *For. Trees Travancore* 247. 1908; *Fl. Madras* 776. 1923.

Small to medium sized deciduous trees, bark greyish-brown, smooth 2-3 mm thick, yellow inside; trunk often thorny in young trees. Leaves ovate-oblong or elliptic, obtuse or subacute, subcoriaceous, to 10 x 4.5 cm; lateral nerves 8-11 pairs. Corolla urceolate, white, 3 mm long, lobes shorter than the tube. Fruit subglobose, yellow when ripe, 1-1.5 cm across, calyx lobes reflexed.

Occasional in moist deciduous and semi-evergreen forests.

NS 10083 (Kallar)

Fl. & Fr. February-April

D i s t. Indo-Malesia to Australia

Diospyros paniculata Dalz. in *Hook.'s J. Bot. Kew Gard. Misc.* 4: 109. 1852; *Bedd., Ic.* t. 125. 1868-1874; *Fl. Brit. India* 3: 570. 1882; *For. Trees Travancore* 245. 1908; *Fl. Madras* 775. 1923; *Fl. Thenmala* 208. 1995.

Small to medium sized trees, bark smooth, black often with grey blotches. Leaves oblong, shortly obtusely acuminate, base rounded or acute, glabrous, subcoriaceous; lateral nerves 7-9 pairs, reticulations areolate, prominent. Male flowers in short paniced cymes with a pair of ovate-cordate pubescent bracts. Calyx 8 mm long, deeply lobed, lobes ovate-obtuse, margins reflexed, prominently veined, pubescent. Female flowers solitary, bracts larger than those of male flowers. Fruit ovoid, to 3 x 2 cm; calyx lobes to 1.8 cm long, auricled at base.

Common in semi-evergreen and evergreen forests.

NS 10316, 10352 (Kattalappara)

Fl. & Fr. January-August

D i s t. W. Ghats from southwards : endemic

Diospyros sylvatica Roxb., *Pl. Corom.* 37, t. 47. 1795; *Bedd., Ic.* t. 121. 1868-1874; *Fl. Brit. India* 3: 559; 1882; *For. Trees Travancore* 247. 1908; *Fl. Madras* 773. 1923.

Medium sized trees, bark dull-grey, yellow inside; branchlets glabrous. Leaves elliptic or elliptic-obovate, acuminate, acute, shortly decurrent on petiole, membranous, glabrous, to 12 x 5 cm. Male flowers in axillary paniced cymes. Calyx 1 mm long, lobes rounded, sparsely tomentose. Corolla 3 mm long, lobes rounded, usually paired.

Occasional in evergreen forests.

NS 5433 (Kallar)

Fl. March-April

D i s t. Indo-Malesia

SYMPLOCACEAE

SYMPLOCOS L.

- | | |
|--|--|
| 1. Pedicels over 5 mm long | : S. wynadense |
| 1. Flowers sessile or pedicels under 2 mm long | : 2 |
| 2. Fruits ampulliform, under 6 mm long | : S. cochinchinensis
ssp. laurina |
| 2. Fruits oblong, over 1 cm long | : 3 |
| 3. Fruits 1-1.2 x 0.4-0.5 cm, reddish; flowers pink | : S. macrophylla
ssp. rosea |
| 3. Fruits 2-3 x 1-1.8 cm, white or yellow; flowers white | : 4 |
| 4. Lateral nerves of the leaves ca. 10-pairs; fruits white | : S. macrocarpa
ssp. macrocarpa |
| 4. Lateral nerves of the leaves ca. 5-7 pairs; fruits yellow | : S. macrocarpa
ssp. kanarana |

Symplocos cochinchinensis (Lour.) Moore ssp. *laurina* (Retz.) Nootb., Rev. Symplocac. Old World 156. 1975; Fl. Thenmala 209. 1995. *Myrtus laurinus* Retz., Obs. Bot. 4: 26. 1786. *Symplocos spicata* Roxb. var. *laurina* (Retz.) Cl. in Hook. f., Fl. Brit India 3: 573. 1882 p.p.; Fl. Madras 782. 1921.

Small trees, young shoots glabrous. Leaves elliptic, acuminate, base [≡]cuneate, dentate-crenulate, coriaceous, glossy, to 13 x 5 cm; lateral nerves 6-8 pairs. Spikes axillary, with few branches, tomentose when young. Calyx lobes orbicular, ciliolate along margins. Drupe glabrous.

Fairly common in evergreen and shola forests.

NS 10228 (Pandimotta)

Fl. & Fr. March-May

D i s t. Indo-Malesia to China and Japan

Symplocos macrocarpa Wt. ex Cl. in Hook. f., Fl. Brit. India 3: 582. 1882 ssp. *macrocarpa*; For. Trees Travancore 257. 1908; Fl. Madras 782. 1923.

Small trees. Leaves elliptic-oblong, obtusely acuminate, base acute, margins serrulate, to 12 x 4.5 cm. Flowers in 1-4 flowered axillary or terminal short spikes. Fruits creamy white, smooth, glabrous.

Fairly common in evergreen forests.

NS 10771 (Kallar)

Fl & Fr. March-October

Dist. W. Ghats : endemic

Symplocos macrocarpa Wt. ex Cl. ssp. ***kanarana*** (Talbot) Nooteb., Rev. Symplocac. Old World 22. 1975. *S. kanarana* Talbot, J. Bombay Nat. Hist. Soc. 11: 238. t.9. 1897-1898; Fl. Madras 782. 1923.

Medium sized trees. Leaves elliptic or elliptic-oblong, acuminate to caudately acuminate, base acute, margins serrate, glabrous and glossy, to 13 x 5 cm. Flowers in axillary and terminal few flowered spikes. Fruits to 3 x 1.5 cm, smooth, glabrous, yellow.

Occasional in evergreen and semi-evergreen forests.

NS 10195 (Choodal)

Fr. February-April.

Dist. W. Ghats : endemic

Symplocos macrophylla Wall. ex A. DC. ssp. ***rosea*** (Bedd.) Nooteb., Rev. Symplocac. Old World 229. 1975. *S. rosea* Bedd., Trans. Linn. Soc. London 25: 219. 1866. & Ic. t. 115. 1868-1874; Fl. Brit. India 3: 583. 1882; For. Trees Travancore 257. 1908; Fl. Madras 783. 1923. *S. barberi* Gamble, Kew Bull. 1921: 219. 1921 & Fl. Madras 783. 1923.

Small trees or large shrubs, young shoots puberulent. Leaves elliptic-oblong or oblanceolate, acute to acuminate, base attenuate or obtuse, margins serrulate, subcoriaceous, glabrous, to 14 x 4.5 cm; lateral nerves 6 or 7 pairs. Spikes unbranched, to 4 cm long. Drupe glabrous.

Fairly common in evergreen forests.

NS 10203, 10328 (Kattalappara); 10359 (Kallar)

Fl. & Fr. March-May

Dist. Southern W. Ghats : endemic

Symplocos wynadense (O. Ktze.) Nooteb., Rev. Symplocac. Old World 293. 1975. ***Eugeniodes wynadense*** O. Ktze., Rev. Gen. Pl. 2: 975. 1891. ***Symplocos acuminata*** Bedd., For. Man. Bot. 150. 1872 & Ic. t. 117. 1868-1874, non Miq. 1859; Fl. Brit. India 3: 583. 1882; Fl. Madras 783. 1923.

Large shrubs. Leaves narrowly elliptic, caudate acuminate, base narrowed, glabrous, margins crenate, to 10 x 3 cm. Flowers white, in axillary slender racemes.

Rare in evergreen forests above 1000 m.

NS 11350 (Alvarakurichi)

Fl. February-March.

Dist. Southern W. Ghats : endemic

OLEACEAE

- 1. Corolla deeply divided to the base or petals free : **Chionanthus**
- 1. Corolla divided to half the length with a distinct tube : 2
- 2. Corolla lobes 5 or more, imbricate; calyx lobes linear, subulate, if short, then leaves 3-foliolate : **Jasminum**
- 2. Corolla lobes 5, valvate; calyx shortly lobed or toothed : 3
- 3. Scandent shrubs, branchlets 4-angled; leaves 3-ribbed : **Myxopyrum**
- 3. Erect shrubs or trees, branchlets terete; leaves penni-nerved : 4
- 4. Panicles terminal; corolla lobes as long as the tube; leaves entire : **Ligustrum**
- 4. Panicles axillary to leaves or from leafscars; corolla lobes 1/3 of the length of the tube; leaves serrate : **Olea**

CHIONANTHUS L.

- 1. Corolla lobes oblong, not paired, lateral nerves of leaves prominent and joining in loops : **C. courtallensis**
- 1. Corolla lobes lanceolate, paired, lateral nerves less prominent : 2
- 2. Calyx grey pubescent, ovary hairy; leaves obtuse or shortly acute : **C. mala-elengi**
- 2. Calyx glabrous except the ciliate margins, ovary glabrous; leaves caudate-acuminate : **C. linocieroides**

Chionanthus courtallensis Bedd., For. Man. Bot. 155. 1872 & Fl. Sylv. t. 156. 1872.
Linociera leprocarpa var. *courtallensis* (Bedd.) Cl. in Hook. f., Fl. Brit. India 3:608. 1882.
Linociera courtallensis (Bedd.) Bourd., For. Trees Travancore 260. 1908; Fl. Madras 795. 1923.

Small trees. Leaves oblong or oblong-lanceolate, acuminate, base cuneate or acute, to 17 x 5 cm. Flowers in axillary, 1.5-2 cm long panicles. Calyx glabrous. Corolla lobes yellowish, 3-4 mm long.

Fairly common in evergreen forests.

NS 10096 (Kallar); 10848, 11316 (Rosemala)

Fl. January-March

D i s t. Southern W. Ghats : endemic

Chionanthus linocieroides (Wt.) Bennet & Raizada, Indian J. For. 4: 68. 1981. *Olea linocieroides* Wt., Ic. t. 1241. 1850. *Linociera wightii* Cl. in Hook. f., Fl. Brit. India 3: 608. 1882; Fl. Madras 794. 1923.

Small to medium sized trees. Leaves elliptic or elliptic-oblong, caudate-acuminate, base acute, to 11 x 5 cm. Flowers clustered at the apex of branches of 2-4 cm long panicles. Calyx glabrous except the ciliate margins of the lobes. Corolla lobes white with purple shades, 6-7 cm long.

Common in semi-evergreen and evergreen forests.

NS 10158 (Kallar); 10822, 10933 (Rosemala)

Fl. December-March.

D i s t. Southern W. Ghats : endemic

Chionanthus mala-elengi (Dennest.) Green, Bull. Bot. Surv. India 26: 124. 1985; Fl. Thenmala 200. 1995. *Forsythia mala-elengi* Dennst., Schluss. Hort. Ind. Malab. 12. 21, 31. 1818. *Linociera malabarica* Wall. ex G. Don, Gen. Syst. 4: 53. 1837; Wt., Ic. t. 1246. 1848; Fl. Brit. India 3: 607 1887; For. Trees Travancore 259. 1908; Fl. Madras 794. 1923. *Chionanthus malabaricus* (Wall. ex G. Don) Bedd., Fl. Sylv. t. 239. 1872.

Small to medium sized trees, bark greyish-brown, dull yellow inside. Leaves elliptic or oblong, obtuse or shortly acute, base cuneate, subcoriaceous, to 9 x 5 cm. Flowers fascicled in branched cymes. Calyx lobes ovate, tomentose. Corolla white with bluish-pink shade, lobes linear, 3 mm long. Ovary tomentose.

Common in semi-evergreen forests.

NS 10811 (Rosemala)

Fl. & Fr. December-April

D i s t. Peninsular India : endemic

JASMINUM L.

- | | |
|---|--------------------------|
| 1. Leaves 3-foliolate; calyx tube shortly toothed | : <i>J. flexile</i> |
| 1. Leaves simple; calyx lobes subulate, 4-5 mm long | : <i>J. rottlerianum</i> |

Jasminum flexile Vahl, Symb. Bot. 3: 1. 1794 & Enum. Pl. 1: 31. 1804; Wt., Ic. t. 1253. 1848; Fl. Brit. India 3: 601. 1882; Fl. Madras 791. 1923. *J. azoricum* sensu Burm. f., Fl. Ind. 6. 1768 p.p., non L. 1753; Fl. Thenmala 202. 1995.

Climbing shrubs, young shoots glabrous. Leaflets ovate-lanceolate, acuminate, base rounded or obtuse, glabrous, subcoriaceous, to 7 x 4 cm. Cymes terminal and axillary, 3-many flowered. Calyx glabrous, lobes ovate-acute, 0.5 mm long. Corolla white with pink shade, tube 2 cm long, lobes 6, elliptic. Berry purple, ellipsoid.

Very common in evergreen and semi-evergreen forests.

NS 10041, 10669 (Kallar)

Fl. & Fr. October-March

D i s t. Peninsular India and Sri Lanka

Jasminum rottlerianum Wall. ex A. DC. in DC., Prodr. 8: 305. 1844; Wt., Ic. t. 1249. 1848; Fl. Brit. India 3: 593. 1882; Fl. Madras 789. 1923; Fl. Thenmala 202. 1995.

Climbing shrubs, branches fulvous hairy. Leaves elliptic, acute or acuminate, base

rounded, membranous, softly villous below, to 8 x 3 cm. Flowers in terminal rather lax-flowered cymes, peduncle to 5 cm long; bracts lanceolate, pubescent, 1.2 cm long. Calyx tomentose, lobes often curved. Corolla white, tube to 2.5 cm long, lobes 6-8.

Occasional in semi-evergreen forests.

NS 10934 (Rosemala)

Fl. March-April

D i s t. South West India and Sri Lanka

LIGUSTRUM L.

Ligustrum robustum (Roxb.) Bl. ssp. *walkeri* (Decne.) Green, Kew Bull. 40: 130. 1985. *L. walkeri* Decne., Nouv. Arch. Mus. Nat. Hist. II. 2: 27. 1879; , Fl. Brit. India 3: 61. 1882; Fl. Madras 797. 1923.

Large shrubs to small trees, young shoots lenticellate. Leaves lanceolate or ovate-lanceolate, base acute, glabrous, coriaceous, to 8 x 2.5 cm. Panicles to 15 cm, minutely puberulent. Calyx 1 mm long, glabrescent. Corolla 2.5 mm, lobes reflexed.

Fairly common in evergreen forests above 900 m.

NS 11067 (Rosemala)

Fl. May-July

D i s t. Peninsular India and Sri Lanka

MYXOPYRUM BL.

Myxopyrum smilacifolium Bl. ssp. *smilacifolium* Kiew, Blumea 26: 509. 1984; Fl. Brit. India 3: 618. 1882, p.p. *M. serratum* Hill, Kew Bull. 1910: 41. 1910; Fl. Madras 798. 1923; Fl. Thenmala 201. 1995.

Climbing shrubs, stem glabrous, 4-angled. Leaves elliptic-ovate or oblong, acuminate, base rounded or acute, serrate, membranous, to 13 x 5 cm; the nerves and midrib impressed above and raised below. Panicles trichotomous. Calyx lobes pubescent. Corolla campanulate, 1.2 mm long, lobes linear. Berry to 1 cm across.

Fairly common in semi-evergreen and evergreen forests.

NS 10455 (Kallar); 10853 (Rosemala)

Fl. & Fr. February-August

D i s t. Indo-Malaya and China

OLEA L.

Olea dioica Roxb., Fl. Ind. 1: 105. 1820; Wt. III. 2, t. 151. 1850; Fl. Brit. India 3: 612. 1882; For. Trees Travancore 261. 1908; Fl. Madras 796. 1923; Fl. Thenmala 200. 1995.

Small to medium sized trees, bark greyish-brown, shallowly vertically grooved. Leaves elliptic-lanceolate, acute or acuminate, base acute, distantly serrate, chartaceous, to 12 x 5cm.

Male panicles larger than that of bisexual flowers. Calyx lobes triangular-ovate. Corolla white, 3 mm long. Drupe ellipsoid, purple, 1 cm long; seed 1.

Common in semi-evergreen and moist deciduous forests.

NS 10159, 10706 (Kattalappara); 10370 (Kallar)

Fl. November-April

D i s t. South West and North East India

APOCYNACEAE

- | | |
|---|--------------------------|
| 1. Leaves whorled | : 2 |
| 1. Leaves opposite | : 4 |
| 2. Fruit linear follicles, seeds comose or winged | : 3 |
| 2. Fruit drupaceous, seeds without coma or wings | : Rauvolfia |
| 3. Small or large trees, seeds comose | : Alstonia |
| 3. Climbing shrubs, seeds winged | : Ellertonia |
| 4. Erect herbs, shrubs or trees | : 5 |
| 4. Climbers | : 8 |
| 5. Fruit follicles, seeds comose | : 6 |
| 5. Fruit drupaceous, seeds without coma | : 7 |
| 6. Corolla with several coronal scales; anthers exserted | : Wrightia |
| 6. Corolla without scales at mouth; anthers included | : Holarrhena |
| 7. Corolla tube over 2 cm long; seeds many, arillate | : Tabernaemontana |
| 7. Corolla tube under 1 cm long; seeds 1 or 2, exarillate | : Hunteria |
| 8. Plants with axillary recurved spines | : Carissa |
| 8. Plants without axillary spines | : 9 |
| 9. Anthers exserted, filaments long, spirally twisted | : Parsonsia |
| 9. Anthers included, filaments short, not twisted | : 10 |
| 10. Leaves ovate-orbicular, base cordate, to 25 x 22 cm, densely tomentose beneath; flowers 5-7 cm across | : Chonemorpha |
| 10. Leave elliptic or elliptic-oblong, base rounded, obtuse or acute, less than 13 x 6 cm, glabrous below, except the midrib; flowers less than 1.5 cm wide | : 11 |
| 11. Calyx deeply divided to the base, lobes ca. 10 mm long | : Aganosma |
| 11. Calyx divided to the middle, lobes 1 mm long | : Ichnocarpus |

AGANOSMA G. Don

Aganosma cymosa (Roxb.) G. Don, Gen. Syst. 4: 77. 1837; Fl. Brit. India 3: 665. 1882; Fl. Madras 819. 1923. *Echites cymosa* Roxb., Fl. Ind. 2: 16. 1832; Wt., Ic. t. 395. 1840.

Lianas, latex milky. Leaves elliptic or elliptic-obovate, acute to acuminate, base acute,

glabrous, chartaceous, to 12 x 5 cm. Calyx lobes linear-lanceolate, 1 cm long. Corolla yellowish-white, tomentose, lobes oblong-lanceolate, 5 mm long. Follicles linear, brown pubescent, to 17 x 0.8 cm.

Occasional in semi-evergreen and evergreen forests.

NS 10485, 10632 (Kattalappara)

Fl. & Fr. April-December

D i s t. Peninsular India and Sri Lanka

ALSTONIA R. Br.

1. Leaves narrowly lanceolate, finely acuminate, less than 2.5 cm wide : *A. venenata*

1. Leaves oblong or obovate, obtuse or shortly acute, 3.5-6 cm wide : *A. scholaris*

Alstonia scholaris (L.) R. Br., Mem. Wern. Nat. Hist. Soc. 1: 76. 1811; Wt., Ic. t. 422. 1841; Fl. Brit. India 3: 642. 1882; For. Trees Travancore 265. 1908; Fl. Madras 810. 1923; Fl. Thenmala 218. 1995. *Echites scholaris* L., Mant. 1: 53. 1767.

Large to very large trees, bark greyish, brown, rough, irregularly cracked and shallowly fissured, 2.5 cm thick, latex milky. Leaves in whorls of 5-9, coriaceous, to 15 x 6 cm; lateral nerves numerous, parallel and nearly at right angle to the midrib. Cymes dense, capitate. Calyx lobes ovate, 1.5 mm long, puberulous. Corolla greenish-white, tube 0.7 mm long, fragrant. Follicles to 30 x 0.4 cm long.

Uncommon in moist deciduous forests.

NS 11135 (Kattalappara)

Fl. & Fr. October-February

D i s t. Indo-Malesia to Australia and South China

Alstonia venenata R. Br., Mem. Wern. Nat. Hist. Soc. 1: 77. 1811; Wt., Ic. t. 436. 1841; Fl. Brit. India 3: 642. 1882; Fl. Madras 810. 1923; Fl. Thenmala 208. 1995.

Large shrubs to small trees. Leaves in whorls of 3-5, membranous, to 15 x 2.5 cm; lateral nerves numerous, close and parallel. Cymes racemose. Calyx lobes, ovate-acute, 1.5 mm long, ciliate along margins. Corolla white, tube 1.5 cm long, slender. Follicles narrowed at both ends, to 12 x 0.8 cm.

Occasional in disturbed forests above 800 m.

NS 10824 (Rosemala)

Fl. & Fr. February-August

D i s t. Native of Tropical Asia, now introduced in Africa

CARISSA L.

Carissa inermis Vahl, Symb. Bot. 3: 43. 1794; Fl. Madras 805. 1923. *C. macrophylla* Wall. ex A. DC. in DC., Prodr. 8: 332. 1844; Fl. Brit. India 3: 631. 1882.

Lianas, spines recurved. Leaves ovate or ovate-lanceolate, acute or acuminate, base rounded or obtuse, glabrous, coriaceous, to 9 x 4.5 cm. Cymes puberulous, peduncle short. Calyx pubescent, lobes 2-3 mm long. Corolla white, 2.5-3 cm long, lobes linear, 1 cm long.

Occasional in evergreen forests.

NS 10249 (Charupara)

Fl. & Fr. January-June

D i s t. Peninsular India : endemic

CHONEMORPHA G. Don *nom. cons.*

Chonemorpha fragrans (Moon) Alston, Ann. Roy. Bot. Gard. (Peradeniya) 11: 203. 1929; Chatter., Kew Bull. 1947: 52. 1947; Fl. Thenmala 216. 1995. *Echites fragrans* Moon, Cat. 20. 1824. *Chonemorpha macrophylla* (Roxb.) G. Don, Gen. Syst. 4: 76. 1837; Fl. Brit. India 3: 661. 1882; Fl. Madras 818. 1923. *Echites macrophylla* Roxb., Fl. Ind. 2: 13. 1832.

Leaves broadly elliptic or ovate-orbicular, shortly acuminate, base cordate, pubescent above and tomentose beneath, 20-25 x 15-22 cm. Flowers 6-7 cm across, in terminal tomentose paniculate cymes. Calyx 1 cm long, glabrous.

Rare in evergreen forests.

NS 10979 (Rosemala)

Fl. & Fr. April-December

D i s t. Indo-Malesia

ELLERTONIA Wt.

Ellertonia rheedii Wt., Ic. t. 1295. 1848; Fl. Brit. India 3: 641. 1882; Fl. Madras 811. 1923.

Climbing shrubs, young branches reddish. Leaves broadly elliptic or elliptic-oblong, obtusely acuminate, base acute or obtuse, to 10 x 6 cm, lateral nerves many, parallel. Flowers in terminal pedunculate cymes. Corolla greenish-yellow with pink shades, 1 cm long. Follicles divaricate, 7-9 cm long.

Occasional in evergreen forests.

NS 11214 (Rosemala)

Fl. & Fr. October-March

D i s t. Southern W. Ghats : endemic

HOLARRHENA R. Br.

Holarrhena pubescens (Buch.-Ham.) Wall. ex G. Don, Gen. Syst. 4: 78. 1837; Panigr., Taxon 36: 466. 1987. *Echites pubescens* Buch.-Ham., Trans. Linn. Soc. London 13: 521. 1821. *Holarrhena antidysenterica* (Roth) A. DC. in DC., Prodr. 8: 413. 1844; Fl. Brit.

India 3: 644. 1882; Fl. Madras 811. 1923; Fl. Thenmala 220. 1995. *Chonemorpha antidysenterica* G. Don, Gen. Syst. 4: 76. 1837; Wt., Ic. t. 439. 1841.

Small deciduous trees or large shrubs. Leaves broadly ovate or elliptic, obtuse, acute or acuminate, base obtuse, glabrous or puberulent beneath, to 18 x 10 cm. Flowers creamy white, appear along with new leaves, slightly fragrant. Calyx lobes oblong-lanceolate, ciliate, 2.5 mm long. Corolla puberulous, mouth with a ring of hairs, tube 1.2 cm long, lobes as long as the tube. Follicles to 25 x 1 cm; seeds 8 mm long.

Very common in moist deciduous forests.

NS 10423 (Kattalappara)

Fl. & Fr. April-October

D i s t. Indo-Malesia

HUNTERIA Roxb.

Hunteria zeylanica (Retz.) Gard. ex Thw., Enum. Pl. 191. 1860; Fl. Thenmala 219. 1995. *Cameraria zeylanica* Retz., Obs. Bot. 4: 24. 1786. *Hunteria corymbosa* Roxb., Fl. Ind. 1: 695. 1832; Bedd., Fl. Sylv. t. 265. 1872; Fl. Brit. India 3: 637. 1882; For. Trees Travancore 263. 1908; Fl. Madras 808. 1923.

Small evergreen trees, bark thick, yellowish-grey, with small lenticular tubercles. Leaves elliptic or oblong-lanceolate, acuminate, base obtuse or rounded, glabrous, coriaceous, to 15 x 4 cm. Calyx lobes 1.5 mm long, glabrous. Corolla creamy white, lobes acuminate. Drupes 2.5 cm long, yellow.

Fairly common in semi-evergreen forests.

NS 11333 (Rosemala)

Fl. & Fr. February-June

D i s t. Indo-Malesia

ICHNOCARPUS R. Br.

Ichnocarpus frutescens (L.) R. Br. in Ait., Hort. Kew. (ed. 2) 2: 69. 1811; Wt., Ic. t. 430. 1841; Fl. Brit. India 3:669. 1882; Fl. Madras 820. 1923; Fl. Thenmala 215. 1995. *Apocynum frutescens* L., Sp. Pl. 213. 1753.

Young shoots brown tomentose. Leaves elliptic-oblong, acute or acuminate, base rounded, chartaceous, glabrous above, and shortly tomentose along the nerves below, to 6 x 3.5 cm. Panicles tomentose. Calyx fulvous, divided halfway down, lobes ovate, eglandular. Corolla greenish-white, 5 mm long, lobes oblong, narrowed at apex.

Common in moist deciduous forests and forest plantations.

NS 10645 (Kattalappara)

Fl. & Fr. August-March

D i s t. Indo-Malesia to Australia

PARSONSIA R. Br. *nom. cons.*

Parsonsia alboflavescens (Dennst.) Mabb., *Taxon* 26: 532. 1977; Fl. Thenmala 204. 1995. *Periploca alboflavescens* Dennst., *Schluss. Hort. Malab.* 12,23, 35. 1818. *Parsonsia spiralis* Wall. ex G. Don, *Gen. Syst.* 4: 80. 1837; Fl. Brit. India 3: 650. 1882; Fl. Madras 814. 1923.

Young shoots glabrous. Leaves elliptic or oblong-lanceolate, acuminate, base rounded or subcordate, glabrous, subcoriaceous, to 13 x 6 cm. Flowers in axillary corymbose cymes, glabrous. Corolla greenish-yellow, tube 5 mm long, lobes 6 mm long.

Occasional in semi-evergreen forests.

NS 10962 (Rosemala)

Fl. March-April

Dist. Indo-Malesia to South China

RAUVOLFIA L.

- | | |
|---|------------------------|
| 1. Corolla 5 mm long, fruiting calyx green, drupes yellow | : <i>R. hookeri</i> |
| 1. Corolla over 10 mm long, fruiting calyx red, drupes purple | : <i>R. serpentina</i> |

Rauvolfia hookeri Srinivas. & Chithra in Henry *et. al.* Fl. Tamilnadu I, 2:78. 1987. *R. beddomei* Hook. f., Fl. Brit. India 3: 634. 1882 *nom. illeg.*; Fl. Madras 807. 1923.

Large dichotomously branched shrubs. Leaves narrowly elliptic or oblanceolate, acuminate, base narrowed, to 17 x 5.5 cm, lateral nerves many, parallel. Flowers in lax dichotomous cymes, peduncles 6-9 cm long. Corolla white, mouth pink-red. Drupe ovate-acute.

Occasional in evergreen forests.

NS 10126 (Kallar); 10407 (Choodal)

Fl. & Fr. December-April

Dist. Southern W. Ghats : endemic

Rauvolfia serpentina (L.) Benth. ex Kurz, *For. Fl. Burma* 2: 171. 1877; Fl. Brit. India 3: 632. 1882; Fl. Madras 807. 1923; Fl. Thenmala 207. 1995. *Ophioxylon serpentinum* L., *Sp. Pl.* 1043. 1753; *Wt., Ic. t.* 849. 1844.

Herbs to subshrubs with thick root stock, latex watery. Leaves elliptic or oblanceolate, acuminate, base attenuate, glabrous, to 16 x 5 cm. Flowers in terminal or axillary umbellate cymes. Calyx glabrous. Corolla white with pale purple shade on the tube. Mericarps 0.6 x 0.5 cm.

Fairly common in moist deciduous forests.

NS 10420 (Kattalappara); 10568 (Kallar)

Fl. & Fr. April-October

Dist. Indo-Malaya

TABERNAEMONTANA L.

1. Branchlets stout; corolla tube 4 mm wide at the inflated portion : *T. heyneana*

1. Branchlets slender; corolla tube 2.5 mm wide at the inflated portion: *T. gamblei*

Tabernaemontana gamblei Subram. & Henry, Bull. Bot. Surv. India 12: 1. 1970. *Ervatamia caudata* Gamble, Kew Bull. 1921. 310. 1921 & Fl. Madras 813. 1923, non *Tabernaemontana caudata* Merr. 1990.

Shrubs, to 1.5 m tall. Leaves often unequal, elliptic or elliptic-lanceolate, caudate-acuminate, acumen to 2 cm long, base acute, glabrous, glaucous below, to 12 x 4.5 cm, often much smaller. Corolla tube 2-2.5 cm long, lobes to 1 cm long. Follicles 4 x 1 cm, oblong, caudate at apex.

A very common undergrowth in evergreen forests.

NS 10391 (Kallar)

Fl. & Fr. April-September

D i s t. Southern W. Ghats : endemic

Tabernaemontana heyneana Wall., Edward's Bot. Reg. 15: t. 1273. 1829; Fl. Brit. India 3: 646. 1882; For. Trees Travancore 267. 1908; Fl. Thenmala 206. 1995. *Ervatamia heyneana* (Wall.) Cooke, Fl. Pres. Bombay 2: 134. 1904; Fl. Madras 813. 1923.

Small deciduous trees, bark greyish, rough with shallow irregular fissures. Leaves elliptic-oblong or oblong-lanceolate, shortly acuminate, base acute, coriaceous, to 18 x 7 cm. Peduncle to 4 cm long. Corolla white, tube 2.5 cm long, lobes 1.5 cm long, margins crisped. Follicles orange yellow, to 3 x 1 cm.

Fairly common in moist deciduous forests.

NS 10513 (Choodal)

Fl. & Fr. April-October

D i s t. Throughout W. Ghats : endemic

WRIGHTIA R. Br.

1. Leaves tomentose on both sides; follicles completely fused : *W. arborea*

1. Leaves glabrous; follicles fused at the tip only, often completely free : *W. tinctoria*

Wrightia arborea (Dennst.) Mabb., Taxon 26: 533. 1977. *Periploca arborea* Dennst., Schluss. Hort. Malab. 13, 23, 25. 1818. *Wrightia tomentosa* Roem. & Schult., Syst. Veg. 4: 414. 1819; Wt., Ic. t. 443. 1841; Fl. Brit. India 3: 653. 1882; For. Trees Travancore 268. 1908; Fl. Madras 816. 1923.

Small trees, branchlets tomentose, latex yellow. Leaves elliptic-oblong, acuminate, base obtuse, to 13 x 5 cm. Flowers in dense, short peduncled tomentose cymes, white at first, turning yellow. Corolla tube 4 mm long, lobes oblong, 1.2 cm long. Follicles subcylindric, brown, speckled with white small tubercles, to 16 x 2 cm.

Occasional in moist deciduous forests.

NG Nair 6156 (Rosemala)

Fl. & Fr. April-December

D i s t. Indo-Malaya

Wrightia tinctoria (Roxb.) R. Br., Mem. Wern. Nat. Hist. Soc. 1: 74. 1811; Wt., Ic. t. 444. 1841; Bedd., Fl. Sylv. t. 241. 1872; Fl. Brit. India 3: 653. 1882; For. Trees Travancore 267. 1908; Fl. Madras 815. 1923; Fl. Tenmala 209. 1995. *Nerium tinctorium* Roxb., Orient. Reper. 1: 39. 1791.

Small trees, branchlets glabrous, latex milky. Leaves oblong-lanceolate, caudate-acuminate, base acute or rounded, membranous, glabrous, glaucous below, to 15 x 4.5 cm. Flowers in lax terminal cymes, appearing along with new flush of leaves. Corolla tube 3 mm long, lobes oblong, obtuse, 8 mm long. Follicles distinct, terete, glabrous, to 30 x 0.8 cm.

Very common in moist deciduous forests.

NS 10903 (Rosemala)

Fl. & Fr. February-November

D i s t. Indo-Malesia

ASCLEPIADACEAE

- | | |
|--|----------------------|
| 1. Filaments free; cymes axillary | : 2 |
| 1. Filaments united into a tube, peduncle from the node between petioles | : 3 |
| 2. Corolla lobes valvate; leaves with 10-20 pairs of lateral nerves | : Hemidesmus |
| 2. Corolla lobes imbricate; leaves with numerous close and parallel lateral nerves | : Cryptolepis |
| 3. Epiphytes, leaves thick, fleshy | : Hoya |
| 3. Terrestrial plants; leaves not fleshy | : 4 |
| 4. Corolla tube elongated, base inflated, bulbous | : Ceropegia |
| 4. Corolla tube otherwise, base not bulbous | : 5 |
| 5. Corolla lobes alternating with fleshy ridges within the sinus | : Gymnema |
| 5. Corolla without ridges inside | : 6 |
| 6. Corolla divided to the base; follicles compressed, slightly winged | : Cynanchum |
| 6. Corolla shortly lobed or divided to half the length; follicles terete | : 7 |
| 7. Corona segments completely adnate to the staminal column | : Tylophora |
| 7. Corona segments adnate only at the base and free above | : Marsdenia |

CEROPEGIA L.

- | | |
|--|-------------------------|
| 1. Corolla less than 2 cm long, outer corona deeply divided | : <i>C. maculata</i> |
| 1. Corolla more than 2.5 cm long, outer corona entire or bifid | : 2 |
| 2. Corolla throat tubular, lobes less than 1 cm long | : <i>C. candelabrum</i> |
| 2. Corolla throat funnel-shaped, lobes 2-4 cm long | : <i>C. metziana</i> |

Ceropegia candelabrum L., Sp. Pl. 211. 1753; Fl. Brit. India 4: 70. 1883; Fl. Madras 857. 1923; Ansari, Fl. India Fasc. 16: 12. 1984.

Glabrous twining herbs. Leaves linear to ovate-orbicular, obtuse to apiculate, base acute or rounded, to 7 x 5 cm. Cymes few to many flowered, peduncles longer than the petioles. Corolla slightly inflated below, greenish-white with purple streaks, lobes yellow, hairy within, beak purplish; outer corona of 5 entire or truncate hairy lobes; inner erect, linear-spathulate.

Occasional in moist deciduous forests.

NS 11099 (Kattalappara)

Fl. September-November

D i s t. South India and Sri Lanka

Ceropegia maculata Bedd., Madras J. Lit. Sci. (ser. 3) 1: 52. 1864; Ansari, Fl. India Fasc. 16: 23. 1984; Nayar & Sastry, Red Data Book Indian Pl. 2: 46. 1988; Fl. Pl. Thrissur For. 286. 1996. *C. parviflora* Trimen, J. Bot. 27: 164. 1889.

Slender glabrous herbs. Leaves ovate, acute or acuminate, base obtuse or rounded, membranous, to 8.5 x 5.5 cm. Peduncles shorter than the petioles; flowers few to many. Corolla to 1.8 cm long, base slightly inflated, greenish-violet on lower 2/3, white above, lobes bluish-green, sparsely hairy; outer corona of 5 lobes each deeply divided, hairy at base; inner corona linear as long as or slightly longer than the outer.

Rare in evergreen forests.

NS 11210, 11244 (Rosemala)

Fl. September-November

D i s t. South India (Tamil Nadu and Kerala) and Sri Lanka

Note: According to Nayar & Sastry (l.c.) this species is endangered or possibly extinct. It was last collected from 'Naduvengad, Travancore Ghats' by Barber in 1905. The recent collections from Thrissur (l.c.) and the Shendruny rule out the possibility of its extinction in India.

Ceropegia metziana Miq., Analecta Bot. Ind. 3: 11. 1852; Ansari, Fl. India Fasc. 16: 25. 1984; Nayar & Sastry, Red Data Book Indian Pl. 2: 51. 1988; Fl. Pl. Thrissur For. 286. 1996. *C. brevicollis* Hook. f., Fl. Brit. India 4: 74. 1883. p.p.; Fl. Madras 859. 1923. *C. stocksii* auct. non Hook. f., sensu Gamble, Fl. Madras 859. 1923.

Twining herbs, pubescent at nodes. Leaves ovate or ovate-oblong, acute or acuminate, mucronate, base acute, to 15 x 5 cm. Peduncle to 2 cm long, glabrous or hairy. Corolla to 7 cm long, base inflated, funnel-shaped above, lobes ovate-deltoid, dull pink with purple dots; outer corona deltoid, bifid, hairy; inner long, glabrous.

Occasional in evergreen forests.

NS 10453 (Kallar); 11263 (Rosemala)

Fl. September-November

D i s t. Southern W. Ghats : endemic

CRYPTOLEPIS R. Br.

Cryptolepis buchananii Roem. & Schult., Syst. Veg. 4: 409. 1819; Wt., Ic. t. 494. 1840; Fl. Brit. India 4: 5. 1883; Fl. Madras 826. 1923; Fl. Thenmala 213. 1995.

Young shoots glabrous. Leaves elliptic or oblong-lanceolate, obtuse or apiculate, base acute, glabrous and glossy, to 12 x 5 cm. Peduncles to 2 cm long, glabrous. Corolla greenish-yellow, tube 2 mm long, lobes linear-lanceolate, 5 mm long; coronal lobes clavate.

Fairly common in moist deciduous forests.

NS 10976 (Rosemala)

Fl. March-August

D i s t. India, Burma and Sri Lanka

CYNANCHUM L.

Cynanchum alatum Wt. & Arn. in Wt., Contrb. Bot. India 57. 1834 & Ic. t. 1280. 1848; Fl. Brit. India 4: 24. 1883; Fl. Madras 836. 1923.

Glabrous twining herbs. Leaves elliptic-oblong or linear-oblong, acute, base cordate, sparsely hairy, glaucous below, to 8 x 3 cm; lateral nerves 7-9, faint. Peduncles 1-1.5 cm long. Corolla white, 0.5 cm long, divided nearly to the base, lobes oblong, acute; corona of 5 erect obtuse bifid lobes, with shorter lobes between them.

Occasional in evergreen forests.

NS 11298 (Rosemala)

Fl. & Fr. October-March

D i s t. India and Burma

GYMNEMA R. Br.

Gymnema sylvestre (Retz.) R. Br. ex Schult. in Roem. & Schult., Syst. Veg. 6: 57. 1820; Wt., Contrb. Bot. India 44. 1834 & Ic. t. 349. 1840; Fl. Brit. India 4: 29. 1883; Fl. Madras 839. 1923; Fl. Thenmala 214. 1995.

Branchlets tomentose. Leaves elliptic to ovate, obovate, obtusely acute, base truncate or obtuse, subcoriaceous, densely tomentose below, to 7 x 5 cm, often much smaller. Peduncle to 1 cm long. Corolla campanulate, yellow, 2.5 mm long.

Fairly common in moist deciduous and semi-evergreen forests.

NS 10515, 10631 (Kattalappara); 10975 (Rosemala)

Fl. & Fr. July-January

D i s t. Peninsular India, Sri Lanka and Tropical Africa

HEMIDESMUS R. Br.

Hemidesmus indicus (L.) R. Br. in Ait., Hort. Kew (ed. 2) 2: 75. 1811; Wt., Ic. t. 594. 1842; Fl. Brit. India 4: 5. 1883; Fl. Madras 825. 1923; Fl. Thenmala 213. 1995. *Periploca indica* L., Sp. Pl. 211. 1753.

Slender twining herbs. Leaves very variable, elliptic-oblong to linear-lanceolate, 4-10 cm long, young leaves often variegated, glabrous on both sides. Pedicels many bracteate. Corolla mostly yellow, sometimes purple, 8 mm across.

Common in moist deciduous forests and forest plantations.

NS 10696 (Kattalappara)

Fl. August-December

D i s t. India and Sri Lanka

HOYA R. Br.

1. Leaves linear-lanceolate, less than 1 cm wide Q. *H. pauciflora*

1. Leaves elliptic or rhomboid, more than 2 cm wide : *H. ovalifolia*

Hoya ovalifolia Wt. & Arn, in Wt., Contrb. Bot. India 37. 1834; Wt., Ic. t. 847. 1844; Fl. Brit. India 4: 60. 1883; Fl. Madras 849. 1923.

Stem glabrous, terete. Leaves elliptic or rhomboid, acute or obtuse, base acute, to 7 x 3 cm; petiole ca. 0.5 cm long. Peduncles stout, to 3.5 cm long, pedicels slender, ca. 1.5 cm long. Corolla 1 cm across, creamy-white; corona purplish.

Occasional in moist deciduous and semi-evergreen forests.

NS 11228 (Kallar); 11293 (Rosemala)

Fl. November-December

D i s t. Peninsular India and Sri Lanka

Hoya pauciflora Wt., Ic. 4: 16, t. 1269. 1848; Fl. Brit. India 4: 56. 1883; Fl. Madras 849. 1923.

Slender epiphytic glabrous climbers. Leaves linear-lanceolate, obtuse, base truncate, to 3.5 x 0.6 cm. Flowers in few flowered subsessile umbellate cymes. Corolla white, 1.2 cm across; corona lobes rounded at apex.

Occasional in evergreen forests above 700 m.

NS 11369 (Alvarakurichi)

Fl. November-December

D i s t. South India and Sri Lanka

MARSDENIA R. Br.

- | | |
|--|---------------------------|
| 1. Peduncles longer than petioles, pedicels up to 20 mm long | : M. tirunelvelica |
| 1. Peduncles shorter than petioles, pedicels 3-4 mm long | : M. raziana |

Marsdenia raziana Yoga. & Subr., Proc. Indian Acad. Sci. 83B: 147. 1976; Nayar & Sastry, Red Data Book Indian Pl. 2: 61. 1987; Sasidharan & Anto, J. Econ. Tax. Bot. 21: 247. 1997.

Climbing glabrous shrubs, stem striate, latex watery. Leaves oblong, acuminate, base rounded or acute, membranous, 10-19 x 7-10 cm. Flowers brownish-pink, 1 x 1.2 cm, in 10-15 flowered umbellate racemes. Calyx ovate, acute, ciliate along the margins. Corolla urceolate, lobes reflexed.

Rare in evergreen forests, growing along with reeds.

NS 11422 (Alvarakurichi)

Fl. January-March.

D i s t. Southern W. Ghats : endemic

Note: This rare species first reported from Chikmagalur district of Karnataka has not been relocated (Nayar & Sastry, l.c.). The present collection from Shenduruny is a rediscovery after type collections and is a new record for Kerala.

Marsdenia tirunelvelica Henry & Subram., J. Bombay Nat. Hist. Soc. 73: 186. 1976; Henry *et. al.*, Fl. Tamil Nadu I, 2: 87. 1987; Sasi. & Swarup., J. Econ. Tax. Bot. 18: 636. 1994.

Twining glabrous herbs. Leaves broadly elliptic or obovate, acuminate, base obtuse or subcordate, to 7-4 cm. Flowers greenish-yellow, in umbellate cymes, arising from nodes between petioles. Corolla urceolate, 4.5 mm long, lobes twisted.

Growing along with *Ochlandra travancorica* var. *hirsuta*, which forms more or less pure reed patch.

NS 10230 (Pandimotta)

Fl. March-April

D i s t. Southern W. Ghats : endemic

Note: This rare and endangered species was considered to be restricted to Tirunelveli forests of Tamil Nadu. The present collection from Shenduruny is a new distribution record out side the type locality and an addition to Kerala flora.

TYLOPHORA R. Br.

1. Flowers 3 mm across, fascicled along the slender 4-7 cm long peduncles : *T. mollissima*
1. Flowers 13 mm across, in umbellate cymes, peduncles straight, under 2.5 cm long : *T. subramanii*

Tylophora mollissima Wt. & Arn. in Wt., Contrb. Bot. India 49. 1834; Wt., Ic. t. 1275. 1848; Fl. Brit. India 4: 43. 1883; Fl. Madras 843. 1923.

Slender tomentose climbers. Leaves elliptic-oblong or ovate, acute, apiculate, base truncate, glabrescent or puberulous to 5 x 2 cm. Umbels compound, peduncles and pedicels slender. Corolla greenish-yellow with purple centre.

Occasional in evergreen forests, above 1400 m.

NS 11368 (Alvarakurichi)

Fl. February-July

D i s t. Peninsular India.

Tylophora subramanii Henry, Proc. Indian Acad. Sci. 65B: 161. 1967 & Fl. Tamil Nadu I, 2: 90. 1987.

Tomentose subshrubs. Leaves ovate-orbicular, apiculate, base subcordate or rounded, 7-12 x 5-8 cm, basal leaves much larger. Cymes umbellate, tomentose. Calyx lobes lanceolate, tomentose, 5 mm long. Corolla greenish outside and pale pink inside.

Occasional in reed areas, above 1,200 m.

NS 10248 (Pandimotta)

Fl. March-April

D i s t. Southern W. Ghats : endemic

LOGANIACEAE

1. Leaves 3-5-ribbed from base; pericarp hard; corolla lobes valvate : *Strychnos*
1. Leaves penni-nerved, thickly coriaceous; pericarp fleshy; corolla lobes imbricate : *Fagraea*

FAGRAEA Thunb.

Fagraea ceilanica Thunb., Kongl. Ventensk. Acad. Nya Handl. 3: 132, t. 4. 1782; Fl. Brit. India 4: 83. 1883 '*zeylanica*'; Fl. Madras 865. 1923; Fl. Thenmala 216. 1995. *F. obovata* Wall. in Roxb., Fl. Ind. 2: 33. 1824; Fl. Brit. India 4: 83. 1883; Fl. Madras 865. 1923. *F. coromandelina* Wt., Ic. t. 1336. 1848. *F. malabarica* Wt., Ic. t. 1317. 1848.

Branchlets stout with prominent leafscars. Leaves obovate or oblanceolate, obtuse, entire, fleshy, glabrous, to 20 x 8 cm; lateral nerves obscure. Corolla creamy-yellow, to 5 cm long. Berry ellipsoid, 4 cm long.

The plants are epiphytic and shrubby at low elevations but grow as independent trees at elevations above 1400 m in shola forests.

NS 10396 (Kallar); 11407 (Alvarakurichi)

Fl. & Fr. March-November

Dist. Indo-Malesia

STRYCHNOS L.

1. Climbers, corolla under 5 mm long, pedicels, ovary and style

pubescent

: *S. minor*

1. Trees, corolla over 1 cm long, pedicels, ovary and style glabrous

: *S. nux-vomica*

Strychnos minor Dennst., *Schluss.* 15, 25, 33. 1818; Bisset & Philcox, *Taxon* 20: 542. 1971; *Fl. Thenmala* 218. 1995. *S. colubrina* sensu auct. p.p., non L. 1753; Hill, *Kew Bull.* 1917: 157. 1917; *Fl. Madras* 868. 1923.

Leaves ovate or ovate-oblong, acute to acuminate, base obtuse or rounded, glabrous, to 10 x 4.5 cm; 3-ribbed from a little above the base. Cymes tomentose. Corolla tube 2 mm long, lobes ovate-acute, as long as the tube or a little shorter, hairy inside. Berry 2-2.5 cm across; seeds 1-3, orbicular.

Common in evergreen forests.

NS 10862 (Umiyar)

Fl. & Fr. September-October

Dist. Indo-Malesia

Strychnos nux-vomica L., *Sp. Pl.* 189. 1753; *Bedd., Fl. Sylv.* t. 243. 1872; *Fl. Brit. India* 4: 90. 1883; *For. Trees Travancore* 269. 1908; *Fl. Madras* 868. 1923; *Fl. Thenmala* 217. 1995.

Medium sized to large deciduous trees, bark yellowish-grey, scurfy, 2-3 mm thick, yellow inside. Leaves broadly elliptic, acute or obtuse, mucronate, base acute, glabrous, to 11 x 8 cm, 5-nerved from base. Cymes terminal, tomentose. Corolla tube 1 cm long, lobes 3 mm long. Berry 3.5-4 cm across; seeds 3 or 4, orbicular.

Fairly common in moist deciduous forests.

KNS 77451 (Thenmala)

Fl. & Fr. March-December

Dist. Indo-Malesia

GENTIANACEAE

1. Ovary 2-celled; anthers dehiscing by apical pores

: *Exacum*

1. Ovary 1-celled; anthers dehiscing by lateral slits

: *Hoppea*

EXACUM L.

1. Corolla lobes 2-2.5 cm long, anthers oblong : **E. courtallense**
1. Corolla lobes 1 cm long, anthers narrowed towards apex : **E. atropurpureum**

Exacum atropurpureum Bedd., Ic. t. 119. 1886-74; Fl. Brit. India 4: 97. 1883; Fl. Madras 874. 1923; Klack., Opera Bot. 84: 71. 1985.

Erect herbs, to 50 cm long; stem 4-angled. Leaves broadly elliptic, acuminate, base acute or attenuate, to 6 x 2.2 cm; 5-nerved from base. Calyx lobes 5. Corolla blue, lobes 5, elliptic, Anther linear-oblong, 8 mm long. Capsules elliptic, 1 cm long.

Fairly common in open areas above 1,300 m.

NS 11352 (Alvarakurichi)

Fl. & Fr. January-March

D i s t. Southern W. Ghats : endemic

Exacum courtallense Arn., Ann. Sci. Nat. Bot. 11: 175. 1839; Wt., Ic. t. 1323. 1848; Fl. Brit. India 4: 98. 1883; Fl. Madras 875. 1923; Klack., Opera Bot. 84: 66. 1985.

Herbs to 50 cm tall, stem 4-angled. Leaves sessile, linear-lanceolate, acuminate, base acute or obtuse, to 6 x 1.5 cm, subsessile, 1-nerved. Flowers in many flowered lax cymes. Calyx lobes 4. Corolla pale blue, lobes broadly elliptic to obovate. Anthers bottle-shaped. 4-5 mm long. Capsule ovate, 7 mm long.

Rare in open grassy areas.

NS 10620 (Rosemala)

Fl. & Fr. September-November

D i s t. Southern W. Ghats : endemic

HOPPEA Willd.

Hoppea fastigiata (Griseb.) Cl. in Hook. f., Fl. Brit. India 4: 100. 1883; Fl. Madras 877. 1923. *Cicendia fastigiata* Griseb., Gen. Sp. Gent. 158. 1839.

Small herbs, branchlets fastigate. Leaves broadly ovate to obtuse, base truncate or subcordate, to 8 x 8 mm; nerves indistinct. Calyx tubular, lobes lanceolate, 2 mm long. Corolla greenish-yellow 4 mm long, lobes oblong. Capsule ellipsoid, smooth, 3 mm long.

Fairly common among sedges in disturbed moist deciduous forests.

NS 11456 (Kattalappara)

Fl. & Fr. September-October

D i s t. India, Burma and Sri Lanka

BORAGINACEAE

1. Leaves crisped, subpinnatifid; prostrate herbs : **Coldenia**
1. Leaves not crisped; erect herbs, shrubs or trees : 2

- | | |
|---|----------------|
| 2. Style 4 branched | : Cordia |
| 2. Style 2 branched or lobed | : 3 |
| 3. Style elongated, 2 partite; trees | : Ehretia |
| 3. Style depressed conical at apex with a horizontal ring below the stigma; herbs | : Heliotropium |

COLDENIA L.

Coldenia procumbens L., Sp. Pl. 125. 1753; Fl. Brit. India 4: 144. 1883; Fl. Madras 892. 1923; Kazmi, J. Arnold Arbor. 51: 148. 1970.

Stem and leaves softly white villous. Leaves irregularly dentate or subpinnatifid, to 3 x 1.5 cm. Flowers solitary. Calyx deeply divided, lobes ovate-acute, ciliate. Corolla pale-yellow, 2 mm long. Fruit 4-lobed, 3 mm across.

Common in open areas in moist deciduous forests.

NS 10429 (Kattalappara)

Fl. & Fr. March-May

D i s t. Pantropical

CORDIA L.

Cordia octandra DC., Prodr. 9: 477. 1845; Fl. Brit. India 4: 140. 1883; For. Trees Travancore 273. 1908; Fl. Madras 889. 1923. *C. serrata* sensu Wall. in Roxb., Fl. Ind. 2: 333. 1824, non Juss. 1830; Wt., Ic. t. 469. 1840-1843.

Small trees. Leaves subopposite and alternate, membranous, to 11 x 6 cm; 3-nerved from base and with 3 other pairs of lateral nerves, glabrescent or shortly tomentose. Cymes lateral. Calyx cupular. Berry ovoid, acute, vertically shallowly striated, glabrous, 2.8 x 2.2 cm; stone 1-seeded.

Occasional in semi-evergreen forests.

NS 10089 (Kallar)

Fl. & Fr. August-December

D i s t. Southern W. Ghats (Kerala) : endemic

EHRETIA L.

Ehretia canarensis (Cl.) Gamble, Fl. Madras 891. 1923. *E. laevis* Roxb. var. *canarensis* Cl. in Hook. f., Fl. Brit. India 4: 142. 1883.

Small trees. Leaves elliptic, acuminate, base cuneate, coriaceous, glabrous, to 12 x 6 cm. Flowers 3 mm across, in unilateral axillary and terminal cymes. Corolla white, lobes oblong, obtuse, 2.5 mm long. Style 2-fid above middle. Drupe 0.5 cm across.

Fairly common in semi-evergreen forests.

NS 10583, 10633 (Kattalappara)

Fl. & Fr. September-January

D i s t. South West India : endemic

HELIOTROPIUM L.

Heliotropium indicum L., Sp. Pl. 130. 1753; Fl. Brit. India 4: 152. 1883; Fl. Madras 896. 1923; Fl. Thenmala 231. 1995.

Erect pubescent herbs. Leaves ovate-obtuse, base cuneate, subentire, membranous, to 10 x 4 cm. Cymes 15 cm long. Calyx 2.5 mm long, white strigose. Corolla white, villous, 3 mm long. Fruit separating into 4 pyrenes.

Occasional in disturbed moist deciduous forests.

NS 10428 (Kattalappara)

Fl. & Fr. March-May

D i s t. Paleotropics

CONVOLVULACEAE

- | | |
|---|--------------------|
| 1. Corolla lobes 5, each deeply obcordate | : <i>Erycibe</i> |
| 1. Corolla lobes entire | : 2 |
| 2. Styles 2, free or connate at base only | : <i>Evolvulus</i> |
| 2. Style entire | : 3 |
| 3. Outer 2 or 3 sepals enlarged, much longer and broader than inner; ovary 1-celled | : <i>Hewittia</i> |
| 3. Outer and inner sepals equal or subsimilar; ovary 2 or 4-celled | : 6 |
| 6. Corolla broadly funnel-shaped; pollen smooth | : <i>Merremia</i> |
| 6. Corolla funnel-shaped to salver form; pollen spinulose | : 7 |
| 7. Corolla pubescent outside; fruits fleshy, indehiscent | : <i>Argyreia</i> |
| 7. Corolla glabrous outside; fruit thin walled, dehiscent | : <i>Ipomoea</i> |

ARGYREIA Lour.

Argyreia hirsuta Wt. & Arn., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 18: 356. 1836; Fl. Brit. India 4: 189. 1883; Fl. Madras 909. 1923; Fl. Thenmala 223. 1995.

Rivea hirsuta (Wt. & Arn.) Wt., Ic. t. 891. 1845.

Large shaggy climbers, lignous towards base. Leaves ovate-cordate, caudate-acuminate, pubescent on both sides with adpressed hairs, more dense on lower surface, to 18 x 12 cm. Peduncle as long as or shorter than the petiole, hairy; bracts lanceolate, to 3 cm long. Sepals oblong, obtuse, 8 x 2 mm. Corolla *ca.* 7 cm long, pale purple, funnel-shaped.

Fairly common in moist deciduous and semi-evergreen forests.

NS 11457 (Rosemala)

Fl. & Fr. November-December

D i s t. South India and Sri Lanka

ERYCIBE Roxb.

Erycibe paniculata Roxb., Pl. Corom. 2: 31. t. 159. 1789; Fl. Brit. India 4: 180. 1883; Fl. Madras 930. 1923; Hoogland, Blumea 7: 352. 1953; Fl. Thenmala 222. 1995. *E. wightiana* Grah., Cat. Pl. Bomb. 137. 1839; Fl. Madras 930. 1923. *E. paniculata* Roxb. var. *wightiana* (Grah.) Cl. in Hook. f., Fl. Brit. India 4: 180. 1883.

Large climbing shrubs, bark greyish-brown, warty, young shoots reddish-brown tomentose. Leaves elliptic or elliptic-obovate, obtusely acuminate, base acute, coriaceous, glabrous and glossy, to 10 x 5.5 cm. Sepals ovate, obtuse, densely-brown tomentose. Corolla white, fragrant, campanulate-rotate, 5 mm long.

Occasional in semi-evergreen forest.

NS 10093, 10487 (Kallar)

Fl. & Fr. November-March

D i s t. India and Sri Lanka

EVOLVULUS L.

Evolvulus nummularius (L.) L., Sp. Pl. (ed. 2) 391. 1762; Balakr., Bull. Bot. Surv. India 6: 86. 1964; Stearn, Taxon 21: 649. 1972. *Convolvulus nummularius* L., Sp. Pl. 175. 1753. *Volvulopsis nummularius* (L.) Roberty, Candollea 14: 28. 1952.

Prostrate herbs. Leaves broadly ovate to orbicular, base cordate, to 1.2 x 1 cm. Flowers solitary or in pairs, axillary. Calyx lobes 5, acute, ciliate, 2.5 mm long. Corolla broadly campanulate, 6 mm across. Capsule globose, 3-4 mm across.

Fairly common in forest plantations and disturbed moist deciduous forests.

NS 11496 (Rosemala)

Fl. & Fr. Throughout the year

D i s t. Native of tropical America, established in several African and Asian countries

HEWITTIA Wt. & Arn.

Hewittia malabarica (L.) Suresh in Nicols. *et al.*, Interp. Hort. Malab. 88. 1988. *Convolvulus malabaricus* L., Sp. Pl. 155. 1753. *C. sublobatus* L. f., Suppl. Pl. 135. 1782. *C. bicolor* Vahl, Symb. Bot. 3: 25. 1794, non Desr. 1792. *Hewittia bicolor* (Vahl) Wt. & Arn., Madras J. Sci. 1(5): 22. 1837; Wt., Ic. t. 835. 1844; Fl. Brit. India 4: 216. 1883; Fl. Madras 924. 1923. *H. sublobata* (L. f.) O. Ktze., Rev. Gen. Pl. 2: 441. 1891; Fl. Thenmala 224. 1995. 1980.

Climbing herbs. Leaves ovate to broadly ovate, acute, margin entire or angled, puberulent, to 7 x 5 cm; basally 3-nerved; lateral nerves 4 or 5; petiole to 6 cm. Peduncle as long as or longer than petiole. Corolla yellowish with a purple centre, 3 cm across.

Fairly common in disturbed forest areas and along road sides.

NS 10681 (Kattalappara); 11257 (Rosemala)

Fl. October-January

D i s t. Throughout old world tropics

IPOMOEA L.

- | | |
|--|--------------------------|
| 1. Flowers in subcapitate to capitate inflorescence | : <i>I. pes-tigridis</i> |
| 1. Flowers solitary or in open cymose inflorescence | : 2 |
| 2. Corolla salver-shaped; sepals aristate | : <i>I. hederifolia</i> |
| 2. Corolla funnel-shaped or campanulate; sepals not aristate | : 3 |
| 3. Leaves palmately 5 or 3 lobed | : <i>I. mauritiana</i> |
| 3. Leaves ovate-cordate, entire | : <i>I. obscura</i> |

Ipomoea hederifolia L., Syst. Nat. (ed. 10) 925. 1759; O'Donnell, Lilloa 29:45. 1959; Fl. Thenmala 227. 1995. *I. phoenicea* Roxb., Fl. Ind. 2: 92. 1824. *I. coccinea* sensu Hook. f., Fl. Brit. India 4: 199. 1883. *Quamoclit phoenicea* (Roxb.) Choisy, Mem. Soc. Phys. Geneve 6: 433. 1834; Fl. Madras 919. 1923.

Slender glabrous twiners. Leaves ovate-acuminate, cordate, entire, angled or lobed, to 8 x 5 cm; petiole to 11 cm long. Flowers in few-flowered cymes, peduncle to 17 cm long. Sepals distinctly awned on the back, glabrous. Corolla deep red, salver-form, tube 3.5 cm long, limb 3 cm across, subentire.

Common in disturbed areas in moist deciduous and semi-evergreen forests.

NS 10701, 11183 (Kattalappara)

Fl. & Fr. October-December

D i s t. Native of Tropical America; introduced and run wild

Ipomoea mauritiana Jacq., Coll. Bot. 4: 216. 1719; Fl. Thenmala 228. 1995. *I. paniculata* R. Br., Prodr. 486. 1810; Fl. Madras 918. 1923. *I. digitata* sensu Hook. f., Fl. Brit. India 4: 202. 1883, non L. 1759; Ooststr. in Steenis, Fl. Males. I, 4: 483. 1953.

Glabrous twining shrubs with large tuberous roots. Leaves palmately 5-9 lobed, to 8 cm long; lobes ovate, acuminate, petiole to 3.5 cm long. Peduncles longer than the petioles, flowers few to many. Sepals orbicular, acute. Corolla pale-purple, 4-5 cm long, widely campanulate, glabrous.

Occasional in semi-evergreen forests, mostly in open areas.

NS 10520 (Kattalappara)

Fl. August-September

D i s t. Probably native of Tropical America. now pantropical

Ipomoea obscura (L.) Ker-Gawl., Bot. Reg. 3: t. 239. 1817; Fl. Brit. India 4: 207. 1883; Fl. Madras 916. 1923; Ooststr. in Steenis, Fl. Males. I, 4: 471. 1953. *Convolvulus obscurus* L., Sp. Pl. (ed. 2) 220. 1762.

Slender twining herbs, young shoots pubescent. Leaves ovate-cordate, acuminate, minutely tomentose, to 5.5 cm on either way. Flowers solitary or in few flowered cymes; peduncle to 3 cm long. Sepals ovate-elliptic, acute, outer 2 shorter and wrinkled. Corolla funnel-shaped, 2.5 cm long, and 2.5 cm across at mouth, creamy white with purple centre.

Fairly common in moist deciduous forests, especially in open areas.

NS 10339 (Kallar)

Fl. & Fr. October-March

D i s t. Pantropical

Ipomoea pes-tigridis L., Sp. Pl. 162. 1753; Wt., Ic. t. 836. 1844; Fl. Brit. India 4: 204. 1883; Fl. Madras 918. 1923; Fl. Thenmala 228. 1995.

Slender twiners, stem and leaves bristly hairy. Leaves to 10 x 12 cm, palmately deeply 7-9 lobed, lobes narrowly obovate or elliptic, acuminate; petiole to 7 cm long. Flowers subsessile, in bracteate heads, peduncle to 14 cm long, bristly hairy; bracts foliaceous, oblong, acute. Sepals lanceolate, 8-10 mm long, pubescent. Corolla funnel-shaped, white, 3 cm long.

Common in disturbed forest areas.

NS 11182 (Kattalappara)

Fl. & Fr. September-December

D i s t. Paleotropics

MERREMIA Dennst.

- | | |
|---|------------------------|
| 1. Corolla less than 2 cm long; leaf base auricled and toothed | : <i>M. tridentata</i> |
| 1. Corolla more than 3 cm long, leaf base not auricled or toothed | : 2 |
| 2. Leaves palmately 5-7 lobed; corolla sulphur-yellow | : <i>M. vitifolia</i> |
| 2. Leaves entire; corolla white | : <i>M. umbellata</i> |

Merremia tridentata (L.) Hall. f., spp. *hastata* (Desr.) Ooststr., Blumea 3: 317. 1939; Fl. Thenmala 225. 1995. *Convolvulus tridentatus* L., Sp. Pl. 157. 1753. *Convolvulus hastatus* Desr. in Lamk., Encyl. 3: 542. 1791, non Forsk. 1775. *Merremia hastata* (Desr.) Hall. f., Bot. Jahrb. 16. 552. 1893; Fl. Madras 929. 1923.

Trailing herbs with long slender branches and thick root stock. Leaves subsessile, linear-lanceolate, acute, mucronate, base auricled and toothed, to 4 x 0.8 cm. Flowers mostly solitary or in few flowered cymes. Sepals lanceolate, acuminate. Corolla tubular, white, 2.5 cm long.

Fairly common in open rocky areas in moist deciduous forests.

NS 10744 (Kattalappara)

Fl. & Fr. November-January

D i s t. Paleotropics

Merremia umbellata (L.) Hall. f., Bot. Jahrb. 16: 552. 1893; Fl. Madras 928. 1923; Fl. Thenmala 225. 1995. *Convolvulus umbellatus* L., Sp. Pl. 155. 1753. *Ipomoea cymosa* (Desr.) Roem. & Schult., Syst. Nat. 4: 241. 1819; Fl. Brit. India 4: 211. 1883.

Twining herbs, young shoots puberulous. Leaves ovate-lanceolate, acuminate, base cordate or rounded, to 7 x 4 cm. pubescent below. Flowers in few to many flowered umbellate cymes, peduncle 2-4 cm long. Sepals ovate-lanceolate, apiculate. Corolla white, 3-4 cm long, pubescent without.

A very common species in forest plantations.

NS 11459 (Rosemala)

Fl. & Fr. January-April

D i s t. Tropics

Merremia vitifolia (Burm. f.) Hall. f., Bot. Jahrb. 16: 552. 1893; Fl. Madras 928. 1923; Fl. Thenmala 224. 1995. *Convolvulus vitifolius* Burm. f., Fl. Ind. 45. t. 18, f. 1. 1768. *Ipomoea vitifolia* (Burm. f.) Bl., Bijdr. 709. 1825; Fl. Brit. India 4: 213. 1883.

Twining shrubs, stem brownish-black, young shoots patent hairy. Leaves ovate, base cordate, 5-7 lobed, to 10 x 8 cm; lobes ovate, acuminate, dentate, sparsely fulvous hairy. Flowers in few flowered cymes. Sepals ovate-lanceolate, mucronate, 1.2 cm long. Corolla campanulate, yellow, glabrous, 5 cm long.

Frequent in disturbed moist deciduous forests.

NS 11460 (Rosemala)

Fl. & Fr. November-February

D i s t. Indo-Malesia

SOLANACEAE

1. Flowers in axillary fascicles; calyx saucer-shaped in fruit : **Lycianthes**

1. Flowers in extra-axillary racemes or cymes; calyx distinctly lobed in fruit : **Solanum**

LYCIANTHES Hassler

Lycianthes laevis (Dunal) Bitter, Abh. Nat. Ver. Bremen 24: 484. 1920; Deb, J. Econ. Tax. Bot. 1: 40. 1980; Fl. Thenmala 232. 1995. *Solanum laeve* Dunal, Solan. Synop. 22. 1816; Fl. Brit. India 4: 231. 1883; Fl. Madras 936. 1923.

Subshrubs, often scandent; branches zig-zag, angular. Upper leaves often paired and unequal, elliptic-lanceolate, acuminate, to 18 x 6 cm, membranous. Flowers 2-5 in axils; pedicels ca. 8 mm long, enlarges in fruit to 1.5 cm. Calyx truncate or with subulate lobes. Corolla white with pale purple shades, 1 cm across. Berry globose, red, to 1 cm across; seeds angular.

