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J.-P. Pascal, B. R. Ramesh

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