Fairly common in evergreen forests above 1000 m.

NS 10275 (Pandimotta)

Fl. & Fr. December-May

D i s t. South India and Sri Lanka

SOLANUM L.

- | | |
|---|----------------------------|
| 1. Unarmed herbs; berry black | : S. americanum |
| 1. Armed plants, subshrub or shrubs; berry yellow, red or green | : 2 |
| 2. Berry 1 cm or less in diameter, glabrous | : 3 |
| 2. Berry 2 cm or more in diameter, covered with fulvous hairs | : S. stramonifolium |
| 3. Flowers blue; berry orange-yellow | : S. anguivi |
| 3. Flowers white; berry greenish | : S. torvum |

Solanum americanum Mill., Gard. Dict. (ed. 8) 5. 1768; Edmonds, Kew Bull. 103. 1972; Schill. & Anders., Bot. J. Linn. Soc. 102: 256. 1990. *S. nigrum* auct. non L. 1753, sensu Gamble, Fl. Madras 936. 1923; Fl. Thenmala 230. 1995.

Erect annual herbs, stem glabrous or sparsely hispid. Leaves ovate or elliptic, subentire or bluntly toothed, base rounded, shortly decurrent on the petiole, chartaceous, to 10 x 6 cm. Calyx cupular, 5-lobed. Corolla white, 5 mm across. Berry globose, purplish-black, 0.6 cm across; seeds minutely pitted, 1 mm long.

Occasional in disturbed moist deciduous forests.

NS 11215 (Rosemala)

Fl. & Fr. March-November

D i s t. Pantropical

Solanum anguivi Lamk., Encyl. 2: 23. 1794; Brummitt, Taxon 32: 29. 1983; Fl. Thenmala 232. 1995. *S. indicum* auct. non L. 1753, Wt., Ic. t. 346. 1940; Fl. Brit. India 4: 234. 1883; Fl. Madras 938. 1923.

Stem and leaves with curved spines, stellately tomentose. Leaves ovate oblong, acute, base unequal sided, shallowly lobed, finely stellate above and somewhat densely below, to 10 x 7 cm; Racemes 2-4 cm long, few to many flowered, pedicels often prickly. Calyx deeply lobed, sparsely prickly. Corolla bluish-purple, 1.5 cm across.

Common along the road sides in moist deciduous forests.

NS 11176 (Kattalappara)

Fl. & Fr. August-December

D i s t. Indo-Malesia and East Asia

Solanum stramonifolium Jacq. Misc. 2: 298. 1781, "*stramonifolium*". *S. ferox* auct. non L. 1762; Fl. Brit. India 4: 233. 1883; Fl. Madras 937. 1924.

Shrubs. Stems and leaves prickly and densely wooly. Leaves ovate or subrectangular, shallowly lobed, to 50 x 30 cm. Flowers 2 cm across, white in few flowered cymes. Berry densely covered with yellowish needle like hairs, to 4 cm across.

Occasional in evergreen forests.

NS 10366 (Rosemala)

Fl. & Fr. May-January

D i s t. Indo-Malesia

Solanum torvum Sw., Nov. Gen. & Sp. Pl. 47. 1788; Wt., Ic. t. 345. 1840; Fl. Brit. India 4: 234. 1885; Fl. Madras 937. 1923; Fl. Thenmala 231. 1995.

Shrubs to 3 m tall, stem densely stellately hairy, prickles sparse. Leaves ovate, acute, base cordate, unequal sided, coarsely 2-3 sinuate, stellately pubescent on both sides, to 15 x 10 cm. Flowers in many flowered corymbose cymes. Calyx lobes oblong. Corolla white, 2.5 cm across, lobes longer than the tube.

Common along the road sides in forest plantations.

NS 11181 (Kattalappara)

Fl. & Fr. July-March

D i s t. Throughout tropics

SCROPHULARIACEAE

- | | |
|--|--------------------|
| 1. Corolla rotate, lobes 4 | : Scoparia |
| 1. Corolla 2-lipped or campanulate, lobes 5 or rarely 4 | : 2 |
| 2. Calyx with dorsal wings at least in fruits | : Torenia |
| 2. Calyx without dorsal wings | : 3 |
| 3. All the 4 stamens fertile | : 4 |
| 3. Only 2 stamens fertile | : Lindernia (p.p.) |
| 4. Anther cells stipitate | : Limnophila |
| 4. Anther cells not stipitate | : 5 |
| 5. Leaves 5-10 cm long; corolla tube over 5 mm in diameter | : Artanema |
| 5. Leaves under 3 cm long, corolla tube under 3 mm in diameter | : Lindernia (p.p.) |

ARTANEMA D. Don

Artanema longifolium (L.) Vatke, Linnaea 43: 207. 1881; Fl. Thenmala 237. 1995. *Columnnea longifolia* L., Mant. Pl. 90. 1767. *Artanema sesamoides* (Vahl) Benth., Scroph. Ind. 39. 1835, *nom. illeg.*; Wt., Ic. t. 1410. 1849; Fl. Brit. India 4: 274. 1884; Fl. Madras 955. 1923.

Stem stout, 1 m tall, glabrous. Leaves elliptic or linear-lanceolate, acuminate, serrate or subentire, sparsely scabrid, to 8 x 2.5 cm. Flowers in terminal racemes. Pedicels 1 cm long;

bracts 0.5 cm long. Calyx lobes ovate, acute. Corolla pale purple, 1.5-2 cm long. Capsule 0.6 cm across.

Fairly common along the banks of streams.

NS 10010 (Rosemala); 10526, 10330 (Kallar)

Fl. & Fr. August-December

D i s t. Indo-Malesia

LIMNOPHILA R. Br.

Limnophila aromatica (Lamk.) Merr., Interpr. Herb. Amboin. 466. 1917. *Ambulia aromatica* Lamk., Encyl. 1: 128. 1783. *Limnophila gratissima* Bl., Bijdr. 749. 1826; Fl. Brit. India 4: 286. 1884; Fl. Madras 951. 1923.

Stem rooting at lower nodes, glandular pubescent. Leaves 3 at nodes on main stem, sessile, linear-lanceolate, serrulate, punctate, to 7 x 1.5 cm. Flowers axillary, pedicels 1-2 cm long. Calyx membranous, 5 mm long, lobes as long as the tube, linear-lanceolate. Corolla 1.5 cm long, rose-pink.

Common along the banks of streams.

NS 10009 (Kallar); 10592 (Kattalappara); 11171 (Choodal)

Fl. & Fr. October-January

D i s t. Indo-Malesia

LINDERNIA All.

- | | |
|--|-------------------------|
| 1. Perfect stamens 4, staminodes 0 | : 2 |
| 1. Perfect stamens 2, staminodes 2 | : 4 |
| 2. Capsule much longer than the calyx | : <i>L. anagallis</i> |
| 2. Capsule equalling or shorter than the calyx | : 3 |
| 3. Calyx shortly toothed, glabrous | : <i>L. crustacea</i> |
| 3. Calyx deeply divided, hairy | : <i>L. pusilla</i> |
| 4. Leaves petioled | : <i>L. ruellioides</i> |
| 4. Leaves sessile or subsessile | : 5 |
| 5. Leaves aristate-dentate, base truncate | : <i>L. ciliata</i> |
| 5. Leaves crenate-serrate, base attenuate | : <i>L. antipoda</i> |

Lindernia anagallis (Burm. f.) Pennell, J. Arnold Arbor. 24: 252. 1943; Fl. Thenmala 240. 1995. *Ruellia anagallis* Burm. f., Fl. Ind. 135. 1768. *Vandellia pedunculata* Benth., Scroph. Ind. 37. 1835; Fl. Brit. India 4: 282. 1884; Fl. Madras 959. 1923.

Diffuse herbs, rooting at lower nodes. Leaves ovate deltoid, crenate-serrate, acute, base truncate, to 2.2 x 1.5 cm, penni-nerved, glabrous. Flowers 1 per node, pedicel 1.5 cm long. Calyx lobes divided to the base. Corolla 8 mm long, bluish-purple, pink at mouth. Anthers of basal pair spurred. Capsule linear, 1 x 0.2 cm.

Fairly common along the banks of streams and marshy areas.

NS 11174 (Choodal)

Fl. & Fr. January-April

D i s t. Indo-Malesia

Lindernia antipoda (L.) Alston in Trim., Fl. Ceylon 6 (Suppl.): 214. 1931; Fl. Thenmala 241. 1995. *Ruellia antipoda* L., Sp. Pl. 635. 1753. *Bonnaya veronicifolia* (Retz.) Spreng., Syst. Veg. 1: 41. 1824; Fl. Brit. India 4: 285. 1884. *Illysanthes veronicifolia* (Retz.) Urban, Berl. Deutsch. Bot. Ges. 2: 436. 1884; Fl. Madras 962. 1923.

Prostrate or diffuse herbs. Leaves elliptic-obovate, base cuneate, serrate, to 2.5 x 1 cm; penni-nerved, subsessile. Flowers solitary, axillary or in terminal racemes. Calyx divided to the base. Corolla 6 mm long, pale blue. Stamines hooked. Capsule linear-lanceolate, 1.5 x 0.2 cm.

Fairly common along the sides of streams.

NS 10575 (Choodal)

Fl. & Fr. June-March

D i s t. Tropical and Subtropical Asia

Lindernia ciliata (Closm.) Pennell. Brittonia 2: 182. 1936 & J. Arnold Arbor. 2: 253. 1943; Fl. Thenmala 240. 1995. *Gratiola ciliata* Colsm., Prodr. Desc. Grat. 14. 1793. *Bonnaya brachiata* Link. & Otto, Ic. Pl. Select. 25, t. 11. 1820; Fl. Brit. India 4: 284. 1884. *Illysanthes serrata* (Roxb.) Urban, Berl. Deutsch. Bot. Ges. 2: 436. 1884; Fl. Madras 962. 1923. *Gratiola serrata* Roxb., Fl. Ind. 1: 140. 1820.

Small erect herbs. Leaves elliptic-oblong, acute or obtuse, aristate-dentate, penni-nerved, to 2 x 0.8 cm, sessile. Flowers in terminal racemes; pedicels 1-2 mm long. Calyx lobes lanceolate, 5 mm long. Corolla 0.8 cm long, bluish-pink. Anthers unequal; stamines with divergent hooks. Capsule linear, 1.5 cm long.

Common in open grassy patches in moist deciduous forests.

NS 10556 (Kattalappara); 11170 (Choodal)

Fl. & Fr. June-October

D i s t. Indo-Malesia to Australia

Lindernia crustacea (L.) F. Muell., Syst. Cens. Austral. Pl. 1: 97. 1882; Fl. Thenmala 239. 1995. *Capraria crustacea* L., Mant. Pl. 87. 1767. *Vandellia crustacea* (L.) Benth., Scroph. Ind. 35. 1835; Wt., Ic. t. 863. 1844-45; Fl. Brit. India 4: 274. 1884; Fl. Madras 959. 1923.

Erect or diffuse herbs, rooting at lower nodes. Leaves ovate, obtuse, base truncate, often unequal sided, serrate, penni-nerved, to 1.7 x 1.5 cm; petiole 5 mm long. Flowers

axillary or in lax terminal racemes; pedicel 1-1.2 cm long. Calyx divided to 1/3 of the length. Corolla purple. 5 mm long. Lower pair of stamens with a subulate appendage at the middle of filament. Capsule ovoid, 5 mm long.

Common in disturbed moist deciduous forests.

NS 10555 (Kattalappara)

Fl. & Fr. June-December

D i s t. Pantropical

Lindernia pusilla (Willd.) Bold., Zakfl. Java 165. 1916; Philcox, Kew Bull. 22: 41. 1968. *Gratiola pusilla* Willd., Sp. Pl. 1: 105. 1797. *Vandellia scabra* Benth., Scroph. Ind. 36. 1835; Fl. Brit. India 4: 281. 1884; Fl. Madras 959. 1923.

Diffuse herbs, branched from the base, rooting at nodes. Leaves ovate to orbicular, obtuse, base truncate, to 1.5 cm; basally 3-nerved, sessile. Flowers axillary, pedicels 1-1.5 cm long, hirsute. Calyx divided to the base, lobes linear. Corolla white with yellow spots at mouth. Filaments of staminodes with knee-like appendage. Capsule ovoid, slightly shorter than the calyx lobes.

Occasional in moist deciduous forests.

NS 10598, 11137 (Kattalappara)

Fl. & Fr. August-December

D i s t. Indo-Malesia to South Africa

Lindernia ruellioides (Closm.) Pennell, Britonia 2: 182. 1936 & J. Arnold Arbor. 20: 81. 1939; Fl. Thenmala 241. 1995. *Gratiola ruellioides* Closm., Prodr. Desc. Grat. 12. 1793. *Bonnaya reptans* (Roxb.) Spreng., Syst. 1: 41. 1924; Fl. Brit. India 4: 284. 1884. *Illysanthes reptans* (Roxb.) Urban, Berl., Duetsch. Bot. Ges. 2: 436. 1884; Fl. Madras 962. 1923.

Decumbent herbs, rooting at lower nodes. Leaves broadly elliptic to obovate, obtuse, base attenuate, serrate, to 5 x 2 cm. Flowers in terminal racemes. Calyx divided to the base, lobes lanceolate. Corolla lilac or purple. Capsule linear, 2 cm long.

Occasional along the sides of streams and marshy areas.

NS 10150 (Umiyar)

Fl. & Fr. October-March

D i s t. Tropical Asia

SCOPARIA L.

Scoparia dulcis L., Sp. Pl. 116. 1753; Fl. Brit. India 4: 289. 1884; Fl. Madras 964. 1924; Fl. Thenmala 235. 1995.

Erect annual or perennial herbs. Leaves ternately whorled, obovate-oblong, acute, base

attenuate, coarsely crenate-serrate, to 3.5 x 1.5 cm. Flowers axillary. Pedicels 0.5 cm long. Calyx lobes ovate-oblong, 2-3 mm long, ciliate along margin. Corolla white, lobes spatulate, 3 mm long. Capsule subglobose, longer than the calyx.

Common in disturbed moist deciduous forests and road sides.

NS 11461 (Rosemala)

Fl. & Fr. Throughout the year

D i s t. Native of Tropical America, naturalized in other places, now pantropical

TORENIA L.

- | | |
|---|--------------------------|
| 1. Fruiting calyx ribbed | : <i>T. bicolor</i> |
| 1. Fruiting calyx not ribbed, narrowly winged | : <i>T. travancorica</i> |

Torenia bicolor Dalz. in Hook.'s, *J. Bot. Kew Gard Misc.* 3: 38. 1851; *Fl. Brit. India* 4: 278. 1884; *Fl. Madras* 957. 1923; Sald., *Bull. Bot. Surv. India* 8: 129. 1966; *Fl. Thenmala* 238. 1995.

Annual decumbent herbs, ciliate along the ridges near the nodes. Leaves ovate, acute, base truncate or subcordate, serrate, membranous, sparsely hirsute, to 3.5 x 2.2 cm; petiole 1-1.5 cm long, sparsely hirsute. Flowers solitary; pedicel 2.5 cm long. Corolla 3 cm long, tube yellowish-white, lobes deep purple. Capsule included; fruiting pedicels to 3.5 cm long.

Fairly common in water-logged areas in all forest types.

NS 10656 (Kattalappara); *11172* (Choodal)

Fl. & Fr. August-November

D i s t. W. Ghats : endemic

Torenia travancorica Gamble, *Fl. Madras* 957. 1923; Sald., *Bull. Bot. Surv. India* 8: 130. 1966; *Fl. Thenmala* 238. 1995.

Prostrate herbs, stem 4-angled. Leaves ovate-lanceolate, acute, base truncate, sparsely hairy, to 5 x 2 cm. Flowers solitary, axillary, pedicels to 5 cm long. Calyx 1.7 cm long, narrowly winged. Corolla 3 cm long, tube yellow, lobes purple. Fruits 1.7 cm long, included.

Occasional in water-logged areas.

NS 10512 (Kattalappara)

Fl. & Fr. June-January

D i s t. Southern W. Ghats : endemic

OROBANCHACEAE

- | | |
|--|-----------------------|
| 1. Calyx spathaceous, split one side to the base | : <i>Aeginetia</i> |
| 1. Calyx tubular, 5-lobed | : <i>Christisonia</i> |

AEGINETIA L.

Aeginetia pedunculata (Roxb.) Wall., Pl. As. Rar. 2: t. 219. 1831; Wt., Ic. t. 1421. 1849; Fl. Brit. India 4: 320. 1884; Fl. Madras 974. 1924; Fl. Thenmala 241. 1995. *Orobanche pedunculata* Roxb., Fl. Ind. 3: 29. 1832.

Herbs with short stolons, parasitic on roots of grasses. Scape stout, to 7 cm long, with several sheathing bracts. Calyx 5-6 cm long, acute at apex, pale yellow. Corolla blue, 6 cm long, 2.5 cm across at mouth, lobes crenate. Sterile anthers with fleshy decurved horn.

Common in grasslands.

NS 1956 (Choodal)

Fl. & Fr. September-November

D i s t. Indo-Malesia

CHRISTISONIA Gard.

Christisonia tubulosa (Wt.) Benth. ex Hook. f., Fl. Brit. India 4: 321. 1884; Fl. Madras 976. 1924. *Oligopholis tubulosa* Wt., Ic. t. 1422. 1849.

Stem elongated, to 25 cm long, scales few. Flowers rather distant on the stem, bracts ovate, acute, 5 mm long; bracteoles 0. Pedicel to 2 cm long. Calyx tube 2.5 cm long, lobes ovate, acute. Corolla bluish-pink 5 cm long, lobes spreading.

Occasional in evergreen forests.

NS 10833, 11241 (Rosemala)

Fl. July-August

D i s t. W. Ghats : endemic

LENTIBULARIACEAE

UTRICULARIA L.

- | | |
|---|--------------------------|
| 1. Leaves reniform; seeds glochidiate | : <i>U. striatula</i> |
| 1. Leaves linear or spatulate, often wanting; seeds not glochidiate | : 2 |
| 2. Upper lip of corolla 1 mm long, seeds ellipsoid | : <i>U. foveolata</i> |
| 2. Upper lip of corolla 4-5 mm long, seeds subglobose or ovoid | : <i>U. graminifolia</i> |

Utricularia foveolata Edgew., Proc. Linn. Soc. Bot. 3: 351. 1847; Janarth. & Henry, Bladderworts India 53. 1992. *U. scandens* Oliver, Proc Linn. Soc. 3: 181. 1859; Fl. Brit. India 4: 332. 1884; Fl. Madras 981. 1924.

Terrestrial herbs. Leaves simple, linear-oblongate, entire, to 5 x 2 mm. Scape 1-3 flowered, bracts and bracteoles similar; pedicels 3 mm long. Calyx lobes subequal, ovate, 1.5 mm long. Corolla pale blue, 3 mm long; upper lip 2-lobed, lower lip broadly suborbicular-ovate; spur conical, seeds ellipsoid, obscurely reticulate, cells elongated.

Fairly common in grasslands, in moist localities.

NS 11291 (Rosemala)

Fl. & Fr. August-October

D i s t. Indo-Malesia, Africa and East Asia

Utricularia graminifolia Vahl, Enum. Pl. 1: 195. 1804; Fl. Madras 981. 1924; Janarth. & Henry, Bladderworts India 58. 1992. *U. caerulea* auct. non L. sensu Cl., Fl. Brit. India 4: 331. 1884.

Herbs. Leaves linear to spatulate, 1 cm long, 3-nerved. Scape erect, to 25 cm long, flowers 1-7, bracts ovate-lanceolate, 2.5 mm long; bracteoles subulate. Calyx lobes ovate-lanceolate, unequal. Corolla 8-10 mm long, violet to pink, upper lip longitudinally streaked, lower obovate, obscurely 3-lobed, hairy at throat. Seeds 2-3 mm across, testa cells reticulate.

Fairly common in water logged areas in grasslands.

NS 11367 (Alvarakurichi)

Fl. & Fr. Throughout the year

D i s t. Indo-Malaya

Utricularia striatula J. E. Sm. in Rees, Cyclop. 37: n. 17. 1819; Fl. Madras 983. 1924; Janarth. & Henry, Bladderworts India 106. 1992. *U. glochidiata* Wt., Ic. t. 1581. 1950. *U. orbiculata* Wall. ex A. DC. in DC., Prodr. 8: 18. 1844; Fl. Brit. India 4: 334. 1884.

Scapigerous herbs. Leaves orbicular to reniform, obtuse, to 4 x 3 mm. Scape to 5-flowered; bracts linear, bracteoles smaller; pedicels 3-4 mm long. Calyx lobes unequal, obtuse. Corolla 7 mm long; upper lip small, suborbicular; lower 5-lobed, spreading, bluish-white with yellow at base; spur curved upwards. Seeds oblong or obovoid, glochidiate.

Fairly common on wet rocks and on trees.

NS 11229 (Rosemala)

Fl. & Fr. July-August

D i s t. India

GESNERIACEAE

- | | |
|--|-------------------------|
| 1. Corolla tubular, 4-5 cm long, leaves fleshy, climbing plants rooting at nodes | : Aeschynanthus |
| 1. Corolla distinctly bilabiate, tube less than 2 cm long; erect or prostrate herbs or subshrubs | : 2 |
| 2. Fruit a linear capsule; leaves suborbicular, cordate | : Didymocarpus |
| 2. Fruit ovoid or ellipsoid; leaves otherwise | : 3 |
| 3. Calyx winged, one wing large and prominent, corolla blue | : Rhynchoglossum |
| 3. Calyx not winged, corolla white | : Rhynchotechum |

AESCHYNANTHUS Jack. *nom. cons.*

Aeschynanthus perrottetii A. DC. in DC., Prodr. 9: 261. 1845; Fl. Brit. India 4: 339. 1884; Fl. Madras 985. 1924. *A. ceylanica* sensu Wt., Ic. t. 1347. 1846. *A. perrottetii* A. DC. var. *planiculmis* Cl. in Fl. Brit. India 4: 340. 1884, 'platyculmis'. *A. planiculmis* (Cl.) Gamble, Fl. Madras 985. 1924.

Epiphytic climbers. Leaves elliptic-lanceolate or lanceolate, acuminate, base acute, glabrous, to 8 x 2 cm. Pedicels 1.5 cm long. Calyx lobes linear, subequal. Corolla red. 4-5 cm long, lobes rounded, ciliate. Follicles to 20 x 0.3 cm.

Fairly common in evergreen forests above 700 m.

NS 10043 (Rockwood); *10729* (Umiyar); *11404* (Alvarakurichi)

Fl. & Fr. November-January

D i s t. W. Ghats : endemic

DIDYMOCARPUS Wall. *nom. cons.*

Didymocarpus repens Bedd., Ic. t. 120. 1868-74; Fl. Brit. India 4: 354. 1884; Fl. Madras 989. 1924.

Scapigerous herbs. rooting at nodes. Leaves orbicular, obtuse, base cordate, subcoriaceous, crenate-dentate, tomentose, to 10 cm across. Scape axillary, to 14 cm long, tomentose, few-flowered. Sepals velutinous. Corolla 1 cm long.

Uncommon in evergreen forests.

NS 10121 (Kallar); *10724* (Umiyar); *11380* (Alvarakurichi)

Fl. & Fr. October-March

D i s t. Southern W. Ghats : endemic

RHYNCHOGLOSSUM Bl.

Rhynchoglossum notonianum (Wall.) Burt., Notes Roy. Bot. Gard. Edinb. 24: 170. 1962; Fl. Thenmala 245. 1995. *Wulfenia notoniana* Wall., Tent. Fl. Nepal 46. 1826. *Klugia notoniana* (Wall.) A. DC. in DC., Prodr. 9: 276. 1845; Wt., Ic. t. 1353. 1848; Fl. Brit. India 4: 366. 1884; Fl. Madras 990. 1924.

Succulent herbs, to 60 cm tall. Leaves ovate-oblong, acuminate, base unequal, acute on one side and the other rounded-cordate, to 15 x 6 cm. Flowers towards the apex of the peduncle. Calyx 8-10 mm long, the upper rib of calyx winged. Corolla to 1.5 cm long, tube white, lobes dark blue with yellow at mouth.

Common on rocks along the banks of streams in evergreen and semi-evergreen forests.

NS 10614 (Kattalappara)

Fl. & Fr. July-December

D i s t. South West India and Sri Lanka

RHYNCHOTECHUM BI.

Rhynchotechum permolle (Nees) Burt, Notes Roy. Bot. Gard. Edinb. 24: 39. 1962; Fl. Thenmala 245. 1995. *Isanthera permollis* Nees, Trans. Linn. Soc. London 17: 82. 1834; Wt., Ic. t. 1355. 1848; Fl. Brit. India 4: 372. 1884; Fl. Madras 992. 1924.

Herbs, young stem tawny, woolly-tomentose. Leaves oblanceolate, base attenuate, serrate at apex, woolly-tomentose when young, becoming glabrescent on maturity, to 18 x 8 cm. Flowers in axillary racemes. Peduncle to 1 cm long. Calyx woolly-tomentose. Corolla white, 5 mm long, lobes ovate, subequal.

Fairly common in evergreen forests.

NS 10046 (Rockwood); 10355 (Kallar)

Fl. & Fr. August-March

D i s t. India and Sri Lanka

BIGNONIACEAE

- | | |
|---|------------------------|
| 1. Leaves simple pinnate; fruit smooth | : 2 |
| 1. Leaves 2 or 3 pinnate; fruit with warty tubercles | : <i>Radermachera</i> |
| 2. Fruit broadly flat, winged; leaflets unequal at base | : <i>Pajanelia</i> |
| 2. Fruit linear, angled or terete; leaflets base equal | : <i>Stereospermum</i> |

PAJANELIA DC.

Pajanelia longifolia (Willd.) K. Schum. in Engl. & Prantl, Pflanzenf. 4 (3b): 244. 1895. *Bignonia longifolia* Willd., Sp. Pl. 3: 306. 1800. *Pajanelia rheedii* Wt., Ic. tt. 1343, 1344. 1848; Fl. Brit. India 4: 384. 1884; For. Trees Travancore 278. 1908; Fl. Madras 1000. 1924.

Medium sized deciduous trees. Leaves to 1 m long; leaflets 12-14 pairs, ovate, acuminate, unequal sided, to 20 x 8 cm. Flowers in terminal, to 40 cm long panicles. Calyx 4 cm long, lobes unequal. Corolla 8 cm long, pale purple, white inside. Capsule to 40 x 7 cm; seeds with wings 3.5 cm long.

Fairly common in semi-evergreen forests.

NS 11265 (Rosemala)

Fl. & Fr. January-June

D i s t. Indo-Malesia

RADERMACHERA Zoll. & Moritz.

Radermachera xylocarpa (Roxb.) K. Schum. in Engl. Prantl, Pflanzenf. 4(3b): 243. 1895; Fl. Madras 999. 1924; Fl. Thenmala 247. 1995. *Bignonia xylocarpa* Roxb., Fl. Ind. 3: 108. 1832; Wt., Ic. tt. 1335, 1336. 1848; Bedd., Fl. Sylv. t. 70. 1870. *Stereospermum xylocarpum* (Roxb.) Benth. in Benth. & Hook. f., Gen. Pl. 2: 1047. 1876; Fl. Brit. India 4: 383. 1884; For. Trees Travancore 277. 1908.

Medium sized deciduous trees. Leaves 30-75 cm long; leaflets ovate or elliptic, acuminate, base truncate or obtuse, 6-12 x 3-6 cm. Calyx 1.5 cm long, lobes ovate, obtuse. Corolla creamy white, 5 cm long. Capsule 40-60 x 2.5-3.5 cm; seeds 1.5 cm long including the wings.

Common in moist deciduous forests.

KNS 5780 (Kulathupuzha)

Fl. & Fr. March-April

D i s t. Peninsular India

STEREOSPERMUM Cham.

Stereospermum colais (Buch.-Ham. ex Dillw.) Mabb., Taxon 27: 553. 1979; Fl. Thenmala 246. 1995. *Bignonia colais* Buch.-Ham. ex Dillw., Rev. Hort. Malab. 28. 1839. *Stereospermum tetragonum* DC., Prodr. 9: 210. 1845; Fl. Madras 998. 1924. *S. chelonoides* sensu Wt., Ic. t. 1341. 1845, non (L. f.) DC. 1838; Fl. Brit. India 4: 383. 1884; For. Trees Travancore 276. 1908.

Large trees with a short leafless period. Leaves to 30 cm long; leaflets 9-11, elliptic-oblong, finely caudate-acuminate, base obtuse, slightly unequal sided, 12 x 55 cm. Calyx 5 mm long, lobes rounded. Corolla yellow with reddish-brown streaks on the lobes, 1.8 cm long, villous inside. Capsule tetragonous, to 45 x 0.5 cm, often twisted.

Fairly common in moist deciduous and semi-evergreen forests.

NS 10842, 10967 (Rosemala)

Fl. & Fr. February-October

D i s t. Indo-Malesia

Spathodea campanulata Beauv. is occasionally found grown as ornamental trees.

ACANTHACEAE

- | | |
|---|---------------------|
| 1. Fertile stamens 4 | : 2 |
| 1. Fertile stamens 2 with or without staminodes | : 7 |
| 2. Seeds not supported on retinacula | : 3 |
| 2. Seeds supported on retinacula | : 4 |
| 3. Calyx annular or with 10-12 subulate teeth; ovules 2 in each cell;
climbers | : Thunbergia |
| 3. Calyx 5-partite; ovules 8 or more in each cell; herbs, erect or trailing | : Staurogyne |
| 4. Corolla lobes equal or sub equal, spreading | : Asystasia |
| 4. Corolla 2-lipped | : 5 |
| 5. Ovules 4 or more in each cell; flowers in axillary whorls | : Hygrophila |
| 5. Ovules 2 in each cell; flowers in axillary or terminal spikes | : 6 |

- 6. Bracteoles similar to the bracts; median 2 calyx lobes connate : **Lepidagathis**
- 6. Bracteoles absent; one of the calyx lobe much larger and bract like.
 - others free : **Phaulopsis**
- 7. Anther cells unequal, divergent, appendaged : 8
- 7. Anther cells unappendaged : 9
- 8. Both anther cells basally appendaged; placentae not separating elastically during fruit dehiscence : **Justicia**
- 8. Only one anther cell is basally appendaged; placentae separating during fruit dehiscence : **Rungia**
- 9. Ovules 3 or more in each cell : 10
- 9. Ovules 2 or 1 in each cell : 11
- 10. Capsule subterete, anthers not bearded : **Diotacanthus**
- 10. Capsule compressed; anthers bearded : **Andrographis**
- 11. Calyx 4-lobed : **Barleria**
- 11. Calyx 5-lobed : 12
- 12. Corolla distinctly 2-lipped : 13
- 12. Corolla lobes equal or subequal, spreading : 15
- 13. Corolla pink or purple : **Peristrophe**
- 13. Corolla white : 14
- 14. Corolla tube 2 cm long, upper lip, narrow, 1.5 mm long : **Rhinacanthus**
- 14. Corolla tube 4 mm long, upper and lower lobes subequal : **Leptostachya**
- 15. Corolla tube long and slender : **Eranthemum**
- 15. Corolla tube fairly broad, ventricose : **Strobilanthes**

ANDROGRAPHIS Wall. ex Nees

- 1. Anthers glabrous; calyx lobes and pedicel with few gland-tipped hairs or otherwise glabrous : **A. macrobotrys**
- 1. Anthers bearded at base; calyx lobes glandular pubescent : **A. paniculata**

Andrographis macrobotrys Nees in DC., Prodr. 11: 56. 1847; Fl. Brit. India 4: 503. 1884; Fl. Madras 1048. 1924

Herbs to 50 cm tall, stem 4-angled, sparsely pubescent. Leaves ovate or linear lanceolate, acuminate, base rounded or acute, glabrous, membranous, to 11 x 3.5 cm. Flowers sessile, solitary on the rachis; rachis and pedicels glandular hairy. Corolla 2 cm long, tube and upper lip pale pink, lower lip dark purple. Capsule ca. 2 cm long, glabrescent.

Fairly common in semi-evergreen forest.

NS 10582 (Kattalappara)

Fl. & Fr. September-February

D i s t. South India and Sri Lanka

Andrographis paniculata (Burm. f.) Wall. ex Nees in Wall., Pl. Asiat. Rar. 3: 116. 1832; Fl. Brit. India 4: 502. 1884; Fl. Madras 1048. 1924; Fl. Thenmala 254. 1995. *Justicia paniculata* Burm. f., Fl. Ind. 9. 1768.

Annual or perennial herbs, stem to 40 cm tall, 4-angled. Leaves lanceolate, acuminate, base acute, to 8 x 1.5 cm, often much smaller. Flowers solitary on the rachis. Corolla 1 cm long, pale white with darker blotches on the lobes. Capsule 1.5-1.8 cm long, glabrous.

Occasional in moist deciduous forests.

NS 11092 (Kattalappara); 11339 (Rosemala)

Fl. & Fr. March-December

D i s t. Indo-Malaya

ASYSTASIA BL.

- | | |
|--|-------------------------|
| 1. Leaves elliptic-lanceolate, base narrowed, flowers pale white | : <i>A. chelonoides</i> |
| 1. Leaves ovate, base rounded or truncate, flowers blue | : <i>A. dalzelliana</i> |

Asystasia chelonoides Nees in Wall., Pl. As. Rar. 3: 89. 1832; Fl. Brit. India 4: 493. 1884. *A. chelonoides* Nees var. *quadrangularis* Cl. Fl. Brit. India 4: 494. 1884; Fl. Madras 1063. 1924.

Subscandent subshrubs. Leaves elliptic-lanceolate, acuminate, base attenuate, membranous, to 15 x 3.5 cm. Racemes 10-20 cm long. Corolla bluish purple, 2 cm long. Capsule 1.5 cm long, basal beak 1.5 cm long, puberulent; seeds angular.

Seen along the sides of streams in semi-evergreen forests.

NS 11397 (Pandimotta)

Fl. & Fr. July-December

D i s t. South India and Sri Lanka

Asystasia dalzelliana Sant., Kew Bull. 1948: 276. 1948; Fl. Thenmala 257. 1995. *A. violacea* Dalz. ex Cl., Fl. Brit. India 4: 494. 1884; Fl. Madras 1063. 1924.

Erect subshrubs. Leaves ovate, acuminate or acute, base shortly decurrent on the petiole, to 10 x 6 cm. Racemes often solitary, 8-15 cm long. Corolla 2.5 cm long. Capsule 2 cm long, seeds rugose.

Occasional in evergreen forests.

NS 10479 (Kallar); 10734 (Rosemala)

Fl. & Fr. June-December

D i s t. South West India : endemic

BARLERIA L.

Barleria courtallica Nees in DC., Prodr. 11: 226. 1847; Wt., Ic. t. 1529. 1850; Fl. Brit. India 4: 489. 1884; Fl. Madras 1060. 1924; Fl. Thenmala 256. 1995.

Shrubs to 2 m tall, sparingly branched. Leaves broadly elliptic, acuminate, base acute to attenuate and shortly decurrent on petiole, glabrous, to 14 x 5 cm. Flowers in terminal many dense-flowered pubescent racemes; bracts linear-lanceolate, glandular pubescent, 1.5 cm long. Corolla funnel-shaped, tube pale yellow, 3.5 cm long, bright yellow at mouth, lobes blue, obovate, 1.5 cm long.

Fairly common in semi-evergreen forests.

NS 10791 (Kallar)

Fl. & Fr. January-April

D i s t. South India : endemic

DIOTACANTHUS Benth.

Diotacanthus grandis (Bedd.) Benth. ex Cl. in Hook. f., Fl. Brit. India 4: 515. 1885; Fl. Madras 1054. 1924. *Phlogacanthus grandis* Bedd., Ic. t. 179. 1868-74.

Large shrubs, branches 4-angled. Leaves narrowly elliptic-lanceolate, acuminate, base cuneate, to 25 x 8 cm. Flowers in long peduncled panicles, terminal and axillary to upper leaves. Calyx deeply 5-lobed, lobes subequal. Corolla 2-lipped, 2 cm long, red.

Rare in shola forests.

NS 11381 (Alvarakurichi)

Fl. January-March

D i s t. Southern W. Ghats : endemic

ERANTHEMUM L.

Eranthemum capense L., Sp. Pl. 9. 1753; Fl. Thennala 265. 1995. *E. montanum* Roxb., Fl. Ind. 1: 100. 1820; Wt., Ic. t. 466. 1841; Fl. Madras 1025. 1924. *Daedalacanthus montanus* (Roxb.) T. Anders. in Thw., Enum. Pl. 229. 1860; Fl. Brit. India 4: 421. 1884.

Subshrubs. Leaves elliptic, acuminate, base attenuate, entire or crenulate, to 10 x 4.5 cm. Spike dense flowered, paniculate, peduncle glandular hairy. Bracts and calyx lobes glandular hispid. Corolla blue, tube 2.5 cm long, lobes ovate, 1 cm long. Capsule oblong; seeds 4, discoid.

Fairly common in moist deciduous forests.

NS 10731 (Rosemala)

Fl. & Fr. January-March

D i s t. Peninsular India and Sri Lanka

HYGROPHILA R. Br.

Hygrophila salicifolia (Vahl) Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832; Wt., Ic. t. 1490. 1849; Fl. Brit. India 4: 407. 1884. *Ruellia salicifolia* Vahl, Symb. Bot. 3: 84. 1794. *Hygrophila angustifolia* Cooke, Fl. Bombay 2: 354, non R. Br. 1810; Fl. Madras 1016. 1924.

Erect herbs. Leaves linear, acute, base attenuate, to 7 x 0.8 cm. Flowers in axillary whorls; bracteoles lanceolate, hispid. Calyx lobes hispid white hairy. Corolla pale lavender. Capsule 1 cm long; seeds orbicular, very small.

Not common, occasional along banks of streams.

NS 10130 (Kallar)

Fl. & Fr. September-February

D i s t. Indo-Malaya

JUSTICIA L.

Note: The generic circumscription of *Justicia* L. has been a matter of discord. Nees (in Wall., *Pl. As. Rar.* 3. 1832) proposed division of the genus into *Adathoda*, *Gendarussa*, *Rostellularia* and *Justicia*. Later workers followed Nees's concept either fully or partly. Recently Stearn (*J. Arnold Arbor.* 52: 636-637 1971) and Graham (*Kew Bull.* 43: 551-624. 1988) have suggested that *Justicia* be kept as a large genus.

- | | |
|--|------------------------|
| 1. Calyx 4-lobed, bracts and bracteoles without green nerves | : 2 |
| 1. Calyx 5-lobed, bracts and bracteoles with green nerves | : <i>J. betonica</i> |
| 2. Spikes to 2.2 cm long | : <i>J. procumbens</i> |
| 2. Spikes to 5 cm long | : <i>J. japonica</i> |

Justicia betonica L., *Sp. Pl.* 15. 1753; *Fl. Brit. India* 4: 525. 1885; *Fl. Madras* 1078. 1924; *Grah., Kew Bull.* 43: 586. 1988; *Fl. Thenmala* 273. 1995.

Shrubs to 2 m tall. Leaves elliptic or ovate-lanceolate, acuminate, base acute to attenuate, membranous, margin serrate-dentate. Flowers in terminal racemes; bracts and bracteoles elliptic or ovate, acuminate, 1.5 x 0.7 cm. Corolla white with purple streaks, 1 cm long. Capsule with a solid base, 15 x 5 mm.

Fairly common in semi-evergreen and evergreen forests.

NS 10416 (Kallar)

Fl. & Fr. November-January

D i s t. Paleotropics

Justicia japonica Thunb., *Fl. Japan* 20. 1784. *J. simplex* D. Don, *Prodr.* 118. 1825; *Fl. Brit. India* 4: 539. 1885; *Fl. Madras* 1080. 1924; *Grah., Kew Bull.* 43: 597. 1988. *Rostellularia japonica* (Thunb.) Ellis, *Bull. Bot. Surv. India* 22: 196. 1980 (1982); *Fl. Thenmala* 275. 1995.

Erect or decumbent herbs, branchlets strigose-hispid. Leaves ovate or linear, acute, entire, to 2 x 1.5 cm, sparsely scabrous above and strigose below. Spikes terminal; bracts and bracteoles ovate, scarious-margined, softly hairy. Calyx lobes linear, margins scarious, ciliate. Corolla 4 mm long, pink. Capsule pubescent, 4 mm long.

Fairly common in grasslands.

NS 10917 (Rosemala)

Fl. & Fr. August-January

D i s t. Indo-Malesia, East Asia and Tropical Africa

Justicia procumbens L., Sp. Pl. 15. 1753; Fl. Brit. India 4: 539. 1885; Fl. Madras 1080. 1924; Grah., Kew Bull. 43: 597. 1988. *Rostellularia procumbens* (L.) Nees in Wall., Pl. As. Rar. 3: 101. 1832.

Diffuse herbs, branchlets subtetragonous, strigose hispid. Leaves elliptic or ovate, acute at both ends, membranous, scabrous above, to 3.5 x 2.5 cm. Spikes to 2.5 cm long, dense flowered; bracts obovate, margin ciliate; bracteoles lanceolate, margin scarious, ciliate. Calyx lobes subequal, midrib ridged, margin dentate. Corolla pink, 5 mm long.

Very common in moist deciduous forests and plantations.

NS 10565 (Kattalappara)

Fl. & Fr. June-November

D i s t. Indo-Malesia to Australia

LEPIDAGATHIS Willd.

- | | |
|---|-----------------------|
| 1. Diffuse herbs, flowers in congested heads, bracts 1-nerved | : <i>L. incurva</i> |
| 1. Erect subshrubs, flowers in long villous spikes, bracts 3-nerved | : <i>L. cuspidata</i> |

Lepidagathis cuspidata Nees in Wall., Pl. Rar. 3: 97. 1832; Bedd., Ic. t. 227. 1868-74; Fl. Brit. India 4: 519. 1885; Fl. Madras 1067. 1924.

Subshrubs. Leaves elliptic-lanceolate, caudate-acuminate, base attenuate, to 15 x 5 cm. Spikes axillary, glandular-pubescent, to 7 cm long. Calyx lobes ciliate along margins. Corolla 1.5 cm long, white with purple dots, sparsely hairy at mouth.

Occasional in evergreen forests.

NS 10961 (Rosemala)

Fl. & Fr. February-June

D i s t. India

Lepidagathis incurva Buch.-Ham. ex D. Don, Prodr. 119. 1825; Fl. Thenmala 270. 1995. *L. hyalina* Nees in Wall., Pl. As. Rar. 3: 95. 1832; Fl. Brit. India 4: 521. 1885; Fl. Madras 1068. 1924.

Prostrate herbs with elongated branches, stem obtusely 4-angled. Leaves ovate or oblong, base cuneate, to 8 x 3 cm; often variegated with white; leaves of flowering twigs much smaller. Spikes axillary, capitate, to 2 cm long; bracts elliptic-ovate, mucronate. Calyx lobes elliptic-lanceolate, aristate. Corolla 8 mm long, white with dark pink dots on the lobes.

Fairly common in moist deciduous and semi-evergreen forests.

NS 11089, 10163 (Kattalappara)

Fl. & Fr. February-April

D i s t. South West India

LEPTOSTACHYA Nees

Leptostachya wallichii Nees in Wall., Pl. Asiat. Rar. 3: 105. 1832; Wt., Ic. t. 1543. 1850. *Dianthera wallichii* (Nees) Benth. ex Gamble, Fl. Madras 1083. 1924. *D. leptostachya* Cl., Fl. Brit. India 4: 452. 1885.

Erect herbs. Leaves ovate or elliptic, acute or acuminate, base cuneate, to 13 x 5 cm; petiole slender, to 3 cm long. Flowers in terminal panicle spikes; bracts and bracteoles 1.5 mm long, tomentose. Calyx lobes 5, narrowly oblong, 2 mm long. Corolla 7 mm long, 2-lipped, white.

Occasional in evergreen forests.

NS 10711 (Umiyar)

Fl. December-January

D i s t. Southern W. Ghats : endemic

PERISTROPHE Nees

Peristrophe montana Nees in Wall., Pl. As. Rar. 3: 113. 1832; Wt., Ic. t. 1553. 1850; Fl. Brit. India 4: 556. 1885; Fl. Madras 1084. 1924; Fl. Thenmala 276. 1995.

Erect subshrubs. Leaves elliptic, acuminate, base acute, unequal sided, membranous, glabrous or glabrescent below, to 17 x 7.5 cm. Cymes axillary; bracts obtuse, prominently nerved. Calyx lobes linear, 4 mm long, pubescent. Corolla 4 cm long, pink. Capsule 1.3 cm long.

Common in semi-evergreen forests.

NS 10733, 11325 (Rosemala)

Fl. & Fr. September-March

D i s t. Peninsular India and Sri Lanka

PHAULOPSIS Willd. emend. Spreng. nom. et orth. cons.

Phaulopsis imbricata (Forssk.) Sweet, Hort. Brit. (ed. 1) 327. 1827; Fl. Thenmala 264. 1995. *Ruellia imbricata* Forssk., Fl. Aeg.-Arab. 113. 1775. *Micranthus oppositifolius* Wendl., Bot. Beobacht 39. 1798; Fl. Madras 1022. 1924. *Aetheilema reniforme* Nees in Wall., Pl. As. Rar. 3: 94. 1832; Wt., Ic. t. 1533. 1850. *Phaulopsis parviflora* Willd., Sp. Pl. 3: 342. 1800; Fl. Brit. India 4: 417. 1884. *P. dorsiflora* (Retz.) Sant., Kew Bull. 3: 276. 1948. *Ruellia dorsiflora* Retz., Obs. Bot. 6: 31. 1791.

Stem subterete, young shoots softly glandular-hairy. Leaves ovate or elliptic, acute, base obliquely acute, to 5 x 3 cm. Spikes terminal and axillary, 2-3 cm long; bracts reniform,

usually enclosing 3 flowers. The larger calyx lobe 6 x 4 mm; others 6 x 1 mm. Corolla 4 mm long, white. Capsule 7 mm long, ciliate; seeds 4, orbicular.

Common in moist deciduous and evergreen forests.

NS 10114 (Kallar); 10816 (Rosemala)

Fl. & Fr. November-March

D i s t. Indo-Malaya, China and Africa

RHINACANTHUS Nees

Rhinacanthus nasutus (L.) Kurz, J. As. Soc. Bengal 39: 79. 1870; Sant., J. Bombay Nat. Hist. Soc. 51: 367. 1953; Fl. Thenmala 275. 1995. *Justicia nasuta* L., Sp. Pl. 16. 1753. *Rhinacanthus communis* Nees in Wall., Pl. As. Rar. 3: 109. 1832; Wt., Ic. t. 464. 1841; Fl. Brit. India 4: 541. 1884; Fl. Madras 1083. 1924.

Herbs, stem subterete, procumbent. Leaves elliptic-lanceolate, acute, base attenuate, crenulate, to 10 x 5 cm. Flowers in divaricate branches of lax panicles; bracts and bracteoles 2 mm long, glandular-pubescent. Corolla white, sparsely pubescent, tube to 2 cm long, lower lip 1 cm long, upper lip 7 mm long, narrow. Capsule pubescent, 2 cm long.

Occasional in moist deciduous forests.

NS 10899 (Rosemala)

Fl. & Fr. November-February

D i s t. India, Sri Lanka, Java and Malagasy Island

RUNGIA Nees

1. Flowering bracts obovate or orbicular, obtuse, subshrubs : *R. wightiana*

1. Flowering bracts elliptic or elliptic-lanceolate, apiculate : *R. apiculata*

Rungia apiculata Bedd., Ic. t. 247. 1868-74; Fl. Brit. India 4: 548. 1885; Fl. Madras 1070. 1924.

Diffuse herbs, rooting at lower nodes. Leaves ovate-lanceolate, acute, base acute, 7.5 x 3.5 cm. Spikes axillary and terminal, to 5 cm long; bracts lanceolate, margins narrowly scarious, puberulous, prominently nerved. Corolla 8 mm long, white with pink streaks.

Common in shola forests.

NS 10266 (Pandimotta)

Fl. & Fr. November-February

D i s t. India, Burma and Sri Lanka

Rungia wightiana Nees in Wall., Pl. As. Rar. 3: 110. 1832; Wt., Ic. t. 1549. 1850; Fl. Brit. India 4: 546. 1885; Fl. Madras 1017. 1924.

Subshrubs, branches terete. Leaves ovate or elliptic-acuminate, base acute to attenuate, membranous, to 15 x 6 cm; bracts subsimilar, prominently white margined, 9 x 6 mm,

glabrous. Calyx lobes linear-lanceolate, 5 x 0.5 mm, glabrous. Corolla 0.8 cm long, dull white with purple spots on the lobes. Capsule 1 cm long, puberulous; seeds ridged.

Occasional in evergreen forests.

NS 10112 (Kallar); 10726 (Umiyar)

Fl. & Fr. December-January

Dist. South West India

STAUROGYNE Wall.

1. Lower branches trailing and rooting at nodes; seeds pitted : *S. zeylanica*

1. Stem erect, branches not rooting at nodes; seeds smooth : *S. glauca*

Staurogyne glauca (Nees) O. Ktze., Rev. Gen. Pl. 1: 497. 1891; Fl. Madras 1011. 1924. *Ebermaiera glauca* Nees in DC., Prodr. 11: 73. 1847; Wt., Ic. t. 1488. 1849; Fl. Brit. India 4: 395. 1884.

Viscous pubescent herbs. Leaves opposite and alternate, spatulate-oblong, obtuse, base attenuate, subentire, glabrescent, to 5 x 1.5 cm. Spikes to 12 cm long; lower bract leaf-like, upper smaller; bracteoles linear. The larger calyx lobe 7 mm long, others 4 mm long, pubescent. Corolla 6 mm long, bluish-purple, pubescent. Capsule 5 mm long, glabrous.

Not common, along the banks of streams.

NS 10886 (Rosemala)

Fl. & Fr. February-May

Dist. Indo-Malesia

Staurogyne zeylanica (Nees) O. Ktze., Rev. Gen. Pl. 1: 497. 1891; Fl. Madras 1011. 1924. *Ebermaiera zeylanica* Nees in DC., Prodr. 11: 74. 1847; Fl. Brit. India 4: 397. 1884.

Pubescent trailing herbs. Leaves elliptic-oblong, obtuse, base attenuate, pubescent below and glabrescent above, 7 x 3 cm; leaves of flowering branches usually smaller. Spikes dense-flowered, to 6 cm long; bracts obovate, obtuse, pubescent, 7 x 3 mm; bracteoles linear-spathulate. The larger calyx lobe 8 x 1.5 mm, other lobes much narrower, hirsute. Corolla 5 mm long, pink. Capsule 5 mm long, medianly grooved, pubescent.

Fairly common in semi-evergreen forests.

NS 10164 (Kattalappara)

Fl. & Fr. January-May

Dist. South West India and Sri Lanka

STROBILANTHES Bl.

Note: We are following Anderson's broad concept of the genus as done by some recent authors (Matthew. Fl. Tamil Nadu Carnatic. 1983).

- | | |
|---|------------------------|
| 1. Spikes from old wood, bracts blackish-purple, orbicular, fruiting spikes 10-15 cm long | : S. luridus |
| 1. Spikes axillary and terminal, not from old wood, fruiting spikes under 6 cm long | : 2 |
| 2. Leaves rugose and scabrous, hispid | : S. asperrimus |
| 2. Leaves not rugose and scabrous | : 3 |
| 3. Bracts lanceolate, long acuminate, heads 2-3 flowered | : S. tristis |
| 3. Bracts ovate or elliptic, acute or obtuse, heads 4 or more flowered | : 4 |
| 4. Bracteoles linear, as long as the bracts; seeds hairy | : S. asper |
| 4. Bracteoles 0; seeds glabrous | : S. heyneanus |

Strobilanthes asper Wt., Ic. t. 1518. 1850; Fl. Brit. India 4: 452. 1884; Fl. Madras 1041. 1924. *Nilgirianthus asper* (Wt.) Sant., Bot. Mem. Univ. Bombay 2: 42. 1951.

Shrubs, branchlets softly hairy. Leaves ovate, acute or shortly acuminate, base cuneate, crenate, to 10 x 4.5 cm. Spikes axillary, oblong, to 3 cm; bracts obovate, to 1 cm long; bracteoles linear. Corolla pale blue, 2 cm long.

Fairly common in evergreen forests above 1,000 m.

NS 10226 (Pandimotta)

Fl. & Fr. January-April

D i s t. Southern W. Ghats : endemic

Strobilanthes asperrimus Nees in DC., Prodr. 11: 183. 1847; Fl. Brit. India 4: 442. 1884; Fl. Madras 1041. 1924.

Shrubs. Leaves broadly elliptic, acute, base acute, rugose and bulluate, scabrous, strigose beneath, crenate, to 10 x 4 cm. Spikes axillary, to 2 cm; peduncle to 1.5 cm long. Calyx lobes emarginate, 4 mm long. Corolla pale blue, 2 cm long.

Occasional in grasslands, among rocks.

NS 11289 (Rosemala)

Fl. & Fr. November-February

D i s t. India and Sri Lanka

Strobilanthes heyneanus Nees in Wall., Pl. As. Rar. 3: 85. 1832 & in DC., Prodr. 11: 164. 1847; Fl. Brit. India 4: 443. 1884; Fl. Madras 1041. 1924. *S. rugosus* Wt., Ic. t. 1619. 1850. *Nilgirianthus heyneanus* (Nees) Bremek., Verh. Akad. Nederl. Wetensch. 41: 175. 1944.

Subshrubs, 1 m tall, branchlets obtusely 4-angled. Leaves broadly elliptic, abruptly acuminate, base cuneate, crenate-serrate, sparsely pubescent below and densely lineolate on

both sides, to 10 x 5.5 cm. Spikes capitate, axillary; bracts orbicular, obtuse, concave, closely imbricating, pink, 1 cm long. Calyx lobes linear, 0.8 cm long. Corolla 2 cm long, strobilate, pale blue, lobes equal.

Occasional in moist deciduous and semi-evergreen forests.

NS 10523, 10593 (Kattalappara)

Fl. November-January

D i s t. W. Ghats : endemic

Strobilanthes luridus Wt., Ic. tt. 1515, 1516. 1850; Fl. Birt. India 4: 450. 1884; Fl. Madras 1042. 1923. *Didyplosandra lurida* (Wt.) Bremek., Verh. Akad. Nederl. Wetensch. 41: 178. 1944.

Scandent shrubs with thick branches. Leaves ovate, acuminate, base acute, crenulate, tomentose, to 15 x 7.5 cm; petiole to 8 cm long. Spikes often clustered, pendulous; bracts 2 cm long, bracteoles as long as the bracts, ligulate. Calyx lobes lanceolate, 2 cm long. Corolla 3 cm long, purple, lobes ovate. Fruit glabrous, 2 cm long; seeds glabrous.

Common in evergreen forests above 1,200 m.

NS 10227 (Pandimotta)

Fl. & Fr. December-April

D i s t. Southern W. Ghats : endemic

Strobilanthes tristis (Wt.) T. Anders., J. Linn. Soc. Bot. 9: 470. 1867; Fl. Brit. India 4: 441. 1884; Fl. Madras 1040. 1923. *Goldfussia tristis* Wt., Ic. t. 1508. 1580.

Large shrubs, branches subterete. Leaves elliptic-lanceolate, caudate-acuminate, base attenuate and decurrent on the petiole, crenate, glabrous, to 14 x 5 cm. Heads in axillary panicles, peduncle slender, 2-3 cm long; bracts lanceolate 2 cm long. Calyx divided to the base, lobes linear. Corolla 2 cm long, pale blue. Fruit narrowly ellipsoid, 1.2 cm long.; seeds adpressed hairy.

Occasional in evergreen forests, above 1,200 m.

NS 10260 (Pandimotta)

Fl. & Fr. December-April

D i s t. Southern W. Ghats : endemic

THUNBERGIA Retz. *nom. cons.*

1. Flowers in long pendulous racemes; corolla yellow; bracteoles

reddish-brown

: *T. mysorensis*

1. Flowers solitary or paired, axillary; corolla white; bracteoles green

: *T. fragrans*

Thunbergia fragrans Roxb., Pl. Corom. t. 67. 1795; Fl. Brit. India 4: 390. 1884; Fl. Madras 1007. 1924; Bremek., Verh. Nederl. Akad. Wetensch. 50: 50. 1955.

Climbing herbs, branchlets sparsely sericeous. Leaves broadly elliptic to ovate, acute, mucronate, base subcordate or truncate, 1 or 2 toothed, thinly pubescent, to 8 x 5 cm, basally 5-nerved. Bracteoles 1.5 x 0.8 cm, ovate-oblong, apiculate. Calyx teeth *ca.* 15, subulate, pubescent. Corolla 4 cm across, puberulous without. Staminal filaments glandular-hispid towards base; anther cells obtuse.

Occasional in semi-evergreen and moist deciduous forests.

NS 10580 (Kattalappara)

Fl. & Fr. September-January

D i s t. Indo-Malesia to Australia

Thunbergia mysorensis (Wt.) T. Anders., J. Linn. Soc. Bot. London 9: 448. 1867; Fl. Brit. India 4: 393. 1884; Fl. Madras 1008. 1924. *Hexacentris mysorensis* Wt., Ic. t. 871. 1844.

Climbing shrubs. Leaves ovate or oblong-lanceolate, acuminate, base hastate or truncate, entire or crenate, to 16 x 7 cm. Racemes to 60 cm long, often smaller; bracteoles ovate-oblong, apiculate, 2.5 x 1.2 cm. Corolla 6 cm across, tube ventricose. Staminal filaments bearded; anthers spurred.

Occasional in semi-evergreen forests.

NS 10753 (Kallar)

Fl. & Fr. December-March

D i s t. W. Ghats : endemic

VERBENACEAE

- | | |
|---|-------------------------|
| 1. Leaves digitately 3-5-foliolate | : Vitex |
| 1. Leaves simple | : 2 |
| 2. Corolla regular, lobes 4 or 6-8 | : 3 |
| 2. Corolla zygomorphic, lobes 5 | : 4 |
| 3. Corolla purple; calyx not inflated in fruit; pyrenes 4 | : Callicarpa |
| 3. Corolla white; calyx inflated in fruit; pyrene 1 | : Tectona |
| 4. Flowers in elongated or globes spikes | : 5 |
| 4. Flowers in racemes or cymes | : 6 |
| 5. Spikes elongated; calyx ribbed; stamens 2 | : Stachytarpheta |
| 5. Spikes globose; calyx not ribbed; stamens 4 | : Lantana |
| 6. Corolla less than 0.6 cm long; scandent shrubs | : Premna |
| 6. Corolla more than 1.5 cm long; erect shrubs | : Clerodendrum |

CALLICARPA L.

Callicarpa tomentosa (L.) Murr., Syst. Veg. (ed. 13) 130. 1774; Fl. Thenmala 279. 1995.

Tomex tomentosa L., Sp. Pl. 118. 1753. *Callicarpa arborea* Miq. ex Cl. Fl. Brit. India 4:

567. 1885, non Roxb. 1832. *C. lanata* L., Mant. 331. 1771; Fl. Brit. India 4: 567. 1885; For. Trees Travancore 299. 1908; Fl. Madras 1092. 1924. *C. wallichiana* Walp., Rep. 4: 125. 1845; Wt., Ic. t. 1480. 1849.

Small trees. Leaves broadly elliptic-ovate, acuminate, base truncate or acute, entire or denticulate, densely tomentose below and glabrous above except the nerves, to 30 x 18 cm. Inflorescence to 6 cm long; bracts linear, 3 mm long. Calyx lobes obtuse. Corolla purple, 5 mm long. Drupe globose, 4 mm across.

Fairly common in semi-evergreen and evergreen forests, especially in disturbed areas.

NS 10318 (Kattalappara)

Fl. & Fr. November-April

D i s t. Peninsular India and Sri Lanka

CLERODENDRUM L.

Clerodendrum viscosum Vent., Jard. Mal. 1: t. 25. 1803; Fl. Thenmala 281. 1995. *C. infortunatum* auct. non L. 1753, Wt., Ic. t. 1471. 1849, '*infortunata*'; Fl. Brit. India 4: 594. 1885; For. Trees Travancore 288. 1908; Fl. Madras 1100. 1924.

Shrubs to small trees, young shoots tawny villous. Leaves ovate or orbicular, acuminate, base cordate, entire or denticulate, villous beneath and tomentose above, to 25 x 20 cm. Panicle terminal, to 18 cm long, villous. Calyx lobes lanceolate, 8 mm long, longer than the tube, tomentose. Corolla tube 2 cm long, lobes oblong, 8 mm long. Drupe bluish-black, globose, 6 mm across; fruiting calyx enlarged, pink.

Fairly common, in disturbed forest areas.

NS 10820 (Rosemala)

Fl. & Fr. November-May

D i s t. Indo-Malesia to Philippines and China

LANTANA L.

Lantana camara L., Sp. Pl. 627. 1753; Fl. Brit. India 4: 562. 1885: var. *aculeata* (L.) Moldenke, Torreya 34: 9. 1934

Much branched shrubs, branches 4-angled, armed with short thorns. Leaves ovate, acute, base truncate or obtuse, serrate, scabrous above, puberulous below, to 6 x 4 cm. Peduncle to 4 cm long, shortly prickly, heads 2.5 cm across. Corolla 1.2-1.5 cm long, orange-red. Drupe bluish-black, 3 mm across.

Fairly common in disturbed moist deciduous and semi-evergreen forests.

NS 11495 (Thenmala)

Fl. & Fr. Throughout the year

D i s t. Native of West Indies; now widespread in several tropical countries

PREMNA L.

1. Peduncle reddish-brown; corolla white, 3 mm long; filaments hairy throughout; leaves thickly coriaceous : *P. coriacea*
1. Peduncle greenish, corolla greenish-yellow, 5 mm long; filaments glabrous or hairy at base only; leaves membranous : *P. glaberrima*

Premna coriacea Cl. in Hook. f., Fl. Brit. India 4: 573. 1885; Fl. Madras 1095. 1924.

Large climbing shrubs or small trees; branches prominently lenticellate, young shoots reddish-brown. Leaves ovate-oblong, shortly caudate-acuminate, base cordate or rounded, glabrous, young leaves reddish-brown, to 15 x 9 cm; petiole to 5 cm long. Inflorescence terminal, to 12 cm long, branches shortly tomentose; bracts 3 mm long. Calyx truncate, puberulous.

Occasional in semi-evergreen forests, often among rocks.

NS 10925 (Rosemala)

Fl. April-May

D i s t. South India : endemic

Premna glaberrima Wt., Ic. t. 1848. 1849; Fl. Brit. India 4: 577. 1885 (Sphalm. *P. integerrima*); Fl. Madras 1096. 1924.

Scandent shrubs, young shoots glabrous. Leaves elliptic-oblong or oblanceolate, obtusely acuminate, base truncate, obtuse or acute, entire, to 13 x 7 cm; petiole to 1.2 cm long. Corymbs to 7 cm long, minutely tomentose. Calyx obscurely lobed, tomentose.

Fairly common in semi-evergreen and evergreen forests.

NS 10353 (Kallar); 10893 (Rosemala)

Fl. & Fr. March-June

D i s t. South West India

STACHYTARPHETA Vahl *nom. cons.*

Stachytarpheta jamaicensis (L.) Vahl, Enum. Pl. 1: 206. 1804. *Verbena jamaicensis* L., Sp. Pl. 19. 1753. *Stachytarpheta indica* (L.) Vahl var. *jamaicensis* (L.) Moon, Cat. Pl. Ceylon 68. 1885; Fl. Madras 1090. 1924. *S. indica* sensu Cl. Fl. Brit. India 4: 564. 1885 p.p., non (L.) Vahl 1804.

Annual subshrubs, branches subtetragonous, glabrous. Leaves obovate, obtuse, base cuneate and decurrent on petiole, serrate, to 8 x 4 cm. Spikes to 25 x 4 cm, glabrescent. Calyx 6 mm long, 4-toothed, puberulous. Corolla blue, tube 1 cm, limb 8 mm across.

Common in the dry reservoir bed during summer.

NS 11256 (Thenmala)

Fl. & Fr. June-December

D i s t. Pantropics

TECTONA L.f. *nom. cons.*

Tectona grandis L. f., Suppl. Pl. 151. 1781; Bedd., Fl. Sylv. t. 250. 1872; Fl. Brit. India 4: 570. 1885; For. Trees Travancore 283. 1908; Fl. Madras 1092. 1924; Fl. Thenmala 279. 1995.

Large deciduous trees, bark pale brown; twigs 4-angled, young shoots stellately adpressed tomentose. Leaves broadly elliptic, acute to acuminate, base attenuate and decurrent on petiole, glabrescent above, pubescent below, with minute red glands beneath, to 40 x 30 cm, usually smaller. Panicles to 35 cm long and broad, tomentose; bracts lanceolate, to 1.2 cm long. Corolla white 1 cm across. Ovary pubescent. Fruit globose, 1.5-2.5 cm across (with calyx); drupe densely stellate-tomentose, 2-4-lobed.

Occasional in moist deciduous forests.

NS 10995 (Kattalappara)

Fl. & Fr. May-January

D i s t. Indo-Malaya

VITEX L.

Vitex altissima L. f., Suppl. Pl. 294. 1781; Wt., Ic. t. 1466. 1849; Bedd., Fl. Sylv. t. 252. 1872; Fl. Brit. India 4: 584. 1885; For. Trees Travancore 280. 1908; Fl. Madras 1102. 1924; Fl. Thenmala 277. 1995. *V. alata* Heyne ex Roth. Nov. Pl. Sp. 316. 1821; Fl. Brit. India 4: 584. 1885.

Large nearly evergreen trees, bark yellowish or pale brown, young shoots adpressed pubescent. Leaves 3-5-foliolate; leaflets obovate or oblanceolate, acuminate, base cuneate or acute, entire (serrate in seedlings and coppice shoots) glabrous above and pubescent or glabrescent along the nerves below, terminal to 16 x 5 cm, others smaller; petiole to 12 cm, narrowly winged. Panicle to 20 cm long, flowers fascicled on rachis. Calyx densely tomentose, shortly 5 lobed. Corolla 7 mm long, pale blue or bluish-purple.

Fairly common in semi-evergreen and occasional in moist deciduous forests.

NS 10325 (Kattalappara)

Fl. March-July

D i s t. India, Burma and Sri Lanka

Vitex negundo L., *Duranta erecta* L. and *Clerodendrum paniculatum* L are sometimes grown in settlements.

SYMPHOREMATACEAE

SPHENODESME Jack.

Sphenodesme paniculata Cl. in Hook. f., Fl. Brit. India 4: 600. 1885; Fl. Madras 1104. 1924 [Fig. 13].

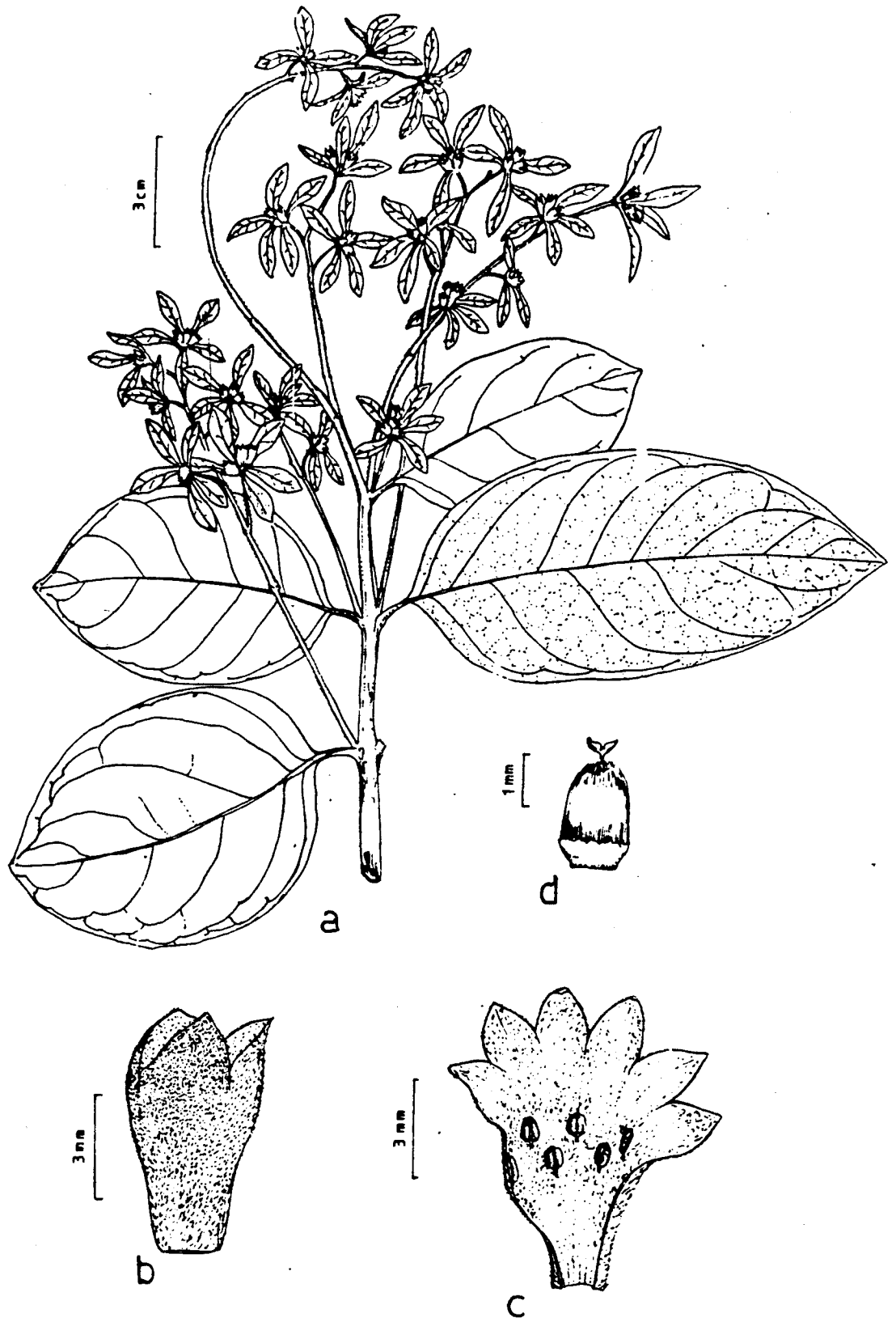


Fig. 13 : *Sphenodesme paniculata* Cl. a. fruiting branch, b. calyx, c. corolla opened, d. pistil

Climbing or scandent shrubs, branchlets subtetragonous. Leaves broadly elliptic, acute, base obtuse or acute, entire, glabrous above and tomentose below, to 14 x 8 cm. Panicles terminal, golden-brown tomentose, 20-30 cm long; involucre bracts 6, obovate, obtuse, subequal, larger one 2.5 x 1 cm. Calyx densely tomentose, 6 mm long, lobes ovate, acute. Corolla white, 1 cm long, tomentose.

Occasional in semi-evergreen forests.

NS 10219 (Kattalappara)

Fl. & Fr. December-April

D i s t. South India

LAMIACEAE

- | | |
|--|-----------------------|
| 1. Calyx 8-10 toothed | : Leucas |
| 1. Calyx 5 toothed, lobed or 2 lipped | : 2 |
| 2. Calyx 5 toothed or lobed, equal or subequal | : 3 |
| 2. Calyx 2-lipped, lobes unequal | : 7 |
| 3. Nutlets fleshy; calyx with dense, stalked stellate tomentum | : Gomphostemma |
| 3. Nutlets dry; calyx without stalked stellate tomentum, tomentum when present, various | : 4 |
| 4. Stamens spreading; corolla lobes 4 | : Pogostemon |
| 4. Stamens declinate; corolla lobes 5 | : 5 |
| 5. Calyx aristately 5-toothed, throat villous | : Hyptis |
| 5. Calyx 5-lobed; throat naked | : 6 |
| 6. Calyx equally 5-lobed: upper lip of corolla entire or 2-lobed, lower lip with 3 spreading lobes | : Anisomeles |
| 6. Calyx subequally 5-lobed: upper lip of corolla entire, lower lip 4-lobed | : Plectranthus |
| 7. Flowers in dense uninterrupted spike forming oblong or ovoid heads | : 8 |
| 7. Flowers in interrupted whorls forming lax spikes or thyrses | : 9 |
| 8. Staminal filaments free; lower lip of corolla declinate, flat | : Acrocephalus |
| 8. Staminal filaments paired; lower lip of corolla elongate, concave | : Anisochilus |
| 9. Calyx lobes obscure, lip pouched; anthers of upper pair of stamens 2-celled and lower pair 1-celled | : Scutellaria |
| 9. Upper lip of calyx 3-lobed, as broad as or nearly as broad as the lobes of lower lip, anthers otherwise | : 10 |
| 10. Staminal filaments fused by their bases forming a sheath around the style, anthers 2-celled | : Coleus |
| 10. Staminal filaments free anthers 1-celled | : Ocimum |

ACROCEPHALUS Benth.

Acrocephalus hispidus (L.) Nicols. & Sivadas., Taxon 29: 324. 1980; Fl. Thenmala 284. 1995. *Gomphrena hispida* L., Sp. Pl. (ed. 2). 1: 326. 1762. *Acrocephalus capitatus* (Roth) Benth. in Edward's Bot. Reg. 15. subt. 1282. 1829; Fl. Brit. India 4: 611. 1885. *Ocimum capitatum* Roth, Nov. Pl. Sp. 276. 1871. *Acrocephalus indicus* (Burm. f.) O. Ktze., Rev. Gen. Pl. 2: 511. 1891; Fl. Madras 1115. 1924.

Annual herbs; stem and leaves hispid. Leaves oblong or elliptic, base attenuate, serrate-crenate, to 3.5 x 1.5 cm. Heads oblong, to 2 x 0.8 cm. Calyx 3 mm long, villous. Corolla white, 4 mm long.

Not common, among grasses in moist deciduous forests.

NS 11140 (Kattalappara)

Fl. & Fr. September-December

D i s t. Indo-Malesia

ANISOCHILUS Wall. ex Benth.

Anisochilus scaber Benth. in DC., Prodr. 12: 81. 1848; Fl. Brit. India 4: 629. 1885; Fl. Madras 1127. 1924.

Herbs, stem woody at base and rooting at lower nodes. Leaves oblong, obtuse, base truncate or obtuse, densely hoary tomentose, crenate-serrate, to 5 x 3 cm. Spikes solitary or 3, oblong, the middle one larger, to 4 x 1.2 cm. Calyx tubular, 4 mm long, puberulous. Corolla purple, throat very villous. Filaments glabrous. Seeds ovoid, dark brown, shining.

Occasional in open rocky areas in moist deciduous forests.

NS 10618, 11104 (Kattalappara)

Fl. & Fr. September-December

D i s t. India, Burma and Sri Lanka

ANISOMELES R. Br.

Anisomeles indica (L.) O. Ktze., Rev. Gen. Pl. 512. 1891; Fl. Madras 1140. 1924; Fl. Thenmala 289. 1995. *Nepeta indica* L., Sp. Pl. 571. 1753. *Anisomeles ovatu* R. Br. in Ait., Hort. Kew. 3: 364. 1811; Wt., Ic. t. 865. 1844-45; Fl. Brit. India 4: 672. 1885.

Herbs, branchlets grooved on opposite sides. Leaves ovate or obovate, acute, base truncate, coarsely serrate-crenate, tomentose on both sides, to 8 x 5 cm. Spikes to 10 x 3 cm. Calyx pilose, lobes ovate-lanceolate, transversely ridged. Corolla 1.6 cm long, bluish-white. Seeds reddish-brown, smooth, shining.

Fairly common in moist deciduous forests.

NS 10702 (Kattalappara); 11218 (Rosemala)

Fl. & Fr. January-April

D i s t. Indo-Malesia and China

COLEUS Lour.

Coleus malabaricus Benth. in Wall., Pl. As. Rar. 2: 16. 1831; Fl. Brit. India 4: 626. 1885; Fl. Madras 1124. 1924; Cramer, Kew Bull. 32: 556. 1978.

Herbs, stem 4-angled, purplish. Leaves ovate, obtuse or acute, base truncate or subcordate, puberulous, to 15 x 13 cm. Panicles terminal, to 30 cm long. Calyx striate, upper lip broadly ovate, lower 3-lobed, lobes ovate-lanceolate. Corolla white with purple tinge, 1 cm long. Stamens exserted, filaments glabrous.

Fairly common in evergreen forests.

NS 10712 (Umiyar); 10615 (Rosemala)

Fl. & Fr. August-December

D i s t. South India and Sri Lanka

GOMPHOSTEMMA Wall.

Gomphostemma eriocarpon Benth. ex Wall., Pl. Asit. Rar. 2: 12. 1830-31; Fl. Brit. India 4: 698. 1885; Fl. Madras 1157. 1924. *G. oblongus* Wt., Ic. t. 1457. 1849, non Wall. ex Benth. 1830-31.

Herbs, stem subtetragonous. Leaves elliptic-lanceolate, acute, base attenuate, irregularly dentate crenate, subscabrous above and stellately pubescent below, to 14 x 5 cm. Flowers in axillary sessile cymes; bracts lanceolate. Calyx tube 5 mm long, lobes subulate, 6-8 mm long. Corolla pale yellow, 1.5 cm long. Nutlets ovoid, orange-red, tomentose.

Fairly common in evergreen forests.

NS 10011 (Kallar); 11285 (Rosemala)

Fl. & Fr. October-December

D i s t. Peninsular India

HYPTIS Jacq. *nom. cons.*

Hyptis suaveolens (L.) Poit., Ann. Mus. Natl. Hist. Nat. 7: 472, t. 27. f.2. 1806; Fl. Brit. India 4: 630. 1885; Fl. Madras 1129. 1924; Keng, Gard. Bull. s.s. 24: 96. 1969; Fl. Thenmala 285. 1995. *Ballota suaveolens* L., Syst. Nat. (ed. 10) 1100. 1759.

Subshrubs, stem obtusely 4-angled, glandular-hispid. Leaves ovate to suborbicular, acute or obtuse, base cordate, irregularly dentate, strigose-hairy, to 7 x 5 cm. Flowers in axillary short cymose racemes. Calyx campanulate, deflexed, mouth oblique, lobes erect. Corolla pale blue. Nutlets oblong, compressed, pubescent with mucilagenous hairs.

Common in forest plantations and occasional in disturbed moist deciduous forests.

NS 10597 (Kattalappara)

Fl. & Fr. August-February

D i s t. Native of Tropical America; now a pantropic weed

LEUCAS L.

1. Calyx mouth strongly oblique: leaves linear : *L. indica*

1. Calyx mouth not strongly oblique: leaves broadly ovate : *L. biflora*

Leucas biflora (Vahl) R. Br., Prodr. 504. 1810; Wt., Ic. t. 866. 1844-45; Fl. Brit. India 4: 683. 1885; Fl. Madras 1150. 1924; Fl. Thenmala 287, 1995. *Phlomis biflora* Vahl, Symb. Bot. 3: 42. 1794.

Diffuse or scandent herbs, branches finely pubescent. Leaves broadly ovate, acute, base obtuse, membranous, crenate, to 3.5 x 2 cm. Flowers 1-4 at nodes. Calyx tubular, 7 mm long, finely strigose. Corolla white, 1.4 cm long, annulate-villous inside at middle. Nutlets oblong, truncate.

Occasional in moist deciduous forests.

NS 10574 (Kattalappara)

Fl. & Fr. October-February

D i s t. Peninsular India and Sri Lanka

Leucas indica (L.) R. Br. ex Vatke in Oesterr., Bot. Z. 25: 9. 1875 var. *indica*; Fl. Thenmala 287, 1995. *Leonurus indicus* L., Syst. Nat. (ed. 10) 1101. 1759. *Leucas linifolia* (Roth) Spreng., Syst. Veg. 2: 743. 1825; Fl. Brit. India 4: 690. 1885; Fl. Madras 1149. 1924. *Phlomis linifolia* Roth, Nov. Pl. Sp. 260. 1821.

Annual herbs, branches puberulous. Leaves linear-lanceolate, acute, base attenuate, entire or subentire; to 10 x 1 cm. Flowers in dense axillary verticils. Calyx tubular, curved, pubescent, shortly 8-toothed, lower teeth larger. Corolla white, 1 cm long, annular hairy within towards middle.

Occasional in moist deciduous forests, often in rocky areas.

NS 10714 (Umiyar)

Fl. & Fr. July-October

D i s t. Indo-Malesia

OCIMUM L.

Ocimum americanum L., Cent. Pl. 1: 15. 1755 var. *americanum*: Paton, Kew Bull. 47: 425. 1992. Fl. Thenmala 283. 1995. *O. canum* Sims, Bot. Mag. 51: t. 2452. 1824; Fl. Brit. India 4: 607. 1885; Fl. Madras 1111. 1924.

Herbs, woody at base, branchlets puberulous. Leaves elliptic-oblong, acute, base truncate or obtuse, subentire, glabrescent, to 3 x 1.5 cm. Racemes to 10 cm long, densely pubescent; bracts ovate, acute. Calyx 4 mm long, sericeous. Corolla 5 mm long, white. Staminal filaments glabrous. Nutlets ovoid-subtrigonous, 1.5 mm long.

Occasional in forest plantations, in open areas.

NS 10672 (Kattalappara)

Fl. & Fr. Throughout the year

D i s t. Paleotropics

Note: Of the two varieties recognized (Paton. l.c.), our specimens with short retrose adpressed hairs along the internodes and with long hairs at nodes belong to var. *americanum*. The other variety *pilosum* (Willd.) Paton. is with long spreading hairs on the stem.

PLECTRANTHUS L'Herit. *nom. cons.*

Plectranthus wightii Benth., Labiat. Gen. Spec. 41. 1832; Wt., Ic. t. 1429. 1849; Fl. Brit. India 4: 619. 1885; Fl. Madras 1120. 1924. *P. pulneyensis* Hook. f., Fl. Brit. India 4: 619. 1885. *P. nepetaefolius* Benth. in DC., Prodr. 12: 57. 1848; Fl. Brit. India 4: 619. 1885. *Rabdosia wightii* (Benth.) Hara, J. Jap. Bot. 47: 203. 1972.

Subshrubs, branchlets glabrescent. Leaves ovate, acute, base cordate, deeply serrate, membranous, sparsely hispid, to 7.5 x 6 cm; lateral nerves ca. 5 pairs; petiole to 7 cm long. Thyrsus to 15 cm long. Calyx hirtellous, red gland-dotted. Corolla lobes glabrous. Stamens exerted.

Occasional in evergreen forests.

NS 10117 (Kallar)

Fl. & Fr. September-December

D i s t. Peninsular India

POGOSTEMON Desf.

- 1. Clusters 1-sided on the spikes; hairs on the filaments few, white : **P. heyneanus**
- 1. Clusters not 1-sided, globose, hairs on the filaments dense, purple : 2
- 2. Calyx shorter than the bracts; upper surface of leaves glabrescent : **P. benghalensis**
- 2. Calyx longer than the bracts; leaves densely tomentose on both surfaces : **P. purpurascens**

Pogostemon benghalensis (Burm. f.) O. Ktze., Rev. Gen. Pl. 2: 517. 1891; Gandhi in Sald. & Nicols., Fl. Hassan Dist. 507. 1976. *Origanum benghalense* Burm. f., Fl. Ind. 128, t. 38, f. 3. 1768. *Pogostemon plectranthoides* Desf., Ann. Mus. Natl. Hist. Nat. 2: 156, t. 6. 1808; Fl. Brit. India 4: 632. 1885; Fl. Madras 1133. 1924.

Shrubs to 1.5 m, young shoots pubescent, branchlets subterete, reddish-brown. Leaves ovate or ovate-lanceolate, acute, base attenuate, serrate-denticulate, chartaceous, to 11 x 5 cm. Spicate racemes dense, to 15 cm long. Calyx 4 mm long, glabrous inside. Corolla pale pink, lobes villous at apex outside. Stamens unequal, filaments bearded with purple moniliform hairs.

Common along margins of grassland and evergreen shola forests.

NS 10774 (Rockwood); 11269 (Rosemala)

Fl. & Fr. January-March

D i s t. India

Pogostemon heyneanus Benth. in Wall., Pl. As. Rar. 1: 31. 1830; Wt., Ic. t. 1440. 1849; Fl. Madras 1132. 1924. *P. patchouli* sensu Hook. f., Fl. Brit. India 4: 663. 1885, non Pellet. 1844.

Herbs, branchlets slender, glabrescent. Leaves ovate or elliptic, acute or acuminate, base attenuate, irregularly serrate-dentate, subchartaceous, glabrescent or sparsely hispid, to 10 x 5 cm. Spikes unilateral, panicles to 15 cm long; bracts oblique. Calyx hirsute. Corolla white, lobes ciliate. Staminal filaments sparsely hairy.

Fairly common in semi-evergreen forests.

NS 10018 (Kallar); *10155* (Umiyar)

Fl. & Fr. October-February

D i s t. India and Burma

Pogostemon purpurascens Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 2: 337. 1850; Fl. Brit. India 4: 632. 1885; Fl. Madras 1133. 1924; Fl. Thenmala 291. 1995.

Subshrubs, stem and leaves softly villous, often purple tinged. Leaves ovate-lanceolate, base cuneate, crenate-serrate, subchartaceous, to 9 x 6 cm. Spicate racemes dense, to 10 cm long; bracts softly villous. Calyx villous. Upper lip of corolla purple, lower white. Stamens unequal, densely bearded with purple moniliform hairs.

Common in moist deciduous and semi-evergreen forests.

NS 10721 (Umiyar)

Fl. & Fr. January-April

D i s t. W. Ghats : endemic

SCUTELLARIA L.

Scutellaria violacea Heyne ex Benth. in Wall., Pl. As. Rar. 1: 66. 1830; Wt., Ic. t. 1449. 1849; Fl. Brit. India 4: 668. 1885 p.p.; Fl. Madras 1142. 1924.

Decumbent herbs, rooting at lower nodes, branches puberulous. Leaves ovate, acute, base cordate, crenate, hispidulous on both sides, to 6 x 4 cm. Racemes to 15 cm long; flowers in opposite pairs; bracts ovate-lanceolate. Corolla white with purple shades. Anthers bearded. Nutlets minutely tuberculate.

Occasional in evergreen forests.

NS 10265 (Pandimotta)

Fl. & Fr. February-May

D i s t. India and Sri Lanka

NYCTAGINACEAE

BOERHAAVIA L.

Boerhaavia diffusa L., Sp. Pl. 3: 1753; Fl. Madras 1162. 1925; Fl. Thenmala 292. 1995. *B. repens* L., Sp. Pl. 3: 1753; Fl. Brit. India 4: 709. 1885. *B. procumbens* Banks ex Roxb., Fl. Ind. 1: 148. 1820; Wt., Ic. t. 874. 1844-45.

Herbs with long tap roots and elongated trailing branches, thickened at nodes, purplish. Leaves broadly ovate or suborbicular, obtuse, entire, often undulate, very variable in size. Flowers 4-10 in umbels, in axillary and terminal panicles. Perianth pink. Fruit clavate, 3 mm long, 5-ribbed.

Occasional in forest plantations and banks of rivers.

NS 11462 (Thenmala)

Fl. & Fr. August-December

D i s t. Pantropics

AMARANTHACEAE

- | | |
|--|------------------------|
| 1. Leaves opposite | : 2 |
| 1. Leaves alternate | : 4 |
| 2. Flowers in sessile heads; anthers 1-celled | : <i>Alternanthera</i> |
| 2. Flowers in spikes or fascicles, anthers 2-celled | : 3 |
| 3. Flowers in groups of 3, in spikes, one fertile and 2 sterile | : <i>Cyathula</i> |
| 3. Flowers solitary in spikes, all fertile | : <i>Achyranthes</i> |
| 4. Stamens interposed with staminodes, utricle dehiscent irregularly | : <i>Aerva</i> |
| 4. Stamines absent, utricle circumscissily dehiscent | : <i>Allmania</i> |

ACHYRANTHES L.

Achyranthes aspera L., Sp. Pl. 204. 1753; Wt., Ic. t. 1777. 1852; Fl. Brit. India 4: 730. 1885; Fl. Madras 1176. 1925; Fl. Thenmala 295. 1995.

Subshrubs or herbs, branchlets 4-angled, pubescent. Leaves obovate or ovate, abruptly acuminate, base cuneate, finely pubescent on both sides, to 6 x 3 cm. Spikes terminal, to 20 cm long; bracts ovate; bracteoles ovate, concave. Tepals greenish white, 5 mm long.

Occasional in forest plantations.

NS 11191 (Kattalappara)

Fl. & Fr. October-March

D i s t. Pantropics

AERVA Forssk. *nom. cons.*

Aerva lanata (L.) Juss. ex Schult., Ann. Mus. Natl. Hist. Nat. 11: 131. 1808; Wt., Ic. t. 723. 1840; Fl. Brit. India 4: 728. 1885; Fl. Madras 1178. 1925; Fl. Thenmala 297. 1995.

Erect pubescent herbs, branchlets striate. Leaves obovate or orbicular, obtuse, pubescent on both sides, to 2.5 x 2 cm; often much smaller. Perianth lobes greenish-white, oblong, obtuse, to 1.5 mm long, pubescent.

Fairly common in forest plantations and disturbed moist deciduous forests.

NS 10402 (Choodal)

Fl. & Fr. September-April

D i s t. Widespread in tropics and subtropics

ALLMANIA R. Br. ex Wt.

Allmania nodiflora (L.) R. Br. ex Wt. in Hook.'s J. Bot. 1: 236. t. 128. 1834. var. *nodiflora*: Hook. f., Fl. Brit. India 4: 716. 1885; Fl. Madras 1167. 1925; Backer in Steenis, Fl. Males. I, 4: 74. 1949. *Celosia nodiflora* L., Sp. Pl. 205. 1753.

Much branched herbs, with long tap root, branchlets angular. Leaves orbicular or obovate, apiculate, base attenuate, very variable in size. Heads sessile, to 1.5 cm across. Perianth lobes oblong-lanceolate, acuminate, 5 mm long.

Occasional in moist deciduous forests.

NS 10447 (Kallar)

Fl. & Fr. July-October

D i s t. Indo-Malesia

ALTERNANTHERA Forssk.

1. Tepals 1-nerved; leaves green

: *A. sessilis*

1. Tepals 3-nerved at base; leaves purple or greenish-purple

: *A. bettzickiana*

Alternanthera bettzickiana (Regel) Voss in Vilm., Blumengart. (ed 3) 1: 869. 1896; Sivar. & P. Mathew, J. Indian For. 7: 52. 1984.

Erect or ascending herbs. Leaves elliptic or rhomboid, acute or acuminate, base attenuate, to 10 x 4.5 cm. Heads globose 1 cm across, axillary, peduncle 1-1.5 cm long. Tepals lanceolate, mucronate, white. Stamines laciniate at apex.

Occasional in disturbed moist deciduous forests.

NS 10748 (Kattalappara)

Fl. October-February

D i s t. Widespread in tropics and subtropics, often cultivated.

Alternanthera sessilis (L.) R. Br. ex DC., Cat. Pl. Hort. Bot. Monspel. 4: 77. 1813; Wt., Ic. t. 727. 1843; Fl. Brit. India 4: 731. 1885; Fl. Thenmala 293. 1995. *Gomphrena sessilis* L., Sp. Pl. 225. 1753. *Alternanthera triandra* Lamk., Encyl. 1: 95. 1785; Fl. Madras 1179. 1925.

Prostrate herbs, branches often purplish, young shoots with 2 lines of hairs. Leaves linear-oblong, obtuse or subacute, base cuneate, somewhat fleshy, to 2.5 x 1 cm. Heads globose to oblong, 0.5 cm long. Tepals equal, ovate, acute, scarious, 1-nerved, 2 mm long. Stamens 3-5.

Common in reservoir bed and along sides of water courses.

NS 10577 (Thenmala)

Fl. & Fr. May-November

D i s t. Paleotropics

CYATHULA Bl. *nom. cons.*

Cyathula prostrata (L.) Bl., Bijdr. 549. 1825; Fl. Brit. India 4: 723. 1885; Fl. Madras 1172. 1925; Fl. Thenmala 294. 1995. *Achyranthes prostrata* L., Sp. Pl. (ed. 2) 296. 1762. *Desmochaeta prostrata* (L.) DC., Cat. Hort. Monsp. 102. 1813; Wt., Ic. t. 733. 1843.

Slender prostrate herbs, rooting at lower nodes, branches ascending. Leaves ovate or rhomboid, acute, hairy on both sides, often pale purplish, to 4.5 x 2.5 cm. Spikes to 15 cm long. Tepals oblong, apiculate, pubescent, 2 mm long. Staminodes lacerate.

Common in moist deciduous and semi-evergreen forests.

NS 11052 (Rosemala)

Fl. & Fr. September-April

D i s t. Paleotropics

POLYGONACEAE

POLYGONUM L.

- | | |
|---|----------------------|
| 1. Flowers white in heads; scandent herbs | : <i>P. chinense</i> |
| 1. Flowers pink, in elongated spikes; erect herbs | : <i>P. glabrum</i> |

Polygonum chinense L., Sp. Pl. 363. 1753; Wt., Ic. t. 1806. 1852; Fl. Brit. India 5: 44. 1886; Fl. Madras 1190. 1925; Fl. Thenmala 298. 1995. *Persicaria chinensis* (L.) Gross., Bot. Jahrb. 49: 269. 177. 315. 1913.

Scandent subshrubs. Leaves ovate or oblong, acuminate, base truncate or cordate, sometimes cuneate, glabrous, margins serrulate or subentire, to 11 x 5 cm; ochrea to 2.5 cm long, glabrous. Heads in terminal corymbose short panicles; bracts oblong. Perianth white, lobes 5, oblong, acute, 4 mm long. Stamens 8. Styles 3. Nuts trigonous.

Common in evergreen and semi-evergreen forests, especially in disturbed areas.

NS 10049, 10769 (Kallar)

Fl. & Fr. Throughout the year

D i s t. Indo-Malesia and East Asia

Polygonum glabrum Willd., Sp. Pl. 2: 447. 1799, var. *glabrum*: Wt., Ic. t. 1797. 1852; Fl. Brit. India 5: 34. 1886; Fl. Madras 1190. 1925; Fl. Thenmala 299. 1995. *Persicaria glabrum* (Willd.) Opiz, Sezam 72. 1852.

Stout herbs. Leaves linear-lanceolate, acuminate, base attenuate, glabrous, to 15 x 1.5 cm; ochrea glabrous, to 3 cm long, without bristles. Spikes to 15 cm long; bracts ovate, acute. Perianth lobes 5, ovate-obtuse, 2.5 mm long. Stamens 5. Nuts biconvex.

Along banks of streams .

NS 11220 (Rosemala)

Fl. & Fr. January-May

D i s t. Tropics and W. Europe

PODOSTEMACEAE

ZEYLANIDIUM (Thul.) Engl. & Prantl

Zeylanidium olivaceum (Gard.) Engl., in Engl. & Prantl, Pflanzenf. (ed. 2) 18a: 62. 1930.

Podostemon olivaceum Gard., Calcutta J. Nat. Hist. 7: 181. 1847; Fl. Brit. India 5: 66.

1886. *Hydrobryum olivaceum* (Gard.) Tul., Ann. Sci. Nat. Bot. (ser. 3) 11: 104. 1849; Wt., Ic. t. 1918, f. 2. 1852; Fl. Madras 1198. 1925.

Thallus crustaceous, often orbicular. Leaves linear, scattered. Flowers shortly stalked, spathe splits along upper side. Stamens 2, as long as the ovary. Capsule 8-ribbed, stalk to 1 cm long.

Common on rocks along streams.

NS 11230 (Umiyar)

Fl. & Fr. December-January

D i s t. South India and Sri Lanka

ARISTOLOCHIACEAE

1. Erect shrubs or subshrubs; perianth equally 3-lobed : *Thottea*

1. Climbing herbs or shrubs; perianth inflated at base and obliquely elongated above : *Aristolochia*

ARISTOLOCHIA L.

Aristolochia indica L., Sp. Pl. 960. 1753; Fl. Brit. India 5: 75. 1886; Fl. Madras 1202. 1925; Fl. Thenmala 302. 1995. *A. lanceolata* Wt., Ic. t. 1858. 1852.

Twining shrubs, branchlets slender. Leaves linear-oblong or ovate-oblong, acute or retuse, glabrous, to 10 x 4.5 cm; 5-nerved at base. Flowers in few-flowered axillary racemes; pedicels 7 mm long, elongate in fruits. Perianth to 4 cm long, bulb green, tube dull brown, limb linear-oblong, greyish-green. Capsule oblong-globose, 2.5 cm long; seeds deitoid ovate.

Occasional in disturbed moist deciduous forests.

NS 10611 (Kattalappara); 11322 (Rosemala)

Fl. & Fr. July-March

D i s t. India, Sri Lanka, Nepal and Bangladesh

THOTTEA Rottb.

1. Flowers in short (1 cm) axillary cymes, stamens 9 in one row : T. *siliquosa*

1. Flowers in racemes (10-15 cm) from subterranean nodes, stamens
15, in two rows : T. *dinghoui*

Thottea dinghoui Swarup., Blumea 28: 407. 1983.

Caespitose herbs. Leaves broadly elliptic or elliptic-lanceolate, acute, base obtuse, glabrous above and hispid below, to 20 x 10 cm. Inflorescence radical, from basal 4 or 5 nodes; bracts linear, 2 mm long. Flowers yellow. Calyx lobes orbicular, 6 x 4 mm, spreading. Stamens with an outer whorl of 9 and inner 6. Stigma with 4 or 5 linear lobes. Capsule linear, quadrangular, 5-6 x 0.5 cm; seeds slightly depressed on one side.

Occasional in evergreen forests.

NS 10959 (Rosemala)

Fl. & Fr. March-August

D i s t. Southern W. Ghats (Kerala) : endemic

Thottea siliquosa (Lamk.) Ding Hou, Blumea 27:327. 1981. *Apama siliquosa* Lamk., Encyl. 1: 91. 1783; Fl. Madras 1200. 1925. *Bragantia wallichii* R. Br. ex Wt. & Arn., Edinb. New Philos. J. 15: 181. 1833; Wt., Ic. t. 520. 1842; Fl. Brit. India 5: 73. 1886.

Shrubs, branchlets angled, finely pubescent. Leaves oblong-lanceolate, base obtuse, entire, glabrous, to 17 x 5 cm; 3-ribbed from base, prominently reticulate. Cymes axillary; bracts linear; pedicels densely pubescent. Perianth 1 cm long, dark purple, lobes acute. Stamens 9. Style 3-fid. Capsule linear, torulose to 7 x 0.3 cm; seeds pitted.

Common in evergreen and semi-evergreen forests.

NS 10206 (Kattalappara); 10362 (Kallar)

Fl. & Fr. Throughout the year

D i s t. Peninsular India and Sri Lanka

PIPERACEAE

1. Climbing shrubs; spikes leaf opposed; flowers dioecious : Piper

1. Erect herbs or subshrubs, sometimes epiphytic; spikes terminal or
axillary; flowers bisexual : 2

2. Subshrubs; leaves alternate, large, orbicular-cordate; spikes in axillary umbels : **Lepianthes**
2. Herbs; leaves opposite or whorled, small, not cordate at base; spikes solitary : **Peperomia**

LEPIANTHES Rafin.

Lepianthes umbellata (L.) Rafin., Sylva Tellur. 84. 1838; Fl. Thenmala 304. 1995. *Piper umbellatum* L., Sp. Pl. 30. 1753. *Pothomorphe subpeltata* (Willd.) Miq., Comm. Phytogr. 37. 1840; Wt., Ic. t. 1925. 1853. *Piper subpeltatum* Willd., Sp. Pl. 1: 166. 1798; Fl. Brit. India 5: 95. 1886. *Hackeria subpeltata* (Willd.) Kunth, Linnaea 13: 571. 1839; Fl. Madras 1208. 1925.

Subshrubs, to 1.5m tall, often glaucous. Leaves orbicular-cordate, acuminate, to 25 cm across; basally 15-17 ribbed; petiole to 17 cm long. Spikes 4-6 per umbel, to 9 x 3 mm; peduncle to 2.5 cm long; bracts orbicular, peltate.

Common in evergreen forests.

NS 10449 (Kallar)

Fl. & Fr. June-February

D i s t. Paletropics

PEPEROMIA Ruiz. & Pavon

1. Leaves obovate, base cuneate; seeds minutely scaly : **P. portulacoides**
1. Leaves elliptic to suborbicular, base obtuse or rounded; seeds rugose : **P. wightiana**

Peperomia portulacoides (Lamk.) A. Dietr., Sp. Pl. (ed. 6) 1: 172. 1831; Fl. Brit. India 5: 98. 1886; Fl. Madras 1210. 1925; Fl. Thenmala 304. 1995. *Piper portulacoides* Lamk., Encyl. 1: 82. 1791.

Small epiphytic or lithophytic herbs; rooting at lower nodes. Leaves opposite, obovate, obtuse, base cuneate, to 3 x 2.5 cm. Spikes narrow, to 7 cm long, bracts orbicular-peltate. Berries partly embedded in the rachis.

Common in evergreen forests above 700 m.

NS 11266 (Rosemala)

Fl. & Fr. July-December

D i s t. South West India and Malagasy Island

Peperomia wightiana Miq., London J. Bot. 5: 548. 1846; Wt., Ic. t. 1924. 1853; Fl. Brit. India 5: 98. 1886; Fl. Madras 1210. 1925.

Small slender epiphytic or lithophytic herbs. Leaves elliptic to orbicular, to 2 cm across. Spikes slender, to 5 cm long. Seeds minutely scaly and rugose.

Occasional in evergreen forests.

NS 11059 (Rosemala)

Fl & Fr. August-November

Dist. South India and Sri Lanka

PIPER L.

- | | |
|---|---------------------------|
| 1. Flowers subtended by peltate orbicular bracts | : 2 |
| 1. Flowers subtended by bracts adnate to the rachis | : <i>P. argyrophyllum</i> |
| 2. Leaves penni-nerved; stem climbing; spikes pendulous, ovaries and berries free | : <i>P. barberi</i> |
| 2. Leaves basally 3-7 ribbed, spikes erect | : 3 |
| 3. Fruiting spikes globose, 1-1.2 cm across | : <i>P. mullesua</i> |
| 3. Fruiting spikes oblong, 2-4 cm long | : <i>P. longum</i> |

Piper argyrophyllum Miq., Syst. Pip. 330. 1844; Wt., Ic. t. 1941. 1853; Fl. Brit. India 5: 93. 1886; Fl. Madras 1207. 1925.

Climbing shrubs, branchlets glabrescent. Leaves ovate or broadly elliptic, acuminate, membranous, glabrous, to 14 x 7 cm; basally 5-nerved. Spikes slender, peduncle to 10 cm; spikes to 15 cm long; bracts peltate, margins overlapping. Stigma 3-4. Berry ovoid, 4 mm long.

Fairly common in semi-evergreen and evergreen forests.

NS 10948 (Choodal)

Fl. & Fr. July-February

Dist. South India

Piper barberi Gamble, Kew Bull. 1924: 387. 1924 & Fl. Madras 1206. 1925; Nayar & Sastry, Red Data Book Indian Pl. 2: 181. 1988.

Climbing subshrubs, branchlets angular or terete, glabrous. Leaves oblong-lanceolate, base obtuse or acute, glabrous, to 14 x 3.5 cm; lateral nerves 7-9 pairs, archingly joined along margins. Peduncle slender, to 11 cm long; spikes to 10 cm long. Berry obovoid-globose, 4 mm long.

Rare in evergreen forests.

NS 10218 (Choodal)

Fl. & Fr. March-September

Dist. Southern W. Ghats : endemic

Note: This little known threatened species was considered to be restricted to the type locality, Kannikatti forests of Tirunelveli District in Tamil Nadu (Nayar & Sastry, l.c.).

Piper longum L., Sp. Pl. 29. 1753; Fl. Brit. India 5: 83. 1886; Fl. Madras 1205. 1925; Fl. Thenmala 306. 1995. *Chavica roxburghii* Miq., Syst. Pip. 239. 1844; Wt., Ic. t. 1928. 1853.

Subshrubs with slender prostrate or ascending shoots, sometimes climbing. Leaves ovate, acute or acuminate, base cordate, puberulous along nerves below, to 12 x 6 cm; basally 5-7 nerved. Spikes yellow, to 5 x 2.5 mm; peduncle to 1.5 cm long. Stigmas 3-5.

Common in moist deciduous and semi-evergreen forests.

NS 10524 (Kattalappara)

Fl. & Fr. Throughout the year

D i s t. Indo-Malesia

Piper mullesua Buch.-Ham. ex D. Don, Prodr. Fl. Nep. 20. 1825; Fl. Thenmala 306. 1995. *P. brachystachyum* Wall. ex Hook. f., Fl. Brit. India 5: 87. 1886; Fl. Madras 1206. 1925. *Chavica sphaerostachya* Miq., Syst. Piperac. 279. 1843; Wt., Ic. t. 1931. 1853.

Much branched climbing shrubs, branches slender. Leaves elliptic-lanceolate, obtusely caudate-acuminate, base acute, glabrous, to 6 x 2.5 cm, 3-5 ribbed from base with another pair little above them. Male spikes slender, 4-6 cm long. Fruiting spikes globose.

Fairly common in evergreen forests.

NS 10286 (Pandimotta); 10386, 11250 (Kallar)

Fl. & Fr. December-April

D i s t. India

Note: *Piper nigrum* L. is widely cultivated in the settlements.

CHLORANTHACEAE

SARCANDRA Gard.

Sarcandra chloranthoides Gard., Calcutta J. Nat. Hist. 6: 348. 1846; Wt., Ic. t. 1946. 1853; Verdc., Kew Bull. 39: 66. 1983; Fl. Thenmala 308. 1995. *Chloranthus brachystachya* sensu Hook. f., Fl. Brit. India 5: 100. 1886 p.p., non Bl. 1829; Fl. Madras 1211. 1925.

Shrubs, branches terete, glabrous. Leaves lanceolate or elliptic-lanceolate, acuminate, base acute, coarsely serrate, chartaceous, to 15 x 5 cm. Spikes to 10 cm long. Stamen 1; anther 2-celled; connective and filament thick. Berry purple-black, 5 mm across.

Common in evergreen forests.

NS 10345 (Kallar)

Fl. & Fr. December-May

D i s t. India and Sri Lanka

MYRISTICACEAE

1. Stamens in male flowers with anthers stellately spreading from a peltate disc of column : **Knema**
1. Stamens in male flowers with anthers around the column : 2
2. Anther column sessile, anthers free at apex; seed globose : **Gymnacranthera**
2. Anther column stipitate, produced above the anthers; seed ovoid or oblong : **Myristica**

GYMNACRANTHERA Warb.

Gymnacranthera farquhariana (Hook. f. & Thoms.) Warb., Monogr. Myrst. 365. 1897. *Myristica farquhariana* Hook. f. & Thoms., Fl. Ind. 162. 1855, non Hook. f., 1886. *M. canarica* Bedd. ex King, Ann. Roy. Bot. Gard. (Calcutta) 3: 306. t. 138. 1891; For. Trees Travancore 294. 1908. *Gymnacranthera canarica* (Bedd. ex King) Warb., Monogr. Myrst. 368. 1897; Fl. Madras 1212. 1925.

Large evergreen trees, exudation red. Leaves bifarious, oblong, acute, base rounded, chartaceous, glabrous and glossy above, glaucous below, to 20 x 6 cm; lateral nerves to 17 pairs. Panicles 3-4 cm long. Perianth orange-yellow, 4 mm long, apically 4-lobed, lobes ovate-acute.

Uncommon, along banks of rivers in evergreen forests.

NS 10182, 10323 (Choodal)

Fl. March-April

D i s t. Indo-Malaya

KNEMA Lour.

Knema attenuata (Hook. f. & Thoms.) Warb., Monogr. Myrist. 590. 1897; Fl. Madras 1215. 1925; de Wilde, Blumea 25: 439. 1979; Fl. Thenmala 308. 1995. *Myristica attenuata* Wall. ex Hook. f. & Thoms., Fl. Ind. 157. 1855; Fl. Brit. India 5: 110. 1886; For. Trees Travancore 295. 1908. *M. corticosa* Bedd., Fl. Sylv. t. 278. 1872.

Evergreen trees, exudation red, watery, branches whorled, horizontal, branchlets reddish-brown, tomentose. Leaves oblong-lanceolate, acuminate, base rounded or obtuse, glabrous above and glaucous below, to 23 x 7 cm; lateral nerves 17-25 pairs. Flowers fascicled at apex of thickened axillary peduncles. Perianth urceolate, 3-lobed, brown tomentose outside. Stamens 10. Capsule ellipsoid, to 3.5 x 1.8 cm, densely brown tomentose; aril red.

Common in semi-evergreen and evergreen forests.

NS 10141 (Choodal); 10739 (Kattalappara)

Fl. & Fr. December-June

D i s t. W. Ghats, from Konkan Southwards : endemic

MYRISTICA Gronov. nom. cons.

- | | |
|---|-------------------------|
| 1. Flowers fascicled at the apex of short peduncles, tomentose | : 2. |
| 1. Flowers in paniced cymes, glabrous | : M. malabarica |
| 2. Leaves reddish-tomentose below, fruits oblong, rusty tomentose | : M. fatua |
| | var. <i>magnifica</i> |
| 2. Leaves glabrous below, fruits globose, glabrous | : M. dactyloides |

Myristica dactyloides Gaertn., Fruct. 1: 195, t. 41. f. 202. 1788; Sinclair, Gard. Bull. s.s. 23: 445. 1968. *M. laurifolia* Hook. f. & Thoms., Fl. Ind. 163. 1855; Fl. Brit. India 5: 103. 1886. *M. beddomei* King, Ann. Roy. Bot. Gard. (Calcutta) 3: 291, t. 118. f. 1-8, 1891; For. Trees Travancore 293. 1908; Fl. Madras 1214. 1925. *M. contorta* Warb., Monogr. Myrist. 507. 1897; Fl. Madras 1214. 1925.

Medium sized trees, bark brownish black, with linear pustular lenticels, reddish inside, exudation red, scanty, branches nearly horizontal. Leaves oblong, acute, base acute, coriaceous, glabrous above and glaucous below, to 25 x 7 cm; lateral nerves 15-20 pairs. Perianth 6 mm long, yellow, tomentose outside. Anthers 10-15. Female flowers usually solitary. Capsule ovoid or subglobose, 5-6 cm long.

Fairly common in evergreen and semi-evergreen forests.

NS 10663 (Kattalappara); *10849* (Rosemala)

Fl. & Fr. December-May

D i s t. South India and Sri Lanka

Myristica fatua var. *magnifica* (Bedd.) Sinclair, Gard. Bull. s.s. 23: 282. 1968; Fl. Thenmala 310. 1995. *M. magnifica* Bedd., Fl. Sylv. t. 268. 1872; Fl. Brit. India 5: 104. 1886; For. Trees Travancore 293. 1908; Fl. Madras 1214. 1925.

Large trees, often butteressed and with many pneumatophores, bark brownish black. Leaves oblong or elliptic-oblong, acute, base rounded, thickly coriaceous, to 40 x 13 cm; lateral nerves 20-25 pairs. Perianth densely tomentose, 5 mm long. Fruits oblong, tomentose, to 7 x 3 cm; aril red, completely covering the seed, laciniate.

Common in the swamp forests.

NS 10138, 10168 (Choodal); *10309* (Kattalappara)

Fl. & Fr. October-June

D i s t. Western Ghats : endemic

Myristica malabarica Lamk., Hist. Acad. Roy. Sci. Mem. Math. Phys. (Paris) 162. 1791; Bedd., Fl. Sylv. t. 269. 1872; Fl. Brit. India 5: 103. 1886; For. Trees Travancore 294. 1908; Fl. Madras 1213. 1925; Sinclair, Gard. Bull. s.s. 23: 168. t. 9. 1968; Fl. Thenmala 311. 1995.

Medium sized to large evergreen trees, bark greenish-black, smooth, tuberculate-lenticellate, exudation red. Leaves linear-oblong or elliptic-oblong, acute, base obtuse, coriaceous, to 13 x 4 cm; lateral nerves slender, faint. Perianth creamy white, ovoid, 4 mm long, glabrous. Anthers 10-20. Capsule oblong, 7.5 x 3.5 cm, tomentose; aril red.

Fairly common in evergreen and swamp forests.

NS 10140 (Choodal); 10860 (Umiyar)

Fl. & Fr. December-April

D i s t. Konkan Southwards ; endemic

LAURACEAE

- | | |
|---|-----------------|
| 1. Leaves opposite or subopposite, 3-ribbed from the base or little above from the base | : Cinnamomum |
| 1. Leaves alternate or verticillate, penni-nerved | : 2 |
| 2. Flowers unisexual | : 3 |
| 2. Flowers bisexual | : 4 |
| 3. Leaves in whorls or pseudo-whorls; anthers 2-celled | : Actinodaphne |
| 3. Leaves alternate, equidistant; anthers 4-celled | : Litsea |
| 4. Anthers 2-celled | : 5 |
| 4. Anthers 4-celled | : 6 |
| 5. Fruits subtented by the erect perianth lobes | : Apollonias |
| 5. Fruiting perianth deciduous | : Beilschmiedia |
| 6. Staminal glands sessile | : Alseodaphne |
| 6. Staminal glands stipitate | : 7 |
| 7. Fruiting perianth enlarged; intercostate of leaves subscalariform | : Cryptocarya |
| 7. Fruiting perianth not enlarged; intercostae of leaves reticulate | : Persea |

ACTINODAPHNE Nees

- | | |
|--|------------------|
| 1. Leaves obovate, obtuse, under 7 cm long | : A. campanulata |
| 1. Leaves lanceolate, acuminate, over 12 cm long | : 2 |
| 2. Under surface of leaves and young shoots hirsute | : A. malabarica |
| 2. Leaves glabrous and glossy, young shoots glabrous | : A. salicina |

Actinodaphne campanulata Hook. f., Fl. Brit. India 5: 148. 1886; Fl. Madras 1230. 1925.

A. salicina sensu Bedd., Fl. Sylv. t. 295. 1873, non Meissn. 1864 [Fig. 14].

Medium sized trees, young shoots densely tomentose. Leaves in whorls of 4-6, obovate or oblong, obtuse, base acute, fulvous tomentose when young, become glabrous when mature, glabrous below, to 5 x 2.5 cm; lateral nerves 5-7 pairs. Flowers fascicled. Perianth 6-lobed, tomentose.

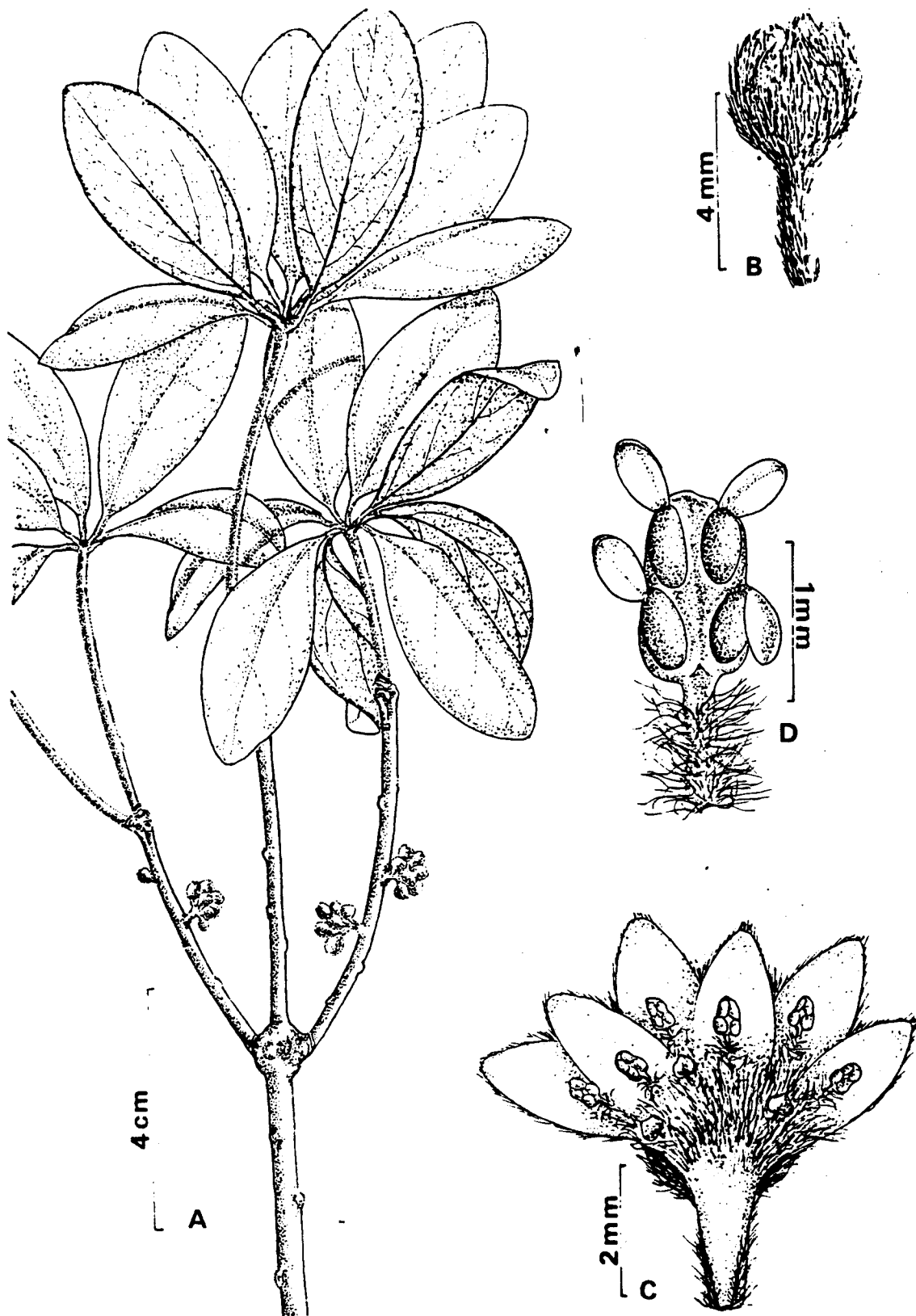


Fig. 14 : *Actinodaphne campanulata* Hook. f. A. flowering twig, B. flower, C. perianth with stamens and staminodes, D. fertile stamen-ventral view

Occasional in shola forests.

NS 10239, 11392 (Pandimotta)

Fl. February-April

D i s t. Southern W. Ghats : endemic

Actinodaphne malabarica Balakr., J. Bombay Nat. Hist. Soc. 6: 329. 1967. *A. hirsuta* Hook. f., Fl. Brit. India 5: 152. 1886, non Bl. 1851; For. Trees Travancore 304. 1908; Fl. Madras 1231. 1925; Fl. Thenmala 315. 1995. *A. hookeri* sensu Bedd., Fl. Sylv. t. 296. 1873 p.p., non Meissn. 1864; For. Trees Travancore 303. 1908.

Medium sized to large trees, young shoots densely fulvous tomentose. Leaves elliptic-lanceolate, acuminate, base attenuate, glabrous and glossy above, villous beneath, to 25 x 6 cm; lateral nerves 13-17 pairs. Bracts and perianth densely silky brown tomentose. Perianth lobes oblong, acute, 3 mm long. Berry globose, 1 cm across; fruiting calyx cupular, entire.

Fairly common in evergreen forests.

NS 10998 (Kallar)

Fl. & Fr. August-January

D i s t. Southern W. Ghats : endemic

Actinodaphne salicina Meissn. in DC., Prodr. 15: 212. 1864; Fl. Brit. India 5: 148. 1886; Fl. Madras 1230. 1925.

Small to medium sized trees, young shoots glabrous. Leaves linear-lanceolate, caudate-acuminate, base attenuate, glabrous and glaucous below when mature, to 16 x 2.5 cm; lateral nerves ca. 10 pairs, very slender. Flowers clustered. Fruits globose 7 mm across, perianth 6-lobed.

Occasional in evergreen forests.

NS 10115, 10465 (Kallar)

Fl. & Fr. September-March

D i s t. Southern W. Ghats : endemic

ALSEODAPHNE Nees

Alseodaphne semecarpifolia Nees var. *parvifolia* Hook. f., Fl. Brit. India 5: 144. 1886; Fl. Madras 1226. 1925. *A. semecarpifolia* sensu Wt., Ic. t. 1827. 1852, non Nees 1831; For. Trees Travancore 300. 1908.

Medium sized evergreen trees, young shoots glabrous. Leaves obovate or oblanceolate, obtuse, base cuneate, sometimes unequal, glabrous above, glaucous below, to 10 x 4.5 cm. Panicles to 8 cm long, glabrous. Perianth lobes oblong, outer 4 mm long; inner 5 mm long.

Occasional in semi-evergreen and evergreen forests.

NS 11290 (Rosemala)

Fl. & Fr. July-December

D i s t. Southern W. Ghats : endemic

APOLLONIAS Nees

Apollonias arnottii Nees, *Syst. Lautin.* 670. 1836; *Wt., Ic.* t. 1819. 1852; *Fl. Brit. India* 5: 121. 1886; *Fl. Madras* 1219. 1925.

Small trees, young shoots glabrescent. Leaves lanceolate, caudate-acuminate, base attenuate, glabrous, coriaceous, to 15 x 3.5 cm; lateral nerves 8-10 pairs, slender. Panicles 2.5-5 cm long, terminal or from the axills of upper leaves. Perianth 6-lobed, lobes subequal. Stamens 9, anthers 2-celled.

Fairly common in evergreen forests.

NS 10116 (Kallar)

Fl. November-December

D i s t. Southern W. Ghats : endemic

BEILSCHMIEDIA Nees

Beilschmiedia wightii (Nees) Benth. ex Hook. f., *Fl. Brit. India* 5: 124. 1886; *For. Trees Travancore* 298. 1908; *Fl. Madras* 1221. 1925. *Haasia wightii* Nees, *Syst. Laurin.* 676. 1836; *Wt., Ic.* t. 1831. 1852.

Medium sized to large trees, bark brown, smooth, young shoots glabrous. Leaves elliptic or elliptic-oblong, obtusely acuminate, base cuneate or acute, glabrous and glossy, to 15 x 6 cm; lateral nerves 7-9 pairs, intercostae prominently reticulate. Inflorescence glabrous. Berry ellipsoid, 3 cm long.

Occasional in evergreen forests.

NS 10826 (Rosemala)

Fl. & Fr. January-February

D i s t. Southern W. Ghats : endemic

Note: Ahmedullah & Nayar (1987) have reported this species as rare and threatened.

CINNAMOMUM Schaeffer. *nom. cons.*

- | | |
|--|------------------------------|
| 1. Pedicels slender, 8-15 mm long, flowers 2-2.5 mm long | : <i>C. filipedicellatum</i> |
| 1. Pedicels under 5 mm long, flowers over 2.5 mm long | : 2 |
| 2. Young shoots and leaves glabrous | : <i>C. malabattrum</i> |
| 2. Young shoots and leaves yellowish-brown tomentose | : <i>C. sulphuratum</i> |

Cinnamomum filipedicellatum Kosterm., *Bull. Bot. Surv. India* 25: 93. 1983 (1985). *C. gracile* auct. non Miq. sensu Hook. f., *Fl. Brit. India* 5: 133. 1886; *Fl. Madras* 1223. 1925 [Fig. 15].

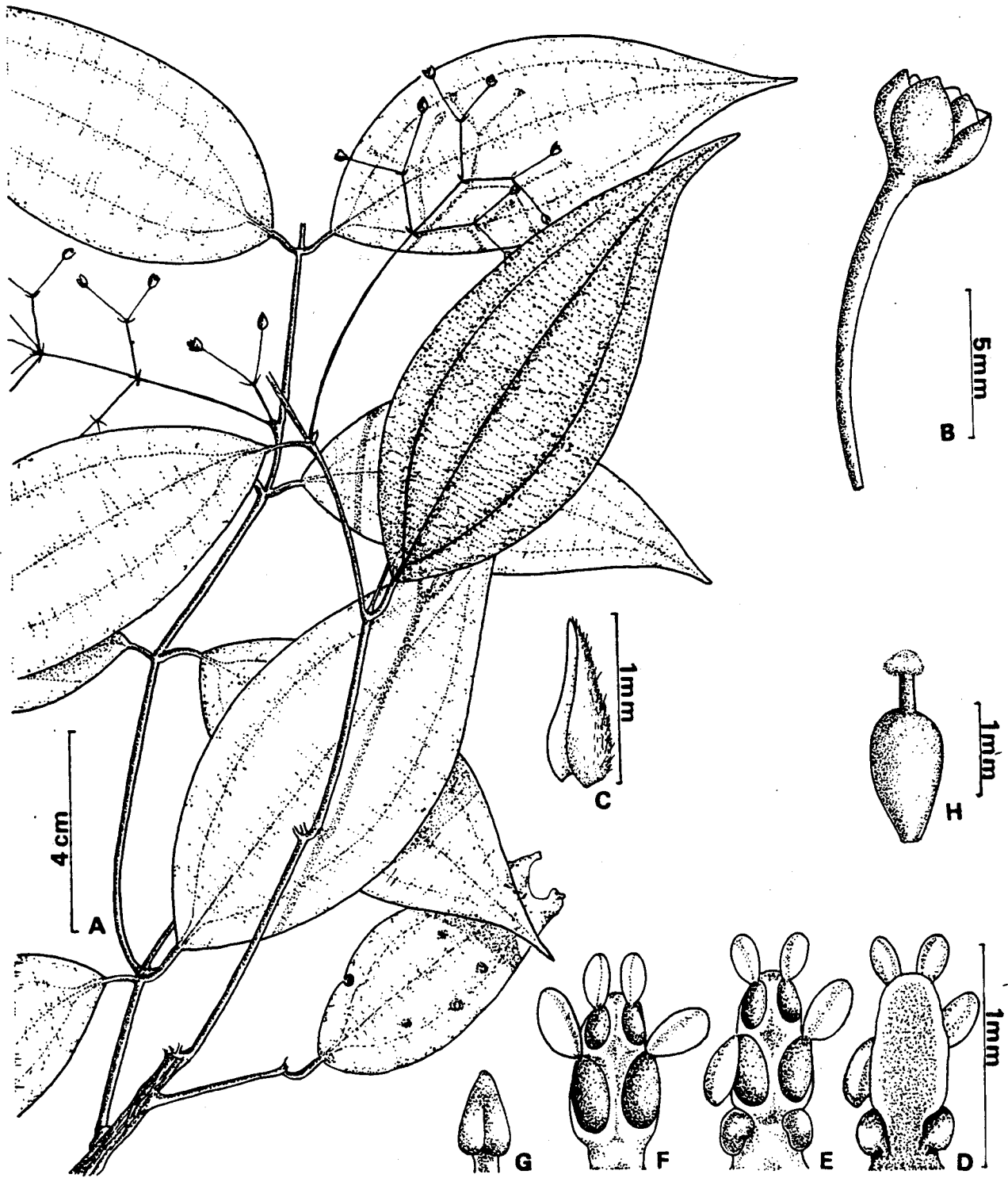


Fig. 15 : *Cinnamomum filipedicellatum* Kosterm. A. flowering twig, B. flower, C. bract, D & E. stamen of inner row-dorsal and ventral views., F. stamen of outer row-ventral view, G. sterile stamen inner row, H. pistil

Small trees, branchlets slender. Leaves elliptic-lanceolate to subovate, obtusely acuminate, base acute, to 12 x 6 cm, the 3 basal ribs reaching 3/4 length of lamina. Panicles slender, glabrous. Flowers yellow with pink shades.

Occasional in evergreen forests.

NS 10120 (Kallar); 11388 (Pandimotta)

Fl. February-March

D i s t. Southern W. Ghats : endemic

Cinnamomum malabattrum (Burm. f.) Bl., Rumphia 1:38, t. 13. f. 3-4. 1836; Kosterm., Bull. Bot. Surv. India 25: 102. 1983 (1985). *Laurus malabattrum* Burm. f., Fl. Ind. 92. 1768. *Cinnamomum iners* auct. non Bl. 1826, Hook. f., Fl. Brit. India 130. 1886; Fl. Madras 1224. 1925.

Small to medium sized trees, bark smooth, reddish-brown. Leaves oblong or oblong-lanceolate, base obtuse, glabrous and glossy, tender leaves often pink-red, to 20 x 6 cm, in young plants much larger. Panicles terminal and axillary panicles. Perianth lobes tomentose. Staminal filaments glandular.

Common in semi-evergreen and evergreen forests.

NS 10405 (Kallar)

Fl. March-April

D i s t. W. Ghats : endemic

Cinnamomum sulphuratum Nees in Wall., Pl. As. Rar. 2: 74. 1831; Fl. Brit. India 5: 132. 1886; For. Trees Travancore 302. 1908; Fl. Madras 1225. 1925; Kosterm., Bull. Bot. Surv. India 25: 114. 1983 (1985).

Small to medium sized trees, young shoots adpressed yellowish-brown tomentose. Leaves oblong or elliptic-oblong, acute, base obtuse or acute, young leaves tomentose beneath, become glabrous when mature, to 10 x 3.5 cm; 3-ribbed from the base. Panicles terminal and axillary, pedicels, peduncle and perianth tomentose. Staminal filaments villous.

Occasional in evergreen forests.

NS 10119 (Kallar)

Fl. March-April

D i s t. Southern W. Ghats : endemic

CRYPTOCARYA R. Br.

- | | |
|--|-------------------------|
| 1. Branchlets and leaves beneath fulvous tomentose | : <i>C. anamalayana</i> |
| 1. Branchlets and leaves glabrous | : <i>C. beddomei</i> |

Cryptocarya anamalayana Gamble, Kew Bull. 1925: 126. 1925 & Fl. Madras 1218. 1925 [Fig. 16].

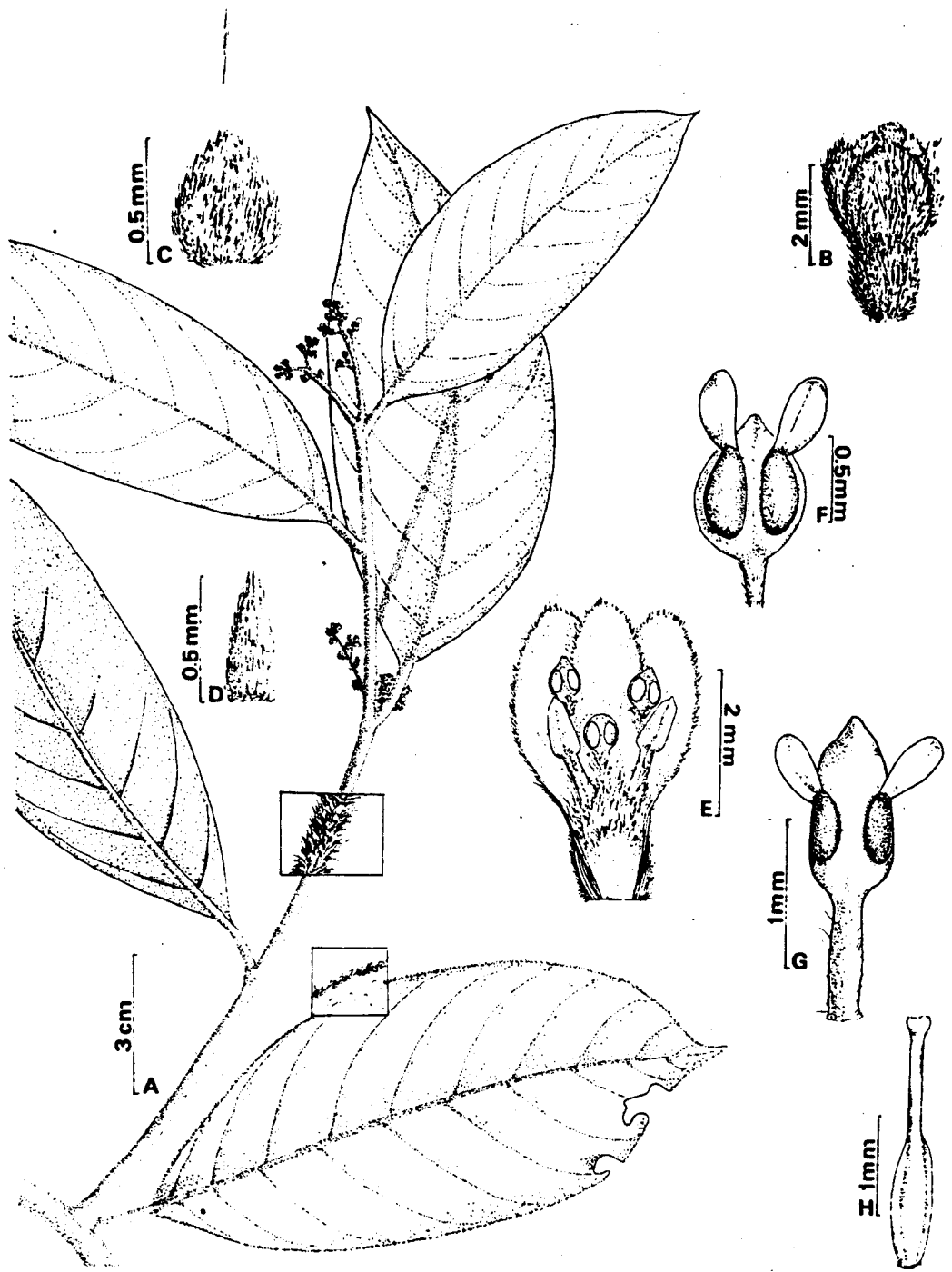


Fig. 16: *Cryptocarya anamalayana* Gamble A. flowering twig, B. flower, C. bract, D. bracteole, E. portion of perianth lobes with stamens, F. outer stamen-ventral view, G. third row stamen-ventral view. H. pistil

Small to medium sized trees, young shoots fulvous tomentose. Leaves elliptic or obovate, acute or shortly acuminate, base obtuse, glabrous above and fulvous tomentose below, to 18 x 8 cm; lateral nerves *ca.* 10 pairs. Panicles fulvous tomentose, to 3 cm long. Bracts and bracteoles conspicuous, oblong. Perianth 2.5 mm long, shortly lobed, tomentose.

Occasional in evergreen forests.

NS 10361 (Kallar); 11419 (Alvarakurichi)

Fl. December-April

Dist. W. Ghats : endemic

Cryptocarya beddomei Gamble, Kew Bull. 1925: 126. 1925 & Fl. Madras 1218. 1925 [Fig. 17].

Small trees, young shoots minutely fulvous tomentose. Leaves elliptic or ovate, obtuse or shortly obtusely acute, base truncate or rounded, glabrous above and glabrescent below, to 12 x 6 cm; lateral nerves 6-8 pairs. Panicles axillary, pubescent, to 8 cm long. Bracts and bracteoles small. Staminal filaments shortly villous.

Occasional in shola forests.

NS 10237 (Pandimotta)

Fl. March-April

Dist. Southern W. Ghats : endemic

LITSEA Lamk. *nom. cons.*

- | | |
|---|--------------------------|
| 1. Umbellules in racemes, sometimes paniced | : 2 |
| 1. Umbellules in fascicles or solitary | : 4 |
| 2. Branchlets and lower surface of leaves yellowish-brown tomentose | : <i>L. floribunda</i> |
| 2. Branchlets and leaves glabrous | : 3 |
| 3. Leaves linear-oblong, white glaucous beneath | : <i>L. beddomei</i> |
| 3. Leaves oblong, brown beneath when dry | : <i>L. oleoides</i> |
| 4. Leaves glabrous beneath | : 5 |
| 4. Leaves tomentose beneath | : 6 |
| 5. Male umbellules solitary, long peduncled, branchlets slender | : <i>L. venulosa</i> |
| 5. Male umbellules fascicled, sessile | : <i>L. coriacea</i> |
| 6. Leaves opposite at the apex of branchlets | : <i>L. travancorica</i> |
| 6. Leaves alternate throughout | : <i>L. bourdillonii</i> |

Litsea beddomei Hook. f., Fl. Brit. India 5: 177. 1886; Fl. Madras 1237. 1925.

Small trees. Leaves linear-oblong, glabrous, silvery glaucous beneath, to 8 x 2.5 cm, lateral nerves 8-10 pairs, slender. Racemes to 3 cm long. Perianth lobes 6, membranous, pubescent. Stamens 8.

Occasional in evergreen forests.

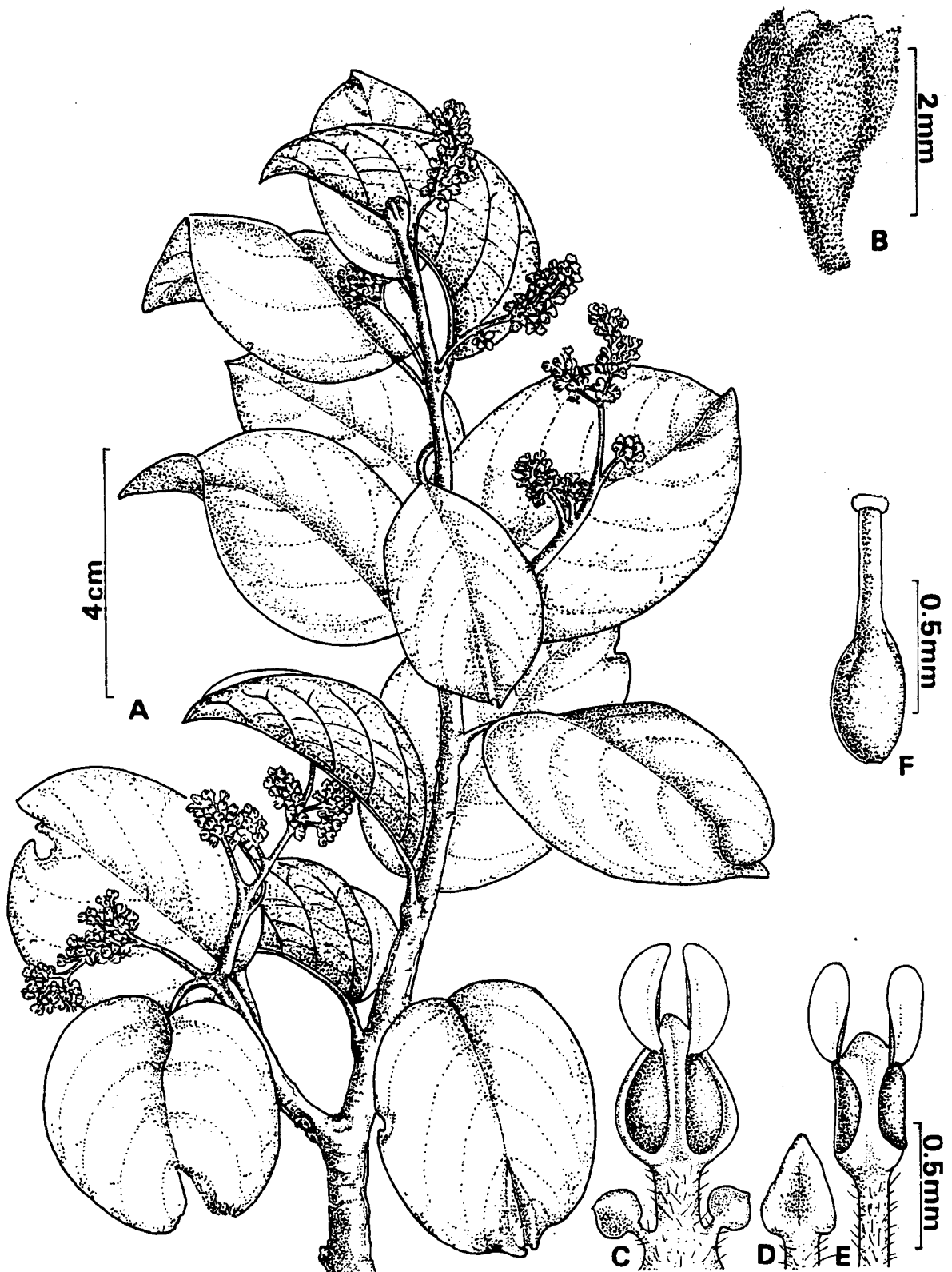


Fig. 17 : *Cryptocarya beddomei* Gamble A. flowering twig, B. flower, C. stamen of first row, D. sterile stamen inner most row, E. stamen of third row, F. pistil

NS 11069 (Rosemala)

Fl. September-November

Dist. Southern W. Ghats : endemic

Litsea bourdillonii Gamble, Kew Bull. 1925: 131. 1925 & Fl. Madras 1237. 1925 [Fig. 18].

Small to medium sized trees; branchlets brownish-black, tomentose. Leaves obovate, obtusely acute, base acute or obtuse, coriaceous, glabrous above, pale below and tomentose, to 20 x 10 cm; lateral nerves impressed above and raised below, intercostae reticulate. Involucral bracts orbicular, concave, densely tomentose 0.5 cm long.

Fairly common in evergreen forests.

NS 10042 (Kallar)

Fl. December-May

Dist. Southern W. Ghats : endemic

Litsea coriacea (Heyne ex Meissn.) Hook. f., Fl. Brit. India 5: 166. 1886; For. Trees Travancore 306. 1908; Fl. Madras 1236. 1925; Fl. Thenmala 313. 1995. *Tetranthera coriacea* Heyne ex Meissn. in DC., Prodr. 15: 186. 1864.

Small to medium sized trees, bark pale brown, thinly scaly, branchlets glabrous. Leaves oblong or narrowly elliptic, acuminate, base acute, coriaceous, dull below, to 16 x 5 cm; lateral nerves 6-9 pairs, intercostae faint. Umbellules subsessile, axillary to leaves or leaf scars. Perianth finely silky to tomentose. Stamens 12.

Fairly common in semi-evergreen forests.

NS 10419 (Kattalappara); 10861 (Umiyar)

Fl. December-January

Dist. Throughout W. Ghats : endemic

Litsea floribunda (Bl.) Gamble, Fl. Madras 1238. 1925; Fl. Thenmala 314. 1995. *Cylicodaphne floribunda* Bl., Mus. Bot. 1: 387. 1851. *Tetranthera wightiana* sensu Bedd., Fl. Sylv. t. 293. 1873, non Nees 1836. *Litsea wightiana* Hook. f., Fl. Brit. India 5: 177. 1886, p.p.; For. Trees Travancore 306. 1908.

Medium sized trees, young shoots densely reddish-brown tomentose. Leaves obovate or oblong, acute, base acute or obtuse, lower surface densely brown tomentose, to 12 x 6 cm; lateral nerves 7-9 pairs; Male umbellules in axillary racemes; bracts densely tomentose; flowers 6-8 in each umbel. Perianth silky. Stamens 12. Female umbellules paniced, axillary and terminal.

Fairly common in evergreen forests.

NS 10058, 10394 (Kallar)

Fl. December-April

Dist. India

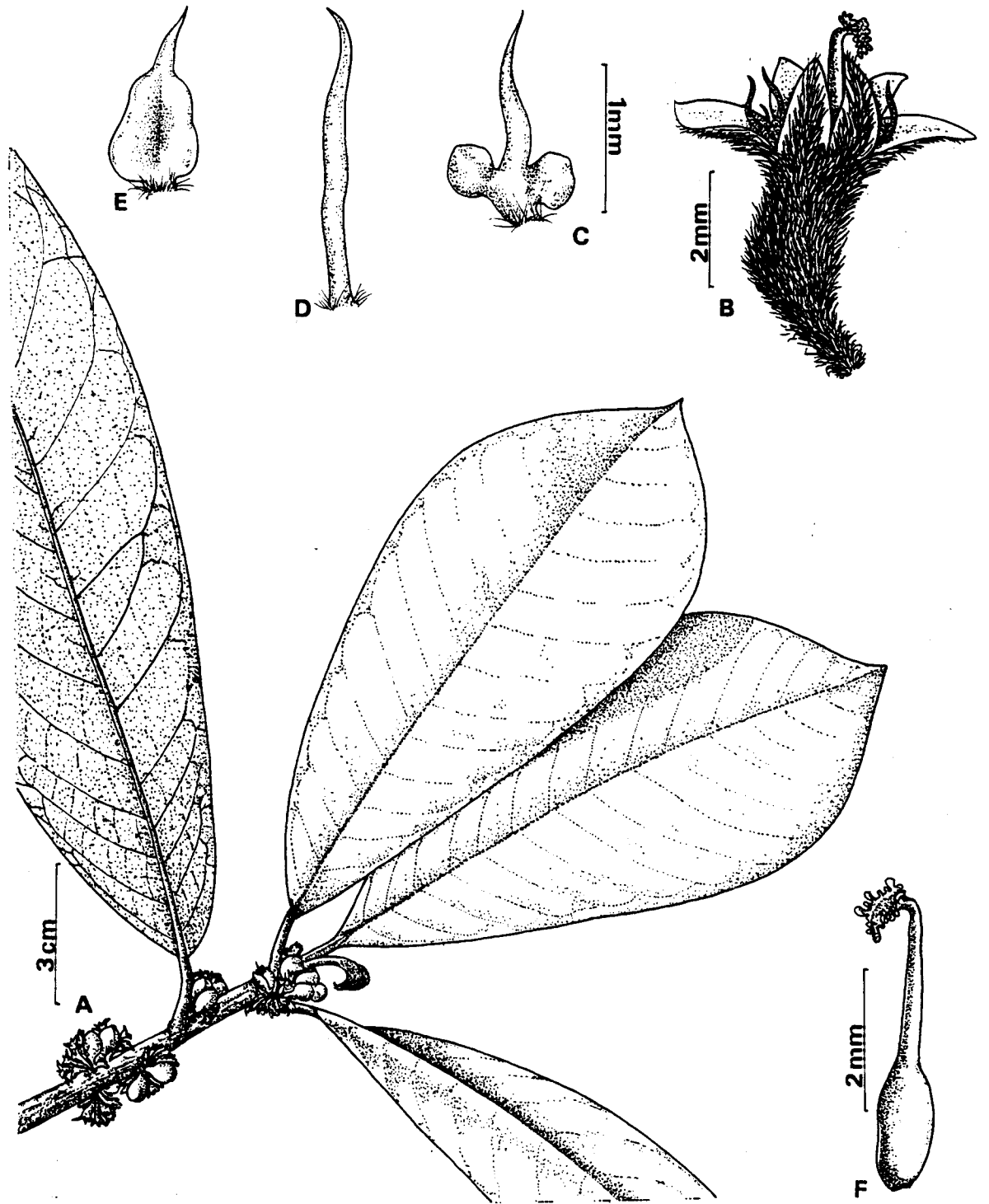


Fig. 18: *Litsea bourdillonii* Gamble A. flowering twig, B. female flower, C, D & E. staminodes, F. pistil

Litsea oleoides (Meissn.) Hook. f., Fl. Brit. India 5: 175. 1886; Fl. Madras 1236. 1925.
Tetranthera oleoides Meissn. in DC., Prodr. 15: 195. 1864.

Large trees, bark brown, smooth, slightly rugose. Leaves oblong, acute or obtuse at both ends, coriaceous, glabrous and glossy, pale green above and reddish-brown below when dry; lateral nerves 7-9 pairs, slender, faint, to 14 x 7 cm. Racemes to 6 cm long. Perianth white, ovate, obtuse, pubescent, 2.5 x 3 mm. Fruits depressed globose, red, 2-2.5 cm across.

Fairly common in evergreen forests.

NS 10766 (Kallar)

Fl. & Fr. October-April

D i s t. Peninsular India : endemic

Litsea travancorica Gamble, Kew Bull. 1925: 132. 1925 & Fl. Madras 1237. 1925; Henry et. al, J. Bombay Nat. Hist. Soc. 75: 694. 1979.

Small trees, young shoots ferruginous tomentose. Leaves oblong or obovate, acute, base obtuse, to 16 x 5 cm; lateral nerves 8-12 pairs, petiole and nerves below tomentose. Umbellules axillary, subsessile, bracts tomentose. Fruits globose, glabrous, 1 cm across, perianth cupular, dentate.

Fairly common in evergreen forests.

NS 10030, 10134 (Kallar)

Fl. & Fr. October-June

D i s t. Southern W. Ghats : endemic

Litsea venulosa (Meissn.) Hook. f., Fl. Brit. India 5: 161. 1886; Fl. Madras 1235. 1925.
Tetranthera venulosa Meissn. in DC., Prodr. 15: 187. 1867.

Subscandent shrubs, branchlets and leaves glabrous. Leaves oblong, obtusely caudate-acuminate, base obtuse, glaucous below, to 10 x 5 cm. Male umbellules solitary or in groups of 2 or 3, peduncles slender, to 1.5 cm long; female solitary. Perianth lobes 5 or 6, unequal, gland-dotted. Fruits subglobose, 1 cm across, pedicels thickened towards apex, yellow.

Fairly common in evergreen forests.

NS 10054, 11003 (Kallar); 11262 (Rosemala)

Fl. & Fr. September-April

D i s t. Southern W. Ghats : endemic

PERSEA Mill. *nom. cons.*

Persea macrantha (Nees) Kosterm., Reinwardtia 6: 193. 1962; Fl. Thenmala 315. 1995.
Machilus macrantha Nees in Wall., Pl. As. Rar. 2: 70. 1831; Wt., Ic. t. 1824. 1852; Bedd., Fl. Sylv. t. 264. 1872; Fl. Brit. India 5: 140. 1886; For. Trees Travancore 299. 1908; Fl. Madras 1227. 1925. *M. glaucescens* Wt., Ic. t. 1825. 1852.

Large trees, bark rough, pale brown, 2-2.5 cm thick, branchlets glabrous. Leaves clustered towards apex of branchlets, oblong, obtuse or acute, base acute or cuneate, glaucous beneath, to 18 x 6 cm. Flowers in panicles, pale yellow, perianth glabrous. Berry globose, 1.5 cm across, green, speckled with white.

Common in evergreen and semi-evergreen forests.

NS 11248 (Rosemala)

Fl. & Fr. December-May

D i s t. Peninsular India and Sri Lanka

LORANTHACEAE

1. Leaves alternate	: Taxillus
1. Leaves opposite or subopposite	: 2
2. Flowers bracteate and bracteolate	: Macrosolen
2. Flowers ebracteolate	: 3
3. Corolla 4-lobed	: Helixanthera
3. Corolla 5-lobed	: Dendrophthoe

DENDROPTHOE Mart.

Dendrophthoe falcata (L. f.) Etting., Akad. Wiss. Wien Math-Naturwiss. Kl. 32: 52, 53, 58, t. 13. f. 14. 1872. *Loranthus falcatus* L. f., Suppl. Pl. 211. 1782. *L. longiflorus* Desr. in Lamk., Encyl. 3: 598. 1792; Fl. Brit. India 5: 214. 1886; Fl. Madras 1253. 1925. *L. longiflorus* Desr. var. *falcata* (L. f.) Kurz, For. Fl. Burma 2: 321. 1877; Fl. Brit. India 5: 215. 1886; Fl. Madras 1253. 1925. *L. longiflorus* Desr. var. *amplexifolia* (DC.) Thw., Enum. Pl. 134. 1859; Fl. Brit. India 5: 215. 1886; Fl. Madras 1253. 1925.

Branches stout, terete, lenticellate. Leaves ovate to lanceolate, acute or obtuse, base truncate, obtuse or cordate, thickly coriaceous, to 15 x 6 cm; lateral nerves 4 or 5 pairs; reticulations indistinct. Racemes to 4 cm long. Corolla pink or greenish yellow, 4.5 cm long, lobes green, recurved. Berry oblong, crimson, 1.2 cm long.

Common on teak and *Bombax ceiba*.

NS 10426 (Choodal)

Fl. January-March

D i s t. Peninsular India

HELIXANTHERA Lour.

Helixanthera wallichiana (Schult.) Danser, Bull. Jard. Bot. Buitenz. (ser. 3) 10: 317. 1929; Fl. Thenmala 320. 1995. *Loranthus wallichianus* Schult., Syst. Veg. 7: 100. 1820; Wt., Ic. t. 143. 1839; Fl. Brit. India 5: 204. 1886; Fl. Madras 1251. 1925.

Branches stout, terete. Leaves subsessile, ovate, elliptic, acute, base acute, to 8 x 5 cm; lateral nerves 3 or 4 pairs, slender. Racemes to 5 cm long. Corolla 0.5 cm long, red, lobes free to the base.

Fairly common in evergreen forests.

NS 10410 (Kallar); 10613 (Kattalappara)

Fl. August-September

D i s t. South West India : endemic

MACROSOLEN (Bl.) Reichb.

Macrosolen parasiticus (L.) Danser, Blumea 4: 36. 1936; Fl. Thenmala 317. 1995. *Lonicera parasitica* L., Sp. Pl. 175. 1753. *Loranthus loniceroides* L., Sp. Pl. (ed. 2) 473. 1762; Fl. Brit. India 5: 221. 1886. *Elytranthe loniceroides* (L.) G. Don, Gen. Syst. 3: 427. 1834; Madras 1253. 1925.

Shrubs. Leaves ovate-lanceolate, acuminate, base obtuse or attenuate, to 10 x 4.5 cm; petiole ca. 0.5 cm long. Flowers in peduncled cymose umbels, 3-5 flowered. Calyx 5 mm long, glabrous. Corolla 2.5-3 cm long, scarlet at the basal half and greenish at the upper half; lobes scarlet, reflexed.

Fairly common in moist deciduous forests.

NS 10457 (Kattalappara)

Fl. & Fr. December-May

D i s t. South India and Sri Lanka

TAXILLUS van Tiegh.

1. Branchlets, corolla and young leaves densely reddish brown tomentose: *T. tomentosus*

1. Branchlets, corolla and young leaves glabrous : *T. cuneatus*

Taxillus cuneatus (Heyne ex Roth) Danser, Bull. Jard. Bot. Buitenz. (ser. 3) 10: 354. 1929. *Loranthus cuneatus* Heyne ex Roth, Nov. Pl. Sp. 193. 1821; Fl. Brit. India 5: 214. 1886; Fl. Madras 1253. 1925.

Shrubs, branchlets slender, subterete. Leaves oblanceolate or obovate, obtuse, base cuneate, to 2.5 x 1 cm. Racemes 2-4 flowered; peduncle to 0.3 cm long; bracts ovate, 1 mm long. Calyx 1-1.5 mm long, pubescent. Corolla to 1.5 cm long, greenish-yellow.

Occasional in semi-evergreen forests.

NS 11110 (Kattalappara)

Fl. & Fr. March-April

D i s t. South India and Sri Lanka

Taxillus tomentosus (Heyne ex Roth) van Tiegh., Bull. Soc. Bot. France 42: 265. 1895.
Loranthus tomentosus Heyne ex Roth, Nov. Pl. Sp. 191. 1821; Fl. Brit. India 5: 212. 1886;
Fl. Madras 1252. 1925.

Shrubs, branchlets dark brown, minutely lenticellate, young shoots brown tomentose. Leaves oblong or obovate, obtuse, base acute or obtuse, upper surface become glabrous when mature, lower surface brown tomentose, to 6 x 3 cm. Flowers in fascicles of 3-8; bract ovate, as long as the calyx. Calyx 2 mm long, teeth triangular. Corolla to 1.5 cm long, greenish with pink shades at base.

Occasional in evergreen forests.

NS 10491 (Kallar); 11387 (Alvarakurichi)

Fl. December-January

D i s t. Peninsular India and Sri Lanka

VISCACEAE

VISCUM L.

Viscum orientale Willd., Sp. Pl. 4: 737. 1806; Fl. Brit. India 5: 224. 1886; Fl. Madras 1258. 1925; Danser, Blumea 4: 299. 1941.

Parasitic shrubs, branchlets terete, longitudinally striate. Leaves elliptic, obovate or falcate, acute, base cuneate, coriaceous, to 7 x 2.5 cm; basally 3-5 nerved. Flowers in triads in axillary dichasia; bracts broadly ovate, acute; bracteoles to 1 mm long. Tepals ovate, concave, 1 mm long.

Occasional in moist deciduous and semi-evergreen forests.

NS 11109 (Kattalappara)

Fl. & Fr. November-March

D i s t. Indo-Malesia to Australia

SANTALACEAE

SCLEROPYRUM Arn.

Scleropyrum pentandrum (Dennst.) Mabb., Taxon 26: 533. 1977; Fl. Thenmala 320. 1995. *Pothos pentandrus* Dennst., Schluss. Hort. Ind. Malab. 16, 24, 33. 1818. *Scleropyrum wallichianum* (Wt. & Arn.) Arn., Mag. Zool. Bot. 2: 550. 1838; Wt., Ic. t. 241. 1839; Fl. Brit. India 5: 234. 1886; For. Trees Travancore 315. 1908; Fl. Madras 1262. 1925. *Sphaerocarya wallichiana* Wt. & Arn., Edinb. New Phil. J. 15: 180. 1833.

Small trees with sharp axillary thorns. Leaves ovate or oblong, acute or acuminate, base truncate or rounded, coriaceous, to 15 x 9 cm. Spikes solitary or fascicled, to 5 cm long; bracts triangular, acuminate, 1.5 mm long, scarious. Perianth orange-yellow. Drupe pyriform, 2.5 x 2 cm; purple.

Occasional in semi-evergreen and evergreen forests.

NS 10315 (Kattalappara); 11274 (Rosemala)

Fl. & Fr. January-April

D i s t. South West India and Sri Lanka

Santalum album L., is found occasionally planted in the study area.

BALANOPHORACEAE

BALANOPHORA J. R. & G. Forst.

Balanophora fungosa J.R. & G. Forst. ssp. *indica* (Am.) Hansen, Dansk. Bot. Ark. 28: 100. 1972. *Langsdorffia indica* Am., Ann. Nat. Hist. 2: 37. 1838. *Balanophora indica* (Am.) Wall. ex Griff., Trans. Linn. Soc. London 20: 95. 1846; Fl. Brit. India 5: 237. 1886; Fl. Madras 1263. 1925.

Dioecious root parasites, rhizomes finely granular. Peduncle bearing 4-10 scale leaves. Inflorescence purple red. Bracts of male flowers truncate, 5 mm long. Anthers horse-shoe shaped. Female inflorescence ovoid.

Common in semi-evergreen and evergreen forests.

NS 10166 (Kallar); 11239, 11276 (Rosemala)

Fl. & Fr. September-January

D i s t. Indo-Malesia and Africa

EUPHORBIACEAE

- | | |
|---|---------------|
| 1. Flowers without perianth, arranged in cyathia; stamen 1 | : Euphorbia |
| 1. Flowers with perianth, not in cyathia; stamens 2 or more | : 2 |
| 2. Cells of ovary 2-ovuled | : 3 |
| 2. Cells of ovary 1-ovuled | : 13 |
| 3. Leaves 3-foliate | : Bischofia |
| 3. Leaves simple | : 4 |
| 4. Perianth uniseriate | : 5 |
| 4. Perianth biseriate | : 12 |
| 5. Branchlets phyllanthoid | : 6 |
| 5. Branchlets not phyllanthoid | : 8 |
| 6. Disc absent or indistinct | : 7 |
| 6. Disc present | : Phyllanthus |
| 7. Perianth lobes in male flowers turbinate | : Breynia |
| 7. Perianth lobes in male flowers spreading | : Sauropus |

8. Flowers in fascicles or solitary	: 9
8. Male flowers in elongated racemes or spikes; female in spikes, racemes or cymes	: 10
9. Fruits dry, dehiscent	: Glochidion
9. Fruits baccate, indehiscent	: Drypetes
10. Ovary 1-celled; disc annular; fruit indehiscent	: Antidesma
10. Ovary 2-4 celled; disc absent; fruit capsular	: 11
11. Male flowers in catkin like spikes, female in short cymes	: Aporusa
11. Male and female flowers in elongated racemes, often cauliflorous	: Baccaurea
12. Ovary 2-celled; fruit drupe with 2 pyrenes	: Bridelia
12. Ovary 3-celled; fruit capsule	: Cleistanthus
13. Perianth in male flowers 2-seriate	: 14
13. Perianth in male flowers uniseriate	: 18
14. Leaves with stalked or sessile glands at the base of lamina; stamens inflexed in bud	: Croton
14. Leaves without glands at base; filaments short, erect in bud	: 15
15. Perianth in female flowers uniseriate	: Blachia
15. Perianth in female flowers 2-seriate	: 16
16. Fruiting perianth accrescent and enlarged	: Dimorphocalyx
16. Fruiting perianth scarcely enlarged	: 17
17. Calyx lobes in male valvate; petals shorter than the calyx	: Agrostistachys
17. Calyx lobes in male imbricate; petals longer than the calyx	: Fahrenheitia
18. Plants monoecious	: 19
18. Plants dioecious	: 22
19. Stamens 2, 3 or 5	: 20
19. Stamens 8 or more	: 21
20. Perianth lobes in male 5; capsule cocci with 2 rows of spines	: Sebastiania
20. Perianth lobes in male 3, capsule without spines	: Claoxylon
21. Stamens 4, filaments inflexed in buds; trees	: Epiprinus
21. Stamens 8, filaments erect; herbs	: Acalypha
22. Leaves orbicular-peltate; anthers 4-celled; ovary 1-celled	: Macaranga
22. Leaves not peltate; anthers 2-celled; ovary 3 or 2-celled	: 23
23. Staminal filaments much branched; shrubs	: Homonoia
23. Staminal filaments not branched; trees	: 24
24. Fruits fleshy, drupe; lamina without glands	: Trewia
24. Fruits capsule; lamina often glandular	: Mallotus

ACALYPHA L.

Acalypha racemosa Wall. ex Baill., *Etud. Gen. Euphorb.* 443. 1858; Airy Shaw, *Kew Bull.* 37: 4. 1882. *A. paniculata* Miq., *Fl. Ind. Bat.* 1: 406. 1859; *Fl. Brit. India* 5: 415. 1887; *Fl. Madras* 1330. 1925.

Stem to 1 m tall, branchlets minutely pubescent. Leaves ovate, acuminate, base rounded or subcordate, crenate-serrate, membranous, sparsely hispid, to 8 x 5 cm; petiole as long as or longer than the lamina. Flowers on slender spikes, to 10 cm long.

Fairly common in moist deciduous and semi-evergreen forests.

NS 10373, 10639 (Kallar); 11195 (Rosemala)

Fl. & Fr. August-December

D i s t. Indo-Malesia and Tropical Africa

AGROSTISTACHYS Dalz.

1. Leaves entire; spikes over 5 cm long : *A. borneensis*

1. Leaves serrate-dentate: spikes under 2 cm long : *A. indica*

Agrostistachys borneensis Becc., *Nelle For. Borneo* 331. 1902. *A. longifolia* (Wt.) Benth. ex Hook. f., *Fl. Brit. India* 5: 407. 1887 p.p. *Sarcoclinium longifolium* Wt., *Ic. tt.* 1887, 1888. 1852. *Agrostistachys meeboldii* Pax & Hoffm. in *Engl., Pflanzenr.* 57: 100. 1912; *Fl. Madras* 1318. 1925.

Small to medium sized evergreen trees. Leaves crowded towards the apex of branchlets, oblanceolate, acuminate, base attenuate, glabrous and glossy, to 22 x 5 cm. Spikes axillary, to 18 cm long. Calyx of male flowers connate, cupular. Petals free. Stamens 10, 2-seriate; inner 5 shortly connate. Capsule 1.5 cm across.

Occasional in evergreen forests above 600 m.

NS 10068 (Kallar)

Fl. & Fr. December-March

D i s t. Indo-Malaya

Agrostistachys indica Dalz. in *Hook.'s J. Bot. Kew Gard. Misc.* 2: 41. 1850; *Bedd., Ic. t.* 241. 1868-1874; *Fl. Brit. India* 5: 406. 1887; *Fl. Madras* 1317. 1925; *Balakr., J. Bombay Nat. Hist. Soc.* 67: 301. 1970.

Large shrubs to small trees. Leaves equidistant, elliptic or oblong lanceolate acute, cuspidate, base acute to attenuate, to 30 x 8 cm. Male flowers sessile, female pedicelled. Calyx 2-lobed in male and 5-lobed in female. Petals 6, oblong, pubescent, white. Capsule 1.2 cm across.

Common in evergreen and semi-evergreen forests.

NS 10143 (Choodal); 10856 (Umiyar); 10914 (Rosemala)

Fl. & Fr. February-March

D i s t. Central and Peninsular India

ANTIDESMA L.

- | | |
|-------------------------------------|--------------------|
| 1. Stamens 3 or 4, perianth lobes 5 | : <i>A. menasu</i> |
| 1. Stamens 2, perianth lobes 3 | : <i>A. acidum</i> |

Antidesma acidum Retz., *Obs. Bot.* 5: 30. 1788; Airy Shaw, *Kew Bull.* 26: 352. 1972; *Fl. Thenmala* 347. 1995. *A. diandrum* (Roxb.) Roth, *Nov. Pl. Sp.* 369. 1821; *Fl. Brit. India* 5: 361. 1887 p.p.; *For. Trees Travancore* 326. 1908; *Fl. Madras* 1298. 1925. *Stilago diandra* Roxb., *Pl. Corom.* t. 166. 1802. *Antidesma lanceolarium* Wall. ex Wt., *Ic. t.* 766. 1844.

Shrubs or small trees. Leaves narrowly elliptic or obovate, acuminate, mucronate, base acute, to 12 x 5 cm (in female) smaller in male. Racemes to 5 cm long; pedicels slender, 1.5 mm long. Perianth greenish-yellow.

Fairly common in moist deciduous forests.

NS 10973 (Rosemala)

Fl. & Fr. July-December

D i s t. Indo-Malesia

Antidesma menasu Miq. ex Tul., *Ann. Sci. Nat. Bot.* (ser. 3) 15: 215. 1851; *Fl. Brit. India* 5: 364. 1887; *For. Trees Travancore* 326. 1908; *Fl. Madras* 1297. 1925; *Fl. Thenmala* 347. 1995.

Small trees, young shoots puberulous. Leaves oblong, abruptly acuminate, base acute or rounded, to 18 x 6.5 cm; lateral nerves 7-12 pairs, archingly joining along the margins. Flowers in axillary racemes or terminal panicles, to 12 cm long; male flowers sessile; female pedicellate, 1 mm long. Drupe 5 mm long, pink-red.

Common in evergreen and semi-evergreen forests.

NS 10374, 10398 (Kallar); *10532* (Kattalappara)

Fl. & Fr. December-April

D i s t. Peninsular India

APORUSA Bl.

- | | |
|---|------------------------|
| 1. Capsule sparsely villous; male catkins ca. 1 cm long | : <i>A. acuminata</i> |
| 1. Capsule glabrous; male catkins 3-4 cm long | : <i>A. lindleyana</i> |

Aporusa acuminata Thw., *Enum. Pl.* 288. 1861; *Fl. Brit. India* 5: 348. 1887; *For. Trees Travancore* 323. 1908; *Fl. Madras* 1309. 1925; *Fl. Thenmala* 338. 1995.

Small trees, branchlets angular. Leaves narrowly elliptic-lanceolate, caudate-acuminate, base acute, glabrous, to 11 x 3.5 cm. Perianth 1 mm long, 3-4 lobed, lobes ciliate along

margins. Stamens 3. Fruit ovoid, acute, 1 cm long, yellowish with pink shades; seeds covered with pink pulp.

Common in evergreen forests above 600 m.

NS 10099, 10343 (Kallar); 10137 (Choodal)

Fl. & Fr. January-May

D i s t. South India and Sri Lanka

Aporusa lindleyana (Wt.) Baill., *Etud. Gen. Euphorb.* 645. 1858; *Bedd., Fl. Sylv.* t. 286. 1872; *Fl. Brit. India* 5: 349. 1887; *For. Trees Travancore* 323. 1908; *Fl. Madras* 1309. 1925; *Fl. Thenmala* 337. 1995. *Scepa lindleyana* Wt., *Ic. t.* 361. 1840.

Small to medium sized trees, bark pale brown. Leaves oblong or elliptic, obtusely acuminate, base obtuse, rounded or acute, glabrous and glossy, to 15 x 4.5 cm. Male catkins to 4 cm long; perianth 3-4 lobed, yellow, tomentose. Stamens 3-4. Female flowers pedicelled, racemes to 1.5 cm long, tomentose. Fruit ovoid, 1.2 cm long; seeds covered with yellow pulp.

Common in semi-evergreen forests.

NS 10854 (Umiyar)

Fl. & Fr. December-June

D i s t. Peninsular India and Sri Lanka

BACCAUREA Lour.

Baccaurea courtallensis (Wt.) Muell.-Arg. in *DC., Prodr.* 15: 459. 1866; *Fl. Brit. India* 5: 367. 1887; *For. Trees Travancore* 322. 1908; *Fl. Madras* 1310. 1925; *Henry et al., Fl. Thenmala* 339. 1995. *Pierardia courtallensis* Wt., *Ic. tt.* 1912, 1913. 1852. *Baccaurea sapida* *Bedd., Fl. Sylv.* t. 280. 1872.

Small trees, trunk with warty knots, bark greyish-yellow. Leaves elliptic or obovate, obtusely acuminate, base acute, to 14 x 5.5 cm. Flowers clustered on racemes on short tubercles, often covering the whole trunk; racemes to 15 cm long. Perianth red, of male flowers 4 lobed.

Common in evergreen and semi-evergreen forests.

NS 11207 (Rosemala)

Fl. January-June

D i s t. W. Ghats : endemic

BISCHOFIA J. R. & G. Forst. *nom. cons.*

Bischofia javanica Bl., *Bijdr.* 1168. 1827; *Bedd., Fl. Sylv.* t. 259. 1872; *Fl. Brit. India* 5: 345. 1887; *For. Trees Travancore* 319. 1908; *Fl. Madras* 1312. 1925; *Fl. Thenmala* 348. 1995.

Large trees with a very short leafless period, bark pale-brown, thinly scaly, exudation red, watery. Leaflets broadly ovate, obtusely caudate-acuminate, base rounded or acute, crenate-serrate, to 15 x 8 cm. Flowers in panicles. Panicles to 17 cm long. Perianth uniseriate, 5-lobed. Berry globose, 0.7 mm across.

Fairly common in evergreen and semi-evergreen forests.

NS 10653 (Kattalappara); 10819, 10881 (Rosemala)

Fl. & Fr. March-October

D i s t. Indo-Malesia to Pacific Islands

BLACHIA Baill.

Blachia umbellata (Willd.) Baill., Eutd. Gen. Euphorb. 387. 1858; Fl. Brit. India 5: 402. 1887; Fl. Madras 1338. 1925. *Croton umbellatus* Willd., Sp. Pl. 4: 545. 1805.

Large shrubs, branchlets compressed, glabrous. Leaves obovate or oblong, abruptly caudate-acuminate, base acute or attenuate, membranous, glabrous, to 15 x 5 cm. Male flowers in umbels, pedicels slender. Petals concave, 2 mm long. Female flowers to 10 in umbels.

Fairly common in semi-evergreen forests.

NS 10868, 10884, 11312 (Rosemala)

Fl. & Fr. February-April

D i s t. South India and Sri Lanka

BREYNIA J. R. & G. Forst. *nom. cons.*

Breynia vitis-idaea (Burm. f.) Fischer, Kew Bull. 1932: 65. 1932; Airy Shaw, Kew Bull. 26. 227. 1972; Fl. Thenmala 326. 1995. *Rhamnus vitis-idaea* Burm. f., Fl. Ind. 61. 1768. *Breynia rhamnoides* (Retz.) Muell.-Arg. in DC., Prodr. 15: 440. 1866; Fl. Brit. India 5: 330. 1887; Fl. Madras 1304. 1925. *Phyllanthus rhamnoides* Retz., Obs. Bot. 5: 30. 1788. *Melanthesa rhamnoides* (Retz.) Bl., Bijdr. 591. 1826; Wt., Ic. t. 1898, f. 1. 1852.

Large shrubs. Leaves ovate or elliptic, obtuse, base acute or obtuse, to 4.5 x 2.5 cm. Male flowers in fascicles of 2-5. Perianth 1.5 mm long. Fruit globose red, changes to purple.

Uncommon in disturbed semi-evergreen forests.

NS 10430 (Choodal)

Fl. & Fr. February-August

D i s t. Indo-Malesia

BRIDELIA Willd.

- | | |
|--|-------------------------|
| 1. Trees, trunk often armed; flowers fascicled on spikes | : <i>B. airy-shawii</i> |
| 1. Scandent shrubs; flowers in axillary fascicles | : <i>B. scandens</i> |

Bridelia airy-shawii P. T. Li, Acta Phyt. Sin. 20: 117. 1982; Das, Indian J. For. 7: 315. 1984. *B. retusa* (L.) Spreng. in L., Syst. Veg. (ed. 16) 3: 48. 1826, non A. Juss. 1824; Bedd., Fl. Sylv. t. 260. 1872; Fl. Brit. India 5: 268. 1887 p.p.; For. Trees Travancore 320. 1908; Fl. Madras 1280. 1925; Fl. Thenmala 327. 1995. *Clusia retusa* L., Sp. Pl. 1042. 1753.

Young trees armed with sharp thorns, bark greyish-brown, reddish inside. Leaves broadly elliptic or oblong, obtuse, base obtuse or truncate, coriaceous, to 15 x 8 cm; lateral nerves 17-25 pairs, parallel. Spikes axillary and terminal, often paniced. Calyx pale brown with reddish shades. Petals 2 mm long, ovate-acute, yellow. Drupe globose, black, 7 mm across.

Common in moist deciduous forests.

NS 10629 (Kattalappara)

Fl. & Fr. August-December

D i s t. Indo-Malaya

Bridelia scandens (Roxb.) Willd., Sp. Pl. 4: 979. 1806; Fl. Madras 1281. 1925; Fl. Thenmala 329. 1995. *Clusia scandens* Roxb., Pl. Corom. t. 173. 1802. *Bridelia stipularis* Muell.-Arg. in DC., Prodr. 15: 499. 1866; Fl. Brit. India 5: 270. 1887 p.p.

Branchlets brown tomentose. Leaves elliptic-oblong, obtuse, base rounded or subcordate, minutely tomentose below, to 9 x 10 cm, those of flowering branches much smaller; lateral nerves 7-10 pairs. Sepals 1.5 mm long, ovate-acute, tomentose. Petals spatulate, yellowish, 1.5 mm long. Drupe oblong, 7 x 4.5 mm, black.

Common in moist deciduous and semi-evergreen forests.

NS 10790 (Kattalappara)

Fl. & Fr. December-February

D i s t. Peninsular India

CLAOXYLON A. Juss.

Claoxylon anomalum Hook. f., Fl. Brit. India 5: 412. 1887; Fl. Madras 1327. 1925; Susila Rani & Balakrishnan, Rheedia 5: 116. 1995.

Dioecious shrubs, young parts puberulous. Leaves elliptic to elliptic-lanceolate, acuminate, base acute or cuneate, crenate, membranous, to 20 x 6 cm; petiole to 7 cm long. Flowers in axillary short racemes. Perianth of male flowers pilose, stamens 25-40. Capsule deeply 3-lobed, 1-1.5 cm across; seeds globose, smooth, 5 mm across.

Common in evergreen forests.

NS 10106, 10469 (Kallar); 10909, 11295 (Rosemala)

Fl. & Fr. January-October

D i s t. Southern W. Ghats : endemic

CLEISTANTHUS Hook. f. ex Planch.

Cleistanthus travancorensis Jablonszky in Engler, Pflanzenr. 65: 21 1915; Fl. Madras 1283. 1925.

Small trees, branchlets slender. Leaves ovate or ovate-lanceolate, acuminate, base rounded, glabrous, 10 x 4.5 cm. Flowers sessile, fascicled, axillary. Calyx 5-lobed, lobes ovate-acuminate, 1.5 mm long. Petals obovate. Ovary densely villous.

Occasional in evergreen forests.

NS 10127 (Choodal); 10810 (Rosemala)

Fl. December-March

D i s t. Southern W. Ghats : endemic

CROTON L.

- | | |
|--|---------------------------|
| 1. Leaves silvery white beneath | : 2 |
| 1. Leaves not silvery white beneath | : 3 |
| 2. Leaves elliptic or linear-lanceolate; staminal filaments glabrous | : <i>C. zeylanicus</i> |
| 2. Leaves broadly ovate; staminal filaments villous | : <i>C. malabaricus</i> |
| 3. Capsule under 1 cm across, yellow glandular; herbs | : <i>C. bonplandianus</i> |
| 3. Capsule 2-2.5 cm across, glabrous; shrubs or small trees | : <i>C. tiglium</i> |

Croton bonplandianus Baill., Adansonia 4: 339. 1864; Fl. Thenmala 326. 1995. *C. sparsiflorus* Morong., Ann. New York Acad. Sci. 7: 221. 1893; Fl. Madras 1316. 1925.

Herbs, young parts stellate-pubescent and viscous glandular. Leaves lanceolate, serrulate, to 5 x 2 cm. Racemes to 10 cm long; pedicels glandular. Corolla lobes oblong, 2 mm long, villous. Ovary tomentose. Capsule oblong, depressed at apex, warty, 6 mm long.

Common on reservoir bed during summer.

NS 10752 (Thenmala)

Fl. & Fr. February-May

D i s t. Native of South America; now naturalized in the old world tropics

Croton malabaricus Bedd., Ic. t. 181. 1868-1874; Fl. Brit. India 5: 386. 1887; For. Trees Travancore 336. 1908; Fl. Madras 1314. 1925; Fl. Thenmala 327. 1995.

Small to medium sized trees, bark greyish-white, smooth. Leaves broadly elliptic or ovate, acuminate, base obtuse or rounded, entire, glabrous above and densely covered with silvery scales below, to 12 x 6.5 cm. Racemes to 10 cm long, silvery scaly. Stamens 10-12. Capsule oblong, depressed above, 2-2.5 cm long.

Fairly common in semi-evergreen and evergreen forests.

NS 10305 (Kattalappara); 10518 (Choodal)

Fl. & Fr. April-November

D i s t. Southern W. Ghats : endemic

Croton tiglium L., Sp. Pl. 1004. 1753; Fl. Brit. India 5: 393. 1887; Fl. Madras 1315. 1925; Fl. Thenmala 327. 1995.

Shrubs to small trees. Leaves ovate, acuminate, base rounded, glabrous, serrate, to 15 x 7.5 cm. Racemes to 10 cm long, glabrous. Stamens 15-20. Capsule ovoid, white.

Occasional in moist deciduous forests.

NS 10679 (Kattalappara)

Fl. & Fr. October-March

D i s t. Native of China and Malaysia, introduced into India, now getting naturalised

Croton zeylanicus Muell.-Arg., Linnaea 34: 107. 1865 & in DC., Prodr. 15: 581. 1866. *C. reticulatus* Heyne ex Muell.-Arg. in DC., Prodr. 15: 580. 1866; Bedd., Ic. t. 233. 1868-1874; Fl. Brit. India 5: 386. 1887; Fl. Madras 1314. 1925.

Large shrubs to small trees. Leaves opposite and alternate, pairs unequal, elliptic or linear lanceolate, caudate-acuminate, base rounded or obtuse with few stalked glands, entire, glabrous above and silvery white beneath, to 15 x 4 cm. Racemes to 7 cm long, sometimes very short with female flowers only. Stamens numerous. Capsule oblong 1.2 cm long.

Common in evergreen forests.

NS 10378, 10754, 10466 (Kallar)

Fl. & Fr. March-October

D i s t. South India and Sri Lanka

DIMORPHOCALYX Thw.

Dimorphocalyx lawianus (Muell.-Arg.) Hook. f., Fl. Brit. India 5: 404. 1887; For. Trees Travancore 341. 1908; Fl. Madras 1337. 1925. *Trigonostemon lawianus* Muell.-Arg., Linnaea 34: 212. 1865 p.p.; Bedd., Fl. Sylv. t. 273. 1872.

Small to medium sized trees, bark smooth, yellowish grey. Leaves elliptic-oblong or lanceolate, obtusely acuminate, base obtuse, to 17 x 6 cm. Male flowers in cymes, to 5 cm long. Calyx in male flowers 4 mm long, unequally 5-lobed; in female deeply partite, linear oblong, notched. Corolla creamy white, longer than calyx in male and smaller in female. Ovary tomentose. Capsule obovoid, 3-lobed, 2 x 2.2 cm.

Common in evergreen and semi-evergreen forests.

NS 10782 (Kallar); 10930, 10939 (Rosemala)

Fl. & Fr. March-October

D i s t. W. Ghats : endemic

DRYPETES Vahl

- | | |
|--|---------------------------|
| 1. Fruits sessile or subsessile; leaves distanty serrate | : <i>D. confertiflora</i> |
| 1. Fruits pedicels more than 1 cm long; leaves entire or subentire | : 2 |

2. Fruits and under surface of leaves tomentose : *D. malabarica*
 2. Fruits and leaves glabrous : *D. elata*

Drypetes confertiflora (Hook. f.) Pax & Hoffm. in Engl., Pflanzenr. 81: 246. 1922.
Cyclostemon confertiflorus Hook. f., Fl. Brit. India 5: 341. 1887; Fl. Madras 1302. 1925.

Medium sized to large trees, branchlets angular. Leaves oblong, obtusely acuminate, base obtuse, unequal, glabrous and glossy, to 20 x 7 cm; often much smaller. Flowers fascicled on old wood; male pedicelled and female subsessile. Pedicels of male flowers to 1.2 cm long, glabrous, 4-5 bracts at base. Perianth lobes orbicular, glabrous, white, 4 mm across. Stamens many, filaments glabrous. Fruits globose, yellow; seeds 2 or 3.

Occasional in evergreen and semi-evergreen forests.

NS 10870, 11342 (Rosemala)

Fl. & Fr. February-May

D i s t. W. Ghats, Kanara Southwards : endemic

Drypetes elata (Bedd.) Pax & Hoffm. in Engl., Pflanzenr. 81: 268. 1922. *Hemicyclia elata* Bedd., Fl. Sylv. t. 279. 1872; Brit. India 5: 339. 1887; For. Trees Travancore 328. 1908; Fl. Madras 1300. 1925.

Medium sized to large trees, bole fluted; branchlets slender, drooping, glabrous. Leaves elliptic, acute or acuminate, base acute, oblique, entire, glabrous, to 12 x 4 cm. Flowers axillary, male in fascicles, pedicels to 1.5 cm long, glabrous. Perianth lobes oblong, obtuse, 4 mm long, softly tomentose. Stamens 6-8. Female flowers solitary. Drupes obovoid, to 2 x 1.5 cm, pedicels to 4 cm long; seed solitary.

Common in evergreen and semi-evergreen forests.

NS 10291(Choondippara); 10758 (Kallar); 11287 (Rosemala)

Fl. & Fr. December-April

D i s t. Peninsular India

Drypetes malabarica (Bedd.) Airy Shaw, Kew Bull. 23: 56. 1969. *Cyclostemon malabaricus* Bedd., For. Man. Bot. 199. 1873 & Ic. t. 183. 1868-1874; Fl. Brit. India 5: 341. 1887; For. Trees Travancore 330. 1908; Fl. Madras 1302. 1925.

Medium sized trees, branches horizontal, branchlets angular, tomentose. Leaves oblong, obtuse, acuminate, base obtuse, unequal, glabrous above and brown tomentose below, to 22 x 6 cm. Flowers pedicelled, fascicled on old wood; pedicels to 1.2 cm long, densely yellowish-brown stellate tomentose. Perianth lobes broadly ovate, brown tomentose outside, 5 mm long. Stamens many. Ovary tomentose.

Fairly common in evergreen forests.

NS 10205 (Choodal)

Fl. & Fr. April-November

D i s t. Southern W. Ghats : endemic

Note: Ahmedullah & Nayar (1987) have reported this species as rare and threatened.

EPIPRINUS Griff.

Epiprinus mallotiformis (Muell.-Arg.) Croizat. *J. Arnold Arbor.* 23: 52. 1942. *Symphyllia mallotiformis* Muell.-Arg., *Linnaea* 34: 156. 1865; *Fl. Madras* 1323. 1925. *Cephalocroton indicum* Bedd., *Fl. Sylv.* t. 261. 1872. *Adenochlaena indica* (Bedd.) Bedd. ex Hook. f., *Fl. Brit. India* 5: 418. 1887; *For. Trees Travancore* 344. 1908.

Small trees. Leaves broadly elliptic, acuminate, base rounded, to 15 x 8 cm. Spikes to 10 cm long. Perianth lobes of male flowers ovate, 2 mm long, minutely pubescent. Stamens 4. Ovary pubescent, minutely warty, yellowish.

Occasional in evergreen forests above 700 m.

NS 10148 (Kallar)

Fl. March-April

D i s t. Peninsular India

EUPHORBIA L.

1. Prostrate herbs; leaves under 1 cm long; cyathia in subsessile clusters

: *E. thymifolia*

1. Erect herbs; leaves up to 3 cm long; cyathia in peduncled, capitate clusters

: *E. hirta*

Euphorbia hirta L., *Sp. Pl.* 454. 1753; *Fl. Madras* 1275. 1925; *Fl. Thenmala* 325. 1995. *E. pilulifera* auct. non L. 1753, *Fl. Brit. India* 5: 250. 1887.

Erect hispid herbs. Leaves decussate, oblong, acute or subacute, base obliquely truncate, margin serrulate, to 2.5 x 1.2 cm. Involucre campanulate, glands 5, red. Male florets 4-6. Ovary 0.8 mm across; styles 3, bifid from base, stigma obtuse. Capsule pubescent, 2 mm across; seeds 4-angled, minutely furrowed.

Fairly common in disturbed moist deciduous forests.

NS 11463 (Thenmala)

Fl. & Fr. Throughout the year

D i s t. Pantropical

Euphorbia thymifolia L., *Sp. Pl.* 454. 1753; *Fl. Brit. India* 5: 252. 1887; *Fl. Madras* 1276. 1925; *Fl. Thenmala* 325. 1995.

Softly hispid prostrate herbs. Leaves opposite, distichous, oblong or suborbicular, obtuse, base obliquely cordate, margin serrulate, to 1 x 0.5 cm. Cyathia axillary, solitary or in

clusters. Involucre campanulate, 0.8 mm long; glands 4. Male florets 1-4; female laterally pendulous. Capsule adpressed hairy, 1.5 mm across; seeds 4-angular, minutely tuberculate.

Common along the margins of reservoir.

NS 11464 (Thenmala)

Fl. & Fr. November-May

D i s t. Tropical Asia

FAHRENHEITIA Reichb. f. & Zoll.

Fahrenheitia zeylanica (Thw.) Airy Shaw, Kew Bull. 20: 410. 1966; Fl. Thenmala 329. 1995. *Desmostemon zeylanicus* Thw., Enum. Pl. 278. 1861. *Ostodes zeylanicus* (Thw.) Muell.-Arg., Linnaea 34: 214. 1865; Fl. Brit. India 5: 400. 1887; For. Trees Travancore 339. 1908; Fl. Madras 1336. 1925.

Medium sized to large trees. Leaves oblong, broadly elliptic-obovate, obtusely acuminate, base acute, serrate, glabrous, to 30 x 15 cm. Racemes pendulous, to 40 cm long, peduncles angular. Calyx lobes oblong, 5 mm long, brown scurfy. Corolla yellow, 7-8 mm long, lobes reflexed. Stamens 15-20 in male. Ovary villous-strigose.

Uncommon in evergreen and semi-evergreen forests.

NS 10470 (Kallar); 10843, 10887 (Rosemala)

Fl. March-April

D i s t. South West India and Sri Lanka

GLOCHIDION J. R. & G. Forst. nom. cons.

- | | |
|--------------------------------------|------------------------|
| 1. Stamens 4 or more | : <i>G. zeylanicum</i> |
| 1. Stamens 3 | : 2 |
| 2. Branchlets and perianth glabrous | : <i>G. ellipticum</i> |
| 2. Branchlets and perianth tomentose | : <i>G. arboreum</i> |

Glochidion arboreum Wt., Ic. t. 1907. f. 1. 1852; Fl. Brit. India 5: 316. 1887; For. Trees Travancore 335. 1908; Fl. Madras 1307. 1925; Fl. Thenmala 339. 1995.

Small trees, branchlets tomentose. Leaves oblong or ovate-oblong, acute, base obtuse, tomentose along veins below, to 9 x 3.5 cm. Flowering branches slender, zig-zag. Flowers greenish-yellow. Style elongated. Capsule 0.8 cm across, 6-lobed.

Occasional in evergreen forests.

NS 10850 (Rosemala)

Fl. & Fr. October-April

D i s t. Peninsular India

Glochidion ellipticum Wt., Ic. t. 1906. 1852; Fl. Brit. India 5: 321. 1887; For. Trees Travancore 335. 1908; Fl. Madras 1308. 1925; Fl. Thenmala 339. 1995. *G. hohenackeri* Bedd., Fl. Sylv. t. 193. 1873; Fl. Brit. India 5: 314. 1887; For. Trees Travancore 335. 1908.

Monoecious small trees. Leaves elliptic-oblong, shortly acuminate, base acute, to 8 x 3.5 cm. Flowers to 10 in the axils; pedicels slender, to 1cm long. Perianth 3+3, oblong, 3 mm long. Ovary 4 or 5 celled; style short, lobed. Capsule 1 cm across, 4 or 5 lobed, orange-red.

Common in evergreen forests above 700 m.

NS 10865 (Rosemala)

Fl. & Fr. January-July

D i s t. Peninsular India

Glochidion zeylanicum A. Juss., Euphorb. Gen. 107. 1824; Fl. Brit. India 5: 310. 1887; For. Trees Travancore 334. 1908; Fl. Madras 1306. 1925; Fl. Thenmala 338. 1987.

Dioecious trees. Leaves broadly oblong, acute, base rounded or truncate, to 15 x 6 cm. Flowers to 8 in the axils. Tepals 6, unequal, ovate, subacute, 2 mm long. Ovary 4 or 5 celled; style beaked, thick. Capsule 0.8 cm across, shortly beaked.

Occasional in semi-evergreen forests, often along the sides of water courses.

NS 1717 (Choodal)

Fl. & Fr. March-May

D i s t. Indo-Malesia

HOMONOIA Lour.

Homonoia riparia Lour., Fl. Cochinch. 637. 1790; Fl. Brit. India 5: 455. 1887; Fl. Madras 1333. 1925; Fl. Thenmala 345. 1995. *Adelia nerifolia* Roth, Nov. Pl. Sp. 375. 1821; Wt., Ic. t. 1868. 1852.

Shrubs, branchlets pubescent. Leaves linear-lanceolate, acute, base cuneate, entire, glandular scaly below, to 15 x 1.5 cm. Spikes to 10 cm long. Tepals of female flowers 5, ovate-lanceolate, puberulous. Capsule ca. 4 mm across.

Common along the rivers, growing among rock crevices.

NS 10442 (Mamood)

Fl. & Fr. December-May

D i s t. Indo-Malesia to Pacific Islands and South China

MACARANGA Thouars

Macaranga peltata (Roxb.) Muell.-Arg. in DC., Prodr. 15: 1010. 1866; Fl. Madras 1326. 1925; Whitmore, Gard. Bull. s.s. 31: 55. 1978; Fl. Thenmala 329. 1995. *Osyris peltata* Roxb., Fl. Ind. 3: 755. 1832. *Macaranga roxburghii* Wt., Ic. t. 1949, f. 4. 1853; Fl. Brit. India 5: 448. 1887; For. Trees Travancore 349. 1908. *M. tomentosa* Wt., Ic. t. 1949, f. 1. 1853; Bedd., Fl. Sylv. t. 287. 1872.

Medium sized trees, bark brown, exudation red, gummy. Leaves ovate-orbicular, acuminate, peltate, to 20 x 15 cm; lateral nerves 8-10, radiating from the centre,; petiole, to 18 cm long. Panicles to 5 cm long, tomentose; bracts concave 3 mm long. Stamens 3, free, filaments 5 mm long.

Occasional in semi evergreen forests

NS 10885 (Rosemala)

Fl. January-February

D i s t. India and Burma

MALLOTUS Lour.

- | | |
|---|-----------------------------|
| 1. Capsule smooth | : 2 |
| 1. Capsule echinate or muricate | : 3 |
| 2. Capsule prominently red-glandular; leaves with minute red glands below: | M. philippensis |
| 2. Capsule densely stellate-tomentose, without red glands; leaves fulvous tomentose below | : M. distans |
| 3. Leaves alternate, broadly ovate, peltate, white fulvous tomentose below; capsule with soft echinate processes, woolly tomentose | : M. tetracoccus |
| 3. Leaves opposite and alternate, lanceolate or oblanceolate, glabrous or glabrescent below; capsule with few short spines or villous processes, glabrous | : 4 |
| 4. Capsule with villous processes | : M. beddomei |
| 4. Capsule with short spines along the septa downwards | : M. aureo-punctatus |

Mallotus aureo-punctatus (Dalz.) Muell.-Arg. in DC., Prodr. 15: 973. 1866; Fl. Madras 1323. 1925; Fl. Thenmala 343. 1995. *Rottlera aureo-punctata* Dalz. in Hooker's J. Bot. Kew Gard. Misc. 3: 122. 1851. *Mallotus lawii* Muell.-Arg., Linnaea 34: 192. 1865; Fl. Brit. India 5: 438. 1887 p.p.

Large shrubs; branchlets minutely pubescent. Leaves opposite, oblong or obovate, acuminate, base obtuse or subtruncate, shortly sinuate crenate, margin recurved, to 15 x 5cm. Male racemes to 8 cm long, pubescent; female to 7 cm, flowers few, distant. Perianth lobes of male broadly ovate, obtuse, densely tomentose, 2 mm long. Ovary with soft echinate processes; style short, stigma 2, plumose. Capsule to 1 cm across.

Fairly common in semi-evergreen and evergreen forests.

NS 10103 (Kallar); 10755 (Mamood); 10817 (Rosemala)

Fl. & Fr. October-March

D i s t. W. Ghats, Konkan southwards : endemic

Mallotus beddomei Hook. f., Fl. Brit. India 5: 438. 1887; Fl. Madras 1323. 1925.

Large shrubs. Leaves broadly elliptic or obovate, caudate-acuminate, base attenuate, entire or undulate, glabrous, to 17 x 8 cm, lateral nerves and nervules prominent. Racemes slender, to 10 cm long, flowers lax. Capsule 1.5-2 cm long, with soft subulate processes.

Fairly common in evergreen forests.

10368, 10393, 10756 (Kallar); 10468 (Rosemala)

Fl. & Fr. October-April

D i s t. W. Ghats : endemic

Mallotus distans Muell.-Arg., *Linnaea* 34: 194. 1865; Bedd., *Ic. t.* 232. 1868-1874; *Fl. Brit. India* 5: 441. 1887; *Fl. Madras* 1322. 1925.

Shrubs to small trees, branchlets pubescent. Leaves opposite and alternate, ovate-lanceolate or oblong, acute or acuminate, base rounded, sessile glands at base prominent, pubescent or glabrous above, fulvous tomentose below, to 18 x 8 cm. Flowers sessile, fasciated on spikes. Perianth tomentose. Capsule 3-lobed, 1 cm across, brown stellate-tomentose.

Fairly common in semi-evergreen and evergreen forests.

NS 10190, 10588 (Choodal); 10635 (Kattalappara); 10889 (Rosemala)

Fl. & Fr. July-March

D i s t. South India and Sri Lanka

Mallotus philippensis (Lamk.) Muell.-Arg., *Linnaea* 34: 196. 1865; Bedd., *Fl. Sylv.* t. 289. 1873; *Fl. Brit. India* 5: 442. 1887; *For. Trees Travancore* 347. 1908; *Fl. Madras* 1322. 1925; *Fl. Thenmala* 343. 1995. *Croton philippense* Lamk., *Encyl.* 2: 206. 1768.

Small trees, branchlets brown tomentose. Leaves broadly ovate or oblong, caudate-acuminate, base rounded or obtuse, glabrous, red glandular below, entire, to 20 x 10 cm; basally 3-ribbed with 4-7 pairs of lateral nerves. Flowers in terminal tomentose, paniced spikes, to 12 cm long. Perianth lobes 4, ovate, acute, 2 mm long, tomentose. Capsule trigonous, apically depressed, 0.8 cm across; red glandular.

Fairly common in semi-evergreen forests.

NS 10732 (Rosemala)

Fl. & Fr. October-March

D i s t. Indo-Malesia to Australia

Mallotus tetracoccus (Roxb.) Kurz, *J. Asiat. Soc. Bengal* 16: 245. 1873; *Fl. Thenmala* 342. 1995. *Rottlera tetracocca* Roxb., *Fl. Ind.* 3: 826. 1832. *R. peltata* Wt., *Ic. t.* 1873. 1852. *Mallotus albus* auct. non Muell.-Arg. 1865, *Fl. Brit. India* 5: 429. 1887. *M. albus* var. *occidentalis* Hook. f., *Fl. Brit. India* 5: 429. 1887; *Fl. Madras* 1321. 1925.

Medium sized trees, branchlets tomentose. Leaves peltate, broadly ovate or suborbicular, acute to acuminate, glabrous above and densely white fulvous tomentose.

below, entire or irregularly toothed, to 25 cm across; 3-5 nerved at base with 6-8 lateral nerves; petiole to 20 cm. Flowers sessile, fascicled on the peduncle in spicate panicles. Perianth 3 or 4 lobed, tomentose. Ovary densely fulvous with soft echinate process; styles 3. Capsule globose, depressed at apex, 1.5 cm across.

Common, mostly along margins of forests.

NS 10609 (Kattalappara)

Fl. & Fr. July-April

D i s t. India, Sri Lanka, Himalayas and South West China

PHYLLANTHUS L.

- | | |
|---|-------------------------|
| 1. Fruits baccate | : 2 |
| 1. Fruits capsular | : 3 |
| 2. Trees; stamens 3, connate; fruit 1.5-2.8 cm across | : <i>P. emblica</i> |
| 2. Erect or scandent shrubs; stamens 5; fruit 0.5 cm across | : <i>P. reticulatus</i> |
| 3. Perianth lobes laceerated, red | : <i>P. gageanus</i> |
| 3. Perianth lobes entire, greenish white | : 4 |
| 4. Trees, seeds pitted | : <i>P. polyphyllus</i> |
| 4. Annuals; stem single | : 5 |
| 5. Capsules densely muricate; leaves reddish | : <i>P. urinaria</i> |
| 5. Capsules smooth; leaves green | : 6 |
| 6. Fruiting perianth smaller than capsule | : <i>P. amarus</i> |
| 6. Fruiting perianth as long as capsule | : 7 |
| 7. Leaves under 0.5 cm broad; capsules 2-3 mm across | : <i>P. airy-shawii</i> |
| 7. Leaves 0.6-1 cm broad; capsules 4-5 mm across | : <i>P. rhedii</i> |

Phyllanthus airy-shawii Brunel & Roux, Nord. J. Bot. 4: 470. 1984; Mitra & Nair, Taxon 37: 470. 1988. *P. debilis* sensu Hook. f., Fl. Brit. India 5: 299. 1887; Fl. Madras 1290. 1925; Webster, J. Arnold Arbor. 38: 307. 1957.

Erect herbs, to 40 cm tall. Leaves elliptic or elliptic-oblong, obtuse or acute, base rounded, to 1.5 x 0.4 cm; stipules lanceolate, acuminate. Perianth oblong, obtuse, 1 mm long. Capsule globose, smooth, 2-3 mm across; seeds trigonous, longitudinally striate.

Fairly common in disturbed moist deciduous forests.

NS 11238 (Rosemala)

Fl. & Fr. July-January

D i s t. Peninsular India and Sri Lanka

Phyllanthus amarus Schum. & Thonn., Kongl. Danske Vidensk. Selsk. Skr. 4: 195. 1829; Webster, J. Arnold Arbor. 38: 313. 1957 & Brittonia 22: 69. 1970; Fl. Thennala 334. 1995.

P. fraternus Webster, Contrib. Gray Herb. 176. 53. 1955. *P. niruri* auct. non L. 1753, Wt., Ic. t. 1894. 1852; Fl. Brit. India 5: 298. 1887; Fl. Madras 1290. 1925.

Erect herbs, to 25 cm tall. Leaves oblong, obtuse or retuse, base unequal sided, to 7 x 3 mm; stipules lanceolate. Flowers very small. Perianth lobes 5, ovate, obtuse. Capsule smooth,

1-1.5 mm across; seeds trigonous, striate with hygroscopic hairs.

Occasional in disturbed moist deciduous forests.

NS 10799 (Kallar)

Fl. & Fr. July-October

D i s t. Native of Tropical America; naturalised in Paletropics

Phyllanthus emblica L., Sp. Pl. 982. 1753; Fl. Brit. India 5: 289. 1887; For. Trees Travancore 332. 1908; Webster, J. Arnold Arbor. 38: 76. 1957; Airy Shaw, Kew Bull. 26: 319. 1972 & 37: 32. 1982; Fl. Thenmala 332. 1995. *Emblica officinalis* Gaertn., Fruct. 2: 122. 1790; Wt., Ic. t. 1896. 1852; Bedd., Fl. Sylv. t. 258. 1872; Fl. Madras 1295. 1925.

Medium sized trees, bark reddish-brown, thinly scaly. Leaves oblong, acute, to 12 x 3 mm; stipule minute, linear. Flowers in axillary monoecious fascicles. Perianth lobes 6, oblong-acute, glabrous. Disc lacerate at apex; styles 3, bifid at apex. Fruits depressed globose, fleshy, dehiscent into 6 cocci on drying.

Common in moist deciduous forests.

NS 10680 (Kattalappara)

Fl. & Fr. April-December

D i s t. Indo-Malesia and South China

Phyllanthus gageanus (Gamble) Mohanan, J. Econ. Tax. Bot. 6: 480. 1985. *Reidii gageana* Gamble, Kew Bull. 1925: 331. 1925 & Fl. Madras 1292. 1925.

Subshrubs, branches confined to the apex of the stem. Leaves ovate-lanceolate, acute, unequally obtuse at base, glaucous below, to 4 x 2 cm. Male flowers towards the base of branches and female at the apex. Perianth in male 4-lobed, in female 6-lobed, deeply lacerated. Stamens 4. Capsule depressed globose, 1.5 cm across.

Occasional in evergreen forests.

NS 10128, 10786 (Kallar)

Fl. & Fr. September-March

D i s t. Southern W. Ghats : endemic

Phyllanthus polyphyllus Willd., Sp. Pl. 4: 586. 1805; Wt. Ic. t. 1895, f. 2. 1852; Fl. Brit. India 5: 290. 1887; Fl. Madras 1288. 1925.

Trees to 8 m tall, branchlets with upto 40 leaves. Leaves oblong, apiculate, to 15 x 5 mm, lateral nerves faint. Flowers small, male 2 mm across. Perianth glabrous. Capsule 3 mm across, shortly 3 lobed; seeds pitted.

Occasional in rocky areas in semi-evergreen forests.

NS 10968 (Rosemala)

Fl. & Fr. February-June

D i s t. India and Sri Lanka

Phyllanthus reticulatus Poir. in Lamk., *Encyl.* 5: 298. 1804; *Fl. Brit. India* 288. 1887; Webster, *J. Arnold Arbor.* 38: 57. 1957; *Fl. Thenmala* 334. 1995. *Kirganelia reticulata* (Poir.) Baill., *Etued. Gen. Euphorb.* 613. 1858; *Fl. Madras* 1294. 1925.

Scandent shrubs, branches pubescent. Leaves elliptic, acute or obtuse, base acute, to 2.5 x 1.5 cm; stipules lanceolate, often spinescent. Male flowers in axillary fascicles; female solitary. Perianth lobes 5, unequal, margin scarious. Stamens 5, outer 2-3 free, inner connate. Styles 3, bifid. Fruit purple, seeds trigonous, smooth.

Common along the banks of reservoir.

NS 11466 (Kattalappara)

Fl. & Fr. August-December

D i s t. Indo-Malesia and Tropical Africa

Phyllanthus rheedii Wt., *Ic. t.* 1895, f. 1. 1852; *Fl. Brit. India* 5: 293. 1887; *Fl. Madras* 1289. 1925.

Erect herbs, to 40 cm tall. Leaves fairly wide apart, elliptic or obovate, acute, glabrous, to 2 x 1 cm. Flowers in axillary fascicles. Perianth lobes in male ovate-acute; in female, obovate, margins scarious. Capsule depressed globose, smooth; seeds trigonous, transversely ridged.

Occasional in shola forests, in open areas.

NS 10255 (Pandimotta)

Fl. & Fr. October-May

D i s t. India and Sri Lanka.

Phyllanthus urinaria L., *Sp. Pl.* 982. 1753; *Fl. Brit. India* 5: 293. 1887; *Fl. Madras* 1289. 1925; Webster, *J. Arnold Arbor.* 38: 194. 1958 & *Brittonia* 22: 65. 1970; *Fl. Thenmala* 333. 1995.

Erect herbs, to 30 cm tall. Leaves oblong, apiculate, base oblique, margin ciliate, stipules linear, subulate. Flowers in axillary cymules. Perianth lobes 5 or 6, orbicular. Disc 6-lobed in male; annular in female. Capsule globose, 3-lobed, sessile, ca. 3 mm across; seeds trigonous, transversely ridged.

Rare, in disturbed moist deciduous forests.

NS 10999 (Kattalappara)

Fl. & Fr. July-October

D i s t. Native of Tropical East Asia, now a weed throughout tropics

SAUROPUS Bl.

1. Leaves under 2.5cm long, obtuse; fruit ca. 1 cm across : **S. quadrangularis**
1. Leaves to 12cm long, acuminate; fruit 1.5 cm across : **S. androgynus**

Sauropus androgynus (L.) Merr., Bull. Bur. Philipp. Islands 1: 30. 1903; Fl. Madras 1303. 1925. *Clusia androgyna* L., Mant. Pl. 128. 1767. *Sauropus albicans* Bl., Bijdr. 596. 1826; Fl. Brit. India 5: 332. 1887. *S. indicus* Wt., Ic. t. 1952, f. 2. 1853.

Glabrous shrubs, branches angular. Leaves narrowly ovate-lanceolate, acuminate, base obtuse, to 12 x 4 cm, pale and glaucous below. Flowers greenish, male clustered, female solitary. Capsule globose, 1.5 cm across, creamy-white; seeds black, smooth.

Common in evergreen and semi-evergreen forests.

NS 10107 (Kallar); 10380 (Choodal); 10963 (Rosemala)

Fl. & Fr. December-August

D i s t. Indo-Malaya

Sauropus quadrangularis (Willd.) Muell.-Arg., Linnaea 32: 73. 1863; Fl. Brit. India 5: 335. 1887; Fl. Madras 1303. 1925; Airy Shaw, Kew Bull. 26: 337. 1972. *Phyllanthus quadrangularis* Willd., Sp. Pl. 4: 585. 1805.

Subshrubs. Leaves sessile, broadly elliptic, obtuse or acute, base rounded or obtuse, to 2 x 1.5 cm; lateral nerves 5-7 pairs, slender. Pedicels slender, 3-5 mm long. Perianth of female flowers membranous, broadly obovate or orbicular, apiculate. Capsule yellowish.

Fairly common in moist deciduous forests.

NS 11465 (Kattalappara)

Fl. & Fr. Throughout the year

D i s t. Indo-Malaya

SEBASTIANIA Spreng.

Sebastiania chamaelea (L.) Muell.-Arg. in DC., Prodr. 15: 1175. 1866; Fl. Brit. India 5: 475. 1888; Fl. Madras 1344. 1925; Fl. Thenmala 341. 1995. *Tragia chamaelea* L., Sp. Pl. 981. 1753.

Annual herbs. Leaves linear-oblong, obtuse, mucronate, base acute, serrulate, to 6 x 1.2 cm. Racemes to 2 cm long. Male flowers minute. Perianth lobes of female flowers fimbriate along margin. Cocci with 2 rows of spines down the back; seeds smooth.

Occasional in moist deciduous forests.

NS 10608 (Kattalappara)

Fl. & Fr. July-December

D i s t. Indo-Malesia to Australia and Oceana

TREWIA L.

Trewia polycarpa Benth. in Benth. & Hook. f., Gen. Pl. 3: 318. 1880; Fl. Brit. India 5: 424. 1887; Fl. Madras 1319. 1925; Fl. Thenmala 344. 1995. *T. nudiflora* Wt., Ic. t. 1871. 1852, non L. 1753; Bedd., Fl. Sylv. t. 281. 1872; For. Trees Travancore 348. 1908.

Medium sized trees, bark yellowish-brown, smooth. Leaves opposite or subopposite, broadly ovate, acuminate, base truncate or rounded, glabrous, to 15 x 12 cm. Male inflorescence to 15 cm long. Perianth 4 mm long. Stamens ca. 25. Drupes 2-2.2 cm across.

Occasional in semi-evergreen forests.

NG Nair 6317 (Rosemala)

Fl. & Fr. January-May

D i s t. Peninsular India

Hevea braziliensis Muell.-Arg., native of Brazil, is often cultivated in settlements.

URTICACEAE

- | | |
|--|----------------------|
| 1. Female flowers aggregated on fleshy receptacle; male flowers on fleshy receptacle or cymose | : Elatostemma |
| 1. Flowers not aggregated on fleshy receptacle | : 2 |
| 2. Leaves opposite | : Pouzolzia |
| 2. Leaves alternate | : 3 |
| 3. Leaves unequally cordate, entire, 3-ribbed, stem creeping below | : Pellionia |
| 3. Leaf base equal, serrate or subentire, erect plants | : 4 |
| 4. Flowers in lax panicles | : Dendrocnide |
| 4. Flowers in short cymes | : Oreocnide |

DENDROCNIDE Miq.

Dendrocnide sinuata (Bl.) Chew, Gard. Bull. s.s. 21: 206. 1965. *Urtica sinuata* Bl., Bijdr. 505. 1826. *Laportea crenulata* Gaud., Voy. Bonite Bot. 498. 1826; Bedd., Fl. Sylv. t. 306. 1873; Fl. Brit. India 5: 550. 1888; For. Trees Travancore 375. 1908; Fl. Madras 1373. 1928. *Urtica crenulata* (Gaud.) Roxb., Fl. Ind. 3: 591. 1832; Wt., Ic. t. 686. 1840.

Large shrubs to small trees. Leaves oblong-lanceolate, acuminate, base acute, crenulate or subentire, glabrous, to 25 x 8 cm. Panicles drooping, to 20 cm long, axillary. Perianth of female flowers shortly 4 lobed, at apex, pubescent. Achenes 5 mm long, tipped by the persistent style.

Common in evergreen forests above 500 m. Though the stinging hairs are not visible, the leaf when contact with body causes severe itching and pain.

NS 11007 (Kallar)

Fl. November-December

D i s t. Peninsular India and Sri Lanka

ELATOSTEMA J. R. & G. Forst. nom. cons.

Elatostema lineolatum Wt. var. *lineolatum* : Wedd., Monogr. Urtic. 31. 1856; Fl. Brit. India 5: 565. 1888; Fl. Madras 1376. 1928; Fl. Thenmala 356. 1995.

Glabrous herbs. Leaves asymmetrically elliptic, caudate-acuminate, base oblique, entire to variously crenate or serrate, very variable in size. Receptacle sessile, solitary or a few together; bract oblong, obtuse. Achenes ribbed, ellipsoid.

Common in evergreen and semi-evergreen forests.

NS 10287 (Charupara); 10387 (Kallar)

Fl. & Fr. March-April

D i s t. India, Burma and Sri Lanka

OREOCNIDE Miq.

Oreocnide integrifolia (Gaud.) Miq., Ann. Mus. Bot. Lugd.-Bat. 4: 306. 1869. *Villebrunea integrifolia* Gaud., Voy. Bonite Bot. t. 91. 1844; Fl. Brit. India 5: 589. 1888; For. Trees Travancore 376. 1908; Fl. Madras 1388. 1928.

Small trees, branchlets pubescent. Leaves oblong-lanceolate, acuminate, base acute, chartaceous, crenulate in the upper half, to 17 x 4 cm; stipules 1 cm long. Flowers mostly from leafscars, in cymose clusters; flower heads 3-4 mm across. Tepals of male, concave, 1.5 mm; female 2 mm long, adnate to the ovary.

Common in evergreen forests above 600 m, mostly in disturbed areas.

NS 10354 (Kallar); 10818 (Rosemala)

Fl. & Fr. June-August

D i s t. Indo-Malaya and S. China

PELLIONIA Gaud. nom. cons.

Pellionia heyneana Wedd., Monogr. Urtic. 287, t. 5. 1856; Fl. Brit. India 5: 561. 1888; Fl. Madras 1380. 1928; Fl. Thenmala 358. 1995.

Spreading herbs, branches grooved. Leaves falcately elliptic-lanceolate, acuminate, base unequally cordate, entire, to 15 x 6 cm; basally 3-ribbed, lateral nerves to the upper half only, cystoliths very prominent. Male cymes spreading, peduncle to 10 cm long; of female to 1.5 cm long. Perianth pink.

Common in evergreen forests.

NS 10358, 10462 (Kallar); 10924 (Rosemala)

Fl. & Fr. June-September

D i s t. South West India and Sri Lanka

POUZOLZIA Gaud.

1. Leaves petiolate, basal ones opposite and upper ones alternate,
under 4 cm long; herbs : *P. zeylanica*
1. Leaves subsessile, opposite, 5-15 cm long, subshrubs : *P. wightii*

Pouzolzia wightii W. S. Sm. & Ramas., Rec. Bot. Surv. India 6: 40. 1914; Fl. Madras 1383. 1928; Fl. Thenmala 358. 1995.

Subshrubs. Leaves lanceolate, acuminate, base rounded or cordate, entire, glabrous, 5-15 cm; 3-ribbed from base; intercostae scalariform. Spikes terminal to 17 cm long; flowers in fascicles; bract ovate-lanceolate, 3-5 mm long. Tepals of male 4, plicate, glabrous. Achenes winged or not.

Occasional evergreen and semi-evergreen forests.

NS 10621 (Kattalappara); 10815 (Rosemala)

Fl. & Fr. August-November

D i s t. Southern W. Ghats : endemic

Pouzolzia zeylanica (L.) Benn., Pl. Jav. Rar. 1: 67. 1838; Fl. Thenmala 359. 1995.
Parietaria zeylanica L., Sp. Pl. 1052. 1753. *Pouzolzia indica* (L.) Gaud., Voy. Bonite Bot. 503. 1826; Wt., Ic. tt. 1980, f. 1 & 2100, f.40. 1853; Fl. Brit. India 5: 581. 1888; Fl. Madras 1382. 1928. *Parietaria indica* L., Mant. Pl. 128. 1767.

Slender procumbent herbs. Leaves ovate or elliptic, acute to acuminate, base rounded, entire, membranous, to 5 x 2.5 cm, lateral nerves 3 or 4 pairs, basal pair opposite; petiole to 2 cm. Flowers in axillary clusters; bract 2 concave, scarious. Tepals 4, ovate-lanceolate, 1.5 mm long, sparsely villous. Achenes 2 winged.

Common in disturbed forests and forest plantations.

NS 10977 (Rosemala)

Fl. & Fr. August-December

D i s t. Indo-Malesia and E. Asia

ULMACEAE

1. Leaves entire; perianth lobes imbricate : *Celtis*
1. Leaves serrulate; perianth lobes valvate : *Trema*

CELTIS L.

Celtis philippensis Blanco var. *wightii* (Planch.) Soep. in Steenis, Fl. Males. I, 8: 62. 1977.
C. wightii Planch., Ann. Sci. Nat. Bot. (Ser. 3) 10: 307. 1848; Wt., Ic. t. 1969. 1853; Fl. Brit. India 5: 483. 1888; Fl. Madras 1349. 1928.

Small to medium sized trees, bark greyish with prominent pustular lenticels. Leaves elliptic to oblong-lanceolate, acute, base rounded, to 12 x 5 cm. Cymes mostly on new shoots. Tepals concave, ciliate, 2.5 mm long. Style arms 2, erect, papillose. Drupe ellipsoid, to 8 mm long.

Fairly common in semi-evergreen and evergreen forests.

NS 10403 (Kallar)

Fl. & Fr. March-June

D i s t. Indo-Malesia to Australia, Oceania and Tropical Africa

TREMA Lour.

Trema orientalis (L.) Bl., Mus. Bot. 2: 61. 1856; Brit. India 5: 484. 1888; For. Trees Travancore 354. 1908; Fl. Madras 1350. 1928; Fl. Thenmala 349. 1995. *Celtis orientalis* L., Sp. Pl. 1044. 1753; Wt., Ic. tt. 602, 603, 1842.

Small to medium sized trees; branchlets adpressed pubescent. Leaves ovate or oblong-lanceolate, acuminate, base obliquely cordate, serrate, strigose above and adpressed hirsute below, to 12 x 5 cm; lateral nerves 5 or 6 pairs, lowest pair opposite and ribbed. Tepals 1.5 mm long, finely ciliate. Drupe globose, 3 mm across, blackish.

Common in moist deciduous forests.

NS 11467 (Kattalappara)

Fl. & Fr. September-December

D i s t. Paleo-Tropics

MORACEAE

- | | |
|--|--------------|
| 1. Flowers enclosed in syconia (fig) | : Ficus |
| 1. Flowers not enclosed in syconia | : 2 |
| 2. Male flowers on disciform receptacle | : 3 |
| 2. Male flowers on globose or oblong heads; fruit a sorosis | : Artocarpus |
| 3. Small herbs; female flowers aggregated, sunk in the fleshy receptacle | : Dorstenia |
| 3. Trees; female flowers solitary | : 4 |
| 4. Female flowers without perianth; male flowers on discoid or flat receptacle | : Antiaris |
| 4. Female flowers with 4 perianth lobes; male flowers in capitate clusters | : Streblus |

ANTIARIS Lesch.

Antiaris toxicaria Lesch., Ann. Mus. Natl. Hist. Nat. 16: 478, t. 22. 1820; Fl. Brit. India 5: 537. 1888; Fl. Madras 1367. 1928. *A. innoxia* Bl., Rumphia 1: 172, t. 54. 1835; Bedd., Fl. Sylv. t. 307. 1873. *A. saccidora* Dalz. in Hooker's J. Bot. Kew Gard. Misc. 3: 232. 1851; Wt., Ic. t. 1958. 1853.

Lofty deciduous trees with large buttresses. Leaves elliptic-oblong, obtusely acuminate, base rounded or cordate, entire and distantly crenulate, to 15 x 5 cm; subsessile or petiole to 3 mm long. Drupe pyriform or obovoid, 1.5-2.5 x 1-2 cm, fleshy, scarlet.

Occasional in semi-evergreen and evergreen forests.

NS 11225 (Rosemala)

Fl. & Fr. January-April

D i s t. Indo-Malesia to Australia and Africa

ARTOCARPUS J. R. & G. Forst.

- | | |
|--|---------------------------|
| 1. Fruits smooth, 2-4 cm long | : <i>A. gomezianus</i> |
| | ssp. <i>zeylanicus</i> |
| 1. Fruits echinate; over 10 cm long | : 2 |
| 2. Under surface of leaves and young shoots yellowish-brown hirsute; | |
| male spikes over 10 cm long | : <i>A. hirsutus</i> |
| 2. Leaves and young shoots glabrous; male spikes under 5 cm long | : <i>A. heterophyllus</i> |

Artocarpus gomezianus Wall. ex Trecul ssp. *zeylanicus* Jarrett, J. Arnold Arbor. 41: 90. 1960; Fl. Thenmala 354. 1995. *A. lakoocha* sensu Fischer in Gamble, Fl. Madras 1369. 1928, non Roxb. 1832.

Medium sized to large trees, bark brownish black. Leaves elliptic-oblong, acuminate, base truncate or subcordate, subscarbous below, to 16 x 8 cm. Male spike globose, 8 mm across, peduncles 1 cm long.

Fairly common in semi-evergreen forests.

NS 11314 (Rosemala)

Fl. January-April

D i s t. South West India and Sri Lanka

Artocarpus heterophyllus Lamk., Encyl. 3: 209. 1789; Jarrett, J. Arnold Arbor. 40: 334. 1959. *A. integrifolias* auct. non L. f. 1781, Wt., Ic. t. 678. 1840; Fl. Brit. India 5: 541. 1888; Fl. Madras 1369. 1928.

Large trees, bark dark greyish-brown, trunk with warty tubercles. Leaves obovate or oblong-obovate, acute or obtuse, base cuneate, entire (seedling and sapling leaves often lobed) to 15 x 7 cm. Spikes enclosed by spathe-like bracts; male from young branches;

female from the trunk and mature branches. Perianth fleshy in fruit. Sorosis to 30 x 25 cm; seeds oblong, smooth.

Occasional in evergreen forests.

NS 10804 (Kallar)

Fl. & Fr. November-April

D i s t. South India and Sri Lanka; widely cultivated in the tropics.

Note: Beside the wild plants, cultivar varieties with large fruits and more fleshy perianth are grown in forest settlements.

Artocarpus hirsutus Lamk., *Encyl.* 3: 210. 1789; *Wt., Ic. t.* 1957. 1853; *Bedd., Fl. Sylv. t.* 308. 1873; *Fl. Brit. India* 5: 541. 1888; *Fl. Madras* 1369. 1928; *Fl. Thenmala* 355. 1995.

Very large trees, bark brownish-black. Leaves broadly ovate or elliptic, acuminate, base truncate or rounded, entire, coriaceous, to 18 x 12 cm. Male spikes linear-oblong, to 15 cm long. Sorosis echinate, tomentose, to 12 x 8 cm, yellow when ripe.

Fairly common in semi-evergreen forests.

NS 10687 (Kallar)

Fl. & Fr. December-March

D i s t. Peninsular India

DORSTENIA L.

Dorstenia indica Wall. ex *Wt., Ic. t.* 1964. 1853; *Fl. Brit. India* 5: 494. 1988; *Fl. Madras* 1370. 1928.

Herbs. Leaves obovate or oblanceolate, acute, base attenuate or cuneate, membranous, distantly toothed, sparsely hirsute along the nerves beneath, to 9 x 2.5 cm. Receptacle discoid, 5-angled, to 1.5 cm across, marginal lobes to 0.5 cm long; peduncles to 2 cm long.

Occasional in evergreen forests.

NS 11356 (Alvarakurichi)

Fl. & Fr. February-April

D i s t. South India and Sri Lanka

FICUS L.

- | | |
|---|------------------------|
| 1. Leaves opposite; internodes of branchlets hollow | : <i>F. hispida</i> |
| 1. Leaves alternate; internodes solid | : 2 |
| 2. Figs cauliflorous or on short leafless branches | : 3 |
| 2. Figs not cauliflorous | : 4 |
| 3. Erect trees; figs often on short leafless branches, 2-2.5 cm across;
leaves oblong or elliptic lanceolate | : <i>F. racemosa</i> |
| 3. Climbing shrubs; figs solitary or in fascicles, 3-4 cm long; leaves
broadly ovate | : <i>F. amplocarpa</i> |

- | | |
|---|---|
| 4. Figs sessile | : 5 |
| 4. Figs peduncled | : 7 |
| 5. Young shoots, stipules and under surface of leaves yellowish
pubescent, figs 1.2 cm across, in axillary pairs | : F. drupacea
var. pubescens |
| 5. Young shoots and leaves glabrous, figs 0.5-0.8 cm across, in
clusters of 2-6. | : 6 |
| 6. Leaves broadly ovate, long cuspidate | : F. religiosa |
| 6. Leaves oblong or lanceolate | : F. tsjahela |
| 7. Scandent shrubs, young shoots angular | : F. glaberrima
var. bracteata |
| 7. Erect trees, sometimes epiphytic | : 8 |
| 8. Leaf base asymmetric, one side gibbous or rounded, other side
cuneate | : F. tinctoria
ssp. parasitica |
| 8. Leaf base equal | : 9 |
| 9. Upper surface of leaves very scabrous, lateral nerves 5-8 pairs,
serrate or subentire | : F. exasperata |
| 9. Upper surface of leaves glabrous or glabrescent, lateral nerves over
10 pairs, entire | : F. nervosa |

Ficus amplocarpa Govind. & Masilamoney, Proc. Indian Acad. Sci. (Pl. Sci.) 91: 117. 1982. **F. macrocarpa** (Miq.) Wt. ex King, Ann. Roy. Bot. Gard. (Culcutta) 1: 166. t. 208. 1888; Fl. Brit. India 5: 534. 1888, non Bl. 1825; Fl. Madras 1365. 1928. **Pogonotrophe macrocarpa** Miq., London J. Bot. 7: 74. 1848; Wt., Ic. t. 1965. 1853.

Woody climbers, branchlets glabrous. Leaves broadly ovate, acuminate, base truncate or shallowly cordate, glabrescent, to 14 x 10 cm, basally 3-5 ribbed. Figs fascicled on mature stem, basal bracts nil.

Occasional in evergreen forests.

NS 11355 (Alvarakurichi)

Fr. March-April

D i s t. Southern W. Ghats : endemic

Ficus drupacea Thunb. var. **pubescens** (Roth) Corner, Gard. Bull. s.s. 17: 382. 1960; Fl. Thenmala 352. 1995. **F. mysorensis** Heyne ex Roth in Roem. & Schult., Syst. Veg. 1: 508. 1817; Fl. Brit. India 5: 500. 1888; Fl. Madras 1361. 1928. **F. mysorensis** Heyne ex Roth var. **pubescens** Roth in Roem. & Schult., Syst. Veg. 1: 508. 1817.

Trees, bark brown. Aerial roots sometimes present. Leaves broadly elliptic-oblong, acute or acuminate, base rounded or subcordate, brown pubescent below when young,

becomes glabrescent when mature, to 15 x 8 cm; lateral nerves 8-12 pairs. Figs sessile, in axillary pairs, oblong or subobovate, ca. 2 cm long, orange yellow when ripe; basal bracts ovate-obtuse, tomentose.

Occasional in semi-evergreen forests.

NS 6109 (Rosemala)

Fr. March-April

D i s t. India to Indo-China and Sri Lanka

Ficus exasperata Vahl, Enum. Pl. 2: 197. 1806; Corner, Gard. Bull. s.s. 21: 74. 1965; Fl. Thenmala 352. 1995. *F. asperrima* Roxb., Fl. Ind. 3: 554. 1832; Wt., Ic. t. 633. 1840; Fl. Brit. India 5: 522. 1888; Fl. Madras 1366. 1928.

Small trees, bark greyish-brown, smooth. Aerial roots absent. Leaves elliptic or obovate, acute or acuminate, base rounded, scabrous, to 10 x 5 cm; lateral nerves 4-6 pairs. Figs axillary, solitary, globose, scabrid; yellow when ripe, 1 cm long; basal bracts 6 or 7; peduncle to 1 cm long.

Fairly common in moist deciduous forests.

NS 11468 (Kattalappara)

Fr. February-April

D i s t. India, Sri Lanka, East Africa and Arabia

Ficus glaberrima Bl. var. *bracteata* Corner, Gard. Bull. ss. 17. 388. 1959. *F. travancorica* King, Ann. Roy. Bot. Gard. (Calcutta) 1: 28. tt. 26, 820. 1887; Fl. Brit. India 5: 503. 1888; Fl. Madras 1365. 1928.

Scandent shrubs, branchlets angular. Leaves lanceolate, acuminate, base acute, glabrous, to 16 x 3.5 cm, penni-nerved. Figs axillary, paired, globose, glabrous, 1.2 cm across, basal bracts 3; peduncle 0.8 cm long.

Occasional in evergreen forests.

NS 10789 (Kallar)

Fr. February-March

D i s t. South India : endemic

Ficus hispida L. f., Suppl. Pl. 442. 1781; Fl. Brit. India 522. 1888; Fl. Madras 1367. 1928; Corner, Gard. Bull. s.s. 21: 89. 1965; Fl. Thenmala 353. 1995. *F. oppositifolia* Roxb., Pl. Corom. t. 124. 1798; Wt., Ic. t. 638. 1843. *F. daemonia* Koenig ex Vahl, Enum. 2: 198. 1805; Wt., Ic. t. 641. 1843.

Small trees or large shrubs, young shoots hispid. Leaves opposite, oblong or obovate-oblong, acute or acuminate, base rounded or emarginate, membranous, hispid-pubescent, to

18 x 10 cm; lateral nerves 5-7 pairs. Figs fascicled on trunk or on elongated pendulous or trailing leafless branches. Mature figs depressed globose, yellowish, 2-2.5 cm across; peduncles to 1 cm long.

Common in moist deciduous forests, often along the sides of water courses.

NS 10913 (Rosemala)

Fr. September-May

D i s t. Indo-Malesia to Australia and S. China

Ficus nervosa Heyne ex Roth in Roem. & Schult., Syst. Veg. 1: 513. 1817; Fl. Brit. India 5: 512. 1888; Fl. Madras 1364. 1928; Corner, Gard. Bull. s.s. 21: 31. 1965. *F. angustifolia* Roxb., Fl. Ind. 3: 554. 1832; Wt., Ic. t. 660. 1840.

Medium sized to large trees. Aerial roots absent. Leaves ovate-elliptic or oblanceolate, shortly obtusely acuminate, base acute or rounded, glabrous and glossy, to 18 x 7 cm. Figs axillary, paired, globose, 1 cm across, red when ripe; peduncle to 1 cm long.

Common in semi-evergreen and evergreen forests.

NS 11231 (Kallar)

Fr. March-May

D i s t. Indo-Malesia to Australia and China

Ficus racemosa L., Sp. Pl. 922. 1753; Corner, Gard. Bull. s.s. 21: 34. 1965; Fl. Thenmala 351. 1995. *F. glomerata* Roxb., Pl. Corom. t. 123. 1799; Wt., Ic. t. 667. 1840; Fl. Brit. India 5: 535. 1888; Fl. Madras 1364. 1928.

Small to medium sized trees, bark reddish-brown, smooth. Aerial roots absent. Leaves elliptic-lanceolate or oblong-lanceolate, acute, base obtuse or acute, coriaceous, glabrous, to 12 x 5 cm; lateral nerves 5-8 pairs. Figs on short leafless branches or warty tubercles of trunk, pyriform, 2.5 x 2 cm, orange-red when ripe; peduncle to 0.5 cm long.

Fairly common in moist deciduous and semi-evergreen forests.

NS 11261 (Rosemala)

Fr. February-May

D i s t. Indo-Malesia to Australia and S. China

Ficus religiosa L., Sp. Pl. 1059. 1753; Fl. Brit. India 5: 513. 1888; Fl. Madras 1363. 1928; Corner, Gard. Bull. ss. 21: 6. 1965.

Large trees without aerial roots form the branches. Leaves ovate-cordate, caudate-acuminate, coriaceous, glabrous, to 15 cm x 8 cm; petiole to 8 cm. Figs axillary, paired, pink purple, ovate-obtuse, ca. 1 cm long.

Occasional in moist deciduous forests.

NS 11332 (Rosemala)

Fr. March-April

D i s t. Himalayas East Ward to South East Asia

Ficus tinctoria Forst. f. ssp. *parasitica* (Willd.) Corner, Gard. Bull. s.s. 17: 476. 1960; 21: 75. 1965. *F. parasitica* Koenig ex Willd., Mem. Acad. Roy. Sci. Hist. (Berlin) 2: 102. 1798. *F. gibbosa* Bl. var. *parasitica* (Koenig ex Willd.) King, Ann. Roy. Bot. Gard. (Calcutta) 1: t. 2, 16. 1887 & Fl. Brit. India 5: 497. 1888; Fl. Madras 1365. 1928.

Small trees, often epiphytic with interlacing aerial roots. Leaves elliptic-ovate or oblanceolate, acute or cuspidate, base unequal, one side gibbous and other cuneate, sparsely hispid, to 10 x 5 cm; lateral nerves 4-7 pairs. Figs in pairs or fascicled on branchlets, subglobose, 5-7 mm across, scabrid, yellow when ripe; peduncle to 1.5 cm long.

Occasional in moist deciduous and semi-evergreen forests.

NS 10200 (Choodal)

Fr. March-April

D i s t. Indo-Malaya

Ficus tsjahela Burm. f., Fl. Ind. 227. 1768 '*tjakela*'; Fl. Brit. India 5: 514. 1888; Fl. Madras 1362. 1928; Corner, Gard. Bull. s.s. 21: 7. 1965; Fl. Thenmala 353. 1995.

Deciduous trees, often epiphytic. Leaves oblong, acuminate, base rounded, coriaceous, glabrous and glossy, to 20 x 8 cm; lateral nerves 6-10 pairs, prominent and parallel; petiole to 6 cm long; stipules foliaceous, linear-oblong, to 6 cm long. Figs in clusters of 2-6, sessile, axillary to leaves and leaf-scars, 5-6 mm across, greenish.

Common in moist deciduous forests.

NS 10337 (Kattalappara)

Fr. March-April

D i s t. Peninsular India and Sri Lanka

STREBLUS Lour.

Streblus taxoides (Heyne ex Roth) Kurz, For. Fl. Burma 2: 465. 1877; Corner Gard. Bull. ss. 225. 1962. *Trophis taxoides* Heyne ex Roth, Nov. Pl. Sp. 386. 1821. *Phyllochlamys spinosa* (Roxb.) Bureau in DC., Prodr. 17: 218. 1873; Fl. Brit. India 5: 488; Fl. Madras 1352. 1928.

Large shrubs with stout axillary spines. Leaves elliptic or ovate to obovate, acute to acuminate, base cuneate, dentate along distal half, to 12 x 5 cm. Male inflorescence axillary, in groups of 1-4 with 8-12 flowers. Female solitary, axillary. Drupe ellipsoid, ca 1 cm across, yellow, subtended by the enlarged foliaceous tepals, ca 2 cm long.

Common in semi-evergreen and evergreen forests.

NS 10221, 10332 (Kattalappara), 11304 (Rosemala)

ORCHIDACEAE

1. Epiphytes or lithophytes	: 2
1. Terrestrials	: 28
2. Leaves equitant	: 3
2. Leaves not equitant	: 4
3. Stem very short, leaves tufted; scapes terminal, spikes many flowered:	Oberonia
3. Stem elongate, leaves imbricating throughout; scapes terminal and lateral, few flowered	: Podochilus
4. Lip spurred	: 19
4. Lip not spurred, sometimes saccate	: 5
5. Flowers with a mentum	: 6
5. Flowers without a mentum	: 8
6. Mentum formed by lateral sepals and foot of the column	: 7
6. Mentum formed by the lip and the foot of the column	: Kingidium
7. Rhizome elongated, annulate, stem nodose, bearing uninodal pseudobulbs	: Flickingeria
7. Rhizome short, pseudobulb single or plurinodal	: Dendrobium
8. Column foot present	: 9
8. Column foot absent	: 13
9. Lip clawed, jointed to the foot, mobile	: 10
9. Lip sessile, not mobile	: 12
10. Scapes lateral, racemose or umbellate	: 11
10. Scapes terminal, flowers paniced	: Polystachya
11. Inflorescence 1 or 2; flowers wide opening, operculum with long tail like prolongation	: Trias
11. Inflorescence many flowered, flowers not wide opened, operculum without tail like prolongation	: Bulbophyllum
12. Sepals connated at base to form a tube, inflorescence usually one flowered	: Porpax
12. Sepals free, inflorescence one to many flowered	: Eria
13. Bracts imbricating, convolute, almost concealing the flowers	: Pholidota
13. Bracts not imbricating, not concealing the flowers	: 14
14. Leaves terete	: Luisia
14. Leaves flat	: 15

15. Scapes terminal, column long curved : **Liparis**
15. Scapes lateral, column very short : 16
16. Pseudobulb absent : 17
16. Pseudobulb present, ovoid or sub-globose : 18
17. Small plants, leaves basal, oblong or elliptic, obtuse, flowers white or pinkish, lip saccate : **Sirhookera**
17. Robust plants, leaves keeled, flowers brownish, midlobe of lip with an auricular callus : **Cottonia**
18. Sepals and petals similar, pinkish brown; leaf apex unequally lobed, obtuse : **Cymbidium (p.p.)**
18. Sepals and petals unequal, white with yellow; leaf apex acute : **Coelogyne**
19. Column foot distinct : 20
19. Column foot absent : 21
20. Leaves terete, flowers 1-3, on short lateral peduncle : **Papilionanthe**
20. Leaves strap shaped, keeled, flowers many, on long lateral or terminal peduncle : **Aerides**
21. Spur longitudinally septate almost to the mouth : **Cleisostoma**
21. Spur not longitudinally septate : 22
22. Spur distant from the base of lip; inflorescence dense, drooping raceme : **Rhynchostylis**
22. Spur at the base of the lip : 23
23. Mouth of spur closed by a horizontal plate from the back wall : 24
23. Mouth of the spur open : 25
24. Stem elongate, 30-60 cm high, leaves elliptic oblong, obtuse, 2-3 x 1.5 cm, flowers yellow, on short peduncle : **Trichoglottis**
24. Stem short, 5-7 cm high; leaves oblong, 10-15 x 2 cm; flowers greenish-white, in long often branched peduncles : **Pomatocalpa**
25. Stem woody, 10-30 cm high : 26
25. Stem inconspicuous, 1-2 cm high : 27
26. Flowers creamy white or yellow with red stripes, brittle; lip conical, acute, side lobes minute, pointed : **Acampe**
26. Flowers pinkish, without red stripes; lip oblong, truncate, at apex, side lobes large : **Vanda**
27. Leaves articulated at base, spur of lip, conical, subacute : **Smithsonia**
27. Leaves not articulated at base, spur of lip deeply saccate, basin-like : **Gastrochilus**
28. Plants climbing, stem fleshy, green, leaves caducous : **Vanilla**
28. Plants not climbing, stem otherwise : 29

29. Plants leafy, autophytes	: 30
29. Plants leafless, saprophytes	: 44
30. Plants with pseudobulb	: 31
30. Plants without pseudobulb	: 36
31. Leaves solitary	: Tainia
31. Leaves two or more	: 32
32. Leaves ensiform	: Cymbidium (p.p.)
32. Leaves plaited	: 33
33. Spur longer than sepals, lip adnate to the top of the column	: Calanthe
33. Spur shorter than sepals, lip adnate to the base of the column	: 34
34. Inflorescence long, decurved, flowers white with pink spots	: Geodorum
34. Inflorescence erect, flowers yellowish brown or purple	: 35
35. Pseudobulb hypogeal, branched, column foot forked at base	: Eulophia
35. Pseudobulbs epigeal, foot absent	: Oeceoclades
36. Plants with underground tubers or tuberoid roots	: 37
36. Plants without underground tubers, rhizome erect or creeping	: 40
37. Leaf single, appear after flowering	: Nervilia
37. Leaves two to many, leafy during flowering	: 38
38. Stigma lobes free, each on a stigmaphore	: Habenaria
38. Stigma lobes not free, confluent	: 39
39. Flowers about 5 cm across, side lobes of lip lacinate	: Pecteilis
39. Flowers 0.5-1 cm across side lobes of lip not lacinate	: Peristylus
40. Stem woody, leaves coriaceous, prominently ribbed	: Tropidia
40. Stem fleshy, leaves membranous	: 41
41. Anther terminal, pollinia waxy, lip superior	: Malaxis
41. Anther dorsal, pollina sectile, lip inferior	: 42
42. Lip spurred, spur exerted beyond the base of sepals; mesochile of lip with flanges or threads	: Anoetochilus
42. Lip saccate, mesochile of lip without any such flanges	: 43
43. Sepals free	: Zeuxine
43. Sepals connate half way into a tube	: Cheirostylis
44. Lip spurred, flowers white, speckled with pink	: Epipogium
44. Lip saccate, not spurred, flowers yellow	: Aphyllorchis

ACAMPE Lindl. *nom. cons.*

Acampe praemorsa (Roxb.) Blatt. & McCann, J. Bombay Nat. Hist. Soc. 35: 495. 1932; Fl. Thenmala 373. 1995. **Epidendrum praemorsum** Roxb., Pl. Corom. 34, t. 43. 1795. **Saccolabium praemorsum** (Roxb.) Hook. f., Fl. Brit. India 6: 62. 1890. **Acampe wightiana** Lindl., Folia Orch. Acampe 2. 1853; Fl. Madras 1447. 1928.

Stem stout, to 30 cm long, with prominent leaf scars. Leaves linear, thick, coriaceous, to 20 x 3 cm. Corymbs leaf-opposed, to 6 cm long. Flowers 1 cm across. Lip creamy white with red streaks; spur short.

Very common in moist deciduous forests.

NS 10992 (Kattalappara)

Fl. March-April

D i s t. India and Sri Lanka

AERIDES Lour.

Aerides ringens (Lindl.) Fischer, Kew Bull. 1928: 284. 1928 & Fl. Madras 1442. 1928; Fl. Thenmala 372. 1995. *Saccolabium ringens* Lindl., Gen. Sp. Orch. 221. 1883. *Aerides lineare* Hook. f., Fl. Brit. India 6: 47. 1890.

Stem to 20 cm long. Leaves linear, unequally lobed at apex, to 20 x 1.5 cm. Racemes axillary, to 20 cm long. Sepals and petals white with pink shades. Lip 3-lobed, midlobe entire, spur curved.

Fairly common in moist deciduous and semi-evergreen forests.

NS 11050 (Rosemala)

Fl. June-July

D i s t. Peninsular India and Sri Lanka

ANOECTOCHILUS Bl.

Anoectochilus elatus Lindl., Proc. Linn. Soc. Bot. 1: 178. 1857; Fl. Brit. India 6: 95. 1890 '*elator*'; Fl. Madras 1453. 1928.

Stem erect, fleshy to 25 cm tall. Leaves membranous, dark brown, veins silvery, to 5 x 3.5 cm. Flowers white, 1.5 cm long. Sepals pubescent. Petals white with pink shades. Lip white, spur 0.5 cm long. Ovary glandular pubescent.

Occasional in evergreen forests above 700 m.

NS 11364 (Alvarakurichi)

Fl. November-December

D i s t. Southern W. Ghats : endemic

APHYLLORCHIS Bl.

Aphyllorchis montana Rchb. f., Linnaea 41: 57. 1877; Fl. Brit. India 6: 116. 1890; Fl. Madras 3: 1457. 1928. *Apaturia montana* Thw., Enum. Pl. Zeyl. 301. 1801, non Lindl., Wall., Cat. 3738. 1832.

Saprophytic herb, 50-60 cm. Flowers yellow, 3 x 1 cm, in racemes. Sepals and petals oblong, obtuse. Lip 9 x 5 mm, ovate, acute, 3-lobed, side lobes obliquely ovate-obtuse, midlobe ovate acute, slightly curved.

Rare in semi-evergreen forests.

NS 10562 (Kallar)

Fl. August-September

Dist. Indo-Malesia

BULBOPHYLLUM Du Petit-Thou. *nom. cons.*

- | | |
|---|---------------------------|
| 1. Pseudobulb much reduced | : B. xylophyllum |
| 1. Pseudobulb well developed | : 2 |
| 2. Inflorescence with 1 or 2 golden yellow flowers | : B. aureum |
| 2. Inflorescence racemose, with many brownish or purple flowers | : 3 |
| 3. Flowers reddish-brown; lip glabrous, recurved | : B. neilgherrense |
| 3. Flowers pale purple; lip fringed with long auricular hairs, straight | : B. tremulum |

Bulbophyllum aureum (Hook. f.) J. J. Sm., Bull. Buitz. 9, 8: 22. *Cirrhopetalum aureum* Hook. f., Fl. Brit. India 5: 777. 1890; Fl. Madras 1420. 1928.

Pseudobulbs ovoid. Leaves oblong, to 5 x 1 cm. Scape to 5 cm long. Flowers 2.5 x 3 cm. Dorsal sepal ovate-acute. Lateral sepals oblong, twisted at apex. Petals oblong, spatulate. Lip 0.5 cm long, auricled at base. Column winged.

Occasional in evergreen forests above 600 m.

NS 10772 (Kallar)

Fl. November-December

Dist. Southern W. Ghats : endemic

Bulbophyllum neilgherrense Wt., Ic. t. 1650. 1851; Fl. Brit. India 5: 761. 1890; Fl. Madras 1418. 1928; Fl. Thenmala 374. 1995.

Epiphytes or lithophytes. Pseudobulbs ovoid, faintly 4-angled. Leaves elliptic-oblong, to 15 x 3.5 cm. Flowers fetid, reddish-brown, about 1 cm long, in dense racemes, to 15 cm long. Lip dark red, auricled at base.

Fairly common in all forest types.

NS 11338 (Rosemala)

Fl. December-January

Dist. South West India and Bangladesh

Bulbophyllum tremulum Wt., Ic. t. 1 749. 1851; Fl. Brit. India 5: 763. 1890; Fl. Madras 1418. 1928.

Pseudobulb ovoid, depressed, rigid. Leaves oblong or elliptic-oblong, to 4.5 x 1.2 cm. Flowers pale purple, about 1.2 cm long, in lax racemes, to 15 cm long. Sepals subequal, lanceolate. Petals scaly, 0.3 cm long. Lip linear-oblong.

Fairly common in evergreen forests.

NS 11473 (Kattalappara)

Fl. March-April

D i s t. W. Ghats, Coorg southwards : endemic

Bulbophyllum xylophyllum Par. & Rchb. f., Trans. Linn. Soc. 30: 151. 1874; Fl. Brit. India 5: 766. 1890. *Phyllorchis xylophylla* (Par. & Rchb. f.) O. Ktze., Rev. Gen. 2: 678. 1891. *Bulbophyllum agastyamalayanum* Gopalen & Henry, J. Bombay Nat. Hist. Soc. 90: 78. 1993. syn nov [Fig. 19].

Pseudobulbs minute, discoid. Leaves elliptic, subacute, 3 x 1-1.2 cm. Flowers 10-12, dark-brownish red, in densely packed head. Dorsal sepal, 3.8 x 1.9 mm, ovate, acute. Lateral sepals 2.9 x 2 mm, obliquely ovate, acute, apiculate. Petals 2 x 1 mm, linear, falcate. Lip oblong, obtuse, puberulous. Column with forwardly pointing cuspidate stelidia.

Fairly common in evergreen forests above 1300 m.

NS 11371 (Alvarakurichi)

Fl. February-March

D i s t. Indo-Malesia

CALANTHE R. Br. nom. cons.

Calanthe masuca (D. Don) Lindl., Gen. Sp. Orch. 249. 1833; Fl. Brit. India 5: 850. 1890; Fl. Madras 1432. 1928. *Bletia masuca* D. Don, Prodr. 30. 1825.

Robust herbs, to 40 cm tall. Leaves broadly elliptic, acuminate, to 35 x 15 cm, puberulous. Flowers pale blue, 3-4 cm across, in large terminal racemes, scape to 40 cm long, tomentose. Sepals oblong, acute. Petals little smaller than the sepals. Lip white with purple shades; spur 4 cm long.

Occasional in evergreen forests.

NS 10007 (Kallar)

Fl. October-November

D i s t. Indo-Malesia

CHEIROSTYLIS Bl.

Cheirostylis parvifolia Lindl., Bot. Reg. 25: Misc. 20. 1830.

Delicate herb, to 15 cm tall. Leaves 2 x 1.5 cm, ovate-lanceolate. Flowers pinkish white, in terminal puberulous raceme. Sepals ovate, obtuse. Petals oblong, obovate, obtuse. Lip longer than sepals, subquardate, 6-8 lobed.

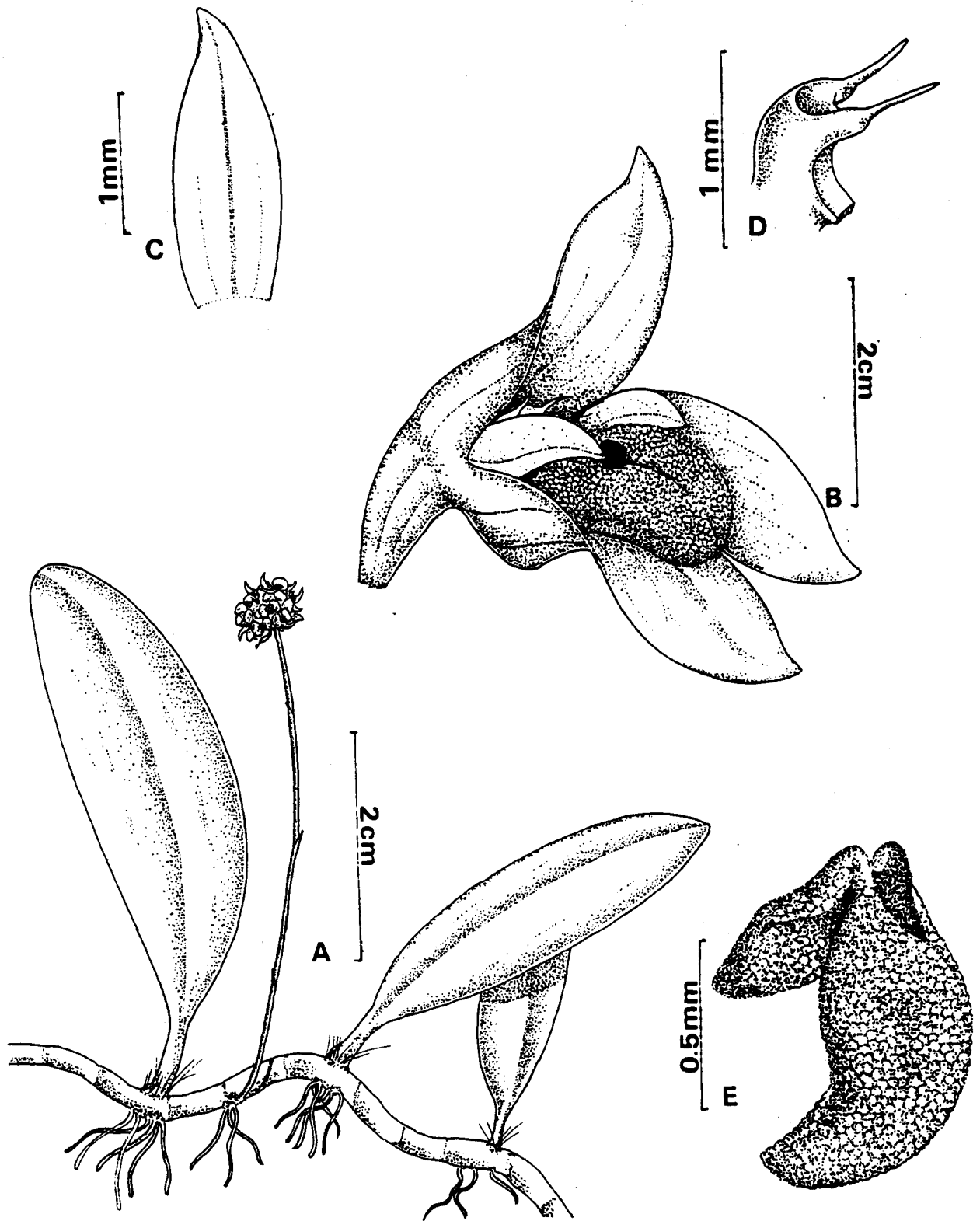


Fig. 19: *Bulbophyllum xylophyllum* Par. & Rchb. f. A. habit, B. flower, C. petal, D. column, E. Lip

Occasional in evergreen forests.

NS 10773 (Rockwood)

Fl. December-January

D i s t. South India and Sri Lanka

CLEISOSTOMA Bl.

Cleisostoma tenuifolium (L.) Garay, Bot. Mus. Leaflet. Harvard 23: 175. 1972. *Epidendrum tenuifolium* L., Sp. Pl. 952. 1753. *Sarcanthus pauciflorus* Wt., Ic. t. 1747. 1851. *S. peninsularis* Dalz. in Hook.'s J. Bot. Kew Gard. Misc. 3: 343. 1851; Fl. Brit. India 6: 67. 1890; Fl. Madras 1447. 1928.

Pendulous epiphytes. Leaves linear, acuminate, fleshy, to 12 x 0.5 cm. Flowers 0.8 cm long, in racemes, to 4 cm long. Sepals and petals yellow with red stripes along margins. Lip white with purple streaks, spur slightly curved.

Fairly common in semi-evergreen and evergreen forests.

NS 11209 (Rosemala)

Fl. July-August

D i s t. India and Sri Lanka

COELOGYNE Lindl.

Coelogyne nervosa A. Rich., Ann. Sci. Nat.(ser. 2) 15: 16. 1841; Fl. Madras 1430. 1928; Das & Jain, Fl. India Fasc. 5: 18, 1980. *C. corrugata* Wt., Ic. t. 1639. 1851; Fl. Brit. India 5: 835. 1890.

Pseudobulbs ovoid, corrugated. Leaves to 15 x 3 cm, linear-elliptic, acuminate. Flowers 3-4, white, in about 10 cm long racemes. Sepals elliptic-lanceolate, acute. Petals lanceolate. Midlobe of lip ovate-lanceolate, acute, with 3 yellow crenate keels.

Fairly common in shola forests.

NS 11433 (Alvarakurichi)

Fl. June-July

D i s t. Southern W. Ghats : endemic

COTTONIA Wt.

Cottonia peduncularis (Lindl.) Rchb. f., Cat. Orch. Schillar 52. 1857. *Vanda peduncularis* Lindl., Gen. Sp. Orch. 216. 1833. *Cottonia macrostachya* Wt., Ic. t. 1755. 1851; Fl. Brit. India 6: 26. 1890; Fl. Madras 1439. 1928.

Leaves articulated, to 20 x 1.5 cm, sheath persistent. Racemes extra axillary, paniced, to 50 cm long. Flowers 1.5 cm long, confined to the apex of branches only. Sepals and petals yellow, with faint brown stripes. Lip 1.2 cm long, velvety purple, yellow along margins.

Fairly common in semi-evergreen and evergreen forests.

NS 10993 (Kattalappara)

Fl. March-May

D i s t. South India and Sri Lanka

CYMBIDIUM Sw.

1. Epiphytes, leaves loratus, coriaceous, bifid at apex; flowers
purple, pollinia 2 : C. aloifolium

1. Terrestrials, leaves ensiform, conduplicate, acute at apex; flowers
yellow, pollinia 4 : C. ensifolium

ssp. haematodes

Cymbidium aloifolium (L.) Sw., Nov. Act. Sc. Upsal. 6: 73. 1799; Wt., Ic. tt. 1687, 1688. 1851; Fl. Brit. India 6: 8. 1890; Fl. Madras 1436. 1928. *Epidendrum aloifolium* L., Sp. Pl. 953. 1753; Fl. Thenmala 376. 1995.

Leaves linear-oblong, to 40 x 2 cm. Raceme pendulous, to 25 cm long. Sepals and petals linear, acuminate, 2 x 0.4 cm, yellow with purple median stripe. Lip reddish-purple, yellow at base, midlobe recurved.

Common in semi-evergreen and moist deciduous forests.

NS 10333 (Kattalappara); 11311 (Rockwood)

Fl. April-May

D i s t. Indo-Malesia

Cymbidium ensifolium (L.) Sw. ssp. *haematodes* (Lindl.) Du Puy & Cribb. Gen. *Cymbidium* 161. 1988. *Cymbidium ensifolium* var. *haematodes* (Lindl.) Trimen, Cat. 89. 1855. *C. haematodes* Lindl. Genn. Sp. Orch. 162. 1833.

Leaves 50-60 x 1.5-2 cm. Flowers 2 x 3 cm, in about 40 cm long erect raceme. Dorsal sepal elliptic, oblong, acute. Lateral sepals subfalcately oblong, acute. Petals lanceolate, acute. Lip 3 lobed; lateral lobes rounded, midlobe orbicular, obtuse, revolute, base saccate.

Occasional in semi-evergreen forests.

NS 10787 (Rockwood)

Fl. September-October

D i s t. India and Sri Lanka

DENDROBIUM Sw.

- | | |
|--------------------------------------|--------------------|
| 1. Plants leafy during flowering | : 2 |
| 1. Plants leafless during flowering | : 3 |
| 2. Stem clavately swelling distally | : D. heterocarpum |
| 2. Stem not clavate | : 3 |
| 3. Flowers in terminal racemes | : D. wightii |
| 3. Flowers in leaf opposed tubercles | : D. nutantiflorum |

- | | |
|--|---------------------------|
| 4. Lip not lobed, margins minutely fimbriate, ciliate | : <i>D. macrostachyum</i> |
| 4. Lip 3-lobed, margins not ciliate | : 5 |
| 5. Petals obovate, disc with green hairs | : <i>D. ovatum</i> |
| 5. Petals elliptic-lanceolate, disc with golden yellow hairs | : <i>D. barbatulum</i> |

Dendrobium barbatulum Lindl., Gen. Sp. Orch. 84. 1830; Fl. Brit. India 5: 719. 1890; Fl. Madras 1416. 1928; Fl. Thenmala 375. 1995.

Stem 5-10 cm long, terete. Flowers creamy white, 2.5 x 2 cm, in 5-8 cm long terminal racemes. Dorsal sepals lanceolate, obtuse. Lateral sepals ovate-lanceolate, acute. Petals obovate, obtuse. Lip 13 x 11 mm, 3-lobed, side lobes, ovate, obtuse, midlobe obovate, truncate at apex.

Rare in grasslands.

NS 11249 (Rosemala)

Fl. December-January

Dist. South India : endemic

Dendrobium heterocarpum Wall. ex Lindl., Gen. Sp. Orch. 78. 1830; Fl. Brit. India 5: 737. 1890; Fl. Madras 1416. 1928.

Stem 20-35 cm long, clavate. Leaves to 10 x 2 cm, oblong-lanceolate, acute, at both ends. Flowers white, 4 x 3 cm, in short 2-4 flowered raceme. Dorsal sepal oblong-lanceolate, obtuse. Lateral sepals obliquely ovate, oblong, lanceolate, subacute. Petals obliquely elliptic, apiculate. Lip quadrately ovate, margin crenulate, hairy within side lobes.

Rare in evergreen forests.

NS 11359 (Alvarakurichi)

Fl. February-March

Dist. South India : endemic.

Dendrobium macrostachyum Lindl., Gen., Sp. Orch. 78. 1830; Wt., Ic. t. 1647. 1851; Fl. Brit. India 5: 735. 1890; Fl. Madras 1416. 1928.

Stem to 40 cm long, terete. Leaves oblong or ovate-lanceolate, acute, to 8 x 2.5 cm. Flowers dull yellow, 2.5 cm long, 2 or 3 on very short peduncles. Sepals and petals similar, oblong-lanceolate or obovate. Lip obscurely 3-lobed, lateral lobes enclosing the column, midlobe quadrately oblong, ovate, obtuse, with prominent red veins, margins crenulate.

Fairly common in moist deciduous and semi-evergreen forests.

NS 10997 (Kattalappara)

Fl. March-April

Dist. India and Sri Lanka

Dendrobium nutantiflorum Hawkes & Heller, Lloydia 20: 121. 1957. *D. Nutans* Lindl., Gen. Sp. Orch. 90. 1830; Fl. Brit. India 5: 734. 1890; Fl. Madras 1416. 1928.

Stem 20-25 cm long, terete, tufted. Leaves to 4 x 1 cm, ovate lanceolate, obliquely bifid at apex. Flowers white, 3 x 1 cm, in short 3-4 flowered racemes. Sepals and petals subsimilar, oblong or linear-lanceolate, acute. Lip obovate, lanceolate, 3-lobed; disc 4 lamellate.

Rare in evergreen forests.

NS 11360 (Alvarakurichi)

Fl. February-March.

D i s t. South India and Sri Lanka

Dendrobium ovatum (Willd.) Kranz. in Engl., Pflanzenr. 45: 71. 1910; Fl. Madras 1416. 1928. *Cymbidium ovatum* Willd., Sp. Pl. 4: 101. 1805. *Dendrobium chlorops* Lindl., Bot. Reg. Misc. 44. 1844; Fl. Brit. India 5: 719. 1890.

Stem to 30 cm long, terete. Flowers creamy white, about 1.5 cm long, in many flowered, 5-10 cm long racemes. Sepals ovate-oblong. Petals obovate, mucronate at apex. Lip shortly clawed, lateral lobes erect, conniving over the column, midlobe quadrate-oblong, truncate, green pubescent.

Common in moist deciduous forests.

NS 10749 (Kattalappara)

Fl. December-January

D i s t. W. Ghats, Konkan southwards : endemic

Dendrobium wightii Hawkes & Heller, Orquidea 24: 16, 1962. *D. graminifolium* Wt., Ic. t. 1649. 1851; Fl. Brit. India 5: 718. 1890; Fl. Madras 1415. 1928.

Stem terete, to 20 cm long. Leaves 6.7 x 0.5 cm, linear, acute, membranous. Flowers white with pink shades, 13 x 6 mm, in about 10 cm long, terminal racemes. Sepals sub similar, oblong-lanceolate acute. Petals oblanceolate, acute. Lip 3-lobed, lateral lobes 2 x 1mm, obliquely ovate oblong, obtuse, midlobe orbicular, margins crenate wavy.

Common in evergreen and semi-evergreen forests.

NS 10064 (Rockwood); 10651 (Kallar)

Fl. September-October

D i s t. India and Sri Lanka

EPIPOGIUM R. Br.

Epipogium roseum (D. Don) Lindl., J. Linn. Soc. Bot. 1: 177. 1857. *Limodorum roseum* D. Don, Prodr. 30. 1825. *Epipogium nutans* Rchb. f., Bonplandia 5: 36. 1836; Fl. Brit. India 6: 124. 1890; Fl. Madras 1460. 1928 '*Epipogium*'.

Stem pale yellow, hollow, to 30 cm long with many adpressed thin scales. Flowers 1.2-1.5 cm long, white, speckled with purple. Sepals and petals linear-lanceolate. Lip slightly shorter than the petals.

Fairly common in evergreen forests.

NS 10942 (Rosemala); 11421 (Alvarakurichi)

Fl. April-May

D i s t. Indo-Malesia and West Africa

ERIA Lindl. *nom. cons.*

- | | |
|--|------------------------|
| 1. Pseudobulbs swollen, elongated; inflorescence many flowered | : E. polystachya |
| 1. Pseudobulbs clavate | : 2 |
| 2. Leaves 4-6 x 1 cm; disc of lip with 2 ridges | : E. pauciflora |
| 2. Leaves 9-10 x 2.5-3 cm; disc of lip with single ridge | : E. pseudoclavicaulis |

Eria pauciflora Wt., Ic. t. 1636. 1851; Fl. Brit. India 5: 799. 1890; Fl. Madras 1425. 1928.

Leaves oblong acute. Bracts 6 x 3 mm, oblong-lanceolate, acute. Lip 6.5 x 3-6 mm, midlobe quadrate, emarginate.

Occasional in evergreen forests.

NS 11403 (Alvarakurichi)

Fl. August-September

D i s t. Southern W. Ghats : endemic

Eria polystachya A. Rich., Ann. Sci. Nat. (ser. 2) 11: 20. t. 1841; Wt., Ic. t. 1635. 1852; Fl. Brit. India 5: 792. 1888; Fl. Madras 1425. 1928.

Leaves oblong, acute, to 15 x 3.5 cm. Flowers creamy yellow, 1.2 x 0.5 cm. Sepals lanceolate, 1 x 0.3 mm, pubescent outer.

Common in evergreen forests.

NS 11294 (Rosemala)

Fl. December-January

D i s t. Southern W. Ghats : endemic

Eria pseudoclavicaulis Blatt., J. Bombay Nat. Hist. Soc. 32: 519. 1928; Fl. Madras 1426. 1928.

Pseudobulb 20-25 cm tall. Leaves elliptic-oblong, acute. Bracts 11.5-12 x 6 mm, ovate acute. Lip 12 x 10 mm, midlobe orbicular to truncate.

Common in evergreen forests, above 1,200 m.

NS 11406 (Alvarakurichi)

Fl. August-September

D i s t. Southern W. Ghats : endemic

EULOPHIA R. Br. ex Lindl. *nom. cons.*

Eulophia spectabilis (Dennst.) Suresh., in Nicols. *et al*, intrep. Host. Malab. 300. 1988. *Wolfia spectabilis* Dennst., Schluss. 11. 1818. *Eulophia nuda* Lindl., Gen. Sp. Orch. 180. 1833; Fl. Brit. India 6: 5. 1890; Fl. Madras 1435. 1928; Fl. Thenmala 365. 1995.

Rhizome creeping, oblong, to 6 x 4 cm. Leaves, linear-lanceolate, acuminate, to 40 x 3.5 cm, appear after the emergence of raceme. Flowers dark purple, 2.5 x 3 cm long, in lax flowered racemes, scape to 50 cm long. Sepals subsimilar, oblong, acute, 2-2.2 x 0.5 cm. Petals oblong, obtuse, 2 x 0.7 cm. Lip 2 cm long, ovate-oblong, obtuse, margins wavy.

Fairly common in moist deciduous forests and grasslands.

NS 10921 (Rosemala)

Fl. April

Dist. Indo-Malesia

FLICKINGERIA Hawkes

Flickingeria nodosa (Dalz.) Seidenf., Dansk Bot. Ark. 34: 41. 1980. *Dendrobium nodosum* Dalz. in Hooker's J. Bot. Kew Gard. Misc. 4: 292. 1852. *D. macraei* auct. non Lindl. 1830; Fl. Brit. India 5: 714. 1890. *Desmotrichum fimbriatum* auct. non Bl. 1825, sensu Fischer, Fl. Madras 1412. 1928.

Stem smooth, glossy, yellow. Pseudobulbs to 5 x 1.2 cm. Leaves linear-oblong, obtuse, 10 x 1.5 cm. Flower 2 cm long, white, specked with red at the apex of sepals. Sepals ovate, acute. Lip 1.2 cm long, midlobe broadened and wing-like at apex; lamellae reddish.

Fairly common in semi-evergreen and moist deciduous forests.

NS 11471 (Kattalappara)

Fl. March-April

Dist. India, Burma and Sri Lanka

GASTROCHILUS D. Don

Gastrochilus acaulis (Lindl.) O. Ktze., Rev. Gen. Pl. 2: 661. 1891. *Saccolabium acaule* (Lindl.) Hook. f., Fl. Brit. India 6: 61. 1890. *Cleisostoma acaule* Lindl., Gen. Sp. Orch. 227. 1833.

Leaves distichous, oblong, coriaceous, unequally 2-lobed at apex, to 12 x 2.5 cm. Flowers 1.5 cm across. Sepals and petals yellow. Sepals narrowly obovate, acute. Petals obtuse at apex. Lip white, speckled with pink dots, keeled, 3-lobed, side lobe wing-like, mouth of midlobe fimbriate, sac with conical callus.

Occasional in evergreen forests above 1000 m.

NS 11358 (Alvarakurichi)

Fl. November-December

Dist. Southern W. Ghats : endemic

GEODORUM Sack.

Geodorum densiflorum (Lamk.) Schltr., Feddes Repert. 4: 259. 1919; Fl. Madras 1473. 1928; Fl. Thenmala 364. 1995. *Limodorum densiflorum* Lamk., Encycl. 3: 516. 1792. *Geodorum purpureum* R. Br. in Ait., Hort. Kew. ed. 2, 5: 207. 1813; Fl. Brit. India 6: 16. 1890.

Leaves elliptic or oblanceolate, acute or obtuse, to 30 x 12 cm. Racemes lateral, to 40cm long, flowers 1.5 cm long, confined to the apex of scape. Sepals and petals oblong, acute. Lip white with purple streaks, 1.5 x 1 cm.

Fairly common in moist deciduous forests and occasionally in semi-evergreen forests.

NS 11470 (Kattalappara)

Fl. April-June

D i s t. Indo-Malesia

HABENARIA Willd.

- | | |
|--|------------------------------|
| 1. Midlobe of lip 2 lobulate, lobules filiform | : <i>H. crinifera</i> |
| 1. Midlobe of lip entire | : 2 |
| 2. Ovary long pedicelled, flowers 1-3 | : <i>H. longicorniculata</i> |
| 2. Ovary sessile, flowers more than 5 | : <i>H. longicornu</i> |

Habenaria crinifera Lindl., Gen. Sp. Orch. 323. 1835; Wt., Ic. t. 926. 1845; Fl. Brit. India 6: 142. 1890; Fl. Madras 1471. 1928; Fl. Thenmala 367. 1995.

Leaves clustered towards base of stem, oblong-lanceolate, acute or acuminate. Scape to 25 cm long. Flowers white, 1.8 cm across, towards the apex of scape. Sepals ovate, 7 x 5 mm. Petals linear, 7 x 1.5 mm. Lip about 2 cm long, clawed, side lobes cuneiform, serrate, apex filiform; midlobe flabelliform, serrate, apex caudate.

Fairly common in evergreen forests.

NS 10012 (Kallar); 10506 (Kattalappara)

Fl. August-October

D i s t. India and Sri Lanka

Habenaria longicorniculata Grah., Cat. Bombay Pl. 202. 1839. *H. longicalcarata* A. Rich., Ann. Sci. Nat. (ser. 2) 15: 71, t. 3B. 1841; Fl. Brit. India 6: 141. 1890; Fl. Madras 1470. 1928.

Leaves clustered towards base of stem, oblong-lanceolate or linear-lanceolate, acute, to 15 x 2 cm. Scape to 40 cm long. Flowers white, 2.5 cm across. Sepals obliquely ovate; dorsal concave. Petals spathulate, obtuse. Lip 3-partite, side lobes oblong, subcuneate, oblique at apex; midlobe linear-oblong, shorter than side lobes, narrower; spur to 12 cm long.

Occasional in open grassy areas in moist deciduous forests and grasslands.

NS 11485 (Kattalappara)

Fl. July-August

D i s t. India

Habenaria longicornu Lindl., Gen. Sp. Orch. 322. 1835; Fl. Brit. India 6. 139. 1890; Fl. Madras 1470. 1928.

Leaves clustered towards the middle of the stem, linear-oblong lanceolate, acute or acuminate, to 12 x 2.5 cm. Scape to 25 cm tall. Flowers 2.5 cm across. Bracts shorter than the 2.5 cm long ovary. Sepals ovate, acute. Petals linear-oblong, narrower. Lip 3-partite; side lobes 1.2 x 0.5 cm, cuneate, apex obliquely truncate, fimbriate; midlobe linear, shorter; spur to 10 cm long.

Occasional in moist deciduous forests in open rocky areas.

NS 11478 (Kattalappara)

Fl. September-October

D i s t. Peninsular India

KINGIDIUM Hunt

Kingidium deliciosum (Rchb. f.) Sweet, Amer. Orch. Soc. Bull. 39: 1095. 1970. *Phalaenopsis deliciosa* Rchb.f., Bonplandia 2: 93. 1854. *Doritis wightii* (Rchb. f.) Benth., Gen. Pl. 3: 574. 1883; Fl. Brit. India 6: 32. 1890. *Kingiella decumbens* (Griff.) Rolfe, Orch. Rev. 25: 197. 1917; Fl. Madras 1439. 1928.

Leaves oblong-obovate, obtuse, margin wavy, glossy, to 15 x 3 cm. Scape to 12 cm long. Flowers to 1.8 cm across. Sepals and petals pale pink. Lip white with dark pink blotches; side lobes oblong, midlobe obovate, forked at apex.

Occasional in evergreen forests.

NS 10525 (Kattalappara)

Fl. July-August

D i s t. Indo-Malesia

LIPARIS L.C. Rich. *nom. cons.*

1. Pseudobulb ovoid, conical; leaves linear oblong, over 10 cm long;

lip entire

: *L. viridiflora*

1. Pseudobulb compressed; leaves elliptic; lip with an earlike marginal

folding in the middle

: *L. elliptica*

Liparis elliptica Wt., Ic. t. 1735. 1851. *L. viridiflora* auct. non Lindl. 1830, Fl. Brit. India 5: 704. 1890; Fl. Madras 1411. 1928.

Pseudobulbs ellipsoid, compressed, to 2 x 1.5 cm. Leaves 2, narrowly elliptic or elliptic-oblong, to 7 x 1.5 cm. Scape narrowly winged, to 6 cm long. Flowers creamy white, 0.5 cm across. Sepals oblong 3.5 x 2 mm. Petals linear, 3 x 0.75 mm. Lip 2 x 2 mm, obovate-orbicular, 3-lobed; midlobe ovate-triangular.

Rare in shola forests.

NS 11440 (Alvarakurichi)

Fl. April-May

D i s t. Indo-Malesia

Liparis viridiflora (Bl.) Lindl., Gen. Sp. Orch. 31. 1830. *Malaxis viridiflora* Bl., Bijdr. 392. 1825. *Liparis longipes* Lindl. in Wall., Pl. As. Rar. 1: 31, t. 35. 1830; Fl. Brit. India 5: 703. 1890; Fl. Madras 1411. 1928.

Pseudobulbs narrowly ovoid, elongated, to 7 x 1.5 cm. Leaves usually 2 on pseudobulb, narrowly oblong or obovate-oblong, to 20 x 2.5 cm. Scape 25 cm long. Flowers 4 mm across, greenish-yellow. Sepals narrowly oblong, obtuse, 2 x 1 mm. Petals as long as sepals, narrower. Lip oblong, notched at apex. Column not winged.

Common in evergreen and semi-evergreen forests.

NS 10076 (Rockwood); 10652 (Kattalappara)

Fl. September-October

D i s t. Indo-Malesia

LUISIA Gaud.

- | | |
|--|-------------------------|
| 1. Flowers small, petals under 0.5 cm long, lip apex ovate-acute | : <i>L. zeylanica</i> |
| 1. Flowers large, petals over 1 cm long; lip apex with 2 divergent lobes | : 2 |
| 2. Leaf apex with a jointed tail (3-7 mm long); lip 3-ridged | : <i>L. evangelinae</i> |
| 2. Leaf apex obtuse without a tail; lip 1-ridged | : <i>L. birchea</i> |

Luisia birchea (A. Rich.) Bl., Mus. Bot. Ludg. Bat. 1: 64. 1849. *Luisia tenuifolia* auct. non Bl. 1849, Fl. Brit. India 6: 24. 1890; Fl. Madras 1438. 1928; Fl. Thenmala 375. 1995.

Stem erect, to 15 cm long. Leaves to 9 cm long, grooved on one side. Peduncle to 2.5cm long. Flowers 2.5 cm long. Sepals and petals greenish yellow. Sepals oblong, acute to 1.6 cm long. Petals shorter. Lip 2 x 0.8 cm, greenish-white with dark purple blotches.

Occasional in evergreen forests above 1,000 m.

NS 10604, 11096 (Kattalappara)

Fl. July-September

D i s t. W. Ghats : endemic

Luisia evangelinae Blatt. & McCann, Rev. Fl. Pres. Bombay 16: 493. 1932.

Stem pendent, to 20 cm long. Leaves 15 cm long. Peduncle short, to 1.5 cm long. Flowers 3 cm long. Sepals creamy white, oblong, 1.2 x 0.4 cm. Petals linear, creamy white with purple blotches, 2 x 0.2 cm. Lip pandurate, 2.2 x 1 cm, white with purple blotches.

Occasional in evergreen forests above 700 m.

NS 10409 (Kattalappara)

Fl. December-January

Dist. W. Ghats : endemic

Luisia zeylanica Lindl., Folia Orch. *Lusia* 3. 1853. *L. teretifolia* auct. non Gaud. 1826, Fl. Brit. India 6: 22. 1890; Fl. Madras 1438. 1928.

Stem erect, tufted, to 15 cm long. Leaves to 10 X 0.25 cm. Peduncle short. Flowers greenish-yellow with purple tinge. Sepals and petals oblong. Lip oblong, quadrate, ovate, acute.

Common in moist deciduous forests.

NS 11482 (Kattalappara)

Fl. March-August

Dist. Indo-Malesia

MALAXIS Soland. ex Sw.

Malaxis rheedii Sw., Kongl. Vetensk. Acad. Nya Handl. 21: 235. 1800. *Microstylis versicolor* Lindl., Gen. Sp. Orch. 21. 1830; Fl. Madras 1408. 1928; Fl. Thenmala 366. 1995. *M. rheedii* (Sw.) Lindl., Gen. Sp. Orch. 21. 1830 p.p.; Fl. Brit. India 5: 690. 1890.

Stem swollen towards base, to 15 cm long. Leaves broadly ovate or elliptic, to 12 x 6cm, with purple shades. Scape to 18 cm long. Bracts subulate, deflexed. Flowers orange yellow, 0.5 cm across. Sepals and petals linear, 3 mm long. Lip reniform, margin pectinate.

Fairly common in moist deciduous forests, often in rocky areas.

NS 11212 (Rosemala)

Fl. July-September

Dist. India and Sri Lanka

NERVILIA Comm. ex Gaud. nom. cons.

1. Petiole 10-20 cm long.

: *N. aragoana*

1. Petiole under 4 cm long.

: *N. plicata*

Nervilia aragoana Gaud. in Freyc., Voy. Bot. 422, t. 35. 1826; Fl. Madras 1459. 1928; Fl. Thenmala 365. 1995. *Pogonia carinata* Lindl., Gen. Sp. Orch. 414. 1840; Fl. Brit. India 6: 120. 1890. *P. flabelliformis* Lindl., Gen. Sp. Orch. 415. 1840; Fl. Brit. India 6: 121. 1890.

Leaves ovate-orbicular, acute, base deeply cordate, glabrous, with purple shade on lower surface, to 15 cm across; 9-11 ribbed from base. Flowers not obtained.

Fairly common in moist deciduous forests.

NS 11483 (Rosemala)

D i s t. Indo-Malesia

Nervilia plicata (Andr.) Schltr., Bot. Jahrb. Syst. 45: 403. 1911; Fl. Madras 1548. 1928; Fl. Thenmala 365. 1995. *Arethusa plicata* Andr., Bot. Rep. 5. t. 321. 1803. *Pogonia biflora* Wt., Ic. t. 1758. 1851; Fl. Brit. India 6: 119. 1890.

Leaves ovate-orbicular, rounded at base, margin crenate, pubescent, to 8 cm across, green with dark blotches. Flowers not obtained.

Occasional in moist deciduous forests.

D i s t. Indo-Malesia

NS 11476 (Kattalappara)

OBERONIA Lindl. nom. cons.

- | | |
|---|-------------------------------|
| 1. Lateral lobes of lip rise vertically above the column like two horns | : O. bicornis |
| 1. Lateral lobes of lip not as above | : 2 |
| 2. Lip deeply dentate along margins | : O. denticulata |
| 2. Lip not dentate along margins | : 3 |
| 3. Lip papillose | : O. chandrasekharanii |
| 3. Lip glabrous | : 4 |
| 4. Flowers orange red; disc of lip with crescent shaped band | : O. santapau |
| 4. Flowers yellow or green; disc of lip ovate, saccate or indistinct | : 5 |
| 5. Leaves 20-25 x 2 cm; spikes to 15 cm long, flowers yellow; lip with ovate disc | : O. brunoniana |
| 5. Leaves 5-10 x 1-1.5 cm; spikes to 10 cm long, flowers greenish yellow, disc indistinct | : O. nayarii |

Oberonia bicornis Lindl., Gen. Sp. Orch. 16. 1830 & Fol. Orch. *Oberonia* 4. 1859; Seidenf., Dansk Bot. Ark. 25 (3): 85. 1968. *Malaxis bicornis* (Lindl.) Rchb. f., Walp. Ann. 6: 211. 1861; Fl. Brit. India 5: 682. 1888.

Leaves linear-oblong, acute, to 6 x 0.5 cm. Spike to 10 cm long. Flowers red, in verticils. Dorsal sepal lanceolate, acuminate. Lateral sepals shorter than dorsal, suborbicular, subacuminate. Petals elliptic or linear, acute. Lip 3-lobed.

Rare in evergreen and semi-evergreen forests.

NS 10062 (Rockwood); 10708 (Kattalappara)

Fl. October-November

D i s t. Southern W. Ghats and Sri Lanka

Oberonia brunoniana Wt., Ic. t. 1622. 1851; Fl. Brit. India 5: 681. 1888; Ansari & Balakr., Orch. Monogr. 4: 15, f. 9. 1990.

Leaves oblong-ensiform, acute, to 25 x 2 cm. Spike to 15 cm long. Flowers yellow, in verticils. Sepals and petals reflexed. Sepals entire, 2 x 1.2 mm; dorsal oblong, obtuse; laterals obliquely ovate, subacute, sparsely gland-dotted. Petals lanceolate, subentire, 2 x 7 mm. Lip ovate, 3-lobed, 2-25 mm across, gland-dotted; lateral lobes oblong, subentire, midlobe 2-lobuled, lobules diverging, sinus broad.

Fairly common in evergreen and semi-evergreen forests.

NS 11486 (Rosemala)

Fl. December-January

D i s t. Southern W. Ghats : endemic

Oberonia chandrasekharanii Nair *et al.*, *Blumea* 28: 361. 1983; Ansari & Balakr., *Orch. Monogr.* 4: 12, f. 5. 1990.

Leaves ensiform, acute, to 15 x 1.5 cm. Spikes to 22 cm long. Flowers orange-yellow or greenish-yellow. Sepals and petals reflexed. Lip reniform, 3-lobed, 1.5 x 2.5 mm, papillose, gland-dotted; side lobes produced above the column, arose along margins; midlobe 2-lobuled, sinus broad; disc ovate, concave, sac-like.

Occasional in evergreen forests.

NS 11487 (Rosemala)

Fl. December-September

D i s t. Southern W. Ghats : endemic

Oberonia denticulata Wt., *l.c.* t. 1625. 1851; Ansari & Balakr., *Orch. Monogr.* 4: 20, f. 15. 1990. *O. iridifolia* Lindl. var. *denticulata* (Wt.) Hook. f., *Fl. Brit. India* 5: 675. 1888; *Fl. Madras* 1406. 1928; *Fl. Thenmala* 368. 1995.

Leaves oblong-ensiform, acute, jointed at base, to 20 x 2 cm. Spikes to 25 cm long. Flowers pale brownish-yellow, in verticils. Sepals equal, ovate-acute, entire, 1 x 0.75 mm. Petals ovate, obtuse or subacute, 1 x 0.5 mm, denticulate along margins. Lip quadrate or ovate, 3-lobed, 1.5 x 1.5 mm; side lobes deeply dentate; midlobe 2-lobuled, lobules ovate-triangular, dentate.

Occasional in moist deciduous forests.

NS 10646 (Kattalappara); 11211 (Rosemala)

Fl. November-December

D i s t. Indo-Malesia to Philippines

Oberonia nayarii Ansari & Balak., *Orch. Monographs* 17. 4. 1990.

Leaves oblong-ensiform. Flowers brownish yellow. Dorsal sepals oblong, obtuse, lateral sepals ovate acute. Petals oblanceolate. Lip ovate in outline.

Occasional in evergreen forests.

NS 11330 (Rosemala)

Fl. December-July

Dist. W. Ghats : endemic

Oberonia santapau Kapad., J. Bombay Nat. Hist. Soc. 57: 265. 1960; Sant. & Kapad., Orch. Bombay 72. 1966; Ansari & Balakr., Orch. Monogr. 4: 18, f. 12. 1990. *O. lindleyana* Wt., Ic. t. 1624. 1851, non Brongn. ex Duperr. 1834; Fl. Brit. India 5: 681. 1888; Fl. Madras 1407. 1928.

Leaves oblong, obtuse or acute, pale brown, to 15 x 1.5 cm. Spikes to 18 cm long. Flowers orange-red, in verticils. Sepals subsimilar, entire, 1.2 x 0.7 mm; dorsal oblong, obtuse; laterals oblong-ovate, subacute. Petals 1.2 x 0.25 mm, linear, obtuse. Lip ovate, 2.2 x 2.2 cm, 3-lobed, side lobes oblong, shallowly crenate, recurved along the margins; midlobe densely gland-dotted, 2-lobuled, lobules crenate, sinus wide with a rounded protuberance.

Fairly common in evergreen and shola forests.

NS 11488 (Rosemala)

Fl. November-December

Dist. W. Ghats : endemic

OECEOCLADES Lindl.

Oeceoclades pulchra (Thours.) Clements & Cribb in Clement's, Cat. Austr. Orch. 99. 1989. *Limodorum pulchrum* Thours., Orch. Iles. Austr. Afr. Pls. 43, 44. 1822. *Eulophia pulchra* (Thours.) Lindl. Gen. Sp. Orch. 182. 1833. *Eulophia macrostachya* Lindl., Gen. Sp. Orch., 183. 1833; Wt. Ic. t. 1667-68. 1851; Fl. Brit. India 6: 4. 1890; Fl. Madras 1435. 1928.

Pseudobulbs fusiform, 10 x 2 cm. Leaves 40-56 x 6 cm, elliptic, oblong lanceolate, acuminate, 2 per pseudobulb. Flowers purplish yellow 2 x 1.5 cm. Dorsal sepal oblong, acuminate. Lateral sepals obliquely elliptic acuminate. Petals broader. Spur of lip shortly bilobed.

Rare in evergreen forests.

NS 11051 (Rosemala)

Fl. September-October

Dist : Indo-Malesia

PAPILIONANTHE Schlechter

Papilionanthe subulata (Koenig) Garay, Bot. Mus. Leaflet. Harvard Univ. 23 (10): 372. 1974. *Epidendrum subulatum* Koenig in Retz., Obs. 6: 51. 1791. *Aerides cylindricum* Lindl., Gen. Sp. Orch. 240. 1833; Fl. Madras 1442. 1928.

Stem erect, to 60 cm tall. Leaves terete, 6-8 cm long. Flowers white 3 x 2 cm, in short raceme. Dorsal sepal ovate, obtuse. Lateral sepals obliquely ovate-lanceolate, obtuse. Petals

ovate-obtuse. Lip 15 x 12 mm, 3 lobed, lateral lobes oblong, obtuse, midlobe tongue shaped, disc with 2 longitudinal calli.

Rare in evergreen forests.

NS 11345 (Alvarakurichi)

Fl. February-April

D i s t. South India and Sri Lanka

PECTEILIS Rafin.

Pecteilis gigantea (J. E. Sm.) Rafin., Fl. Tellur. 2: 38. 1837. *Orchis gigantea* J. E. Sm., Exot. Bot. 2: 79, t. 100. 1805. *Platanthera susannae* auct. non (L.) Lindl. 1835, Fl. Madras 1475. 1928.

Robust herbs, to 75 cm tall. Leaves oblong-lanceolate, acute, glaucous, to 12 x 6 cm. Flowers 6 x 7 cm, white, sweet scented. Dorsal sepal obovate, concave, 4 x 3 cm, laterals obliquely oblong, acute, 4 x 2 cm. Petals narrowly linear-oblong, acute, 3.5 x 0.5 cm. Lip fan-shaped, 5 x 8 cm, side lobes cuneately flabellate, deeply pectinate; midlobe oblong-spathulate, spur linear, to 13 x 0.4 cm.

Rare in Grasslands.

NS 11480 (Rosemala)

Fl. September-October

D i s t. Indo-Malesia

PERISTYLUS Bl. *nom. cons.*

- | | |
|--|--------------------------|
| 1. Side lobes of lip filiform, distinct from midlobe in size | : <i>P. aristatus</i> |
| 1. Side lobes of lip not filiform not distinct from midlobe | : 2 |
| 2. Petals gibbously ovate, lip as long as the sepals | : <i>P. goodyeroides</i> |
| 2. Petals obliquely orbicular, lip shorter than the sepals | : <i>P. plantagineus</i> |

Peristylus aristatus Lindl., Gen. Sp. Orch. 300. 1835; Fl. Madras 1474. 1928.

Stem, to 35 cm tall. Leaves 4-7 x 2 cm, elliptic lanceolate, subacuminate, clustered to the middle of the stem. Flowers white, 12 x 4 mm, to 18 cm long lax spike. Lip 3 lobed, lateral lobes 7.5-8 x 0.5 mm, linear, midlobe to 2.5 x 1 mm, oblong, obtuse. Spur 3.2 x 1.5mm, elliptic, acute.

Fairly common in moist deciduous forests.

NS 11042 (Rosemala)

Fl. July-August

D i s t. India and Sri Lanka

Peristylus goodyeroides (D. Don) Lindl. Gen. Sp. Orch. 299. 1835; Fl. Madras 1475, 1928. *Habenaria goodyeroides* D. Don, Prodr. Fl. Nepal 25. 1825.

Stem, to 60 cm tall. Leaves 10-12 x 3-4 cm, elliptic acute, towards the apex. Flowers 13 x 5 mm. in about 25-30 cm long terminal dense spike. Dorsal sepal 5.5 x 3 mm, ovate obtuse. Lateral sepals 5 x 2.5 mm obliquely, elliptic, subacute. Petals 5 x 4 mm, rhomboid. obtuse. Lip 5.5 x 4, 3-lobed; lateral lobes triangular, acute; mid lobe, ovate, obtuse. Spur ovoid.

Rare in evergreen forests.

NS 11484 (Rosemala)

Fl. July-August

D i s t. Indo-Malesia

Peristylus plantagineus Lindl., Gen. Sp. Orch. 300. 1835; Fl. Madras 1475. 1928.

Habenaria wightii Trim., Cat. Pl. Ceylon 91. 1885; Fl. Brit. India 6: 162. 1890.

Stem to 30 cm tall. Leaves oblong or broadly elliptic, acute glabrous, glossy, to 16 x 4.5 cm long. Spikes to 20 cm long. Flowers many, 3 mm across. Sepals pale brown, 2.5 x 1.5 mm. Petals creamy white, oblong-elliptic, 2.5 x 2 mm. Lip white, obscurely 3-lobed, broadly ovate-oblong, 2 x 2 mm.

Fairly common in moist deciduous forests.

NS 10579 (Kattalappara)

Fl. July-August

D i s t. India and Sri Lanka

PHOLIDOTA Lindl. ex Hook.

Pholidota pallida Lindl. in Edward's Bot. Reg. 21: sub t. 1777. 1836. *P. imbricata* auct. non Lindl. 1828, Wt., Ic. t. 907. 1845; Fl. Brit. India 5: 845. 1888; Fl. Madras 1431. 1928; Fl. Thenmala 389. 1995.

Pseudobulbs ovoid, crowded, 4-6 x 2.5 cm, covered with sheathing scales. Leaf oblong, acute or acuminate, to 30 x 5.5 cm. Scape to 30 cm long. Flowers white with pink tinge. Bracts ovate-obtuse, 6 x 5 mm. Sepals ovate, obtuse or acute, 7 x 5 mm. Petals linear-oblong, 6 x 2.5 mm. Lip 8 x 8 mm, midlobe 2-fid.

Common in semi-evergreen forests, epiphytic as well as lithophytic.

NS 11477 (Kattalappara)

Fl. June-July

D i s t. Indo-Malesia

PODOCHILUS Bl.

Podochilus malabaricus Wt., Ic. t. 1748. 1857; Fl. Brit. India 6: 80. 1890. *Podochilus falcatus* Lindl. Fl. Madras 1450. 1928.

Epiphytes to 15 cm tall. Leaves imbricating. Flowers white, 3 x 2 mm, in about 5 cm slender, flexuos racemes. Dorsal sepal ovate, acute; lateral sepals elliptic-oblong, acute. Petals oblanceolate, acute. Lip oblong lanceolate acute.

Rare in evergreen forests.

NS 10715 (Umiyar); 11236 (Rockwood)

Fl. November-December

D i s t. South India and Sri Lanka

POLYSTACHYA Hook. *nom. cons.*

Polystachya concreta (Jacq.) Garay & H.R. Sweet, *Revista Soc. Colomb. Orchideol.* 9: 206. 1974. *Epidendrum concretum* Jacq., *Enum. Pl. Carib.* 30. 1760. *Polystachya purpurea* Wt., *l.c.* t. 1679. 1851; *Fl. Brit. India* 6: 21. 1890; *Fl. Madras* 1437. 1928.

Pseudobulbs ovoid. Stem short. Leaves oblong-elliptic to lanceolate. Flowers purple, 0.5 cm across, in short panicles. Dorsal sepal ovate, acute; lateral sepals broadly ovate, base oblique. Petals linear, oblanceolate, narrower than the sepals. Lip 4 x 4 mm, with an erect median ridge at base, side lobes obtuse; midlobe oblong-orbicular.

Occasional in semi-evergreen forests.

NS 11101 (Kattalappara)

Fl. July-August

D i s t. Both Old and New World Tropics

POMATOCALPA Breda

Pomatocalpa spicata Gen. & Sp. *Orch. Kuhl & Hasselt* 1827: 7. 15. *Cleisostoma mannii* Rchb. f., *Flora* 4: 274. 1872; *Fl. Brit. India* 6: 74. 1890; *Fl. Madras* 1448, 1928.

Flowers 4 x 4 mm, in about 5-10 cm long spikes. Sepals sub-similar, oblanceolate-spathulate. Petals obovate or elliptic obtuse. Lip deeply saccate, midlobe elliptic-orbicular, spur ovate, obtuse.

Rare in evergreen forests.

NS 10376 (Rockwood)

Fl. March-April

D i s t. Indo-Malesia

PORPAX Lindl.

Porpax reticulata Lindl., *Bot. Reg. Misc.* 31. 1845; *Fl. Madras* 1422. 1928. *Eria reticulata* Benth. *Gen Pl.* 3: 509. 1883; *Fl. Brit. India* 5: 786. 1890.

Pseudobulbs discoid. Leaves appear after flowering. Flowers solitary, deep reddish-purple. Sepals fused to form a tube. Lip with tongue-like projection at base.

Rare in evergreen forests.

NS 11232 (Rockwood)

Fl. April-June

D i s t. Southern W. Ghats : endemic

RHYNCHOSTYLIS Bl. emend. Hassk.

Rhynchosstylis retusa (L.) Bl., Bijdr. 286, t. 49. 1825; Fl. Brit. India 6: 32. 1890; Fl. Madras 1440. 1928. *Epidendrum retusum* L., Sp. Pl. 953. 1753.

Stem to 20 cm long, covered with leaf sheaths. Leaves linear, unequally lobed at apex, coriaceous, to 20 x 2 cm. Racemes 20-30 cm long, flowers numerous, 1.8 cm across. Sepals and petals white with pink shades. Sepals obovate, obtuse, 8 x 7 mm. Petals obovate, obtuse, 6 x 4 mm. Lip oblong, apex decurved, dark pink; spur 5 mm long.

Fairly common in moist deciduous forests.

NS 10573 (Kattalappara)

Fl. June-July

D i s t. Indo-Malesia

SIRHOOKERA O. Ktze.

1. Leaves petioled, oblong-lanceolate, epichile of lip obscurely bifid at apex : *S. lanceolata*

1. Leaves sub-sessile, broadly oblong, ovate or subrotund, epichile acute : *S. latifolia*

Sirhookera lanceolata (Wt.) O. Ktze., Rev. Gen. Pl. 681. 1891. *Josephia lanceolata* Wt., Ic. t. 1743. 1851; Fl. Brit. India 5: 823. 1890; Fl. Madras 1428. 1928.

Leaves 18 x 3.5-4 cm. Flowers white, 5 x 4 mm, in about 10-15 cm long compound racemes. Dorsal sepal elliptic obtuse; lateral sepals oblong obtuse. Petals oblanceolate, obtuse. Lip 3-lobed, lateral lobes short, blunt, midlobe, elliptic oblong, bifid at apex.

Occasional in evergreen and semi-evergreen forests.

NS 11057 (Rosemala)

Fl. August-September

D i s t. South India and Sri Lanka

Sirhookera latifolia (Wt.) O. Ktze., Rev. Gen. Pl. 681. 1891. *Josephia latifolia* Wt., Ic. t. 1743. 1851; Fl. Brit. India 5: 823. 1890; Fl. Madras 1428. 1928.

Leaves oblong, to 13 x 3.5 cm. Scape to 30 cm long. Flowers 4 mm long, greenish-yellow. Lip boat-shaped, white with purple markings, midlobe acute.

Fairly common in evergreen forests.

NS 10223 (Choodal); 10601 (Kattalappara)

Fl. August-September

D i s t. Southern W. Ghats : endemic

SMITHSONIA Sald.

Smithsonia straminea Sald., J. Bombay Nat. Hist. Soc. 71: 74. 1974 & in Sald. & Nicols., Fl. Hassan Dist. 850. 1976.

Leaves oblong, unequally lobed at apex, to 4 x 0.6 cm. Racemes to 1.5 cm long. Flowers to 5, pale yellow. Sepals 3 x 1 mm; dorsal, ovate-acute concave, laterals obovate-acute. Lip white, 2.5 x 1 mm, midlobe with short lateral wings; spur purple, 1.5 mm long.

Occasional in semi-evergreen forests.

NS 10736 (Rosemala)

Fl. April-May

D i s t. W. Ghats : endemic

TAINIA Bl.

Tainia bicornis (Lindl.) Rchb. f., Bonplandia 5: 54. 1857; Fl. Brit. India 5:820. 1890; Fl. Madras 1427. 1928. *Ainia bicornis* Lindl. in Edward's Bot. Reg. 28: 37. 1842.

Pseudobulb narrowly fusiform, to 8 cm long. Leaves broadly oblong, acuminate, to 17 x 10 cm. Scape to 40 cm long. Flowers 3 cm broad, racemes lax. Sepals linear-oblong, 2.8 x 0.3 cm. Petals linear, 2.7 x 2 mm. Lip yellow with purple dots, obovate, 1.5 x 1 cm, midlobe with 3-lamellae. Anther cap with 2 purple horns.

Occasional in evergreen forests.

NS 11383 (Kallar) 11292 (Rosemala)

Fl. November-December

D i s t. South Asia

TRIAS Lindl.

Trias stocksii Benth. ex Hook. f., Fl. Brit. India 5: 781. 1890.

Pseudobulbs globose, 6-8 mm across, reddish-brown. Leaves elliptic-oblong, acute or obtuse, coriaceous, 4 x 1.5 cm. Racemes 1 or 2 flowered. Sepals yellow with reddish-brown spots; dorsal broadly ovate, obtuse; laterals obliquely ovate, acute. Petals oblong-acute, with a broad base. Upper lobe of lip oblong, rounded, grooved on the middle, deflexed, base with 2 small auricles.

Occasional in evergreen forests.

NS 11474 (Kallar)

Fl. December-January

D i s t. W. Ghats : endemic

TRICHOGLOTTIS Bl. *emend.* Rchb. f.

Trichoglottis tenera (Lindl.) Schltr., Bull. Herb. Boiss. (ser.2) 6: 471. 1906. *Oeceoclades tenera* Lindl., Gen. Sp. Orch. 236. 1833. *Cleisostoma tenerum* (Lindl.) Hook. f., Fl. Brit. India 6: 73. 1890; Fl. Madras 1448. 1928.

Leaves oblong, obtuse or notched at apex, coriaceous, to 4 x 1 cm. Flowers 6 mm long, in 2 or 3 flowered racemes. Sepals and petals oblanceolate, obtuse, yellow, speckled with red. Lip 6 mm long, 3-lobed, side lobes ovate, crenulate, midlobe 3-lobed, disc with 2 ridges, spur 2 mm long.

Fairly common in evergreen shola forests.

NS 11475 (Kallar)

Fl. April-May

D i s t. South India and Sri Lanka

TROPIDIA Lindl.

Tropidia pedunculata Bl., Coll. Orch. Arch. Ind. 122. t. 40. 1853; Seidenf., Dansk. Bot. Ark. 32: 110. 1978. *Tropidia curculigoides* auct. non Lindl. 1840, sensu Rao & Ahuja, Bull. Bot. Surv. India 10: 366. 1968. *Tropidia maingayi* Hook. f., Fl. Brit. India 6: 93. 1890.

Stem woody, to 30 cm high. Leaves 15 x 3.5 cm, lanceolate acuminate, 7-ribbed. Flowers white, in short terminal raceme. Bracts lanceolate, subulate. Sepals and petals oblong-lanceolate. Lip cymbiform.

Rare in evergreen and semi-evergreen forests.

NS 10507 (Kattalappara)

Fl. June-July

D i s t. Southern W. Ghats and Thailand.

Note: This species differs from the closely related *T. curculigoides* Lindl., by having pedunculate spikes, ovate-lanceolate bracts, equalling the ovary. Seidenfaden (1978) comments that *T. curculigoides* Lindl., described and illustrated by Rao & Ahuja (1968) based on the collection of Subramanian from Thenmalai resembles *T. pedunculata* Bl.

VANDA R. Br

Vanda testacea (Lindl.) Rchb. f., Gard. Chron. 2: 166. 1877; Fl. Thenmala 373. 1995. *Aerides testacum* Lindl., Gen. Sp. Orch. A. *wightianum* Lindl., *ibid*; Fl. Brit. India 6: 50. 1890; Fl. Madras 1444. 1928.

Leaves equidistant, linear-oblong, keeled, coriaceous, to 10 x 0.6 cm. Flowers yellow, in 5-10 flowered to 15 cm long, axillary racemes. Dorsal sepal spathulate, 8 x 4 mm; laterals to 7 x 4 mm. Petals oblong-spathulate, as long as the sepals. Lip white with purple shades, 9 mm long.

Fairly common in moist deciduous forests.

NS 10326 (Kattalappara)

Fl. April-May

D i s t. India, Burma and Sri Lanka

VANILLA Mill.

Vanilla aphylla Bl., Bijdr. 422. 1825; Seidenf., Dansk Bot. Ark. 32: 138. 1978; Sathish Kumar & Manilal, Amer. Orch. Soc. Bull. 62: 395. 1993. *V. parishii* Rehb. f., Otiā Hamb. 1: 39. 1878; Fl. Brit. India 6: 90. 1890.

Stem terete, 1-1.5 cm across, grooved along one side, nodes 10-15 cm apart. Leaves scaly, deciduous. Flowers not obtained.

Occasional in semi-evergreen and evergreen forests.

NS 11481 (Rosemala)

D i s t. Indo-Malesia

ZEUXINE Lindl.

1. Lip white, 12 x 1.5-9 mm; mid lobe "V"-shaped, margins wavy : *Z. affinis*

1. Lip orange yellow, 3 x 1.5-3.5 mm, midlobe of lip smooth. "T" shaped, entire : *Z. flava*

Zeuxine affinis (Lindl.) Benth. ex Hook. f., Fl. Brit. India 6: 108. 1890; Seidenf., Dansk Bot. Ark. 32: 88. 1978. *Etaeria affinis* Lindl., Wall. Cat. No. 7383. 1832 [Fig. 20].

Terrestrial herb, 20-30 cm tall, with a creeping rhizome, 10-15 cm long. Leaves 3-4.5 x 1-1.5 cm, ovate or elliptic, acute, with sheathing base. Flowers white, 2 x 1 cm, in about 15-25 cm long lax raceme including 10-18 cm long, hairy peduncle. Bracts 6 x 1.5 mm, ovate, acuminate, pubescent outer. Dorsal sepals and petals connated, sepals hairy dorsally. Dorsal sepal, 6 x 5 mm, ovate obtuse; lateral sepals 6 x 5mm, elliptic, obtuse. Petals 6-6.5 x 2.5 mm, falcate, oblong, obtuse. Lip 11 x 10 mm, saccate at base, with two cylindrical acute glands; epichile, 2 lobulate, lobules each 7 x 3.5-4 mm, obconical, truncate, wavy along margins. Column 5 x 2.5 mm; anther dorsal.

Occasional in semi-evergreen forests and grasslands.

NS 10257 (Pandimotta); 10439 (Kattalappara)

Fl. March-April.

D i s t. Indo-Malesia

Note : The present collection is a new record for South India.

Zeuxine flava (Wall. ex Lindl.) Benth. ex Hook. f., Fl. Brit. India 6: 108. 1890. *Etaeria flava* Lindl. in Wall., Cat. 7380. A & B, non C, 1832. *nom nud Monochilus flavum* Wall. ex Lindl., Gen. Sp. Orch. 1840. 437.

Terrestrial herb, 30-60 cm tall. Leaves elliptic, acute, sheathed 6-6.5 x 2 cm. Flowers white with orange yellow base, to 9 x 1 mm, in about 20-30 cm long spike. Dorsal sepal, ovate-lanceolate, obtuse; lateral sepals elliptic, subacute. Petals obliquely oblong, obtuse.

Occasional in evergreen forests.

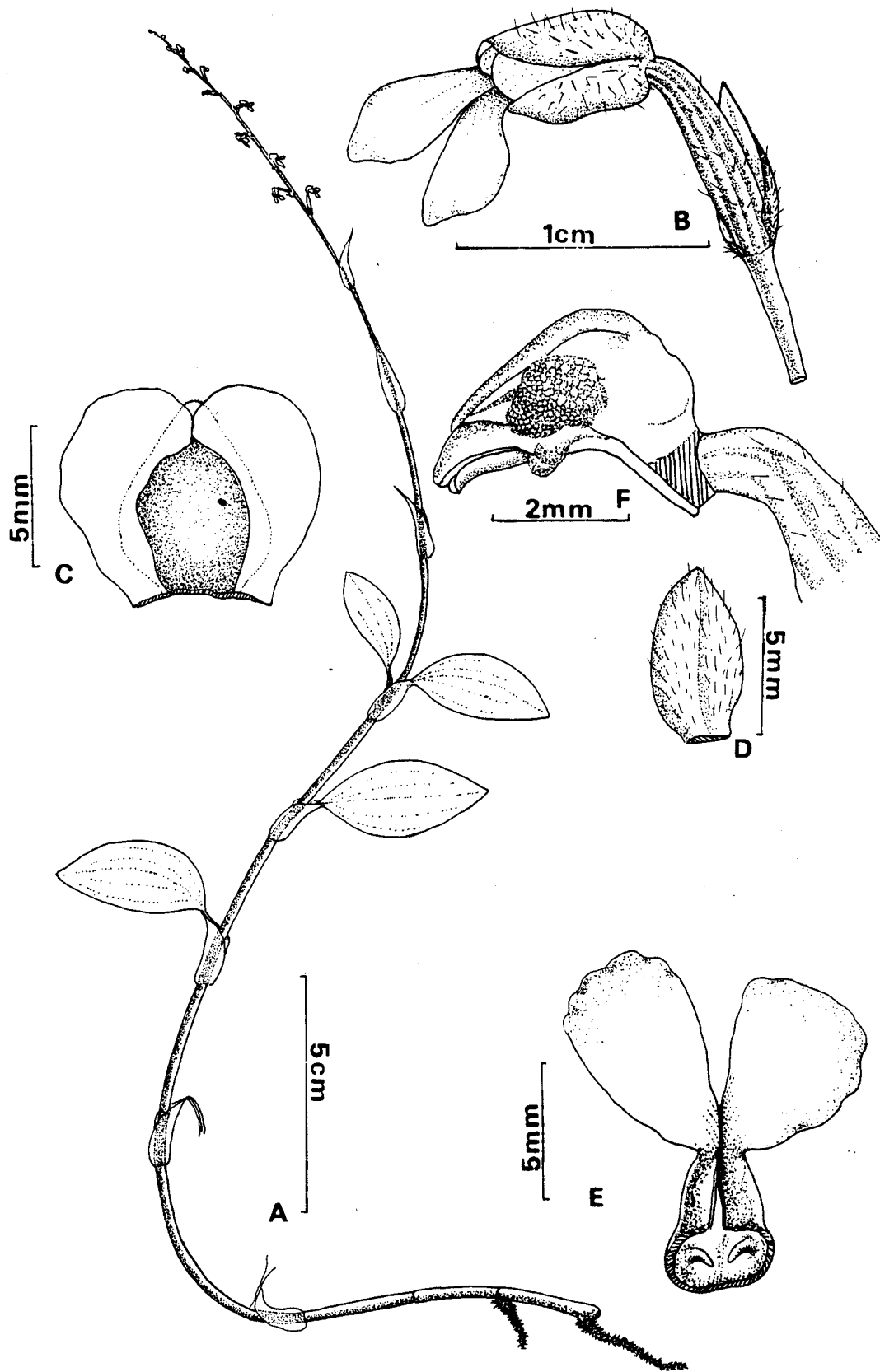


Fig. 20 : *Zeuxine affinis* (Lindl.) Benth. ex Hook. f. A. habit, B. flower, C. dorsal sepal and petals, D. lateral sepal, E. lip, F. column

Fl. February-March

D i s t. Indo-Malesia

ZINGIBERACEAE

- | | |
|---|----------------|
| 1. Leaves spiral; anther median on a petaloid process | : Costus |
| 1. Leaves distichous; anther terminal on filament | : 2 |
| 2. Flowers in racemes or panicles | : 3 |
| 2. Flowers in spikes | : 4 |
| 3. Inflorescence terminal on leafy stem | : Alpinia |
| 3. Inflorescence lateral from the stem, often trailing | : Elettaria |
| 4. Bracts pouched, basally connate, sterile terminal bracts often brightly coloured | : Curcuma |
| 4. Bracts not as above | : 5 |
| 5. Spikes terminal on leafy stem | : 6 |
| 5. Spikes lateral from the rhizome | : 7 |
| 6. Ovary 1-celled; filament free from style | : Globba |
| 6. Ovary 3-celled; filament clasping the style throughout | : Boesenbergia |
| 7. Anther connective prolonged into a beak; rhizome fleshy | : Zingiber |
| 7. Anther connective truncate, crested; rhizome woody | : Amomum |

ALPINIA Roxb. *nom. cons.*

Alpinia malaccensis (Burm. f.) Rosc., Trans. Linn. Soc. London 8: 345. 1808; Fl. Madras 1493. 1928; Fl. Thenmala 380. 1995. *Maranta malaccensis* Burm. f., Fl. Ind. 2. 1768.

Alpinia nutans Rosc. var. *sericea* Baker in Hook. f., Fl. Brit. India 6: 256. 1892.

Leafy stem to 2.5 m tall. Leaves oblong-lanceolate, acuminate, base unequal, glabrescent, to 50 x 7.5 cm; petiole to 4 cm long, pubescent. Panicle to 15 cm long, axis, pedicel and ovary densely villous; bracts absent. Calyx white, shortly lobed, 1.5 cm long. Corolla white, 1 cm long. Lip yellow with red linear veins, ovate, emarginate at apex, 3 cm long.

Fairly common in semi-evergreen and evergreen forests.

NS 10796 (Kallar)

Fl. March-April

D i s t. Indo-Malesia

AMOMUM Roxb. *nom. cons.*

- | | |
|---|------------------|
| 1. Lip elliptic, emarginate, densely gland-dotted | : A. muricatum |
| 1. Lip obovate, not gland-dotted | : A. cannicarpum |

Amomum cannicarpum (Wt.) Benth. ex Baker in Hook. f., Fl. Brit. India 6: 240. 1892; Fl. Madras 1487. 1928. '*cannaecarpum*'. *Elettaria cannicarpum* Wt., Ic. t. 2007. 1853.

Leafy stem to 2 m tall. Leaves oblong, acuminate, base acute or obtuse, glabrous, except midrib below, to 25 x 5 cm; ligule 0.5 cm long. Peduncle to 15 cm long; bracts ovate-oblong, cuspidate, ciliate along margin, 2.5 x 1.5 cm. Calyx 1 cm long. Lip yellow with a median red stripe, to 2 x 1.5 cm; lateral lobes small. Ovary densely villous. Fruits muricate, pink-red.

Occasional in evergreen forests.

NS 10270 (Charupara)

Fl. & Fr. March-May

D i s t. W. Ghats : endemic

Amomum muricatum Bedd., Madras J. Sci. (ser. 3) 1: 59. 1864; Fl. Madras 1487. 1928.

Rhizome terete, stout. Leafy stem to 2.5 m tall. Leaves oblong-lanceolate, acuminate, base obtuse, puberulous below, to 35 x 5 cm; ligule to 1 cm long. Peduncle to 7 cm long; bracts many, ovate-oblong, margin entire, glabrous, to 2 cm long. Calyx 1 cm long. Lip deeply 3-lobed, lateral lobes orbicular, 1.2 cm across, yellowish with prominent red glands. Fruits globose, muricate, reddish-purple.

Fairly common in semi-evergreen and evergreen forests.

NS 11258 (Rosemala)

Fl. & Fr. April-July

D i s t. W. Ghats : endemic

BOESENBERGIA O. Ktze.

Boesenbergia pulcherrima (Wall.) O. Ktze., Rev. Gen. Pl. 685. 1891; Holttum, Gard. Bull. s.s. 13: 109. 1950; Mangaly & Swarup., Bull. Bot. Surv. India 23: 235. 1981; Fl. Thenmala 372. 1995. *Gastrochilus pulcherrima* Wall., Pl. As. Rar. 1: 22, t. 24. 1829; Fl. Brit. India 6: 217. 1890.

Small annual herbs; rhizome 0. Leaves elliptic-acuminate, base oblique, glabrous, to 15 x 7 cm. Spikes to 4 cm long, included in the upper leaf sheaths. Floral bracts 3 x 1 cm. Calyx truncate, hyaline. Corolla 1.5 cm long, white with pink dots. Lip concave, white with pink dots.

Fairly common in semi-evergreen forests.

NS 10545 (Kattalappara)

Fl. August-September

D i s t. South West India : endemic

COSTUS L.

Costus speciosus (Koenig) Sm., Trans. Linn. Soc. London 1: 249. 1791; Wt., Ic. t. 2014. 1853; Fl. Brit. India 6: 249. 1892; Fl. Madras 1490. 1928; Fl. Thenmala 381. 1995.
Banksea speciosa Koenig in Retz., Obs. Bot. 3: 75. 1783.

Stem to 1.5 m tall. Leaves apparently spiral, elliptic-acuminate or elliptic-obovate, glabrous above and pubescent below. Flowers in terminal dense cone-like spikes; bracts oblong-obtuse, mucronate, 3 cm long, bright red. Calyx 2 cm long. Corolla white with light pink shades, lobes 4, elliptic, acute, to 4 x 2 cm. Lip obovate, yellowish at centre, to 5 cm across.

Common in moist deciduous and semi-evergreen forests.

NS 10570 (Kattalappara)

Fl. July-October

D i s t. Indo-Malesia

CURCUMA Roxb. *nom. cons.*

1. Spikes without coma; flowers under 1 cm long : *C. vamana*
1. Spikes with bright pink or yellowish-white coma; flowers over 2 cm long : *C. ecalcarata*

Curcuma ecalcarata Sivar. & Balachandran, Notes Roy. Bot. Gard. Edinb. 41: 321. 1983.

Leaves elliptic-oblong to lanceolate, acuminate, to 20 x 8 cm; ligule acute. Spike from the centre of the leaves; lower bracts green, oblong-obtuse; coma yellow or yellowish-white. Calyx truncate at apex, 1 cm long. Corolla about 2 cm long. Staminodes bright yellow. Lip 3-lobed, midlobe larger. Anthers not spurred.

Fairly common in moist deciduous and semi-evergreen forests.

NS 10527 (Kattalappara)

Fl. July-October

D i s t. South India : endemic

Curcuma vamana Sabu & Mangaly, J. Econ. Tax. Bot. 10: 307. 1988. *C. peethapushpa* Sasi. & Sivar., Notes Roy. Bot. Gard. Edinb. 45: 425. 1989.

Rhizome short, roots fibrous, some of them terminating in tubers. Leaves 3-5, oblong-acuminate, glabrous, 12-15 x 4-8 cm; Spikes terminal, peduncle 4-5 cm, 5-7 bracteate; bracts ovate-orbicular, 2 cm across. Calyx glabrous, tube 3-4 mm long, lobes subequal. Corolla funnel-like. Lateral staminodes spatulate, pale yellow, 5 x 4 mm. Lip yellow, fan-shaped, crenulate along margins, shortly 2-fid apex, pubescent below. Anther white, basal appendage short and straight. Filaments 2 cm long.

Common in moist deciduous forests.

NS 10571 (Kattalappara)

Fl. & Fr. July-October

Dist. South India : endemic

ELETTARIA Maton

Elettaria cardamomum (L.) Maton, *Trans. Linn. Soc. London* 10: 254, t. 5. 1811; *Fl. Brit. India* 6: 251. 1892; *Fl. Madras* 1491. 1928; *Fl. Thenmala* 384. 1995. *Amonum cardamomum* L., *Sp. Pl.* 1. 1753. *Alpinia cardamomum* (L.) Roxb., *Pl. Corom.* 3: t. 226. 1819.

Leafy stem to 2 m tall. Leaves oblong-lanceolate, caudate-acuminate, pubescent below, to 35 x 6 cm; ligule membranous. Panicle to 40 cm long. Calyx 1 cm long. Corolla 1.2 cm long, white. Lip white, streaked with purple. Capsule trigonous, 1.2 x 0.8 mm; seeds black, with pleasant aromatic smell.

Occasional in evergreen forests.

NS 11044 (Rosemala)

Fl. & Fr. September-February

Dist. South India and Sri Lanka

GLOBBA L.

Globba ophioglossa Wt., *Ic. t.* 2002. 1853; *Fl. Brit. India* 6: 202. 1890; *Fl. Madras* 1480. 1928; *Fl. Thenmala* 378. 1995.

Stem to 50 cm tall. Leaves linear or ovate-lanceolate, finely caudate-acuminate, to 18 x 5 cm. Panicles to 8 cm long; bracts oblong, 5 x 2 cm, deciduous. Calyx 4 mm long. Corolla yellow, 1.5 cm long, tube narrow, 8 mm long. Lobes ovate-acute. Lip obovate. Filaments unappendaged.

Common in semi-evergreen forests.

NS 10492 (Choodal)

Fl. & Fr. July-September

Dist. India

ZINGIBER Boehmer. *nom. cons.*

Zingiber neesanum (Grah.) Ramam. in *Sald. & Nicols.*, *Fl. Hassan Dist.* 769. 1976. *Alpinia neesana* Grah., *Cat. Pl. Bombay* 207. 1139. *Zingiber macrostachyum* Dalz. in *Hook.'s J. Bot. Kew Gard. Misc.* 4: 342. 1852; *Fl. Brit. India* 6: 247. 1892; *Fl. Madras* 1490. 1928.

Leafy stem to 75 cm tall. Leaves sessile, oblong or linear, acuminate, base obtuse or acute, to 25 x 4 cm, ligule membranous, 5 mm. Peduncle to 30 cm long, sheathing scales oblong, to 5.5 cm long; outer bracts ovate, acute, to 3 x 1.3 cm; inner linear. Corolla white, tube 1 cm long, lobes lanceolate, 1.5 cm long, lateral lobes smaller. Lip 1.3 cm long, obovate, 3-lobed; midlobe oblong-rounded, retuse, white with purple streaks; lateral lobes oblong.

Occasional in moist deciduous and semi-evergreen forests.

NS 10659 (Kattalappara)

Fl. July-September

D i s t. W. Ghats, Konkan Southwards : endemic

Curcuma longa L. (turmeric), *Kaempferia galanga* L. (Kacholam) and *Zingiber officinale* Rosc. (Ginger) are often grown in the settlements.

MARANTACEAE

1. Flowers in lax panicles

: *Schumannianthus*

1. Flowers in dense capitate spikes

: *Phrynium*

PHRYNIUM Willd. emend. K. Schum.

Phrynium pubinerve Bl., Enum. Pl. Javae 1: 58. 1827; Rao & Verma, Bull. Bot. Surv. India 14: 141. 1972. *P. capitatum* auct. non Willd. 1797, Wt., Ic. t. 2016. 1853; Fl. Brit. India 6: 258. 1892; Fl. Madras 1495. 1928.

Herbs with creeping root stock. Leaves oblong, acuminate, base rounded or obtuse, to 30 x 18 cm; petiole to 60 cm long. Spike globose, sessile on the petiole, 4-6 cm across. Inner bracts ovate-oblong, fimbriate at apex. Corolla yellow. Outer petaloid staminodes orange-red. Lip with a pendulous appendage. Ovary tomentose.

Fairly common in swampy areas in the forests.

NS 1417 (Choodal)

Fl. & Fr. October-March

D i s t. Indo-Malaya

SCHUMANNIANTHUS Gagnep.

Schumannianthus virgatus (Roxb.) Rolfe, J. Bot. 14: 244. 1907; Fl. Madras 1494. 1928; Fl. Thenmala 382. 1995. *Phrynium virgatum* Roxb., Asiat. Res. 11: 324. 1810. *Maranta virgata* (Roxb.) Wall. ex Wt., Ic. t. 2015. 1853. *Clinogyne virgata* (Roxb.) Benth. ex Baker in Hook. f., Fl. Brit. India 6: 258. 1892.

Stem to 3 m tall, joints swollen. Leaves oblong, acuminate, cuspidate, base rounded, to 30 x 10 cm; petiole to 2 cm long. Panicles to 50 cm long; bracts oblong, to 5 cm long. Flowers white, 1.2 cm long.

Common in semi-evergreen forests, often along sides of water courses and marshy areas.

NS 10341 (Kallar)

Fl. June-March

D i s t. South India and Sri Lanka

MUSACEAE

ENSETE Bruce ex Horan.

Ensete superbum (Roxb.) Cheesm., Kew Bull. 3: 100. 1948; Fl. Thenmala 384. 1995.
Musa superba Roxb., Pl. Corom. t. 223. 1811; Wt., Ic. t. 2017-18. 1853; Fl. Brit. India 6: 261. 1892; Fl. Madras 1497. 1928.

Pseudostem to 4 m tall, without offsets. Leaves to 3 m long; most of the leaves withers by end of December and new sets of leaves are produced with onset of monsoon.

Occasional in moist deciduous and semi-evergreen forests, often in open rocky areas.

D i s t. South West India : endemic

Note: Flowering specimens were not found during the study period.

Musa paradisiaca L. is frequently grown by people settled in forest areas.

HAEMODORACEAE

1. Staminal filaments united into a ring; leaves linear-elliptic, over

2.5 cm broad

: *Peliosanthes*

1. Staminal filaments free; leaves narrowly linear, under 1 cm broad : *Ophiopogon*

OPHIOPOGON Ker.-Gawl.

Ophiopogon intermedius D. Don, Prodr. 48. 1825; Fl. Brit. India 6: 269. 1892; Fl. Madras 1499. 1928. *O. indicus* Wt., Ic. t. 2050. 1853.

Herbs. Leaves narrowly linear, acute or obtuse, base narrowed, glabrous, to 30 x 0.8cm. Peduncle to 15 cm long, racemes 5 cm long; flowers white with pink shades, 8 mm across.

Fairly common in evergreen forests.

NS 11043 (Rosemala)

Fl. & Fr. July-December

D i s t. India

PELIOSANTHES Andr.

Peliosanthes teta Andr. ssp. *humilis* (Andr.) Jessop, Blumea 23: 155. 1976. *P. humilis* Andr., Bot. Rep. 10, t. 634. 1811. *P. neilgherrensis* Wt., Ic. t. 2052. 1853; Fl. Brit. India 6: 266. 1892; Fl. Madras 1498. 1928. *P. courtallensis* Wt., Ic. t. 2051. 1853; Fl. Brit. India 6: 266. 1892; Fl. Madras 1498. 1928.

Scapigerus herbs. Leaves linear-elliptic, caudate-acuminate, base attenuate, to 15 x 3cm; petiole to 20 cm. Racemes to 10 cm long; flowers purple, 0.6 mm across; bracts 4 mm long. Berry bluish-purple, ellipsoid, to 1.5 cm long.

Fairly common in semi-evergreen and evergreen forests.

NS 10147 (Kallar); 10710 (Umiyar)

Fl. & Fr. March-August

Dist. Indo-Malesia

AMARYLLIDACEAE

PANCRATIUM L.

Pancratium triflorum Roxb., Fl. Ind. 2: 126. 1832; Fl. Brit. India 6: 285. 1892; Fl. Madras 1505. 1928. *P. verecundum* auct. non Ait. 1789, Wt., Ic. t. 2023. 1853; Fl. Brit. India 6: 286. 1892.

Bulbs globose, to 5 cm across. Leaves linear-lanceolate, to 25 x 2.5 cm. Flowers white, 3 cm across, in 4-8 flowered umbels. Perianth lobes linear. Staminal tube with 2-fid teeth.

Fairly common in moist deciduous forests.

NS 11494 (Kattalappara)

Fl. March-May

Dist. India and Sri Lanka

AGAVACEAE

DRACAENA Vandel. ex L.

Dracaena terniflora Roxb., Fl. Ind. 2: 159. 1832; Fl. Brit. India 6: 328. 1892; Fl. Madras 1521. 1928; Fl. Thenmala 386. 1995. *Dracaena terminalis* Wt., Ic. t. 2054. 1853.

Erect shrubs, roots orange-red. Leaves elliptic-lanceolate, acuminate, base acute, glabrous, coriaceous, to 20 x 5 cm. Racemes to 12 cm long. Corolla greenish-yellow, 1.2 cm long. Berry 3-lobed, 1.5 cm across.

Common in semi-evergreen and evergreen forests.

NS 10927 (Rosemala); 10201 (Choodal)

Fl. & Fr. March-October

Dist. Indo-Malaya

HYPOXIDACEAE

CURCULIGO Gaertn.

- | | |
|---|-------------------------|
| 1. Scape 1-3 flowered; perianth on an elongated rostrum | : <i>C. orchioides</i> |
| 1. Scape 5 or more flowered; perianth sessile, rostrum absent | : <i>C. trichocarpa</i> |

Curculigo orchioides Gaertn., Fruct. 1: 63, t. 16. f. 11. 1788; Fl. Brit. India 6: 279. 1892;

Fl. Madras 1502. 1928; Fl. Thenmala 385. 1995. *C. malabarica* Wt., Ic. t. 2043 A. 1853.

Herbs with elongated oblong rhizome, to 15 cm long. Leaves subsessile, lanceolate, plicate, base sheathing, to 15 x 1.5 cm, pilose. Perianth yellow, 1.5 cm across; tube 3 cm long, narrow, sparsely pilose. Ovary villous.

Common in moist deciduous and semi-evergreen forests.

NS 10162 (Kattalappara); 10412 (Kallar)

Fl. June-December

Dist. Indo-Malesia

Curculigo trichocarpa (Wt.) Bennet & Raizada, Indian J. For. 4: 61. 1981. *Hypoxis trichocarpa* Wt., Ic. t. 2045. 1853. *Molineria finlaysoniana* Baker, J. Linn. Soc. Bot. 17: 121. 1878; Fl. Madras 1502. 1928. *Curculigo finlaysoniana* Wall. ex Hook. f., Fl. Brit. India 6: 279. 1892. *Molineria trichocarpa* (Wt.) Balakr., J. Bombay Nat. Hist. Soc. 63: 330. 1966; Fl. Thenmala 385. 1995.

Herbs, rhizome narrowly oblong, to 10 cm long. Leaves elliptic-lanceolate, acuminate, base attenuate, plicate, glabrous, to 30 x 5 cm; petiole to 30 cm. Racemes to 8 cm long; bracts linear, 1 cm long. Bisexual flowers towards base of racemes; male towards the apex. Perianth yellow, 1 cm across. Ovary pilose. Fruit narrowly oblong.

Fairly common in evergreen and semi-evergreen forests.

NS 10152 (Kattalappara); 10283 (Charupara)

Fl. & Fr. August-April

Dist. Peninsular India and Sri Lanka

DIOSCOREACEAE

- | | |
|---------------------------------------|-------------|
| 1. Climbing plants, flowers unisexual | : Dioscorea |
| 1. Erect herbs, flowers bisexual | : Trichopus |

DIOSCOREA L.

- | | |
|---|---------------------------|
| 1. Leaves 1-foliolate | : 2 |
| 1. Leaves 3-5 foliolate, sometimes terminal 1-foliolate | : <i>D. pentaphylla</i> |
| 2. Leaves opposite, margins thickened | : <i>D. oppositifolia</i> |
| 2. Leaves alternate, margins not thickened | : 3 |
| 3. Fruits broader than long, leaves 3-5 ribbed | : <i>D. spicata</i> |
| 3. Fruits as broad as long, leaves 7-9 ribbed | : 4 |
| 4. Perianth lobes linear-oblong, bulbils common in leaf axils | : <i>D. bulbifera</i> |
| 4. Perianth lobes ovate-obtuse; bulbils absent | : <i>D. wallichii</i> |

Dioscorea bulbifera L., Sp. Pl. 1033. 1753; Wt., Ic. t. 878. 1844; Fl. Brit. India 6: 296. 1892; Fl. Madras 1511. 1928; Burkill in Steenis, Fl. Males. I, 4: 311. 1951. *D. sativa* auct. non L. 1753, sensu Hook. f., Fl. Brit. India 6: 295. 1892.

Stem angled, glabrous. Leaves orbicular-reniform, base cordate, membranous, glabrous, very variable, leaves of basal stem to 30 cm across, upper ones smaller; basally 9-11 ribbed; petiole to 20 cm. Bulbils frequent in leaf axils and inflorescence. Male flowers in paniced spikes, pendulous, to 15 cm long. Perianth lobes linear-oblong, ca. 2.5 mm long, glabrous. Stamens 6.

Occasional in moist deciduous forests.

NS 11098 (Kattalappara)

Fl. September-October

D i s t. Paletropics

Dioscorea oppositifolia L., Sp. Pl. 1033. 1753; Wt., Ic. t. 813. 1844; Fl. Brit. India 6: 292. 1892; Fl. Madras 1512. 1928; Fl. Thenmala 387. 1995.

Stem terete, glabrous. Leaves opposite, oblong or obovate, acuminate, base truncate or rounded, glabrous, margins thickened, to 7.5 x 4.5, basally 3-ribbed; petiole to 3 cm long. Male flowers in spikes, fascicled on the rachis of panicles. Perianth lobes ovate-acute, glabrous, 1.5 mm long. Stamens 6.

Occasional in semi-evergreen and evergreen forests.

NS 10624 (Choodal)

Fl. & Fr. August-November

D i s t. Indo-Malaya

Dioscorea pentaphylla L., Sp. Pl. 1032. 1753; Wt., Ic. t. 814. 1844; Fl. Brit. India 6: 289. 1892; Fl. Madras 1511. 1928; Fl. Thenmala 388. 1995.

Tubers terete, slender, to 1.5 m long, subterranean, growing parallel to the ground. Stem terete, pubescent. Leaves alternate, 3-5 foliolate, elliptic or obovate, lanceolate, cuspidate, base attenuate, oblique, densely pubescent below, to 14 x 7 cm; upper leaves much smaller; petiole to 10 cm. Female spike solitary, to 20 cm long, tomentose. Ovary 3-ribbed, oblong. Capsule oblong, 3-winged, glabrescent.

Common in moist deciduous forests.

NS 10636 (Choodal)

Fl. & Fr. September-December

D i s t. Indo-Malesia and China

Dioscorea spicata Roth, Nov. Pl. Sp. 571. 1821; Fl. Brit. India 6: 291. 1892; Fl. Madras 1512. 1828.

Stem glabrous, terete. Leaves elliptic, oblong, obtusely acute, cuspidate, base rounded or obtuse, glabrous, to 13 x 6 cm; petiole to 5 cm. Spikes axillary, male in fascicles of 3-8, to 15 cm long; female solitary. Capsule subquadrate, to 3 x 4.5 cm, glabrous and shining.

Occasional in semi-evergreen forests.

NS 11005 (Kattalappara); 11373 (Rosemala)

Fl. & Fr. August-December

D i s t. India and Sri Lanka

Dioscorea wallichii Hook. f., Fl. Brit. India 6: 295. 1892; Fl. Madras 1512. 1928; Fl. Thenmala 388. 1995.

Stem terete, prickly towards base. Leaves broadly ovate to reniform, abruptly caudate-acuminate, base cordate, glabrous, to 8 cm across; 7-9 ribbed from base, intercostae subscalariform-reticulate; petiole to 7 cm long. Female spike in axillary panicles, to 10 cm long. Perianth 2-seriate, lobes oblong-lanceolate, 1 mm long.

Occasional in moist deciduous forests.

NS 10666 (Kattalappara)

Fl. October-November

D i s t. Indo-Burma

TRICHOPUS Gaertn.

Trichopus zeylanicus Gaertn. ssp. *travancoricum* (Bedd.) Burkill in Steenis, Fl. Malesia. 1, 4: 299. 1951. *Trichopodium travancoricum* Bedd., Ic. 68. 1868-1974 (under *T. zeylanicum*). *Trichopus zelanicus* sensu Hook. f., Fl. Brit. India 6: 297. 1892 p.p., non Gaertn. 1788; Fl. Madras 1513. 1928.

Perennial herbs, rhizome slender. Leaves ovate-lanceolate, acute or obtuse, apiculate, base deeply cordate, to 12 x 7 cm; 5-7 ribbed, petiole to 5 cm. Flowers fascicled at the base of the petiole. Perianth dark brown, campanulate, lobes lanceolate. Stamens 6, anthers apiculate. Fruit triquetrous, purple-brown; seeds dorsally grooved.

Occasional in evergreen and semi-evergreen forests.

NS 10920 (Umiyar); 10981 (Rosemala)

Fl. & Fr. March-October

D i s t. Southern W. Ghats : endemic

LILIACEAE

1. Spinescent climbers; leaves reduced to spines; cladodes present : *Asparagus*

1. Non-spinescent plants; leaves normal, cladodes absent : 2

2. Flowers in terminal panicle on the leafy stem : Dianella
 2. Flowers in racemes from the root stock : Chlorophytum

ASPARAGUS L.

Asparagus racemosus Willd., Sp. Pl. 2: 152. 1799; Wt., Ic. t. 2056. 1853; Fl. Brit. India 6: 316. 1892; Fl. Madras 1517. 1928; Jessop in Steenis, Fl. Males. I, 9: 216. 1979; Fl. Thenmala 390. 1995.

Stem terete, smooth, green. Cladodes linear-falcate, 10 x 1 mm. Racemes to 5 cm long. Perianth white, lobes oblong, acute, 4 x 0.5 mm. Stamens adnate to the perianth lobes.

Fairly common in moist deciduous forests.

NS 11108 (Kattalappara)

Fl. July-August

D i s t. Paleotropics

CHLOROPHYTUM Ker.-Gawl.

Chlorophytum heynei Rottl. ex Baker, J. Linn. Soc. Bot. 15: 322. 1876; Fl. Madras 1525. 1928; Fl. Thenmala 390. 1995. *C. heyneanum* Wall. ex Hook. f., Fl. Brit. India 6: 333. 1892.

Roots slender, terminating in elliptic-oblong tubers. Leaves linear-oblong, acuminate, base broadened and sheathing, glabrous, to 35 x 3.2 cm. Flowers white, 1.2 cm across. Perianth lobes oblong-acute, 0.5 cm long. Capsule 3-lobed, obcordate, 0.8 x 1 cm.

Common in semi-evergreen and moist deciduous forests.

NS 10970 (Rosemala)

Fl. & Fr. July-October

D i s t. Peninsular India and Sri Lanka

DIANELLA Lamk.

Dianella ensifolia (L.) DC. in Rodoute, Liliac. 1. t. 1. 1802; Fl. Brit. India 6: 337. 1892; Fl. Madras 1521. 1928. *Dracaena ensifolia* L. Mant. Pl. 63. 1767. *Dianella ensata* (Thumb.) Henderson, Taxon 26: 136. 1977.

Stout stoloniferous herbs, stem to 1 m long. Leaves distichous, linear-ensiform, acuminate, base sheathing, sheath acutely keeled, to 50 x 2.5 cm. Flowers in cymose panicles. Pedicels jointed. Perianth 1 cm across, pale blue. Berry globose, 7-10 mm across; seeds black, shining.

Occasional in grasslands.

NS 10268 (Charupara); 11023 (Rosemala)

Fl. & Fr. August-April

D i s t. Indo-Malaya

SMILACACEAE

SMILAX L.

Smilax zeylanica L., Sp. Pl. 1029. 1753; Fl. Brit. India 6: 309. 1892; Fl. Madras 1518. 1928; Fl. Thenmala 392. 1995.

Climbing herbs. Leaves ovate-oblong or ovate-orbicular, acuminate, base rounded, coriaceous, glabrous and glossy, to 12 x 8 cm; tendril from either sides of petiole. Peduncle to 3 cm long. Perianth lobes subequal, oblong, 7 mm long. Ovary 3-lobed. Berry 0.8 mm across.

Fairly common in semi-evergreen forests.

NS 10495 (Choodal)

Fl. & Fr. July-January

Dist. Indo-Malesia

COMMELINACEAE

- | | |
|---|----------------|
| 1. Epiphytes, stem creeping | : Belosynopsis |
| 1. Terrestrial herbs | : 2 |
| 2. Fruit an indehiscent berry | : Pollia |
| 2. Fruit a dehiscent capsule | : 3 |
| 3. Flowers enclosed in spathe or bracteoles | : 4 |
| 3. Flowers not enclosed in spathe or bracteoles | : 5 |
| 4. Stamens 6, filaments bearded; bracteoles in closely imbricating
biseriate pairs | : Cyanotis |
| 4. Stamens 3, staminodes 2 or 3, filaments naked; bracteoles 0 | : Commelina |
| 5. Flowers sessile in axillary fascicles; leaf sheath inflated | : Toningia |
| 5. Flowers in axillary or terminal panicles or solitary; leaf sheath
not inflated | : 6 |
| 6. Fertile stamens 6; staminodes 0 | : Floscopa |
| 6. Fertile stamens 2 or 3; staminodes 1-3 | : 7 |
| 7. Flowers regular; bracts subulate, deciduous | : Murdannia |
| 7. Flowers irregular; bracts funnel-shaped or leafy, persistent | : Aneilema |

ANEILEMA R. Br.

- | | |
|---|------------------|
| 1. Leaf sheath hispid; inflorescence glandular hairy; bracts
funnel-shaped | : A. scaberrimum |
| 1. Leaf sheath and inflorescence glabrous; bracts leafy | : 2 |
| 2. Panicles shorter than leaves | : A. ovalifolium |
| 2. Panicles longer than leaves | : A. montana |

Aneilema montana (Wt.) Cl. in DC., Monogr. Phan. 3: 217. 1881; Fl. Brit. India 6: 382. 1892; Fl. Madras 1546. 1931; Fl. Thenmala 402. 1995. *Dictyospermum montanum* Wt., Ic. t. 2069. 1853; Morton, J. Linn. Soc. 59: 4. 1966.

Scandent herbs. Leaves clustered towards the apex of stem, elliptic-lanceolate, acuminate, base narrowed, to 15 x 5 cm; petiole short, 1 cm long; sheath to 3 cm long. Panicles terminal, to 15 cm long; bracts leafy, deciduous. Flowers white, 0.6 cm across. Ovule 1 in each cell. Capsule globose, glabrous, 3 mm across; seeds hemispheric, rugose.

Fairly common in semi-evergreen forests.

NS 11058 (Rosemala)

Fl. & Fr. July-October

D i s t. South and North East India

Aneilema ovalifolia (Wt.) Hook. f. ex Cl. in DC., Monogr. Phan. 3: 218. 1881; Fl. Brit. India 6: 328. 1892; Fl. Madras 1546. 1934; Fl. Thenmala 403. 1995. *Dictyospermum ovalifolium* Wt., Ic. t. 2070. 1853.

Stem 30-100 cm high, stout, erect. Leaves 15 x 4 cm, ovate, caudate. Panicles to 6 cm long, globose; branches curved. Flowers white, densely packed. Stamens 2. Capsule globose, glabrous; seeds reticulate.

Rare in evergreen forests

NS 10360 (Kallar)

Fl. & Fr. November-May.

D i s t. Western Ghats : endemic

Aneilema scaberrimum (Bl.) Kunth, Enum. 4: 69. 1843; Fl. Brit. India 6: 382. 1892; Fl. Madras 1546. 1931; Fl. Thenmala 402. 1995. *Commelina scaberrima* Bl., Enum. Pl. Jav. 1: 4. 1827. *Dictyospermum protensum* Wt., Ic. t. 2071. 1853. *Rhophalephora scaberrima* (Bl.) Faden, Phytologia 37: 480. 1977.

Erect herbs, to 1 m tall. Leaves scattered, oblong-lanceolate, acuminate, base rounded, narrowed into a petiole, hispid above and glabrous below, to 15 x 3.5 cm, sheath hispid, to 2.5 cm long. Panicle terminal, glandular pubescent. Flowers blue, 0.8 cm across. Sepals basally connate. Ovary 3-celled; ovule 1 in each cell. Capsule globose, pubescent 3.5 mm across; seeds planoconvex, glandular.

Occasional in moist deciduous forests.

NS 10563 (Kattalappara)

Fl. & Fr. July-September

D i s t. Indo-Malesia

BELOSYNOPSIS Hassk.

Belosynopsis vivipara (Dalz.) Fischer, Kew Bull. 1928: 254. 1928 & Fl. Madras 1551. 1931. *Cyanotis vivipara* Dalz. in Hook., J. Bot Kew Gard. Misc. 3: 226. 1851; Fl. Brit. India 6: 388. 1892.

Epiphytic herbs. Stems viviparous, hairy. Leaves 2-10 x 1.5 cm, radical and cauline, oblong covered with rufous hairs. Cymes few flowered, peduncled, axillary or terminal. Bracts hairy. Sepals 3, connate at base. Stamens 6, filaments naked. Ovary 3-celled; ovules 2 in each cell. Capsule hairy; seeds smooth.

Fairly common in evergreen forests.

NS 11056 (Rosemala)

Fl. & Fr. August-December

D i s t. South India : endemic

COMMELINA L.

1. Spathe ovate-lanceolate, base cordate-sagittate, peduncle 5 cm long : *C. attenuata*

1. Spathe funnel-shaped or cucullate, sessile or subsessile : *C. maculata*

Commelina attenuata Koenig ex Vahl, Enum. Pl. 224. 1839; Fl. Brit. India 6: 372. 1892; Fl. Madras 1539. 1931.

Slender scandent or procumbent herbs. Leaves linear-lanceolate, acute, base not narrowed, glabrous, to 7 x 1.5 cm. Spathe ovate-lanceolate, acuminate, base sagittate-auriculate, to 3.5 x 2.5 cm. Sepals ovate-obtuse, concave, 5 mm long. Petals pale blue. Stamens 3; staminodes 3, all naked. Ovary tomentose, 2-celled; ovules 2 in each cell.

Fairly common in grasslands.

NS 11062 (Rosemala)

Fl. & Fr. August-November

D i s t. Peninsular India and Sri Lanka

Commelina maculata Edgew., Trans. Linn. Soc. London 20: 89. 1846; R. Rao, Blumea 14: 353. 1966. *C. obliqua* Buch.-Ham. ex D. Don, Prodr. 45. 1825, non Vahl 1805; Fl. Brit. India 6: 372. 1892 p.p.; Fl. Madras 1539. 1931. *C. polystachya* Wt., Ic. t. 2066. 1853.

Scandent herbs. Leaves elliptic-lanceolate, caudate-acuminate, base unequal, narrowed into a short petiole, to 17 x 5 cm; sheath, to 3 cm long, rufous hairy at mouth. Spathes in terminal fascicles, funnel-shaped, acute at one side, to 2.5 cm across at mouth. Sepals oblong, concave, 4 mm long. Petals blue. Stamens 3; staminodes 2, naked. Seeds nearly black, subreniform, minutely pitted.

Occasional in semi-evergreen forests.

NS 11125 (Kattalappara)

Fl. & Fr. December-February

D i s t. Indo-Malesia

CYANOTIS D. Don *nom. cons.*

Cyanotis arachinoidea Cl. in DC., Monogr. Phan. 3: 250. 1881; Fl. Brit. India 6: 386. 1892 p.p.; Fl. Madras 1550. 1931; Morton, J. Linn. Soc. Bot. 60: 194. 1967; Fl. Thenmala 397. 1995.

Prostrate herbs, stem and leaves cottony and cowebby. Leaves linear-oblong or lanceolate, acute, base not narrowed, basal one to 15 x 1.5 cm, sheath to 4.5 cm long; upper ones smaller. Cymes in clusters of 2-5, terminal and axillary, sessile or peduncled. Bracts ovate-lanceolate, to 1 cm long; bracteoles linear-falcate. Calyx tube 2 mm long, lobes 3 mm long. Corolla 1 cm long, pale blue, tube 6 mm long. Ovary hairy. Capsule 3 mm long; seeds terete, pitted.

Fairly common in grasslands.

NS 10655 (Kattalappara)

Fl. & Fr. August-November

D i s t. Peninsular India and Sri Lanka

FLOSCOPA Lour.

Floscopa scandens Lour., Fl. Cochinch. 193. 1790; Fl. Brit. India 6: 390. 1892; Fl. Madras 1522. 1931; Fl. Thenmala 398. 1995. *Dithyrocarpus rothii* Wt., Ic. t. 208. 1839. *D. petiolatus* Wt., Ic. t. 2079. 1853. *D. undulatus* Wt., Ic. t. 2080. 1853.

Stem rooting at lower nodes. Leaves elliptic-lanceolate, base cuneate, to 8 x 2.5 cm; sheath 1 cm long, villous at mouth. Panicle to 7 cm long, densely viscid-pubescent. Sepals elliptic-acute, 3 mm long, pubescent. Petals pink. Capsule ellipsoid; seeds rugose.

Common in evergreen and semi-evergreen forests along the sides of water courses.

NS 10088 (Kattalappara)

Fl. & Fr. January-April

D i s t. Indo-Malesia

MURDANNIA Royle *nom. cons.*

- | | |
|--|-----------------------|
| 1. Staminal filaments naked | : <i>M. japonica</i> |
| 1. Staminal filaments bearded | : 2 |
| 2. Leaves oblong, base cordate, amplexicaule, under 4 cm long | : <i>M. spirata</i> |
| 2. Leaves linear-lanceolate, over 6 cm long, base not amplexicaule | : 3 |
| 3. Pedicel scars on rachis prominently raised | : <i>M. simplex</i> |
| 3. Pedicel scars on rachis not conspicuous | : <i>M. nudiflora</i> |

Murdannia japonica (Thunb.) Faden, Taxon 26: 142. 1977; Fl. Thenmala 399. 1995. *Commelina japonica* Thunb., Trans. Linn. Soc. London 2: 332. 1794. *Aneilema lineolatum* (Bl.) Kunth, Enum. Pl. 4: 69. 1843; Fl. Brit. India 6: 376. 1892; Fl. Madras 1544. 1931. *A. latifolium* Wt., Ic. t. 2072. 1853.

Robust branching herbs to 1 m tall. Roots tuberous. Leaves sessile, ovate-elliptic or oblong-lanceolate, acuminate, base rounded, margin scarious, to 16 x 5.5 cm. Flowers in terminal to 20 cm long dichotomously branched panicles; bracts linear-lanceolate, 1.5 cm long. Sepals elliptic, glabrous, 4 mm long. Petals white. Fertile stamens 3; staminodes 3. Capsule subglobose 5 mm long; seeds glandular.

Occasional in moist deciduous forests.

NS 10493 (Kattalappara)

Fl. & Fr. July-September

D i s t. Indo-Malesia

Murdannia nudiflora (L.) Brenan., Kew Bull. 7: 189. 1952; Fl. Thenmala 401. 1995. *Commelina nudiflora* L., Mant. Pl. 177. 1771, non Sp. Pl. 1753. *Aneilema nudiflorum* (L.) R. Br., Prodr. 271. 1810; Fl. Brit. India 6: 378. 1892; Fl. Madras 1545. 1931.

Slender diffuse herbs, roots fibrous. Leaves sessile, linear-lanceolate, acute or acuminate, base rounded, to 8 x 0.5 cm; sheath 1 cm long, margin ciliate. Flowers in terminal and axillary few-flowered panicles. Sepals oblong, obtuse, 2 mm long. Petals bluish-purple, oblong, acute, 2.5 mm long. Ovules 2 in each cell. Capsule globose; seeds pitted.

Fairly common in moist deciduous forests, often in moist localities.

NS 10586 (Kalluvarambu)

Fl. & Fr. September-November

D i s t. Tropical Asia

Murdannia simplex (Vahl) Brenan, Kew Bull. 7: 186. 1952; Fl. Thenmala 401. 1995. *Commelina simplex* Vahl, Enum. Pl. 2: 177. 1806. *Aneilema sinicum* Ker-Gawl. in Edgew., Bot. Reg. t. 659. 1822; Fl. Brit. India 6: 379. 1892; Fl. Madras 1545. 1931. *A. secundum* Wt., Ic. t. 2075. 1853.

Erect herbs. Roots tuberous. Leaves mostly crowded towards base, few cauline, linear, acute or acuminate, to 15 x 1 cm; sheath 2 cm long, ciliate. Flowers in lax terminal panicles; rachis with prominent raised scars; bracts ovate, acute. Sepals oblong, 6 mm long. Petals bluish-pink. Fertile stamens 2; staminodes 3, naked, shorter than the fertile stamens. Ovules 2 in each cell. Capsule globose; seeds rugose.

Occasional in grasslands.

NS 10619 (Kattalappara)

Fl. & Fr. September-November

D i s t. Paleotropics

Murdannia spirata (L.) Brueck. in Engl. & Prantl, Pflanzenf. (ed. 2) 15a: 173. 1930; Panigr. & Kammathy, Proc. Nat. Acad. Sci. India 33: 495. 1963; Fl. Thenmala 400. 1995. *Commelina spirata* L., Mant. Pl. 176. 1771. *Aneilema spiratum* (L.) R. Br., Prodr. 271. 1810; Fl. Brit. India 6: 377. 1892; Fl. Madras 1546. 1931.

Slender diffuse herbs. Roots tuberous. Leaves ovate-oblong, acute, base cordate and subamplexicaule, to 3 x 0.8 cm; sheath 1 cm long, ciliate at mouth. Flowers in few-flowered terminal and axillary panicles; bracts minute. Sepals ovate-oblong, 3 mm long. Petals bluish, oblong, 3 mm long. Fertile stamens 3, filaments bearded; staminodes 2. Ovules 3 in each cell. Capsule oblong-acuminate; seeds angular, rugose.

Fairly common along the banks of streams in moist deciduous forests.

NS 11128 (Kattalappara)

Fl. & Fr. August-November

D i s t. Indo-Malesia

POLLIA Thunb.

Pollia sorzogonensis Steud., Nom. ed. 2: 368. 1841; Fl. Brit. India 6: 368. 1892; Fl. Madras 1534. 1931.

Stem 30-45 cm high stout. Leaves 30 x 10 cm, elliptic, acuminate, acute at base, glabrous. Panicle to 12 x 8 cm. long peduncled; branches hairy. Flowers pedicelled. Sepals obovate. Petals white, glabrous. Stamens 3, filaments naked; sterile anthers triangular. Ovary 3-celled, cells many ovuled. Fruits globose.

Rare in evergreen forests

NS 11047 (Rosemala)

Fl. & Fr. September-January

D i s t. India and Sri Lanka

TONNINGIA Neck. ex A. Juss.

Tonningia axillaris (L.) O. Ktze., Rev. Gen. Pl. 2: 721. 1891. *Commelina axillaris* L., Sp. Pl. 42. 1753. *Cyanotis axillaris* (L.) D. Don, Prodr. 46. 1825; Fl. Brit. India 6: 388. 1892; Fl. Madras 1550. 1931. *Amischophacelus axillaris* (L.) Rao & Kammathy, J. Linn. Soc. Bot. 59: 306. 1966.

Branches terete, glabrous. Leaves sessile, linear, acute, to 7 x 0.7 cm; sheath to 0.5 cm long, mouth ciliate. Cymes sessile. Calyx lobes lanceolate, 2 mm long. Corolla blue, 5 mm long. Staminal filaments purple villous.

Occasional in disturbed moist deciduous forests.

NS 10535 (Kattalappara)

Fl. & Fr. September-November

D i s t. Indo-Malesia

ARECACEAE

1. Plants dioecious; leaves bearing spines : 2
1. Plants monoecious ; leaves without spines : 3
2. Scandent palms climbing with flagellum; leafbase deciduous : **Calamus**
2. Erect palms without flagellum; leafbase persistent on stem : **Phoenix**
3. Spadix interfoliar; leaflets auricled at base, white pruinose beneath : **Arenga**
3. Spadix infrafoliar; leaflets not auricled and pruinose beneath : 4
4. Stem diameter below 6 cm; spadices branches 5-6; male and female flowers together, female at centre and male on either side : **Pinanga**
4. Stem diameter above 10 cm; spadices much branched; female flowers towards the base of the branches and male towards the apex : **Bentinckia**

ARENGA Labill.

Arenga wightii Griff., Calcutta J. Nat.-Hist. 5: 475. 1845; Fl. Brit. India 6: 422. 1892; Fl. Madras 1558. 1931; Fl. Thenmala 406. 1995.

Trunk to 6 m tall. Leaves to 5 m long; leaflets linear-ensiform, base unequally auricled, to 1 m x 0.5 cm; petiole to 3 m long. Spadices to 1 m long. Male tepals 6, outer 3 orbicular, 3 mm long; inner 3 oblong-obovate, apiculate. Stamens many.

Occasional in evergreen forests.

NS 10668 (Kallar)

Fl. July-September

Dist. W. Ghats : endemic

BENTINCKIA Berry

Bentinckia condapanna Berry ex Roxb., Fl. Ind. 3: 621. 1832; Fl. Brit. India 6: 418. 1892; Fl. Madras 1555. 1931; Nayar & Sastry, Red Data Book Indian Pl. 2: 32. 1988.

Erect palms to 15 m tall and 25 cm diameter at base. Leaves pinnate, to 2 m long; leaflets to 40 on each side, linear-lanceolate, acuminate. Inflorescence to 40 cm long, decomposed, monoecious. Fruit ovoid, reddish-brown, 1.5 cm long.

Growing gregariously along the slopes of hills.

NS 10946 (Pongumala)

Fl. & Fr. Throughout the Year.

Dist. Southern W. Ghats : endemic

CALAMUS L.

1. Leaf rachis ending in a cirrus : **C. nagbetta**
1. Leaf rachis without a cirrus : 2

- | | |
|--|---------------------------|
| 2. Leaflet over 5 cm wide, 5-ribbed; fruits oblong | : C. vattayila |
| 2. Leaflets under 3 cm wide; fruits globose, ellipsoid or ovoid | : 3 |
| 3. Leaflets in groups of 2, 3 or 5 | : 4 |
| 3. Leaflets equidistant | : 6 |
| 4. Stem 2.5-3 cm across, rachis with black flattened spines | : C. thwaitesii |
| 4. Stem less than 1.5 cm across, spines not black | : 5 |
| 5. Leaflets under 2 cm wide, fruit globose, 1 cm across, scales in 24 rows, straw yellow | : C. travancoricus |
| 5. Leaflets to 3 cm wide, fruit ovoid, 1.5 x 1.2 cm, scales in 17 rows, brown | : C. brandisii |
| 6. Leaf sheath glabrous; fruit globose, tapering basally, scale golden-yellow throughout | : C. gamblei |
| 6. Leaf sheath tomentose; fruit ellipsoid, scale reddish-brown along margins | : 7 |
| 7. Mouth of the sheath with 3-4 pairs of long spines, upto 10 cm long; fruit subovoid | : C. pseudotenuis |
| 7. Mouth of the sheath with numerous spines, upto 18 cm long; fruit subglobose | : C. hookerianus |

Calamus brandisii Becc. ex Becc. & Hook. f. in Hook. f., Fl. Brit. India 6: 448. 1892; Fl. Madras 1567. 1931.

Clustering canes, stem to 10 m long and 1.5 cm across with sheaths. Leaves to 1 m long; leaflets linear-lanceolate, to 20 x 3 cm; petiole to 15 cm long, spines short and large, the larger ones to 3 cm long, spines at mouth slender, to 4 cm long; ochrea absent, flagellum to 60 cm long. Fruit ovoid, brown.

Fairly common in evergreen forests.

NS 11279 (Pandimotta)

Fl & Fr. October-May

D i s t. Southern W. Ghats : endemic

Calamus gamblei Becc. ex Becc. & Hook. f. in Hook. f., Fl. Brit. India 6: 453. 1893; Fl. Madras 1568. 1931.

Culms to 15 m long and 2.5 cm across with sheath. Leaves to 1.2 m long; leaflets numerous, lanceolate, acuminate, bristly, to 40 x 2.5 cm, sparsely bristly ciliate on both sides; petiole to 25 cm long, spines to 2.5 cm long; rachis with hooked spines; sheath green, glabrous, knee prominent, ochrea inconspicuous, spines on sheath scattered, to 1.5 cm long; flagellum to 4 m long. Fruit shortly stalked, globose, slightly tapering at base, 1.5-2 cm across; scales in 23 rows, deeply channelled.

Occasional in evergreen forests.

NS 10077 (Kallar)

Fl. & Fr. October-April

Dist. W. Ghats : endemic

Calamus hookerianus Becc., *Ann. Roy. Gard. (Calcutta)* 11: 83. 226. 1908; *Fl. Madras* 1568. 1931. *C. borneensis* Becc., *Rec. Bot. Surv. India* 2: 205. 1904, non Miq. 1855.

Culms clustering, to 5 m long and 4 cm across with sheath. leaves to 2 m long; leaflets regular, lanceolate, acuminate, bristly, to 45 x 2.5 cm, ciliate along the midrib beneath; petiole to 70 cm long, spines to 8 cm long; rachis with a single row of spines; sheath green, densely brown tomentose, spines dense, largest to 2.5 cm long; knee not prominent; ochrea to 7 cm long, deciduous; flagellum to 5 m long. Inflorescence *ca.* 3 m long. Fruit sessile, ovoid-ellipsoid; 1 x 0.8 cm; scales in 18 rows.

Fairly common in semi-evergreen forests.

NS 1732 (Rosemala); Renuka 2929 (Shenduruny)

Fl. & Fr. October-April

Dist. W. Ghats : endemic

Calamus nagbettai Fernandez & Dey, *Indian Forester* 96: 225. 1970; Nayar & Sastry, *Red Data Book Indian Pl.* 1: 46. 1987; Sasidharan & Anto, *J. Econ. Tax. Bot.* 21: 247. 1997.

Clustering canes, to 15 m long and 4.5 cm across with leaf sheaths. Leaves to 4 m long. cirrus to 1.5 m long; petiole to 40 cm long. Rachis and petiole with *ca.* 2 cm long sharp spines. Sheaths yellowish-green, lower half densely spiny, spines triangular, black, in groups of 2 or 3, intermingled with shorter spines, young sheaths brown tomentose. Flowers and fruits not seen.

Occasional in evergreen forests.

NS 10984 (Kallar)

Dist. Southern W. Ghats : endemic

Note: This threatened cane was considered to be restricted to the type locality, Chikmagallur in Karnataka State. The present collection from the Sanctuary is a new distribution record outside the type locality.

Calamus pseudotenuis Becc. ex Becc. & Hook. f. in Hook. f., *Fl. Brit. India* 6: 445. 1892; Becc., *Ann. Roy. Bot. Gard. (Calcutta)* 11: 138, t. 12. 1908; *Fl. Madras* 1567. 1931; *Fl. Thenmala* 407. 1995.

Culms to 7 m long and 3.5 cm across with sheath. Leaves to 1.5 m long; leaflets narrowly lanceolate, caudate-acuminate, sparsely ciliate along veins beneath, to 40 x 2.5 cm; petiole to 22 cm long; spines to 3 cm long, sheath yellowish-green, brown tomentose, spines scattered, to 5 cm long; knee obscure; ochrea to 10 cm long; flagellum to 3 m long. Inflorescence to 3 m long. Fruit obovoid, 1.5 x 0.8 cm; scales in 18 rows.

Fairly common in evergreen forests.

NS 10801 (Kallar); 11060 (Rosemala)

Fl. & Fr. October-March

D i s t. South West India and Sri Lanka

Calamus thwaitesii Becc. ex Becc. & Hook. f., *Fl. Brit. India* 6: 441. 1892. *C. thwaitesii* Becc. & Hook. f. var. *canaranus* Becc., *Ann. Roy. Bot. Gard. (Calcutta)* 11: 138, t. 12. 1908; *Fl. Madras* 1567. 1931; *Fl. Thenmala* 404. 1995.

Culms to 20 m long and 6 cm across with sheath. Leaves to 3 m long; leaflets clustered and equidistant, to 50 x 3 cm, spinulate along margins; petiole to 30 cm long, spines arranged in oblique whorls; sheath yellowish, spines dense, black, often in oblique whorls, to 3 x 0.7 cm; knee and ochrea absent; flagellum to 9 m long. Inflorescence to 6 m long; spikelets closely arranged on the rachillae. Fruit stalked, ovoid or globose, 2 x 1.5 cm; scales in 12 rows, vertically grooved.

Fairly common in semi-evergreen and occasionally in moist deciduous forests.

NS 10037 (Kattalappara)

Fl. & Fr. March-January

D i s t. W. Ghats : endemic

Calamus travancoricus Bedd. ex Becc. & Hook. f. in Hook. f., *Fl. Brit. India* 6: 452. 1893; *Fl. Madras* 1567. 1931; *Fl. Thenmala* 405. 1995.

Slender clustering canes, stem to 10 m long and 0.8 cm diameter with sheath. Leaves to 50 cm long; leaflets in groups, linear-lanceolate, acuminate; petiole to 10 cm long; sheaths green, spines to 5 mm long, flagellum to 1.3 m long. Male inflorescence to 1 m long.

Common in evergreen forests.

NS 10078 (Kallar); 1731 (Rosemala)

Fl & Fr. October-May

D i s t. Southern W. Ghats : endemic

Calamus vattayila Renuka, *Curr. Sci.* 56. 1012. 1987; Renuka & Sasi., *RIC Bull.* 9: 5. 1990.

Culms solitary, to 30 m long and to 2.5 cm across with sheath. Leaves to 1 m long; leaflets alternate, elliptic or elliptic-oblong, acute, ciliate at apex, to 40 x 8 cm; petiole to 25 cm long, spines to 1 cm long; rachis armed with recurved spines in 3 rows; sheath green, glabrous, spines few, to 2 cm long; knee prominent; ochrea ca. 0.5 cm long; flagellum to 4 m long.

Occasional in evergreen forests .

NS 11492 (Kallar)

D i s t. Southern W. Ghats : endemic

Note: Flowering and fruiting materials could not be collected during the study period.

PHOENIX L.

Phoenix humilis Royle ex Becc. var. *pedunculata* (Griff.) Becc., Males. 3: 379, 387, t. 44. ff. 13-15, 18-21. 1890; Fl. Brit. India 6: 427. 1892; Fl. Madras 1560. 1931. *P. loureirii* Kunth, Enum. 3: 257. 1841; Fl. Thenmala 406. 1995.

Trunk to 1 m tall. Leaves to 1.5 m long; leaflets linear-lanceolate, to 25 x 1.5 cm, lower ones modified into long spines. Male spadix to 40 cm long, branches crowded towards the apex of peduncle. Female spadix to 1 m long. Fruit oblong, orange-yellow, 1.2 x 0.7 cm.

Fairly common in grasslands.

NS 10919 (Rosemala)

Fl. & Fr. Throughout the year

D i s t. India to Vietnam and China

PINANGA BL.

Pinanga dicksonii (Roxb.) Bl., Rumph. 2: 85. 1838; Scheffer, Naturk. Tijdschr. Nederl. Ind. 32: 174. 1879; Fl. Brit. India 6: 409. 1892; Fl. Madras 1556. 1931; Fl. Thenmala 407. 1995. *Areca dicksonii* Roxb., Fl. Ind. 3: 616. 1832.

Stem to 8 m tall and 5 cm across, with annular leaf scars. Leaves to 1.5 m long; leaflets linear-lanceolate, praemorse at apex, to 50 x 3 cm, glabrous; sheath to 30 cm long. Inflorescence to 35 cm long. Tepals keeled. Drupe ellipsoid, 15 x 7 mm.

Occasional in evergreen forests.

NS 10716 (Umiyar)

Fr. March-April

D i s t. W. Ghats : endemic

Areca catechu L. and *Cocos nucifera* L. are often grown in forest settlements. *Elaeis guineensis* Jacq., the oil palm, has been raised in plantations at Rockwood.

PANDANACEAE

PANDANUS Parkinson

Pandanus thwaitesii Mart., Bull. Soc. Bot. Ital. 369. 1904; Fl. Madras 1570. 1931; Fl. Thenmala 407. 1995.

Shrubs with stilt roots. Leaves spirally arranged; linear-lanceolate, acuminate, spiny along the margins and midrib below, glabrous, to 1.5 m long. Spadix branched, spathe ovate, acute. Male flowers in 5-6 cm long catkins; filaments 1 cm long.

Fairly common in evergreen forests.

NS 10627 (Choodal)

Fl. & Fr. September-March

D i s t. South India

ARACEAE

- | | |
|--|-------------------------|
| 1. Climbing plants without underground corms or rhizomes | : Pothos |
| 1. Plants not climbing, with underground corms or rhizomes | : 2 |
| 2. Leaves entire | : 3 |
| 2. Leaves many-foliolate or dissected | : 6 |
| 3. Leaves peltate, spathe yellow | : 4 |
| 3. Leaves not peltate, spathe purplish-brown | : Lagenandra |
| 3. Leaves suborbicular | : Ariopsis |
| 3. Leaves ovate-cordate | : 5 |
| 5. Epiphytes or lithophytes with bulbiferous stalks; leafless during
flowering | : Remusatia |
| 5. Terrestrial plants without bulbiferous stalks | : Colocasia |
| 6. Spadix without a sterile appendix | : Anaphyllum |
| 6. Spadix with a sterile appendix | : 7 |
| 7. Plants leafy during flowering; petiole sheathing the peduncle, lamina
pedatisect | : Arisaema |
| 7. Leafless during flowering; leaves tripartly compound | : Amorphophallus |

AMORPHOPHALLUS Bl. ex Dcne. *nom. cons.*

Amorphophallus nicolsianus Sivadas., *Pl. Syst. Evol.* 153: 165. 1986.

Corm oblong or subcylindrical. Leaves to 30 cm long; leaflets ovate or oblong, acuminate, base acute or obtuse, glabrous, glossy above, to 15 x 5 cm; subsessile or shortly petiolulate. Peduncle terete, to 20 cm long, spathe ovate-lanceolate, acuminate, to 10 x 3 cm, greenish-brown, basally convolute; spadix sessile, slightly longer than the spathe, flowers confined towards the base 1/3 portion; sterile appendix narrowly cylindric, tapering to the apex.

Fairly common in evergreen forests.

NS 10832 (Rosemala)

Fl. May

D i s t. South India (Kerala) : endemic

ANAPHYLLUM Schott

- | | |
|--|----------------------|
| 1. Spathe under 10 cm long, 5-nerved, apex not twisted | : A. beddomei |
| 1. Spathe over 12 cm long, 10-nerved, apex often twisted | : A. wightii |

Anaphyllum beddomei Engl., *Planzenr.* 48: 26. 1913; *Fl. Madras* 1589. 1931.

Leaves trisect, to 35 cm long, mid lobe often pinnately lobed, lobes linear-oblong, obtuse or acute; petiole to 45 cm long. Peduncle as long as the petiole. Spathe ovate-oblong, acute, apiculate, greenish-yellow, 8 x 5 cm. Spadix stipitate, oblong.

Occasional in evergreen forests.

NS 10282 (Charupara); 11346 (Alvarakurichi)

Fl. February-March

Dist. Southern W. Ghats : endemic

Anaphyllum wightii Schott, Bonplandia 5: 127. 1857 & Gen. Aroid. t. 83. 1858; Fl. Brit. India 6: 551. 1893; Fl. Madras 1589. 1931; Sivadas. in Jain & Rao, (eds.) Threatened Pl. India 252. 1983.

Leaves pinnatisect, to 40 cm long; leaflets opposite, basal larger, obliquely oblong or elliptic, acuminate, base attenuate. Peduncle as long as the petiole; spathe oblong-lanceolate, acuminate, to 30 x 10 cm, dark violet; spadix ca. 6 cm long. Tepals ovate.

Fairly common in semi-evergreen and evergreen forests.

NS 11000 (Kallar)

Fl. January-February

Dist. W. Ghats : endemic

ARIOPSIS Grah.

Ariopsis peltata Nimmo. in Grah., Cat. Pl. Bombay 252. 1839; Fl. Brit. India 6: 519. 1893; Fl. Madras 1580. 1931. *Remusatia vivipara* auct. non Schott, 1832, Wt., Ic. t. 900. 1845.

Annual herbs, corms depressed globose, to 2.5 cm across. Leaf simple, suborbicular, peltate, to 7 cm across, petiole to 10 cm. Spathe 1 to 1.5 cm long, pale purple. Spadix 1 cm long. Portion of the spadix with female flowers adnate to spathe and the other part with male flowers free from spathe. Ovules many. Stamens in synandrium.

Occasional on wet rocks among humus in evergreen forests.

NS 10452 (Kallar)

Fl. & Fr June-August

Dist. India

ARISAEMA Mart.

Arisaema barnesii Fischer, Kew Bull. 1933: 342. 1933 & Fl. Madras 1891. 1936.

Corms globose, 2 cm across. Leaflets 7 or 5 foliolate, elliptic-lanceolate, caudate-acuminate, base acute, glabrous, to 15 x 5 cm; petiole to 20 cm long. Spathe as level with the petiole, tube 5 x 1.5 cm, vertically striped with dark purple streaks; limb ovate, finely caudate-acuminate, green with white bands inside, purplish outside; spadix straight appendix tapering into a short tail.

Fairly common in evergreen forests.

NS 10953 (Rosemala)

Fl. April-May

D i s t. Southern W. Ghats : endemic

Note: Listed as "Rare & threatened" (Ahmedullah & Nayar 1987). However, in the study area it is fairly common.

COLOCASIA Schott nom. cons.

Colocasia esculenta (L.) Schott in Schott & Endl., Melet. Bot. 1: 18. 1832; Fl. Thenmala 410. 1995. *Arum esculentum* L., Sp. Pl. 965. 1753. *Colocasia antiquorum* Schott in Schott & Endl., Melet. Bot. 1: 18. 1832; Wt., Ic. t. 786, f. 1. 1844; Fl. Brit. India 6: 523. 1893; Fl. Madras 1580. 1931.

Leaves many, peltate, ovate-acute, base cordate-sagittate, glabrous and glossy, to 70 x 40 cm; petiole to 1.5 m, sheathing at base. Peduncle to 40 cm long; spathe to 30 cm long, base tube green, limb yellow, lanceolate, to 20 cm; spadix 15 cm long.

Fairly common in water-logged areas and stream sides.

NS 11493 (Rosemala)

Fl. August-September

D i s t. Native of Tropical Asia; now pantropical

LAGENANDRA Dalz.

1. Rhizome stout, over 3 cm in diameter, leaf base acute : *L. ovata*

1. Rhizomes under 1.5 cm in diameter; leaf base rounded or subcordate: *L. meeboldii*

Lagenandra meeboldii (Engl.) Fischer, Fl. Madras 1576. 1931; Sant., J. Bombay Nat. Hist. Soc. 54: 967. 1959. *Cryptocoryne meeboldii* Engl., Pflanzenr. 4. 23 F (73): 234. 1920.

Leaves broadly elliptic or ovate, acute, base rounded, coriaceous, reddish-purple below, to 12 x 6 cm; petiole to 15 cm long; cataphylls 2-keeled. Peduncle 2 cm long. Spathe 10 cm long, dark purple, limb cucullate, caudate-acuminate.

Occasional along streams in evergreen forests.

NS 10958 (Rosemala)

Fl. March-April

D i s t. South West India : endemic

Lagenandra ovata (L.) Thw., Enum. Pl. Zey. 334. 1864; Fl. Madras 1889. 1936; Fl. Thenmala 409. 1995. *Arum ovatum* L., Sp. Pl. 967. 1753, *Lagenandra toxicaria* var. *barnesii* Fischer, Kew Bull. 1936: 126. 1936.

Leaves broadly elliptic, acute, chartaceous, glabrous, to 30 x 15 cm; petiole to 25 cm long; cataphylls lanceolate, sheathing 10 cm long. Peduncle 4.5 cm long. Spathe 6 cm long, oblong, constricted above the tube, limb abruptly acuminate, pale purple; spadix 1.5 cm long.

Common along the streams and swamps.

NS 1408 (Kattalappara)

Fl. March-October

D i s t. South West India and Sri Lanka

POTHOS L.

1. Stem armed with short spines along nodes; spadix slender,
3-6 cm long : *P. armatus*
1. Stem unarmed; spadix globose, 0.4 cm across : *P. scandens*

Pothos armatus Fischer, Kew Bull. 1929: 126. 1929 & Fl. Madras, 1592. 1931; Sivads. in Jain & Rao, (eds.) Threatened Pl. India 254. 1983.

Stem terete. Leaves elliptic or linear-lanceolate, acute or acuminate, base attenuate, glabrous and glossy, coriaceous, to 12 x 3 cm. Peduncle slender, to 4.5 cm long, subtended by few linear-oblong cataphylls at base. Spathe ovate-lanceolate, concave, reddish-brown, 1.5 cm long; spadix pubescent. Flowers in fascicles of 3 or 4. Berry oblong 1.2 cm long.

Fairly common in evergreen forests.

NS 10100 (Kallar); 10202 (Choodal)

Fl. & Fr. December-April

D i s t. Southern W. Ghats : endemic

Pothos scandens L., Sp. Pl. 968. 1753; Wt., Ic. t. 776. 1844; Fl. Brit. India 6: 551. 1893; Fl. Madras 1592. 1931; Fl. Thenmala 412. 1995.

Leaves ovate or oblong, acuminate, base acute, coriaceous, glabrous, to 7 x 2 cm; petiole to 4 cm long, wings 1 cm wide. Peduncle about 0.5 cm long, decurved; cataphylls a few, minute. Spathe ovate-orbicular, acute, 3 mm long; spadix globose.

Common in semi-evergreen and evergreen forests.

NS 10486 (Kattalappara); 10794 (Kallar)

Fl. October-November

D i s t. Indo-Malesia and Malagasy Island

REMUSATIA Schott

Remusatia vivipara (Roxb.) Schott in Schott & Endl., Melet. Bot. 1: 18. 1832; Fl. Brit. India 6: 521. 1893; Fl. Madras 1583. 1931; Fl. Thenmala 410. 1995. *Arum viviparum* Roxb., Fl. Ind. 3: 496. 1832; Wt., Ic. t. 798. 1844.

Corms depressed globose, to 6 cm across. Leaves ovate-acuminate, base cordate, peltate, glabrous, to 30 x 20 cm. Bulbiferous shoots brown scaly, as long or longer than the petiole. Peduncle to 10 cm long; cataphylls membranous, to 7 cm long. Spathe 15 cm long; tube green, persistent, limb yellow, deciduous; spadix to 8 cm long.

Common in moist deciduous and semi-evergreen forests, often growing in cavities of trees and on rocks.

NS 10622 (Kattalappara); 11326 (Rosemala)

Fl. March-April

Dist. Indo-Malesia to Australia and Africa

ERIOCAULACEAE

ERIOCAULON L.

- | | |
|---|------------------------|
| 1. Peduncles solitary; involucre bracts pubescent | : <i>E. trilobum</i> |
| 1. Peduncles few to many; involucre bracts glabrous | : 2 |
| 2. Male sepals 2 | : <i>E. thwaitesii</i> |
| 2. Male sepals 3 | : 3 |
| 3. Appendages on seeds winglike on vertical walls on epidermal cells; male petals equal | : <i>E. truncatum</i> |
| 3. Appendages on seeds setiform on horizontal walls of epidermal cells; male petals unequal | : <i>E. odoratum</i> |

Eriocaulon odoratum Dalz. in Hook., Kew Journ. 3: 280. 1851; Fl. Brit. India 5: 574. 1893; Fl. Madras 1618. 1931; Ansari & Balakr., Eriocaul. India 43. 1994. *E. collinum* Hppk. f., Fl. Brit. India 6: 584. 1893; Fl. Madras 1620. 1931.

Leaves 10 x 0.3 cm, lanceolate, acute at apex, glabrous. Peduncles many; heads depressed globose; involucre bracts 3 x 2 mm, obovate, obtuse; floral bracts 4 x 1.5 mm deltoid, hairy. Male sepals united, black. Female sepals 2 x 1 mm, concave, hairy along the keel. Petals oblanceolate hairy, white. Seed oblong, appendages many on transverse walls.

Common in marshy places in grasslands at higher elevation.

NS 11441 (Alvarakurichi)

Fl. & Fr. November-January

Dist. Peninsular India

Eriocaulon thwaitesii Koern., Linnaea 27: 627. 1854; Fl. Brit. India 583. 1893; Fl. Madras 1620. 1931; Ansari & Balakr. Eriocaul. India 63. 1994.

Leaves 6-8 x 0.5 cm, lanceolate, glabrous. Peduncles several, 10-30 cm long; heads 2.5-4 x 4-6 mm, globose; involucre bracts 2 x 1.5 mm oblong; floral bracts 2 x 1 mm cuneate, hairy at apex. Female sepals 2, lanceolate, keeled, brown. Petals linear hyaline. Male sepals 2, glabrous, brownish. Petals equal, hairy, glandulose.

Common in grasslands.

NS 11410 (Alvarakurichi)

Fl. & Fr. August-December

D i s t. Southern Western-Ghats : endemic

Eriocaulon trilobum Bunch.-Ham. ex Koern., *Linnaea* 27: 645. 1856; *Fl. Brit. India* 6: 583. 1893; Ansari & Balakr., *Ericaul. India* 46. 1994.

Leaves 17 x 1.2 cm, lanceolate, flat, acute at apex. Peduncles 30 cm high, stout; head 10 x 13 mm; involucral bracts 4 x 3.5 mm, obovate, black; floral bracts 5 x 3 mm oblanceolate, black. Female sepals 4 x 2.5 mm, hairy at apex, black. Petals 3 x 0.5 mm oblong, densely hairy. Male sepals united, densely hairy at apex. Petals equal.

Very rare at higher elevation in grasslands.

NS 11437 (Alvarakurichi)

Fl. & Fr. September-December

D i s t. India : endemic

Eriocaulon truncatum Bunch.-Ham. ex Mart. in Wall., *Pl. Asiat. Rar.* 3: 29. 1831; *Fl. Brit. India* 6: 578. 1893; *Fl. Madras* 1619. 1931; Ansari & Balakr., *Eriocaul. India* 118. 1994.

Leaves 3-4 x 0.4 cm, lanceolate. Peduncles 15 cm long; heads 3 x 5 mm hemispherical; involucral bracts oblong, obtuse at apex; floral bracts oblanceolate, obtuse, pale brown, glabrous. Female sepals 2 x 1.5 mm long, linear, black. Petals 3, linear, white, glabrous. Male sepals united, lobes shallow, black, glabrous. Petals equal, glandulose.

Common in dampy open grasslands.

NS 11284 (Rosemala)

Fl. & Fr. July-December

D i s t. Asia

CYPERACEAE

- | | |
|--|---------------------|
| 1. Flowers unisexual | : 2 |
| 1. Flowers bisexual | : 4 |
| 2. Nut enclosed in a utricle | : <i>Carex</i> |
| 2. Nut not enclosed in a utricle | : 3 |
| 3. Spikelets with female florets basal; nut white and smooth, bony | : <i>Scleria</i> |
| 3. Spikelets with female florets terminal; nut trigonal, not smooth and bony | : <i>Hypolytrum</i> |
| 4. Hypogynous bristles present | : 5 |
| 4. Hypogynous bristles absent | : 6 |

5. Inflorescence of 1-5 congested globose spikes; hypogynous bristle 2, elliptic, hyaline : *Lipocarpa*
5. Inflorescence a spreading panicle; hypogynous bristles many, narrow, scabrid : *Rhynchospora*
6. Glumes spirally disposed; style fimbriate, base dilated and constricted : *Fimbristylis*
6. Glumes in two rows, not spiral, style not constricted at base : 7
7. Spikelets with one bisexual flower, congested in 1-3 globose sessile spikes : *Kyllinga*
7. Spikelets with more than two bisexual flowers, usually not in globose spikes : 8
8. Nut biconvex, compressed; styles 2 : *Pycnus*
8. Nut trigonal; style 3 : 9
9. Rachilla persistent : *Cyperus*
9. Rachilla deciduous above the empty glumes : *Mariscus*

CAREX L.

1. Inflorescence paniculate; spikelets androgynous : *C. filicina*
1. Inflorescence spicate; spikelets not androgynous, unisexual : 2
2. Female glumes with a hispid mucro; utricles not beaked : *C. phacota*
2. Female glumes without mucro; utricles shortly beaked : *C. maculata*

Carex filicina Nees var. *filicina* Nees in Wt., Contr. Bot. India 123. 1834; Fl. Brit. India 6: 717. 1894; Fl. Madras 1686. 1934; Fl. Thenmala 416. 1995.

Culms to 120 cm tall. Leaves to 60 x 0.8 cm, scabrous along the midrib. Spikelets to 1.5 cm long; pistillate glumes 2 mm long; staminate glumes 3 x 1.5 mm. Utricle 3.5 mm long.

Common in marshy areas.

NS 10864 (Umiyar); *11071* (Rosemala)

Fl. & Fr. December-May

Dist. Indo-China

Carex maculata Boott, Trans. Linn. Soc. London 20: 128. 1846; Fl. Brit. India 6: 735. 1894; Fl. Madras 1686. 1934.

Culms to 80 cm tall. Leaves to 60 x 1 cm. Spikelets 5 cm long, cylindrical, unisexual. Female glumes 2 x 1 mm, acute, 1-nerved, glabrous. Utricle trigonous, glabrous, 2.5 x 1.5 mm.

Common in marshy areas.

NS 11158 (Kallar)

Fl. & Fr. November-March

Dist. South East Asia

Carex phacota Spreng., Syst. Veg. 3: 826. 1826; Fl. Brit. India 6: 708. 1894; Fl. Madras 1686. 1934.

Culms to 70 cm tall. Leaves to 80 x 1 cm, cauline. Spikelets 5-7 in a terminal raceme; terminal one fully or partly male and others female, each 5 x 0.5 cm. Pistillate glumes truncate at apex, aristate. Staminate glumes 3 x 1.5 mm, obovate, aristate; stamens 3. Utricle 3 x 1.5 mm.

Common in wet areas in grasslands.

NS 11349 (Alvarakurichi)

Fl. & Fr. October-February

Dist. Indo-Malesia

CYPERUS L.

- | | |
|--|---|
| 1. Spikelets digitately disposed | : 2 |
| 1. Spikelets spikately disposed | : 4 |
| 2. Rhizome stoloniferous; leaves usually reduced to sheaths | : <i>C. haspan</i> |
| 2. Rhizome not stoloniferous; leaves well developed | : 3 |
| 3. Glumes aristate; stout annuals or perennials | : <i>C. diffusus</i>
var. <i>macrostachyus</i> |
| 3. Glumes obtuse; slender annuals | : <i>C. tenuispica</i> |
| 4. Rachis pilose; margin of glumes white | : <i>C. pilosus</i> |
| 4. Rachis glabrous; margin of glumes not white | : 5 |
| 5. Spikelets linear, not compressed, glumes obtuse; stout perennials | : <i>C. oatesii</i> |
| 5. Spikelets ovate, flattened, glumes cuspidate; annuals | : <i>C. compressus</i> |

Cyperus compresses L., Sp. Pl. 46. 1753; Fl. Brit. India 6: 605. 1893; Fl. Madras 1640. 1931.

Tufted annuals, culms trigonous, to 40 cm tall. Leaves towards base of the culm, linear, as long as or shorter than the culms. Inflorescence compound, rays 3 or 4, to 10 cm long; involucre bracts 2-5, foliaceous. Spikelets compressed, oblong, ca. 15 x 3 mm. Glumes ovate, acute, mucronate, 3-nerved, keel prominent. Nuts trigonous, obtuse at apex, smooth.

Common along the sides of streams and reservoir.

NS 10559 (Kattalappara)

Fl. & Fr. July-November

Dist. Pantropical

Cyperus diffusus Vahl ssp. *macrostachyus* (Boeckler) Koyama, Gard. Bull. ss. 30: 139. 1977. *Cyperus diffuses* Vahl var. *macrostachyus* Boeckler, Linnæa 35: 534. 1868. *Cyperus pubisquama* Steud., Syn. Pl. Glum. 2: 20. 1855; Fl. Brit. India 6: 604. 1893; Fl. Madras 1639. 1931; Fl. Thenmala 420. 1995.

Rhizome short, stout. Culms to 70 cm tall, smooth. Leaves to 75 x 1.6 cm, 3-costate. Umbel 5-35 cm across. Spikelets to 5 x 2 mm, 8-16 flowered. Glumes to 1.75 mm long, cuspidate.

Common in evergreen forests.

NS 10502, 11222 (Kattalappara)

Fl. & Fr. October-January

Dist. Indo-China

Cyperus haspan L., Sp. Pl. 45. 1753; Fl. Brit. India 6: 600. 1893; Fl. Madras 1640. 1931; Koyama, Gard. Bull. s.s. 30: 142. 1977.

Culms tufted, to 40 cm tall. Leaves 2-20 cm long, scaberulous. Umbel decomposed, 3-12 cm long; involucre bracts 2 or 3, unequal. Spikelets narrowly-linear 3-5 x 0.8-1 mm, compressed, 10-30 flowered; rachilla straight. Glumes to 1.5 mm long, ovate, membranous, margin hyaline, mucronulate; keel 3-5 nerved. Nuts obovoid, triquetrous, creamy-yellow, punctulate.

Occasional along the banks of streams.

NS 11155 (Choodal)

Fl. & Fr. June-January

Dist. Pantropical and East Asia

Cyperus oatesii Cl. in Hook. f., Fl. Brit. India 6: 618. 1893. *C. exaltatus* var. *oatesii* Cl., J. Linn. Soc. 19: 188. 1845.

Culms to 120 cm tall. Leaves to 70 x 2 cm. Umbel to 45 cm long. Spikes 6 cm long; rachis glabrous. Spikelets 10 x 0.5 mm, linear, terete, 8-10 flowered. Glumes 2 x 0.7 mm, oblong, obtuse. Nuts oblong, 3-angled.

Common in marshy areas.

NS 11162 (Choodal)

Fl. & Fr. August-December

Dist. Indo-Malaya

Cyperus pilosus Vahl, Enum. Pl. 2: 354. 1806; Fl. Brit. India 6: 609. 1893; Fl. Madras 1641. 1931; Koyama, Gard. Bull. s.s. 30: 138. 1977; Fl. Thenmala 421. 1995.

Rhizome stoloniferous, culms to 1 m tall. Leaves few, 1 cm wide, scabrous on margins; sheath pale purplish. Involucre bracts 3, unequal, to 35 cm. Spikelets 1 x 0.2 cm,

5-20 flowered. Glumes to 2 mm long, ovate to deltoid-ovate, membranous, mucronulate, side nerves 5; keel faint. Nuts obovoid, apiculate, dark brown.

Fairly common along banks of streams.

NS 11166 (Choodal)

Fl. & Fr. July-October

D i s t. Indo-Malesia, East Asia and Tropical Africa

Cyperus tenuispica Steud., Syn. Pl. Glum. 2: 11. 1855; Fl. Madras 1640. 1931. *Cyperus flavidus* Retz., sensu. Clarke in Fl. Brit. India 6: 600. 1893.

Rhizome absent. Culms tufted to 25 cm tall. Leaves to 8 x 0.2 cm. Umbel compound, rays 4-6. Spikelets 3-15 together, 3-7 x 1 mm, oblong, to 40 flowered. Glumes 1 x 0.5 mm, ovate, obtuse. Nuts orbicular, white-rugose.

Common in marshy areas.

NS 11152 (Choodal)

Fl. & Fr. August-April

D i s t. Indo-Malaya

FIMBRISTYLIS Vahl

- | | |
|--|-----------------------------|
| 1. Style 2-fid; nut biconvex | : 2 |
| 1. Style 3-fid; nut globose or triquetrous | : 3 |
| 2. Spikelets digitate in a single head; culms 5-20 cm high | : <i>F. argentea</i> |
| 2. Spikelets not digitate; culms 30-70 cm high | : <i>F. dichotoma</i> |
| 3. Leaves usually reduced to sheaths, culms acutely 4-5 angled | : <i>F. quinquangularis</i> |
| 3. Leaves well developed; culms terete or 3 angled | : 4 |
| 4. Spikelets globose; leaves distichous, acuminate | : <i>F. millacea</i> |
| 4. Spikelets ovate to lanceolate; leaves not distichous, acute or obtuse | : 5 |
| 5. Leaves basal, falcate; rhizome stout, elongated | : <i>F. falcata</i> |
| 5. Leaves cauline, linear, rhizome short | : <i>F. dura</i> |

Fimbristylis argentea (Rottb.) Vahl, Enum. Pl. 2: 294. 1806; Fl. Brit. India 6: 640. 1893; Fl. Madras 1659. 1931; *Scirpus argenteus* Rottb., Progr. 27. 1772.

Culms tufted, trigonous, to 20 cm long. Leaves narrowly linear. Inflorescence capitate, to 1.5 cm across; involucre bracts to 4 cm long. Spikelets terete, obtuse, 5 x 1.5 mm, many flowered; rachilla narrowly winged. Glumes 1.2 mm long, acute at apex, hyaline; keel 3-nerved. Nuts obovate, obscurely vertically striate, yellowish.

Occasional in disturbed moist deciduous forests.

NS 10552 (Kattalappara); 11334 (Rosemala)

Fl. & Fr. July-October

D i s t. Indo-Malesia and China

Fimbristylis dichotoma (L.) Vahl, Enum. Pl. 2: 287. 1806; Fl. Brit. India 6: 635. 1893; Blake, J. Arnold Arbor. 35: 213. 1954; Kern in Steenis, Fl. Males. I, 7:575. 1974; Fl. Thenmala 415. 1995. *Scirpus dichotomus* L., Sp. Pl. 1: 50. 1753. *Fimbristylis glauca* Vahl, Enum. Pl. 2: 288. 1806. *F. annua* Roem. & Schult. var. *diphylla* Kukenth, Bot. Jahrb. 59: 47. 1924; Fl. Madras 1658. 1931.

Rhizome short, culms tufted, to 40 cm long. Leaves linear, acute, to 20 x 0.3 cm; ligules hairy. Inflorescence decomposed; involucral bracts 3-7, the longest to 8 cm long. Spikelets ovoid, acute, ca. 5 x 2 mm; rachilla winged. Glumes broadly ovate, obtuse, mucronulate, margin hyaline; keel 3-nerved. Nuts biconvex, obovate, margin thickened, vertically 7-ribbed and transversely striated.

Mostly confined to banks of streams and open moist areas in moist deciduous forests.

NS 10550 (Kattalappara); 11035 (Rosemala)

Fl. & Fr. July-November

D i s t. Indo-Malesia to Polynesia

Fimbristylis dura (Zoll. & Moritz.) Merr., Philipp. J. Sci. 11: 53. 1916; Koyama, Rev. Handb. Fl. Ceylon 5: 287. 1985; *Isolepis dura* Zoll. & Moritz., Syst. verz. Zollinger Java Pfl. 97. 1846. *Fimbristylis asperrima* Boeckeler, Linnaea 37. 40. 1871; Fl. Brit. India 6: 643. 1893.

Culms to 50 cm high, acutely 4-angled. Leaves 40 x 0.6 cm flat. Umbel 12 x 5 cm; bracts 3-4 surpass the inflorescence. Spikelets 3.5 x 1.5 mm elliptic, acute, solitary, peduncled. Glumes 2.2 x 1.2 mm, acute, 3-nerved, keeled, brown. Connective of anthers penicellate. Nut 1 mm long, obovate, trabaculate, white.

Rare in marshy areas of evergreen forests.

NS 11149, 11156 (Choodal)

Fl. & Fr. July-March

D i s t. Indo-Malesia

Fimbristylis falcata (Vahl) Kunth, Enum. Pl. 2: 239. 1837; Koyama, Rev. Handb. Fl. Ceylon 5: 289. 1985. *Scirpus falcatus* Vahl, Enum. Pl. 2: 275, 1806. *Fimbristylis junciformis* Kunth, Enum. Pl. 2: 239. 1837; Fl. Brit. India 6: 647. 1893; Fl. Madras 1660. 1931.

Rhizome creeping, 6-10 mm thick. Culms to 50 cm tall, solitary, 4-5 angled. Leaves 15 x 0.4 cm falcate, basal. Umbel 10 x 6 cm; bracts 4-5; to 1 cm long, rays 6-7. Spikelets 5-7 x 2.5 mm, sessile, 3-8 together. Glumes 3 x 2 mm ovate acute 5-nerved keeled, reddish brown. Nut 1.2 x 1 mm trigonous, minutely but thickly tubercled, reddish brown.

Occasional in open grasslands.

NS 11151 (Choodal)

Fl. & Fr. September-May

D i s t. Indo-China and Malesia

Fimbristylis miliacea (L.) Vahl, Enum. Pl. 2: 287. 1806; Fl. Brit. india 6: 644. 1893; Fl. Madras 1660. 1931; Fl. Thenmala 414. 1995. *Scirpus miliaceus* L., Syst. ed. 10, 868. 1759.

Culms to 60 cm tall, 4-angled. Leaves 50 x 4 cm; lower ones reduced to sheath; blades folded. Umbel 3-8 cm long; bracts setaceous shorter than umbel, unequal. Spikelets solitary, 3 mm long, many flowered. Glumes reddish-brown, obtuse. Achenes 0.8 mm long, trigonous.

Common in marshy areas.

NS 11163 (Choodal)

Fl. & Fr. October-March

D i s t. Pantropical

Fimbristylis quinquangularis (Vahl) Kunth, Enum Pl. 2: 229. 1807; Fl. Brit. India 6: 644. 1893; Fl. Madras 1659. 1931; Koyama in Rev. Handb. Fl. Ceylon 5: 295. 1985.

Rhizome creeping, woody. Culms to 90 cm tall, acutely, 4-5 angled. Leaves absent. Umbel 7 x 10 cm, bracts few short filiform; rays many, filiform spreading. Spikelets 4-6 x 3 mm mostly pedicelled, ovate, acute. Glume 2.2 x 1.7 mm, obtuse, 3 nerved, red-brown. Nut 0.5 X 0.3 mm, obovate, trabaculate, minutely tubercled.

Common in grasslands.

NS 10944 (Rosemala)

Fl. & Fr. August-December

D i s t. Africa and South Asia

HYPOLYTRUM L.C. Rich.

Hypolytrum nemorum (Vahl) Spreng., Syst. Veg. 1: 233. 1824; Fl. Thenmala 417. 1995. *Schoenus nemorum* Vahl, Symb. Bot. 3: 8. 1794. *Hypaelyptum latifolium* L.C. Rich. ex Pers., Syn. Pl. 1: 70. 1805; Fl. Brit. India 6: 678. 1893; Fl. Madras 1673. 1931.

Culms to 60 cm tall, stout, trigonous. Leaves mostly from base of the culm, a few at the apex, oblong, lanceolate, 3-ribbed, veins and margin serrate towards the apex, to 75 x 2 cm. Corymbs to 7 x 8 cm; involucre bracts 2-4, to 30 cm long. Spikelets ovoid or subglobose, reddish-brown. Glumes 2 mm long, obovate or ovate-orbicular. Inner perianth scales ca. 1.5 mm long, keeled. Nut ovoid, beaked, beak sponge.

Fairly common in swampy areas in evergreen forests.

NS 11306 (Rosemala)

Fl. & Fr. July-January

D i s t. Indo-Malesia

KYLLINGA Rottb. *nom. cons.*

- | | |
|---|------------------------|
| 1. Culms tufted, rhizome absent; spike 1-4 together | : <i>K. bulbosa</i> |
| 1. Culms solitary, rhizome creeping; spike solitary | : 2 |
| 2. Keels of nut bearing glumes crested, smooth | : <i>K. nemoralis</i> |
| 2. Keels of nut bearing glumes not crested, ciliate | : <i>K. brevifolia</i> |

Kyllinga brevifolia Rottb., Descr. Ic. Rar. Nov. Pl. 13. 1773; Fl. Brit. India 6: 588. 1893; Fl. Madras 1624. 1931; Fl. Thenmala 419. 1995.

Culms to 35 cm tall, solitary along the creeping rhizome. Leaves 7 x 0.2 cm, smooth; basal sheaths bladeless. Spike 0.8 x 0.6 cm globose; bracts 7 x 0.2 cm foliar. Spikelets 3.5 x 1.2 mm, lanceolate. Lower glumes smaller, upper glumes 3 x 2 mm aristate. Stamens 3. Nut 1.2 x 0.8 mm obtuse, apiculate, dark brown.

Common in marshy areas of moist deciduous forests.

NS 11034 (Rosemala); 11161 (Choodal)

Fl. & Fr. July-December

Dist. Pantropical

Kyllinga bulbosa Beauv., Fl. d'Oware & Benin 1: 11. 1804. *K. triceps* Rottb., Descr. Ic. Rar. Nov. Pl. 14. t. 4. 1773, *nom. illegit* Fl. Brit. India 6: 587. 1893; Fl. Madras 1623. 1931; Koyama, Gard. Bull. s.s. 30: 162. 1977.

Culms densely tufted, to 12 cm long. Leaves flat, to 10 x 0.5 cm; sheath membranous, pale-brown. Spikes 3-lobed, rarely 5-lobed, 6 mm long; laterals globose, 2 mm across; involucre bracts to 5 cm long. Spikelets oblong, 2 mm. Glumes 4, narrowly-linear, 1-1.5 mm long; side nerves 5, keel smooth. Nuts oblong, biconvex, apiculate.

Occasional in moist deciduous forests and forest plantations.

NS 11153 (Choodal)

Fl. & Fr. July-January

Dist. Indo-Malesia to Australia and Tropical Africa

Kyllinga nemoralis (J. R. & G. Forst.) Dandy ex Hutch. & Dalziel, Fl. W. Trop. Africa 2: 487. 1936; Koyama, Gards. Bull. s.s. 30: 163. 1977; Fl. Thenmala 419. 1995.

Thrycephalon nemoralis J. R. & G. Forst., Char. Gen. Pl. 130. 1776. *Kyllinga monocephala* Rottb., Descr. Ic. Rar. Nov. Pl. 13, t. 4. f. 4. 1773, *nom. illeg.*; Fl. Brit. India 6: 588. 1893; Fl. Madras 1624. 1931.

Stolon creeping. Culms close together, to 35 cm tall. Leaves to 30 cm long. Spikes globose, white, to 4 x 7 mm; involucre bracts to 10 cm long. Spikelets ovate or elliptic, 4mm long. Lower glumes linear, 2 mm long; upper ones concave, 2.5 mm long, mucronulate, side nerves 5, keel arcuate. Nut obovoid, biconvex apiculate, yellowish.

Common in disturbed moist deciduous forests.

NS 10539 (Kattalappara)

Fl. & Fr. July-November

Dist. Pantropical

LIPOCARPHA R. Brown

- | | |
|--|------------------------|
| 1. Spikes 3; glumes dark brown, 7-nerved | : <i>L. sphacelata</i> |
| 1. Spikes 6-12; glumes yellowish brown, 1-nerved | : <i>L. chinensis</i> |

Lipocarpa chinensis (Osbeck) Kern. *Blumea*, Suppl. 4: 167. 1958; Fl. Thenmala 416. 1995. *Scirpus chinensis* Osbeck, Dago. Ostind. Resa. 220. 1757. *Lipocarpa argentea* (Vahl) R. Br. ex Nees, *Linnaea* 9: 287. 1835; Fl. Brit. India 6: 667. 1893; Fl. Madras 1670, 1931. *Hypaelyptum argenteum* Vahl, Enum. Pl. 2: 283. 1806.

Culms to 65 cm tall, 2 mm thick. Leaves 20 x 0.5 cm, stiff; margins scabrid; bracts unequal, largest 8 cm long. Spikelets 0.5-1 x 0.5 cm, obtuse. Glumes 2.5 x 1 mm, keeled, yellow. Nut 1.2 x 0.4 mm obtuse, triquetrous, shortly apiculate, brown.

Common in moist localities in the forests.

NS 10610 (Kattalappara); 11154 (Choodal)

Fl. & Fr. August-December

Dist. Tropics

Lipocarpa sphacelata (Vahl) Kunth, Enum. Pl. 2: 267. 1837; Fl. Brit. India 6: 667. 1893. *Hypaelyptum spacelatum* Vahl, Enum. Pl. 2: 283. 1806. *Lipocarpa triceps* (Roxb.) Nees in Wt., Contr. Bot. India 92. 1834; Fl. Madras 1670. 1931. *Tunga triceps* Roxb., Fl. India 1: 183. 1820.

Culms to 20 cm tall. Leaves 10 x 0.15 cm, glabrous. Involucral bracts 2, unequal, dilated at base 3-4 cm long. Spikelets 3, 8 x 5 mm acute. Glumes clawed, acute, dark brown; scales 4-5 nerved. Nut 1.5 x 0.4 mm, triquetrous, acute, slightly curved, dark brown.

Common in moist localities.

NS 11150 (Choodal)

Fl. & Fr. August-December

Dist. Tropical Africa & India

MARISCUS Vahl nom. cons.

- | | |
|--|-----------------------|
| 1. Spikes globose, solitary; base of culms thickened | : <i>M. dubius</i> |
| 1. Spikes cylindrical, few to several; base of culms not thickened | : 2 |
| 2. Spikelet two flowered; spikes mostly peduncled | : <i>M. cyperinus</i> |
| 2. Spikelet one flowered; spikes usually sessile | : 3 |

3. Rhizome short or zero; nut bearing glumes cuspidate : *M. clarkei*
 3. Rhizome creeping, stoloniferous; nut bearing glumes not cuspidate : *M. panicus*

Mariscus clarkei (Cook) T. Koyama, J. Jap. Bot. 51(10): 313. 1976. Fl. Thenmala 418. 1995. *Cyperus clarkei* Cook, Fl. Pres. Bombay 2: 873. 1908. *Mariscus pictus* Nees in Wt., Contr. Bot. India 90. 1834; Fl. Madras 1645. 1931. *M. bulbosus* Cl. in Hook. f., Fl. Brit. India 6: 620. 1893; Fl. Madras 1644. 1931.

Rhizome stoloniferous, 5-10 cm long, clothed with brown scales; culms solitary, to 25 cm tall. Leaves to 20 cm long, acuminate. Umbel 5 x 3 cm; bracts larger than umbel; spikes 15 x 7 mm, cylindrical, sessile. Spikelets 3 x 8 mm. Glumes 2; one sterile and one fertile.

Rare in marshy grasslands.

NS 10922 (Rosemala)

Fl. & Fr. October-December

D i s t. South India & Sri Lanka

Mariscus cyperinus (Retz.) Vahl, Enum. Pl. 2:377. 1806; Fl. Thenmala 418. 1995. *Mariscus pictus* Nees in Wt., Contrib. Bot. India 90. 1834; Fl. Brit. India 6: 621. 1893; Fl. Madras 1644. 1931.

Rhizome slender, culms solitary or few together, to 25 cm tall, triquetrous, smooth. Leaves narrowly linear, as long as or shorter than the culms. Spikes oblong, to 1.5 cm long; involucre bracts 4-6, to 8 cm long. Nut obovate-oblong, obtuse, muricate, brown.

Common in open rocky areas in moist deciduous forests.

NS 10501 (Kattalappara); 11169 (Choodal)

Fl. & Fr. July-November

D i s t. South India : endemic

Mariscus dubius Kukenth. ex Fischer in Gamble, Fl. Madras 1644. 1931; Koyama Gard. Bull. s.s. 30: 158. 1977. *Cyperus dubius* Rottb., Descr. Ic. Rar. 20, t. 4. f. 5. 1773. *Mariscus dregeanus* Kunth, Enum. Pl. 2: 120. 1837; Fl. Brit. India 6: 620. 1893 p.p.

Culms tufted, to 50 cm tall. Leaves linear, shorter than the culms. Inflorescence capitate, globose, 1.5 cm long; involucre bracts 4, very unequal, the largest to 25 cm long. Spikelets 5 mm long. Glumes 3 mm long, broadly ovate, obtuse. Nuts trigonous, ellipsoid, apiculate, punctulate.

Common on humus in rock crevices in moist deciduous forests.

NS 11168 (Choodal)

Fl. & Fr. July-November

D i s t. Paletropics

Mariscus paniceus (Rottb.) Vahl, Enum. Pl. 2: 373. 1806; Fl. Brit. India 6: 620. 1893; Fl. Madras 1644. 1934. *Kyllinga panicea* Rottb., Descr. Ic. Rar. Nov. Pl. 15. 1773.

Culms to 30 cm tall, smooth. Leaves 20-30 x 0.3-0.4 cm, glabrous. Umbel simple; spikes 3-6, each 1-1.5 x 0.6-0.8 cm, sessile. Spikelets 3-4 x 0.5-0.6 mm terete; glumes 4; lower two glumes smaller; third glumes 3 x 1.5 mm, lanceolate; fourth glumes 3.5 x 0.5 mm. Stamens 2. Nut 2.5 mm long, oblong acute, brown.

Common in openings of evergreen forests.

NS 11315 (Rosemala)

Fl. & Fr. August-January

Dist. Indo-China and Thailand

PYCREUS P. Beauv

1. Glumes aristate; rachilla straight

: *P. pumilus*

1. Glumes obtuse; rachilla zig-zag

: *P. polystachyos*

Pycreus polystachyos (Rottb.) Beauv., Pl. Oware 2: 48, t. 86. f. 2. 1807. *Cyperus polystachyos* Rottb., Descr. Pl. Rar. 21: 1772. *Pycreus odoratus* Urban, Symb. Antill. 2: 164. 1900; Fl. Madras 1627. 1931. var. *laxiflorus* (Benth.) Cl. in Hook. f., Fl. Brit. India 6: 592. 1893.

Culms slender, to 30 cm long. Leaves shorter than the culms. Inflorescence anthelate, to 7 cm long; rays and spikes spreading; bracts 3 or 4, to 8 cm long. Spikelets purplish-brown, 5 mm long; rachilla winged. Glumes purplish, oblong, mucicous, 2 mm long, side nerves 0.

Common along the banks of streams.

NS 11164 (Choodal)

Fl. & Fr. July-November

Dist. Indo-Malesia to Australia

Pycreus pumilus (L.) Nees, Linnaea 9: 283. 1835; Fl. Brit. India 6: 591. 1893; Fl. Madras 1627. 1931. *Cyperus pumilus* L., Cent. Pl. 2: 6. 1756.

Culms to 18 cm tall, slender, terete. Leaves up to 21 x 0.2 cm, serrulate. Umbel 4 x 6 cm spreading; bracts 4, unequal, longest 10-12 x 0.15 cm. Spikelets 1.2 x 0.3 cm, linear oblong. Glumes 1.5 x 1 mm, aristate, keeled, 1-nerved. Nut 0.6-0.4 mm, truncate, cuspidate, glabrous, dark brown.

Common in moist localities in moist deciduous forests.

NS 10558 (Kattalappara)

Fl. & Fr. August-February

Dist. India, Malesia & Australia

RHYNCHOSPORA Vahl

Rhynchospora corymbosa (L.) Britt., trans. new York Acad. Sci. 11: 84. 1892; Fl. Madras 1672. 1934. *Scirpus corymbosus* L., Cont. Pl. 2: 7. 1756. *Rhynchospora aurea* Vahl, Enum. Pl. 2: 229. 1806; Fl. Brit. India 6: 670. 1893.

Rhizome globose, covered with spongy leaf sheaths. Culms to 150 cm tall. Leaves 90 x 1.5 cm. Panicle 20-35 cm long. Partial panicle corymbose. Spikelets 7-8 X 2.5 mm, clustered, all sessile. Glumes 4, lower 3 sterile, uppermost one bisexual, 7.5 x 4 mm, shortly aristate, keeled with brown streaks. Anthers 2.5 mm long, apiculate. Style base 4.5 mm long, conical with longitudinal depression on either sides; hypogynous bristle 8, 4.5 mm long. Nut 3 x 1.5 mm, truncate, wringled with brown spots.

Common along the banks of streams.

NS 11165 (Choodal)

Fl. & Fr. Throughout the year

D i s t. Pantropic

SCLERIA Berg.

Scleria lithosperma (L.) Sw., Prod. Fl. Ind. Occid. 18. 1788; Fl. Brit. India 6: 685. 1894; Fl. Madras 1677. 1934; Fl. Thenmala 415. 1995.

Slender perennial. Culms to 80 cm tall, loosely tufted, 3-sided, smooth. Leaves to 40 x 0.4 cm, 3-costate, canaliculate; sheath tubular, wingless. Inflorescence of 3 or 4, distantly spaced loose panicle, to 35 cm long. Spikelets bisexual 2-3 together; florets unisexual. Staminate glumes lanceolate; stamen 1. Pistillate glumes ovate, mucronate. Achene obovoid, rounded at apex, smooth, shining, white.

Occasional in evergreen forests.

NS 10032 (Choodal); 10499 (Kattalappara)

Fl. & Fr. December-June

D i s t. Pantropical

POACEAE

- | | |
|---|---------------------------|
| 1. Stamens 6 or more, combined into a tube; tall climbing or erect shrubs | : 2 |
| 1. Stamens 3 or less, very rarely 6; but always free, herbs | : 3 |
| 2. Lemmas epaleate; stamens 16 or more | : Ochlandra |
| 2. Lemmas paleate; stamens 6 | : 4 |
| 3. Spikelets strictly 2-flowered, glumes deciduous | : 5 |
| 3. Spikelets 1-many flowered, glumes persistent | : 34 |
| 4. Culms and branches armed | : Bambusa |
| 4. Culms and branches unarmed | : Pseudotenanthera |
| 5. Spikelets dissimilar, usually paired and awned | : 6 |
| 5. Spikelets similar, usually solitary, awned or awnless | : 18 |

6. Spikelets in groups of 3, one sessile and two pedicelled; inflorescence always a panicle : 7
6. Spikelets solitary or paired; inflorescence a panicle or paired or digitate racemes : 8
7. One of the pedicelled spikelets reduced to a broad pedicel; panicle interrupted by spathes : **Apluda**
7. Both pedicelled spikelets developed; panicle not interrupted by spathes : **Chrysopogon**
8. Spikelets unisexual; female spikelets protected by a hard stony case : **Coix**
8. Spikelets bisexual; female spikelets not as above : 9
9. Inflorescence a solitary, digitate or subdigitate racemes : 10
9. Inflorescence a true panicle, contracted or effuse : 13
10. Spikelets awnless : 11
10. Spikelets awned : 12
11. Lower glume of the sessile spikelet rugose or pitted : **Hackelochloa**
11. Lower glume of sessile spikelet flat or smooth : **Rottboellia**
12. Racemes solitary; upper glume long awned : **Pogonatherum**
12. Racemes 2-15; upper glumes not awned, rarely bifid or aristate : **Ischaemum**
13. Joints and pedicels with transparent median line, upper lemma of sessile spikelets formed by the hyaline base of the awn : **Capillipedium**
13. Joints and pedicels opaque and solid; upper lemma of sessile spikelets well developed : 14
14. Panicles covered with long silky hairs; spikelets awnless : 15
14. Panicles not covered with long silky hairs; spikelets awned : 16
15. Both spikelets in each pair pedicelled; panicles contracted, cylindrical : **Imperata**
15. One spikelets in each pair pedicelled, other sessile, panicle effuse : **Saccharum**
16. Racemes with two pairs of sessile involucrel spikelets at base : **Themeda**
16. Racemes without such involucrel spikelets : 17
17. Racemes paired; aromatic grass : **Cymbopogon**
17. Racemes not paired; not aromatic grasses : **Pseudanthistiria**
18. Spikelets awned or aristate : 19
18. Spikelets awnless and not aristate : 21
19. Inflorescence a panicle; spikelets covered by long silky hairs : **Rhynchelytrum**
19. Inflorescence of few racemes arranged digitately or along a central axis : 20
20. Lower glume awned; racemes arranged on an elongated axis; leaves oblique at base : **Oplismenus**
20. Lower glume not awned; racemes digitate; leaves not oblique at base : **Alloteropsis**
21. Spikelets supported by 1-few bristles : 22
21. Spikelets not supported by bristles : 24

22. Bristles persistent; inflorescence paniculate	: Setaria
22. Bristles falling along with spikelets; inflorescence a solitary raceme	: 23
23. Bristles spiny, hard, connate basally into a cup	: Cenchrus
23. Bristles not spiny, not connate basally	: Pennisetum
24. Inflorescence a true panicle, never spiciform	: 25
24. Inflorescence a spiciform panicle or racemes, digitate, subdigitate or scattered on a central axis	: 29
25. Upper lemma of sessile spikelet apiculate; axis and branches of inflorescence with glassy bristles	: Urochloa
25. Upper lemma of sessile spikelets not apiculate; axis and branches of inflorescence not as above	: 26
26. Spikelets gibbous and laterally compressed	: Cyrtococcum
26. Spikelets not gibbous and not laterally compressed	: 27
27. Lower glume absent or reduced into a small scale	: 28
27. Lower glume present, not reduced to a minute scale	: Panicum
28. Spikelets with an annular callus at base; inflorescence a true panicle	: Eriochloa
28. Spikelets without an annular callus at base; inflorescence a panicle of racemes	: Digitaria
29. Lower glume absent or reduced to a minute scale	: 30
29. Lower glume present and not reduced to a minute scale	: 31
30. Culms stoloniferous; lower glume absent	: Axonopus
30. Culms not stoloniferous; lower glume reduced to a minute scale	: Paspalum
31. Inflorescence cylindrical spiciform panicles	: Sacciolepis
31. Inflorescence of few racemes arranged on a central axis	: 32
32. Spikelets crowded in the racemes in 3-4 rows	: Echinochloa
32. Spikelets in the raceme in 1 or 2 rows	: 33
33. Lower glume turned towards the axis or spikelets adaxial	: Brachiaria
33. Lower glume turned away from the axis or spikelets abaxial	: Paspalidium
34. Leaves tassellately nerved	: 35
34. Leaves not tassellately nerved	: 37
35. Spikelets unisexual; grains protected by utricles	: Leptaspis
35. Spikelets bisexual; grains not protected by utricles	: 36
36. Stigma retroseely barbed	: Streptogyna
36. Stigma not retroseely barbed	: Centotheca
37. Inflorescence a panicle	: 38
37. Inflorescence of solitary, digitate or subdigitate racemes	: 45
38. Spikelets with one floret	: 39
38. Spikelets with 2-many florets	: 42

39. Stamens 6; lemmas 5 times or more longer than glumes	: <i>Oryza</i>
39. Stamens 1-3; lemmas as long as or not more than two times the length of glumes	: 40
40. Spikelets awned	: 41
40. Spikelets awnless	: <i>Sporobolus</i>
41. Awns trifid	: <i>Aristida</i>
41. Awns simple	: <i>Garnotia</i>
42. Paleas 2-keeled; spikelets with more than 2 florets	: <i>Eragrostis</i>
42. Paleas not 2-keeled; spikelets with 2-florets	: 43
43. Spikelets globose, awnless; glumes equal, orbicular, obtuse	: <i>Isachne</i>
43. Spikelets lanceolate, awned; glumes ovate-acuminate	: 44
44. Panicle lax, not spiciform	: <i>Arundinella</i>
44. Panicle contracted, spiciform	: <i>Jansenella</i>
45. Spikelets 1-flowered	: 46
45. Spikelets 2-many flowered	: 47
46. Inflorescence 3-15 digitate racemes; spikelets awnless	: <i>Cynodon</i>
46. Inflorescence a solitary raceme; spikelets with long capillary awn	: <i>Perotis</i>
47. All lemmas of spikelets fertile, spikelets awnless	: 48
47. All lemmas of spikelets not fertile, upper ones reduced to awns or sterile	: <i>Chloris</i>
48. Rachis of racemes ending in a spikelet; lemmas not aristate	: <i>Eleusine</i>
48. Rachis of racemes ending in a sharp point; lemmas aristate	: <i>Dactyloctenium</i>

ALLOTEROPSIS J. S. Presl ex C. B. Presl

Alloteropsis cimicina (L.) Stapf in Prain, Fl. Trop. Afr. 9: 487. 1919; Fl. Madras 1766. 1934; Fl. Kerala Grass. 214. 1991; Fl. Thenmala 444. 1995. *Milium cimicinum* L., Mant. Pl. 2: 184. 1771. *Axonopus cimicinus* (L.) P. Beauv., Ess. Agrost. 154: 167. 1812; Fl. Brit. India 7: 64. 1896.

Culms to 50 cm long, nodes hairy. Leaves ovate-lanceolate, base rounded or cordate with bulbous based hairs along margin; sheaths densely hairy. Panicles to 15 cm long; spikelets broadly elliptic, 3-4 mm long; greenish-purple.

Fairly common in disturbed moist deciduous forests.

NS 11112 (Kattalappara)

Fl. & Fr. July-November

D i s t. Indo-Malesia to Australia and Tropical Africa

APLUDA L.

Apluda mutica L., Sp. Pl. 82. 1753; Fl. Madras 1750. 1934; Bor, Grass. Ind. 93, t. 7. 1960; Fl. Kerala Grass. 32. 1991; Fl. Thenmala 455. 1995. *A. aristata* L., Amoen. Acad. 4. 303.

1756; Fl. Madras 1750. 1934. *A. varia* Hack. in DC., Mong. Phan. 6: 196. 1889; Fl. Brit. India 7: 150. 1896.

Culms to 1.5 m tall, decumbent. Leaves lanceolate or elliptic-lanceolate, to 20 x 1 cm, glabrous except the nerves; shortly petiolate; ligule to 2 mm long. Panicle to 30 cm long; spathe broadly ovate, caudate-acuminate, greenish-purple, to 6 x 3 mm. Spikelets ca. 6 mm long; awn 1-1.2 cm long, glabrous.

Fairly common in moist deciduous forests.

NS 11132 (Kattalappara)

Fl. & Fr. October-February

Dist. Indo-Malesia

ARISTIDA L.

Aristida setacea Retz., Obs. Bot. 4: 22. 1786; Fl. Brit. India 7: 225. 1896; Fl. Madras 1809. 1934; Fl. Kerala Grass. 328. 1991; Fl. Thenmala 431. 1995.

Perennials, culms tufted about 1 m high. Leaves linear-lanceolate, acuminate; base rounded, to 25 x 0.4 cm. Inflorescence contracted panicles. Spikelets lanceolate, 10-15 mm long. Lower glume aristate.

Fairly common in moist deciduous forests.

NS 11129 (Kattalappara)

Fl. & Fr. Throughout the year

Dist. Indo-Malesia

ARUNDINELLA Rad.

Arundinella leptochloa (Nees ex Steud.) Hook. f., Fl. Brit. India 7: 76. 1896; Fl. Madras 1802. 1934; Bor, Grass. Ind. 423. 1960; Fl. Kerala Grass. 336. 1991. *Panicum leptochloa* Nees ex Steud., Syn. Pl. Glum. 1: 62. 1854. *Arundinella lawsonii* Hook. f., Fl. Brit. India 7: 76. 1896.

Perennials, culms about 1 m tall, erect, nodes glabrous. Leaves linear-lanceolate, acuminate, base subcordate, sparsely hairy, to 25 x 1 cm; sheath sparsely tubercle-based hairy. Panicle to 2 cm long spikelets, bifarious, elliptic-lanceolate, 3-4 mm long.

Fairly common in grasslands.

NS 11073 (Rosemala)

Fl. & Fr. October-December

Dist. South West India : endemic

AXONOPUS P. Beauv.

Axonopus compressus (Sw.) P. Beauv., Ess. Agrost. 12: 154. 1812; Fl. Kerala Grass. 216. 1991.

Perennials, culms stoloniferous, matforming. Leaves oblong, acute or rounded at apex, base shallowly cordate, to 2.5 x 1 cm. Racemes 2-6; spikelets 2-flowered. Lower glume absent.

Common in disturbed forest areas.

NS 11030 (Rosemala); 11116 (Kattalappara)

Fl. & Fr. Throughout the year

D i s t. Native of Tropical America, introduced to many tropical Asian countries

BAMBUSA Schreb. *nom. cons.*

Bambusa bambos (L.) Voss in Vilmorin, *Blumengartnerei* 1: 1189. 1896; Mc Lure, *Blumea* (Suppl.) 3: 39. 1946; Nicols. *et al.*, *Interp. Hort. Malab.* 306. 1988; *Fl. Thenmala* 429. 1995. *Arundo bambos* L., *Sp. Pl.* 81. 1753. *Bambusa arundinacea* (Retz.) Willd., *Sp. Pl.* 2: 245. 1799; *Fl. Brit. India* 7: 395. 1896; *Fl. Madras* 1859. 1934.

Culms thorny, to 30 m tall and 10 cm across at base; nodes prominent; internodes hollow. Culm sheaths to 30 x 25 cm, hairy outside. Leaves linear-lanceolate, acuminate, base rounded, slightly oblique, glabrous above and glabrescent below; petiole 2 mm long, swollen, sheath ciliate when young.

Occasional in moist deciduous forests.

Fl. & Fr. This species has not flowered during the study period

D i s t. India, Sri Lanka and Burma

BRACHIARIA (Trin.) Griseb.

1. Spikelets 1-2 mm long, paired

: *B. reptans*

1. Spikelets 3-4 mm long, solitary

: *B. miliiformis*

Brachiaria miliiformis (J. S. Presl ex C. B. Presl) A. Chase, *Contrib. U. S. Nat. Herb.* 22: 35. 1920; *Fl. Madras* 1769. 1934; *Fl. Kerala Grass.* 220. 1991. *Panicum miliiforme* J. S. Presl ex C. B. Presl, *Rel. Haenk.* 1: 300. 1830. *P. distachyon* sensu Hook. f., *Fl. Brit. India* 7: 37. 1896, non L. 1771.

Culms to 50 cm long, decumbent, rooting at lower nodes, nodes glabrous. Leaves linear-lanceolate, base rounded, to 10 x 1 cm; sheath glabrous, ciliate along margins. Racemes 3-8, to 6 cm long. Spikelets elliptic-obovate, apiculate. Lower glume 9-11 nerved.

Occasional in disturbed moist deciduous forests and along banks of reservoir.

NS 11144 (Kattalappara)

Fl. & Fr. July-October

D i s t. Indo-Malesia

Brachiaria reptans (L.) Gard. & Hubb. in Hook., *lc. Pl. Subtab.* 3363. 1938; *Fl. Kerala Grass.* 224. 1991. *Panicum reptans* L., *Syst. Nat.* (ed. 10) 870. 1759. *P. javanicum* sensu

Hook. f., Fl. Brit. Ind. 7: 35. 1896, non Poir. 1816. *Urochloa reptans* (L.) Stapf in Oliver, Fl. Trop. Africa 9: 610. 1920; Fl. Madras 1775. 1934.

Culms slender, to 40 cm, decumbent, rooting at lower nodes, nodes glabrescent or sparsely hairy. Leaves lanceolate, base shortly auricled, to 6 x 1 cm; sheath glabrous except the ciliate mouth. Rachis flattened; racemes 3-5, 4-5 cm long; spikelets elliptic, acute. Lower glume 1-3 nerved.

Occasional in disturbed moist deciduous forests.

NS 10508 (Kattalappara)

Fl. & Fr. July-November

D i s t. Indo-Malaya

CAPILLIPEDIUM Stapf

Capillipedium assimile (Steud.) A. Camus in Lecomte, Fl. Gen. Indo-China 7: 314. 1922; Fl. Kerala Grass. 55. 1991. *Andropogon assimile* Steud. in Zoll., Syst. Verz. 58. 1854 & Syn. Pl. Glum. 1: 397. 1854; Fl. Brit. India 7: 179. 1896. *Capillipedium glaucopsis* (Steud.) Stapf, in Hook., Ic. Pl. 31: t. 3085. 1922; Fl. Madras 1730. 1934. *Capillipedium huegellii* (Hack.) Stapf in Hook., Ic. Pl. 31: t. 3085. 1922; Fl. Madras 1730. 1934.

Culms to 60 cm tall, subscandent, nodes glabrous. Leaves linear-lanceolate, to 20 x 1 cm, glabrous, with mild aromatic smell; ligule ovate, membranous. Panicle to 12 cm long; joints of racemes villous. Sessile spikelets ovate-oblong, callus bearded, 3-4 mm long. Awn to 1.5 cm long. Lodicules obovate, 2-horned at apex.

Occasional in grasslands and moist deciduous forests

NS 11147 (Choodal); 11273 (Rosemala)

Fl. & Fr. October-November

D i s t. Peninsular India : endemic

CENCHRUS L.

Cenchrus biflorus Roxb., Fl. India 1: 238. 1820; Bor, Grass. India 287. 1960. *Cenchrus barbatus* Schum., Beskr. Gun. Pl. 43. 1827; Fl. Madras 1794. 1934.

Annual or perennials 40-50 cm high. Leaves 10-20 x 0.5 cm, lanceolate, glabrous. Raceme solitary, 5-8 cm long. Spikelets sessile, covered with sharp involucre bristles; Lower glume absent.; Florets 2; lower barren; upper bisexual; lemmas 4.5 x 2 mm, acute, awnless.

Rare in moist deciduous forests.

NS 10901 (Rosemala)

Fl. & Fr. October-January

D i s t. India

CENTOTHECA Desv.

Centotheca lappacea (L.) Desv., Nouv. Bull. Soc. Philom. 2: 189. 1810; Fl. Brit. India 7: 332. 1896; Fl. Madras 1848. 1934; Fl. Kerala Grass. 354. 1991; Fl. Thenmala 431. 1995.
Cenchrus lappaceus L., Sp. Pl. (ed. 2) 1488. 1763.

Culms to 75 cm tall, nodes glabrous. Leaves ovate or elliptic-lanceolate, acute or acuminate, base oblique, to 16 x 3 cm; ligule membranous. Panicle to 20 cm long, lax; spikelets oblong or elliptic, 5-7 mm long, 2-3 flowered.

Fairly common in semi-evergreen and evergreen forests.

NS 10670, 10071 (Kallar)

Fl. & Fr. October-January

Dist. Paletropics

CHLORIS Sw.

- | | |
|--|----------------------------|
| 1. Sterile lemma reduced in to a bristle | : <i>C. dolichostachya</i> |
| 1. Sterile lemma developed, awned | : <i>C. barbata</i> |

Chloris barbata Sw., Fl. India Occ. 1: 200. 1797; Fl. Brit. India 7: 292. 1896; Fl. Madras 1838. 1934; Fl. Kerala Grass. 357. 1991; Fl. Thenmala 436. 1995.

Culms tufted, 10-40 cm high. Leaves 5-15 x 0.6 cm, glabrous. Spikelets 3-4 mm long, obovate, truncate; glumes acute 1-nerved. Lower floret bisexual, upper barren; lemma obovate 3-nerved; awn 5-6 mm long.

Frequent in disturbed moist deciduous forests.

NS 11489 (Rosemala)

Fl. Throughout the year

Dist. South-East Asia

Chloris dolichostachya Lagasca, Gen. Sp. Pl. 5. 1816; Fl. Thenmala 435. 1995. *C. incompleta* Roth, Nov. Pl. Sp. 60. 1821; Fl. Brit. India 7: 290. 1896; Fl. Madras 1938. 1934.

Culms to 1 m long, nodes glabrous. Leaves linear-lanceolate, acuminate, base rounded, to 25 x 0.6 cm; ligules truncate, membranous. Spikes digitate, elongate; spikelets two flowered, lanceolate, 4-5 mm long. Callus bearded.

Occasional in moist deciduous and semi-evergreen forests.

NS 11310 (Rosemala); 11146 (Choodal)

Fl. & Fr. November-December

Dist. South-East Asia and China

CHRYSOPOGON Trin. *nom. cons.*

1. Pedicels half as long as the spikelet or longer; culms under 30 cm long : *C. aciculatus*

1. Pedicels less than half of the length of the spikelet; culms to 2 m tall : *C. hackellii*

Chrysopogon aciculatus (Retz.) Trin., Fund. Agrost. 188. 1820; Fl. Madras 1738. 1934; Fl. Kerala Grass. 59. 1991. *Andropogon aciculatus* Retz., Obs. Bot. 5: 22. 1789; Fl. Brit. India 7: 188. 1896.

Root stock rhizomatous, dense, creeping. Leaves oblong, acute, scabrid along margin, to 6 x 0.5 cm; ligule anular, minute. Panicles contracted, to 10 cm long; sessile spikelets lanceolate, 3-4 mm long. Lower glume 2-dentate at apex; awn to 0.6 cm long. Pedicelled spikelet lanceolate, 4-5 mm long, mucicous.

Common in disturbed areas, often along roadsides.

NS 11452 (Kattalappara)

Fl. & Fr. June-October

D i s t. Paletropics

Chrysopogon hackellii (Hook. f.) Fischer in Gamble, Fl. Madras 1739. 1934; Fl. Kerala Grass. 62. 1991; Fl. Thenmala 450. 1995. *Andropogon hackellii* Hook. f., Fl. Brit. India 7: 194. 1896.

Perennials, culms to 2 m tall, erect; nodes softly villous or glabrous. Leaves linear-lanceolate, acuminate, base truncate, glabrous; ligule hairy. Panicle to 20 cm long, lax. Sessile spikelets oblong, 5-6 mm long, arista a lower glume 5-7 mm long, awn of lemma 2-2.5 cm long. Pedicelled spikelets 5-6 mm long; pedicels 2 mm long.

Common in grassy patches along hillocks.

NS 10676 (Kallar); 11100 (Kattalappara)

Fl. & Fr. October-January

D i s t. South India : endemic

COIX L.

Coix lacryma-jobi L., Sp. Pl. 972. 1753; Fl. Brit. India 7: 100. 1896; Fl. Madras 1705. 1934; Fl. Kerala Grass. 207. 1991.

Culms to 1 m tall, nodes glabrous. Leaves linear-lanceolate, to 35 x 3 cm; ligules ovate, membranous. Spikes to 5 cm long. Male spikelets 1 cm long. Caryopsis subglobose, furrowed in the middle, greyish-white, 6-8 mm long.

Occasional in disturbed forests in marshy areas.

NS 10813 (Rosemala)

Fl. & Fr. October-April

D i s t. Tropical Asia

CYMBOPOGON Spreng.

1. Lower glume with a long slit on dorsal surface : *C. caesius*
1. Lower glume without slit on dorsal surface. : *C. flexuosus*

Cymbopogon caesius Stapf, Kew Bull. 1906: 360. 1906; Fl. Madras 1757. 1934; Bor. Grass. India 125. 1960; Fl. Kerala Grass. 69. 1991.

Culms 30-80 cm high. Leaves lanceolate, 16-25 x 0.5 cm, glaucous, rounded at base. Panicles contracted; racemes 1.5 cm long. Sessile spikelets 4 mm long, lanceolate, brown coloured; lower glume 2-winged at apex; upper glume winged along the keel; second lemma notched at apex; awn to 14 mm long.

Rare in moist deciduous forests.

NS 11105 (Karadippara)

Fl. & Fr. November-January

D i s t. India and North-East Africa

Cymbopogon flexuosus (Nees ex Steud.) Wats. in Atkins, Gaz N. W. Prov. Ind. 392. 1882; Fl. Madras 1756. 1934; Bor. Grass. Ind. 127. 1960; Fl. Kerala Grass. 71. 1991. *Andropogon flexuosus* Nees ex Steud., Syn. Pl. Glum. 1: 388. 1854. *A. nardus* L. ssp. *flexuosus* (Nees ex Steud.) Hack. in DC., Monogr. Phan. 6: 603. 1889; Fl. Brit. India 7:207. 1896.

Culms to 2 m tall, nodes glabrous. Leaves linear, base rounded, to 40 x 1.2 cm. Panicles to 40 cm long; joints of racemes densely villous. Sessile spikelets elliptic-lanceolate, 4-5 mm long; lower glume not grooved; awn about 1 cm long. Pedicelled spikelets lanceolate, 3-4 mm long, pedicels 2 mm long, densely hairy.

Common in grasslands.

NS 11490 (Thenmala)

Fl. & Fr. November-January

D i s t. Indo-Malesia

CYNODON L. C. Rich. *nom. cons.*

Cynodon dactylon (L.) Pers., Syn. Pl. 1: 85. 1805; Fl. Brit. India 7: 288. 1896; Fl. Madras 1835. 1934; Fl. Kerala Grass. 360. 1991. *Panicum dactylon* L., Sp. Pl. 58. 1753.

Culms slender, to 20 cm tall, nodes glabrous. Leaves linear, acuminate, glaucous, to 7 x 0.3 cm; sheaths keeled, ligules hairy. Racemes 3-6, to 5 cm long. Spikelets oblong, 2.5 mm long.

Fairly common in open rocky areas in moist deciduous forests and forest plantations.

NS 11124 (Kattalappara)

Fl. & Fr. August-November

D i s t. Cosmopolitan

CYRTOCOCCUM Stapf

- | | |
|--|------------------------|
| 1. Glume with glochidiate hairs | : <i>C. muricatum</i> |
| 1. Glumes glabrous | : 2 |
| 2. Panicles contored, pedicels under 1 cm long | : <i>C. oxyphyllum</i> |
| 2. Panicles lax, pedicels over 1 cm long | : <i>C. longipes</i> |

Cyrtococcum longipes (Wt. & Arn. ex Hook. f.) A. Camus, Bull. Mus. Hist. Nat. Paris 27: 118. 1921; Fl. Madras 1786. 1934; Fl. Kerala Grass. 229. 1991; Fl. Thenmala 441. 1995.

Panicum longipes Wt. & Arn. ex Hook. f., Fl. Brit. India 7: 58. 1896.

Culms 50-120 cm long, trailing. Leaves 10-20 x 1.5 cm, lanceolate, glabrous. Panicle drooping. Spikelets 2 x 1 mm; glumes subequal 1.5 x 1 mm; lemma 3-nerved; palea oblong.

Common in evergreen forests.

NS 10146 (Kattalappara); 10284 (Charupara)

Fl. & Fr. November-March

D i s t. Southern W. Ghats : endemic

Cyrtococcum muricatum (Retz.) Bor, Grass. India 291. 1960; Fl. Kerala Grass. 230. 1991.

Panicum muricatum Retz., Obs. Bot. 4: 18. 1786.

Culms to 30 cm high, nodes glabrous. Leaves 5 x 1 cm, hairy below. Panicle 10-20 cm long. Spikelets 4 x 2 mm; lower glume cuspidate; upper glume glochidiate hairy.

Common in semi-evergreen forests.

NS 11200 (Rosemala); 10072 (Kallar)

Fl. & Fr. November-January

D i s t. South-East Asia

Cyrtococcum oxyphyllum (Steud.) Stapf in Hook., Ic. Pl. Subtab. 3096. 1926; Fl. Madras 1786. 1934; Fl. Kerala Grass. 231. 1991; Fl. Thenmala 441. 1995. *Panicum oxyphyllum* Steud., Syn. Pl. Glum. 1: 165. 1854. *P. pilipes* Nees & Arn. ex Buesc in Miq., Pl. Junghn. 3: 376. 1854; Fl. Brit. India 7: 57. 1896.

Culms creeping below and ascending, to 40 cm, nodes glabrous. Leaves lanceolate, to 15 x 1.2 cm; sheath shortly hairy; ligule ovate-acute. Panicles to 15 cm long, congested. Spikelets obovate, 1.5-2 mm long; shortly pedicelled. Lower floret empty.

Common in semi-evergreen and evergreen forests.

NS 10658 (Kallar); 11283 (Rosemala)

Fl. & Fr. August-March

D i s t. Indo-Malesia and China

DACTYLOCTENIUM Willd.

Dactyloctenium aegyptium (L.) P. Beauv., Ess. Agrost. 15. 1812; Fl. Madras 1840. 1934; Fl. Kerala Grass. 367. 1991. *Cynosurus aegyptius* L., Sp. Pl. 72.1753. *Eleusine aegyptiaca* (L.) Desf., Fl. Atlant. 1: 85. 1798; Fl. Brit. India 17: 295. 1896.

Culms to 40 cm tall, nodes glabrous, rooting at lower nodes. Leaves to 15 x 0.5 cm. Sheaths keeled; ligules ovate, fimbriate. Spikes 2-5, to 5 cm long. Spikelets ovate, 3-4 mm long.

Occasional in forest plantations and in disturbed moist deciduous forests.

NS 11189 (Kattalappara)

Fl. & Fr. September-October

D i s t. Paleotropics

DIGITARIA Heist. ex Fabricus

Digitaria ciliaris (Retz.) Koel., Descr. Gram. 27. 1802; Fl. Kerala Grass. 237. 1991; Fl. Thenmala 443. 1995. *Panicum ciliare* Retz., Obs. Bot. 4: 16. 1786. *Paspalum sanguinale* (L.) Lamk. var. *rotleri* Hook. f., Fl. Brit. India 7: 15. 1896, p.p. *Digitaria marginata* Link, Enum. Hort. Berol. 1: 102. 1821; Fl. Madras 1764. 1934. *D. adscendens* (H. B. K.) Henr., Blumea 1: 92. 1934; Bor, Grass. Ind. 298. 1960.

Culms to 70 cm long, tufted, erect or decumbent, nodes glabrous. Leaves linear-lanceolate, base truncate, to 15 x 1 cm; ligule ciliate. Racemes to 10, subdigitate, each to 15 cm long. Rachis winged, wings aristate. Spikelets similar, elliptic or elliptic-lanceolate. Pedicels triquetrous, scabrid along the angles, 1.5-2 mm long. Glumes pubescent. Lemma silky pubescent.

Common in disturbed forests.

NS 11491 (Rosemala)

Fl. & Fr. July-November

D i s t. Paleotropics.

ECHINOCHLOA P. Beauv.

Echinochloa colona (L.) Link, Hort. Berol. 2: 209. 1833; Fl. Madras 1776. 1934; Fl. Kerala Grass. 245. 1991; Fl. Thenmala 446. 1995. *Panicum colonum* L., Syst. Nat. (ed. 10) 2: 870. 1759; Fl. Brit. India 7: 32. 1896.

Annuals, culms tufted, to 70 cm tall; nodes glabrous. Leaves linear-lanceolate, rounded or subcordate at base, to 20 x 0.5 cm; ligule 0. Panicle spiciform, to 15 cm long; racemes 5-10. Spikelets ovate, 3 mm long, sparsely hispid.

Occasional in water-logged areas in moist deciduous forests.

NS 10572 (Kallar)

Fl. & Fr. August-November

D i s t. Paleotropics

ELEUSINE Gaertn.

Eleusine indica (L.) Gaertn., Fruct. 1: 8. 1789; Fl. Brit. India 7: 293. 1896; Fl. Madras 1839. 1994; Fl. Kerala Grass. 371. 1991; Fl. Thenmala 415. 1995. *Cynosurus indicus* L., Sp. Pl. 72. 1753.

Culms to 50 cm tall, nodes glabrous. Leaves linear-lanceolate, often folded, rounded at bases, to 30 x 0.6 cm. Spikes whorled and digitate, to 6 at whorls, to 15 cm long. Spikelets ovate-oblong, 5 mm long.

Fairly common in moist deciduous forest, often in disturbed areas.

NS 10441 (Kattalappara)

Fl. & Fr. July-November

D i s t. Paletropics

ERAGROSTIS Wolf

- | | |
|---|------------------------|
| 1. Spikelets breaking up from apex at maturity | : 2 |
| 1. Spikelets breaking up from base at maturity | : 3 |
| 2. Panicle over 30 cm long; culms below panicles glabrous | : <i>E. japonica</i> |
| 2. Panicle under 20 cm long; culms below panicles viscous, sticky | : <i>E. viscosa</i> |
| 3. Spikelets under 2.5 mm wide; lemmas greyish-green | : <i>E. atrovirens</i> |
| 3. Spikelets over 2.5 mm wide; lemmas tinged with pink or purple | : <i>E. unioloides</i> |

Eragrostis atrovirens (Desf.) Trin. ex Steud., Nom. Bot. (ed. 2) 1: 562. 1840; Fl. Kerala Grass. 377. 1991. *Poa atrovirens* Desf., Fl. Atlant. 1: 73, t. 14. 1798.

Perennials, culms to 1 m tall, erect; nodes glabrous. Leaves linear lanceolate, base rounded, to 20 x 0.7 cm. Panicles lax, to 25 cm long. Spikelets ovate-oblong, 2-3 mm wide.

Fairly common along banks of rivers and streams.

NS 10269, 11386 (Pandimotta)

Fl. & Fr. July-November

D i s t. Indo-Malesia and Africa

Eragrostis japonica (Thunb.) Trin., Mem. Acad. Sci. Petersburg (ser. 6) 1: 405. 1830; Fl. Kerala Grass. 382. 1991; Fl. Thenmala 434. 1995. *Poa japonica* Thunb., Fl. Jap. 51. 1784. *Eragrostis diarrhena* (Schult.) Steud., Syn. Pl. Glum. 1: 266. 1854; Fl. Madras 1826. 1934. *E. interrupta* auct. non P. Beauv. var. *tenuissima* Stapf in Hook. f., Fl. Brit. India 7: 316. 1896, incl. vars.

Culms stout, tufted, to 75 cm tall, nodes glabrous. Leaves linear-lanceolate, base subcordate, to 25 x 0.5 cm; sheaths keeled. Panicles linear, to 40 cm long, branches verticillate or subverticillate. Spikelets oblong, to 2 x 0.7 mm.

Occasional in moist deciduous forests, often in open areas.

NS 10875 (Umiyar); 11341 (Rosemala)

Fl. & Fr. November-January

D i s t. Indo-Malesia to Australia and S. Africa

Eragrostis unioloides (Retz.) Nees ex Steud., Syn. Pl. Glum. 1: 264. 1854; Fl. Madras 1826. 1934; Fl. Kerala Grass. 392. 1991; Fl. Thenmala 433. 1995. *Poa unioloides* Retz., Obs. Bot. 5: 19. 1789. *Eragrostis amabilis* auct. non Wt. & Arn. ex Nees 1838, Fl. Brit. India 7: 317. 1896.

Culms tufted, to 40 cm tall, nodes glabrous. Leaves lanceolate, to 15 x 0.5 cm. Panicles to 15 cm long, spreading. Spikelets broadly ovate or oblong, 0.5-1 x 2-3.5 mm; pedicels to 1 cm long.

Fairly common in disturbed forest areas.

NS 10692, 11120 (Kattalappara)

Fl. & Fr. July-November

D i s t. Paleotropics

Eragrostis viscosa (Retz.) Trin. in Mem. Sci. Petersb. Ser. 6. 397. 1830; Fl. Madras 1826. 1934. Fl. Kerala Grass. 393. 1991; Fl. Thenmala 434. 1995. *Poa viscosa* Retz. Obs. Bot. 4: 20. 1786. *Eragrostis tenella* (Linn.) P. Beauv. ex Roem. & Schult. var. *viscosa* (Retz.) Stapf in Hook. f., Fl. Brit. India 7: 315. 1896.

Culms tufted, nodes glabrous. Leaves lanceolate, acuminate, base rounded, to 6 x 0.3 cm; ligules fimbriate. Panicles to 8 cm long; spikelets 1 mm broad, 4-8 flowered.

Common along road sides and disturbed forests.

NS 11122 (Kattalappara)

Fl. & Fr. Throughout the year

D i s t. India and South Africa

ERIOCHLOA Kunth

Eriochloa procera (Retz.) C. E. Hubb., in Kew Bull. 256. 1930; Fl. Madras 1767. 1934; Fl. Kerala Grass. 251. 1991; Fl. Thenmala 446. 1995. *Agrostis procera* Retz. Obs. Bot. 4: 19. 1786.

Culms 30-70 cm high. Leaves lanceolate, rounded at base, 15-20 x 0.6 cm; ligule a tuft of hairs. Panicle 10-15 cm long, lax. Spikelets 3 mm long, lanceolate, pubescent; lower glume formed into an annular callus; first lemma lanceolate, 5-nerved, hairy, epaleate; second lemma obtuse, mucronate; palea oblong, crustaceous.

Common in semi-evergreen forests.

NS 11299 (Rosemala)

Fl. & Fr. November-February

D i s t. South-east Asia and Tropical Africa

GARNOTIA Brongn.

Garnotia tenella (Arn. ex Miq.) Janowsky, Feddes Repert. 17: 86. 1921; Fl. Kerala Grass. 413. 1991. *Berghausia tenella* Arn. ex Miq., Verh. Konink. Nederl. 3(4): 34. 1851. *Garnotia stricta* auct. non Brongn. 1832, Fl. Brit. India 7: 243. 1896; Fl. Madras 1812. 1934.

Culms to 40 cm tall, nodes villous. Leaves to 18 x 1 cm; sheaths slightly keeled. Panicles to 20 cm long, lax towards base and contracted towards apex. Spikelets paired, lanceolate, 3-4 mm long; pedicels 1 mm long.

Occasional in semi-evergreen and moist deciduous forests.

NS 10657 (Kallar)

Fl. & Fr. August-December

D i s t. Indo-Malaya

HACKELOCHLOA O. Ktze.

Hackelochloa granularis (L.) O. Ktze., Rev. Gen. Pl. 2: 776. 1891; Fl. Madras 1758. 1934; Fl. Kerala Grass. 111. 1991. *Cenchrus granularis* L., Mant. Pl. 2: 575. 1771. *Manisuris granularis* (L.) L. f., Nov. Gram. Gen. 40. 1779; Fl. Brit. India 7: 150. 1896.

Culms erect, to 40 cm long, nodes hairy. Leaves oblong-lanceolate, acute, base rounded, hispid, to 15 x 1 cm. Racemes to 1.5 cm long, enclosed by a leafy spathe. Spikelet globose.

Occasional in semi-evergreen forests.

NS 10607, 11119 (Kattalappara)

Fl. & Fr. July-January

D i s t. Tropics

IMPERATA Cyrillo

Imperata cylindrica (L.) Raeusch., Nom. Bot. (ed. 3) 10. 1797; Fl. Kerala Grass. 114. 1991; Fl. Thenmala 448. 1995. *Lagurus cylindricus* L., Syst. Nat. (ed. 10) 878. 1759. *Imperata cylindrica* (L.) P. Beauv. var. *koenigii* Dur & Schiz., Consp. Flor. Afr. 5: 694. 1894; Fl. Madras 1707. 1934. *I. arundinacea* Cyrillo, Pl. Rar. Naep. 2: 26. 1792; Fl. Brit. India 7: 206. 1896, p.p.

Culms to 1 m tall, rhizomes scaly. Leaves linear-lanceolate, base narrowed, to 40 x 1.2 cm. Panicles to 20 cm long; spikelets 3-3.5 mm long, pedicels 1.5-2.5 cm long; lower lemma oblong-lanceolate; upper elliptic-lanceolate. Palea obovate.

Fairly common in open areas and roadsides in moist deciduous forests.

NS 10835 (Rosemala)

Fl. & Fr. March-July

D i s t. Paleotropics

ISACHNE R. Br.

Isachne globosa (Thunb.) O. Ktze., Rev. Gen. Pl. 2: 778. 1891; Fl. Kerala Grass. 421. 1991. *Millum globosum* Thunb., Fl. Japon. 49. 1874. *Isachne australis* R. Br., Prodr. Fl. Nov. Holl. 1: 196. 1810; Fl. Brit. India 7: 24. 1896.

Culms to 25 cm tall, ascending from a rhizomatous base; nodes glabrescent. Leaves oblong-lanceolate, base rounded, to 4 x 1.2 cm, sparsely hairy. Panicles a few, compact, to 7 cm long. Spikelets globose, 3 mm long. Glumes ovate-lanceolate; upper tubercled hairy along margins.

Occasional in moist deciduous forests.

NS 11113 (Kattalappara)

Fl. & Fr. October-December

D i s t. South India : endemic

ISCHAEMUM L.

1. Joints of racemes with a warty projection on inner side; glumes glabrous : *I. zeylanicum*

1. Joints of racemes without warty projection, glumes pilose : *I. timorense*

Ischaemum timorense Kunth, Rev. Gram. 1: 369, t. 98. 1830; Fl. Brit. India 7: 136. 1896, p.p.; Fl. Madras 1722. 1934; Fl. Kerala Grass. 164. 1991.

Perennials, culms stoloniferous, creeping below and rooting at nodes, to 60 cm long, nodes bearded. Leaves fascicled at nodes, lanceolate, to 10 x 0.7 cm. Racemes paired or solitary, to 4 cm long; joints turbinate, 2 mm long, hairy along the angles. Sessile spikelets, ovate-lanceolate, 3-4 mm long, awned. Lower glume bicuspidate; upper bifid at apex and aristate. Awn geniculate, 1-1.5 cm long. Pedicelled spikelets ovate-oblong, 3-4 mm long; pedicels turbinate, 2 mm long, ciliate.

Common in grassy patches in moist deciduous forests.

NS 11145 (Kattalappara)

Fl. & Fr. September-December

D i s t. Indo-Malesia

Ischaemum zeylanicum Bor, Grass. Bur. Cey. Ind. Pak. 186. 1960; Fl. Kerala Grass. 169. 1991. *I. timorense* sensu Hook. f., Fl. Brit. India 7: 136. 1896, p.p.

Culms to 50 cm long, base trailing, nodes glabrous. Leaves elliptic or elliptic-lanceolate, acuminate, base cuneate, shortly petioled. Racemes to 6 cm long; spikelets ovate-lanceolate, 4-5 mm long, calyx 1 mm long, sparsely bearded.

Fairly common in moist deciduous forests.

NS 10697 (Kattalappara)

Fl. & Fr. October-February

D i s t. Sri Lanka and South India

JANSENELLA Bor

Jansenella griffithiana (C. Muell.) Bor, Kew Bull. 9: 98. 1955; Fl. Kerala Grass. 348. 1991. *Danthonia griffithiana* C. Muell., Bot. Zeit. 14: 347. 1856. *Arundinella avenacea* Munro ex Thw., Enum. Pl. 362. 1864; Fl. Brit. India 7: 69. 1896; Fl. Madras 1801. 1934.

Culms slender, to 25 cm tall, nodes glabrous. Leaves to 7 x 1 cm, glabrescent. Spikelets elliptic-lanceolate, 6-7 mm long. Lower glumes tubercled hairy; awns 1-1.5 cm long.

Fairly common in grasslands.

NS 11426 (Alvarakurichi)

Fl. & Fr. October-December

D i s t. India, Burma and Sri Lanka

LEPTASPIS R. Br.

Leptaspis urceolata (Roxb.) R. Br. in Benn., Pl. Jav. Rar. 23. 1838; Fl. Brit. India 7: 95. 1896; Fl. Kerala Grass. 435. 1991; Fl. Thenmala 430. 1995. *Pharus urceolatus* Roxb., Fl. India 3: 611. 1832.

Culms 30-35 cm high, nodes glabrous. Leaves 15-25 x 4-5 cm, tassellatly nerved. Panicle 20 x 30 cm lax; branches radiating. Spikelets solitary, unisexual. Lemma absent. Palea linear-obovate. Styles 3; stigma 3, retrorsely barbed.

Rare in swamp forests.

NS 10034 (Empongpaccha)

Fl. & Fr. September-January

D i s t. Sri Lanka and South-East Asia

OCHLANDRA Thw.

Ochlandra travancorica Benth. ex Gamble, Ann. Roy. Bot. Gard. (Calcutta) 7: 125. t. 111. 1896 & Fl. Brit. India 7: 419. 1896; Fl. Madras 1863. 1934; Fl. Thenmala 428. 1995.

- | | |
|--|----------------------------|
| 1. Spikelets glabrous | : var. <i>travancorica</i> |
| 1. Spikelets densely brown velvety pubescent | : var. <i>hirsuta</i> |

var. *hirsuta* Gamble, Ann. Roy. Bot. Gard. Calcutta 7: 126. 1896 & Fl. Madras 1863. 1934; Camus, Les Bambusees 183. 1913; Varmah & Bahadur Indian For. Rec. (n. s) Bot. 6 (1): 4. 1980.

Culms to 6 m tall. Leaves lanceolate, acuminate, to 30 x 6 cm; culm sheath adpressed with black or brown bulbous based hairs; ligule with stiff bristles at the mouth. Stamens about 100, united at base into a tube; anthers linear-apiculate. Caryopsis ovoid-oblong, beaked, to 7 x 3.5 cm.

Grows gregariously along the hills.

Mukthesh Kumar 7216 (Pandimotta)

Fl. & Fr. The species flowered during 1991-1993.

Dist. Southern W. Ghats : endemic

var. *travancorica*

Culms to 5 m tall. Leaves oblong-lanceolate, glabrous, 20-40 x 5-10 cm; mouth of sheath with stiff bristles. Panicles spicate. Spikelets 5-6 cm long. Glumes 2-5, 5 cm long, mucronate. Lemmas 5 cm long, mucous. Stamens 20-30; filaments united into a tube; Style long; stigmas 4-6.

Common in evergreen forests.

NS 10196 (Choodal); 10334 (Kattalappara)

Fl. & Fr. November-May

Dist. South India : endemic

OPLISMENUS P. Beauv. *nom. cons.*

Oplismenus compositus (L.) P. Beauv., *Ess. Agrost.* 54: 168. 1812; *Fl. Brit. India* 7: 66. 1896; *Fl. Madras* 1778. 1934; *Fl. Kerala Grass.* 257. 1991; *Fl. Thenmala* 445. 1995. *Panicum compositum* L., *Sp. Pl.* 57. 1753.

Culms to 50 cm long, nodes glabrous or softly hairy. Leaves elliptic-lanceolate, acuminate, margins wavy, to 8 x 1.5 cm, hispid; sheaths tubercled hairy. Inflorescence to 18 cm long; rachis triquetrous. Spikelets paired, elliptic-lanceolate, 3-3.5 mm long, pedicels sparsely hairy.

Common in plantations and moist deciduous forests.

NS 10677 (Kattalappara)

Fl. & Fr. October-December

Dist. Paleotropics

ORYZA L.

Oryza meyeriana (Zoll. & Mor. ex Steud.) Baill. subsp. *granulata* (Nees & Arn. ex Watt) Tateoka, *Bot. Mag. (Tokyo)* 75: 460. 1962; *Fl. Kerala Grass.* 431. 1991; *Fl. Thenmala* 430. 1995. *O. granulata* Nees & Arn. ex Watt, *Dic. Econ. Prod. Ind.* 5: 500. 1891; *Fl. Brit. India* 7: 93. 1896. *O. meyeriana* Baill., *Hist. Pl.* 12. 160. 1894; *Fl. Madras* 1845. 1934.

Culms 40-90 cm high, erect. Leaves 10-25 x 1-2 cm, sheath with long hairs at mouth, ligule 1-3 mm long. Panicle 5-10 cm long; branches angled, smooth. Spikelets 5-6 x 2.5 mm; glumes similar, reduced to very minute scales; lemma 5 x 3.5 mm, broadly ovate, granulate crustaceous; palea 5 x 2 mm, oblong.

Common along moist deciduous and semi-evergreen forests.

NS 11111 (Kattalappara)

Fl. & Fr. November-January

Dist. South-east Asia

PANICUM L.

- | | |
|--|------------------|
| 1. Lemma transversely rugose; nodes bearded | : P. maximum |
| 1. Lemma smooth; nodes glabrous | : 2 |
| 2. Leaves broadly ovate, base amplexicaule; lower glume as long as the spikelets | : P. brevifolium |
| 2. Leaves linear-lanceolate; lower glumes smaller than the spikelets | : 3 |
| 3. Glumes subequal; spikelets 2-2.5 mm long | : P. notatum |
| 3. Glumes unequal, lower less than half the length of upper; spikelets 3-4 mm long | : P. trypheron |

Panicum brevifolium L., Sp. Pl. 59. 1753; Fl. Madras 1783. 1934; Fl. Kerala Grass. 263. 1991. *P. ovalifolium* Poir. in Lamk., Encyl. (Suppl.) 4: 279. 1816; Fl. Brit. India 7: 44. 1896.

Annuals, culms to 60 cm tall, creeping at base. Leaves ovate, acute, base with few tubercled hairs, to 6 x 2.5 cm; sheath ciliate along one margin. Panicles pyramidal, to 10 cm long, branches alternate and fascicled. Spikelets ovate, slightly gibbous, 1.5-2 mm long. Pedicels 0.5-1 cm long. Lower glume sparsely hairy. Lower floret male.

Occasional in evergreen forests.

NS 10664 (Kallar)

Fl. & Fr. October-January

Dist. Paleotropics

Panicum maximum Jacq., Col. Bot. 1: 76. 1786; Fl. Brit. India 7: 49. 1896; Fl. Madras 1783. 1934; Fl. Kerala Grass. 266. 1991; Fl. Thenmala 442. 1995.

Culms 80-300 cm tall. Leaves 20-50 x 0.5-2 cm, glabrous. Panicle 10-40 cm long. Spikelets 3 x 1.5 mm, ovate; lower glume 1 x 1 mm, 3-nerved; upper glume, 2.5 x 1.5 mm, oblong, 5-nerved. Lower floret male, upper bisexual; first lemma 3 x 1.5 mm, 5-nerved, paleate; second lemma 2 x 1 mm, palea 2-keeled.

Common in grasslands.

NS 11031 (Rosemala)

Fl. & Fr. August-December

Dist. Tropics

Panicum notatum Retz., Obs. Bot. 4: 18. 1786; Fl. Kerala Grass. 267. 1991; Fl. Thenmala 442. 1995. *P. montanum* Roxb., Fl. Ind. 1: 315. 1820; Fl. Brit. India 7: 53. 1896; Fl. Madras 1783. 1934.

Perennials, culms erect, to 1.5 m tall, stout, nodes glabrous. Leaves lanceolate, acuminate, base subcordate, sparsely villous on both sides, to 20 x 2 cm, sheaths ciliolate along one margin. Panicle to 30 cm long, branches lax, spreading. Spikelets ovate-oblong. Pedicels to 1.5 cm long. Lower glume ovate-lanceolate, sparsely hairy. Lower floret empty.

Common in moist deciduous and semi-evergreen forests.

NS 10497 (Choodal); 10695 (Kattalappara)

Fl. & Fr. September-October

D i s t. Indo-Malaya

Panicum trypheron Schult., Syst. Veg. 2: 244. 1824; Fl. Brit. Ind. 7: 47. 1896; Fl. Madras 1783. 1934; Fl. Kerala Grass. 273. 1991.

Annuals, culms slender, to 60 cm tall, nodes glabrous. Leaves mostly towards base, linear-lanceolate, base subcordate, margin serrulate and ciliolate; sheath ciliolate along one margin. Panicles to 30 cm long, branches alternate and whorled, spreading. Spikelets elliptic or elliptic-lanceolate. Pedicels to 1.2 cm long, slender, scabrid. Lower glume broadly ovate, cuspidate-acuminate, glabrescent. Lower floret empty.

Occasional in moist deciduous and semi-evergreen forests.

NS 11123 (Kattalappara)

Fl. & Fr. August-November

D i s t. Indo-Malaya and China

PASPALIDIUM Stapf

Paspalidium flavidum (Retz.) A. Camus in Lecomte, Fl. Gen. Indo-China 7: 419. 1922; Fl. Madras 1774. 1934; Fl. Kerala Grass. 278. 1991. *Panicum flavidum* Retz., Obs. Bot. 4: 15. 1786; Fl. Brit. India 7: 28. 1896.

Culms tufted, decumbent. Leaves to 12 x 0.6 cm. Inflorescence to 20 cm long; racemes 5-8, each to 3 cm long; rachis narrowly winged. Spikelets ovate, gibbous; 1.5-2.5 mm long. Lower glume ovate-orbicular. Lower floret empty.

Occasional along the sides of water courses and Reservoir.

NS 10521 (Kattalappara)

Fl. & Fr. January-October

D i s t. Tropical Asia

PASPALUM L.

- | | |
|--|---------------------------|
| 1. Upper glume white ciliate along margins | : <i>P. conjugatum</i> |
| 1. Upper glume not ciliate along margins | : <i>P. scrobiculatum</i> |

Paspalum conjugatum Berg., Act. Helv. Phys. Meth. 7: 129, t. 8. 1772; Fl. Brit. India 7: 11. 1896; Fl. Madras 1772. 1934; Fl. Kerala Grass. 285. 1991; Fl. Thenmala 444. 1995.

Culms to 50 cm long, creeping below, compressed, nodes glabrous. Leaves linear-lanceolate, acuminate, to 18 x 1 cm. Racemes 2, conjugate, to 10 cm long. Spikelets broadly ovate, 1-1.5 mm long, greenish-yellow. Upper lemma 2-keeled.

Occasional along the banks of streams.

NS 11117 (Kattalappara); 11167 (Choodal)

Fl. & Fr. July-October

D i s t. Pantropics

Paspalum scrobiculatum L., Mant. Pl. 1: 29. 1769; Fl. Brit. India 7: 10. 1896; Fl. Madras 1772. 1934; Fl. Kerala Grass. 287. 1991; Fl. Thenmala 445. 1995.

Culms to 50 cm tall, base creeping, nodes glabrous. Leaves linear-oblong or lanceolate, acute, base truncate, to 15 x 0.8 cm. Racemes 2 or 3, alternate, to 5.5 cm long, rachis flat. Spikelets ovate-orbicular, ca. 2 mm long, sessile, pale reddish-purple. Upper lemma faintly 3-5 nerved.

Occasional along the banks of streams.

NS 11032 (Rosemala); 11114 (Kattalappara)

Fl. & Fr. July-November

D i s t. Paleotropics

PENNISETUM L.C. Rich.

Pennisetum polystachyon (L.) Schult. in Roem. & Schult., Syst. Veg. 2: 146. 1824; Fl. Madras 1792. 1934; Fl. Kerala Grass. 291. 1991. *Panicum polystachyon* L., Syst. Nat. (ed. 10) 2: 870. 1759. *Pennisetum setosum* (Sw.) L.C. Rich. in Pers., Syn. Pl. 1: 72. 1805; Fl. Brit. India 7: 87. 1896. *Cenchrus setosus* Sw., Prodr. Veg. Ind. Oce. 26. 1788.

Culms to 2 m tall, densely tufted. Leaves to 25 x 1.2 cm, sparsely tubercle-based hairy; sheaths hairy, villous at mouth. Panicle to 15 x 2 cm, yellow. Rachis angular. Spikelets sessile, solitary to involucre; bristle plumose towards base. Spikelets lanceolate, 3 mm long. Upper glume ovate lanceolate, 5-7 nerved. Lower floret empty.

Very common along roadsides in forests and forest plantations.

NS 10498 (Choodal); 10673 (Kattalappara)

Fl. & Fr. April-December

D i s t. Paleotropics

PEROTIS Ait.

Perotis indica (L.) O. Ktze., Rev. Gen. Pl. 2: 787. 1891; Fl. Madras 1814. 1934; Bor, Grass. Ind. 611. 1960; Fl. Kerala Grass. 434. 1991; Fl. Thenmala 435. 1995.

Anthoxanthum indicum L., Sp. Pl. 28. 1753. *Perotis latifolia* Ait., Hort. Kew. 1: 85. 1789; Fl. Brit. India 7: 98. 1896.

Culms crowded, slender, to 30 cm long, nodes glabrous. Leaves glabrous, to 4 x 1 cm. Racemes to 15 cm long, pale purplish. Spikelets linear-lanceolate, 2-2.5 mm long; awns slender, to 1.5 cm long.

Occasional in forest plantations.

NS 10509 (Kattalappara)

Fl. & Fr. July-November

Dist. Indo-Malesia

POGONATHERUM P. Beauv.

Pogonatherum crinitum (Thunb.) Kunth, Enum. Pl. 1: 476. 1833; Fl. Brit. India 7: 141. 1896; Fl. Kerala Grass. 176. 1991. *Andropogon crinitus* Thunb., Fl. Jap. 40. 1784.

Culms to 30 cm high, tufted. Leaves 5 x 0.4 cm lanceolate, glabrous. Raceme solitary, 2-3 cm long. Spikelets paired. Sessile spikelets 1.5 mm long, 2-flowered. Glumes awned. Second lemma acuminate, awned. Stamens 1.

Very common in cutting of open grasslands.

NS 11281 (Rosemala)

Fl. & Fr. November-January

Dist. Indo-China

PSEUDANTHISTIRIA (Hack.) Hook. f.

Pseudanthistiria umbellata (Hack.) Hook. f., Fl. Brit. India 7: 220. 1896; Fl. Madras 1749. 1934; Fl. Kerala Grass. 181. 1991; Fl. Thenmala 451. 1995. *Andropogon umbellatus* Hack. in DC., Monogr Phan. 6: 401. 1889.

Culms 30-50 cm high, geniculate. Leaves 5 x 0.5 cm lanceolate, rounded at base. Panicle interrupted by spathes; racemes paired. Spikelets 5 mm long, 2 in each raceme. Lower glume truncate; upper glume oblong, 3-nerved. Lower floret absent. Second lemma awned, awn 25 mm long.

Occasional in moist deciduous forests, in open rocky areas.

NS 10688 (Kattalappara)

Fl. & Fr. September-November

Dist. India

PSEUDOTENANTHERA Munro

Pseudotenanthera bourdillonii (Gamble) Majumdar in Karthik. *et al.*, Fl. Ind. Enum. 280. 1989. *Oxytenanthera bourdillonii* Gamble, Ann. Roy. Bot. Gard. (Calcutta) 7: 76, t. 67. 1896 & in Hook. f., Fl. Brit. India 7: 403. 1896; Fl. Madras 1861. 1934.

Culms to 7 m tall, smooth, to 5 cm diameter at base. Leaves linear-lanceolate, acuminate, base unequal, glabrous, to 15 x 2.5 cm; leaf sheaths striate; ligule oblong, serrate. Spikelet-heads globose, to 4 cm across. Spikelets oblong, to 1.8 cm long, 3-flowered. Sterile glumes 2, ovate, mucronate, 0.5 cm long. Flowering glume to 1.5 cm long, mucronate. Palea 2-keeled, ciliate along the keels. Stamens exserted. Ovary and style hairy; stigmas 3, plumose.

Rare in evergreen forests.

NS 10001 (Rosemala)

Fl. & Fr. October-February

D i s t. South India : endemic

RHYNCHELYTRUM Nees

Rhynchelytrum repens (Willd.) C. E. Hubb., Kew Bull. 1934: 110. 1934; Fl. Kerala Grass. 297. 1991. *Saccharum repens* Willd., Sp. Pl. (ed. 4.) 1: 322. 1798. *Rhynchelytrum villosum* (Parl.) Chiov. in Annuario Res. Inst. Bot. Roma 8: 310. 1908; Fl. Madras 1791. 1934. *Tricholaena wightii* Arn. & Nees, Linnaea 16: 218. 1842; Fl. Brit. India 7: 65. 1896.

Culms tufted, to 1 m tall, nodes hairy or glabrous. Leaves linear-lanceolate, to 15 x 0.8 cm; sheaths glabrous or hairy; ligules row of hairs. Panicles white with purple shades, to 17 cm long. Spikelets oblong, 4-6 mm long, hairy.

Occasional in moist deciduous forests and grasslands.

NS 10892 (Rosemala)

Fl. & Fr. January-March

D i s t. Native tropical Africa, introduced and run wild

ROTTBOELLIA L. f. *nom. cons.*

Rottboellia cochinchinensis (Lour.) Clayton, Kew Bull. 35: 817-818. 1981; Fl. Kerala Grass. 183. 1991. *Stegosia cochinchinensis* Lour., Fl. Coch. 1: 51. 1790. *Rottboellia exaltata* L. f., Suppl. Pl. 114. 1782, non (L.) L. f., Nov. Grem. Gen. 23: 37. 1779; Fl. Brit. India 7: 156. 1896; Fl. Madras 1759. 1934.

Culms to 1.5 m tall. Leaves linear-lanceolate, acuminate, base rounded, to 40 x 1.5 cm. Spikes terete, to 15 cm long; abscission oblique, joints hollow. Sessile spikelets 3 mm long, closely adpressed to the depressions on spikes. Glumes faintly many nerved. Pedicelled spikelets 3 mm long; pedicels clavate, flat, glabrous, 4 mm long.

Fairly common in semi-evergreen and moist deciduous forests.

NS 11097 (Kattalappara)

Fl. & Fr. July-December

D i s t. Paleotropics

SACCHARUM L.

Saccharum spontaneum L., Mant. Pl. 2: 183. 1771; Fl. Brit. India 7: 118 1896; Fl. Madras 1709. 1934; Fl. Kerala Grass. 185. 1991; Fl. Thenmala 449. 1995.

Culms 100-300 cm high; nodes glabrous. Leaves 30-100 x 1 cm glabrous; ligule membranous. Panicle 30 cm long, silky hairy. Spikelets similar, paired. Glumes chartaceous, white hairy. Florets 2, lower empty, upper bisexual.

Common in stream banks in moist deciduous forests.

NS 10855 (Rosemala)

Fl. & Fr. November-February

D i s t. Tropics

SACCIOLEPIS Nash

Sacciolepis indica (L.) A. Chase, Proc. Biol. Soc. Wash. 21: 8. 1908; Fl. Madras 1787. 1934; Fl. Kerala Grass. 298. 1991; Fl. Thenmala 440. 1995. *Aira indica* L., Sp. Pl. (in errata) 1753. *Panicum indicum* L., Mant. Pl. 184. 1771, non Mill. 1768; Fl. Brit. India 7: 41. 1896.

Culms slender, to 40 cm long, ascending. Leaves linear-lanceolate, base subcordate, to 10 x 0.2 cm. Panicle to 6 cm long. Spikelets ovate, 2 mm long; pedicels 0.3 mm long.

Occasional in grasslands, in moist localities.

NS 10735 (Kattalappara)

Fl. & Fr. August-November

D i s t. Indo-Malesia

SETARIA P. Beauv. nom. cons.

- | | |
|--|--------------------------|
| 1. Leaves not plicate; inflorescence contracted. | : 2 |
| 1. Leaves plicate; inflorescence lax, spreading | : <i>S. paniculifera</i> |
| 2. Panicle not interrupted; spikelets sessile | : <i>S. pumila</i> |
| 2. Panicle interrupted; spikelets pedicelled | : <i>S. intermedia</i> |

Setaria intermedia Roem. & Schelt., Syst. Veg. 2: 489. 1817; Fl. Brit. India 7: 79. 1896; Fl. Madras 1789. 1934; Fl. Kerala Grass. 306. 1991. *S. tomentosa* Kunth., Rev. Gram. 1: 47. 1829.

Culms 50 cm high. Leaves 10 x 0.3-1 cm, flat. Panicle spiciform; bristles 6 mm long. Spikelets 2 x 1.5 mm. Upper glume obtuse. Second lemma 2 x 1.2 mm. Palea rugate.

Common in moist deciduous forests.

NS 10802 (Kallar)

Fl. & Fr. November-January

D i s t. India, Burma and Sri Lanka

Setaria paniculifera (Steud.) Fourn. ex Hemsl., Biol. Centr. Amer. Bot. 3: 505. 1855; Fl. Kerala Grass. 308. 1991. *Panicum paniculiferum* Steud., Syn. Pl. Glum. 1: 54. 1854.

Culms erect, to 1.5 m tall, nodes sparsely hairy. Leaves elliptic-lanceolate or lanceolate, acuminate, base rounded or acute, to 35 x 4 cm. Panicles to 50 cm long; spikelets elliptic or elliptic-lanceolate, 2-4 mm long.

Occasional in semi-evergreen forests, mostly in disturbed areas.

NS 10070 (Kallar); 10522 (Kattalappara)

Fl. & Fr. September-November

D i s t. Native of Tropical America, introduced as a fodder

Setaria pumila (Poir.) Roem. & Schult., Syst. Veg. 2: 891. 1817; Fl. Kerala Grass. 309. 1991. *Panicum pumilum* Poir. in Lamk., Encyl. Meth. Bot. (Suppl.) 4: 273. 1816. *Setaria pallidifusca* (Schum.) Stapf & Hubb., Kew Bull. 1930: 259. 1930; Fl. Madras 1789. 1934. *S. glauca* sensu Hook. f., Fl. Brit. India 7: 78. 1896, p.p.

Annuals, culms tufted, to 35 cm long, decumbent, nodes glabrous. Leaves linear-lanceolate, base rounded, to 15 x 0.4 cm. Panicle spiciform, cylindric, to 7 cm long, yellowish; bristles antrorsely barbate, to 4 mm long. Spikelets ovoid, 2 mm long.

Common in forest plantations and disturbed moist deciduous forests.

NS 10589 (Kattalappara)

Fl. & Fr. July-October

D i s t. Paleotropics

SPOROBOLUS R. Br.

Sporobolus indicus (L.) R. Br. var. *diander* (Retz.) Jovet & Guedes, Taxon 22: 163. 1973; Fl. Kerala Grass. 437. 1991. *Agrostis diandra* Retz., Obs. Bot. 5: 19. 1789. *Sporobolus diander* (Retz.) P. Beauv., Ess. Agrost. 26. 147. 178. 1812; Fl. Brit. India 7: 247. 1896; Fl. Madras 1817. 1934.

Culms 30-80 cm high. Leaves 30 x 0.5 cm. Panicle 10-30 cm long, lax. Spikelets 1.5 x 0.5 mm. Lower glume obtuse. Lemma 1.5 x 0.5 mm. Stamens 2.

Common in moist deciduous forests.

NS 11121 (Kattalappara)

Fl. & Fr. September-December

D i s t. India, Sri Lanka and East Africa

STREPTOGYNA P. Beauv.

Streptogyna crinita P. Beauv., Ess. Agrost. 80. 1812; Fl. Brit. India 7: 332. 1896; Fl. Kerala Grass. 441. 1991. *S. gerontogea* Hook. f. in Trin., Handb. Fl. Ceylon 5: 301. 1900; Fl. Madras 1854. 1934.

Rhizomatous perennials, culms to 70 cm high. Leaves 20 x 2 cm, glabrous. Panicle to 30 cm long. Spikelets linear-lanceolate, similar. Glumes unequal, lower 8 x 1 mm, acuminate, upper 20 x 5 mm, 3-aristate. Florets 2, similar. Lemmas awned, awn 20 mm long.

Occasional in evergreen forests

NS 10683 (Kattalappara)

Fl. & Fr. October-December

D i s t. South India : endemic

THEMEDA Forssk.

1. Awns upto 2 cm long; callus hairs white : *C. cymbaria*

1. Awns 6-9 cm long; callus hairs brown : *C. triandra*

Themeda cymbaria (Roxb.) Hack. in DC., Monogr. Phan. 6: 668. 1889; Fl. Madras 1746. 1934; Fl. Kerala Grass. 196. 1991; Fl. Thenmala 453. 1995. *Anthistiria cymbaria* Roxb., Fl. India 1: 255. 1820; Fl. Brit. India 7: 215. 1896.

Culms to 250 cm high, densely tufted. Leaves 120 x 1 cm, scabrid. Panicles to 80 cm long; racemes clustered. Involucral spikelets 4 x 1 mm, 1-flowered, male. Sessile bisexual spikelet 5 x 1 mm, 2-flowered, lower barren, upper bisexual.

Very common in open grassy patches.

NS 11148 (Choodal)

Fl. & Fr. November-January

D i s t. Peninsular India

Themeda triandra Forssk., Fl. Aegypt-Arab. 178. 1775; Fl. Madras 1746. 1934; Fl. Kerala Grass. 202. 1991; Fl. Thenmala 453. 1995. *Anthistiria imberbis* Retz., Obs. Bot. 3: 11. 1783; Fl. Brit. India 7: 211. 1896.

Perennials, culms to 1.5 m tall, erect; nodes glabrous. Leaves lanceolate, acute, base rounded, sparsely hairy, to 30 x 1 cm; sheaths keeled, bulbous based hairy; ligule fimbriate. Panicles to 40 cm long; clusters of spikelets rather lax. Involucral spikelets 2 pairs, elliptic, 1 cm long, tubercled hairy. Lower floret empty; upper male. Sessile spikelets oblong, 8 mm long. Pedicelled spikelets lanceolate, 8 mm long; pedicels 2 mm long.

Common in grasslands and in open rocky areas in moist deciduous forests.

NS 11115 (Kattalappara)

Fl. & Fr. October-January

D i s t. Paleotropics

UROCHLOA P. Beauv.

Urochloa panicoides P. Beauv., Ess. Agrost. 53. 1812; Fl. Madras 1775. 1934; Fl. Kerala Grass. 316. 1991.

Culms to 50 cm high; nodes bearded. Leaves 10 x 2 cm, amplexicaul at base, pubescent. Panicles to 10 cm long; rachis of raceme covered with glassy bristles. Spikelets 2.5 x 3.5 mm, ovate. Glumes unequal, upper 3 x 1 mm, pubescent. Florets 2, lower barren, upper bisexual; second lemma transversely rugose, cuspidate. Stamen 3.

Common in disturbed evergreen forests.

NS 11205 (Rosemala)

Fl. & Fr. October-January

D i s t. India and South Africa

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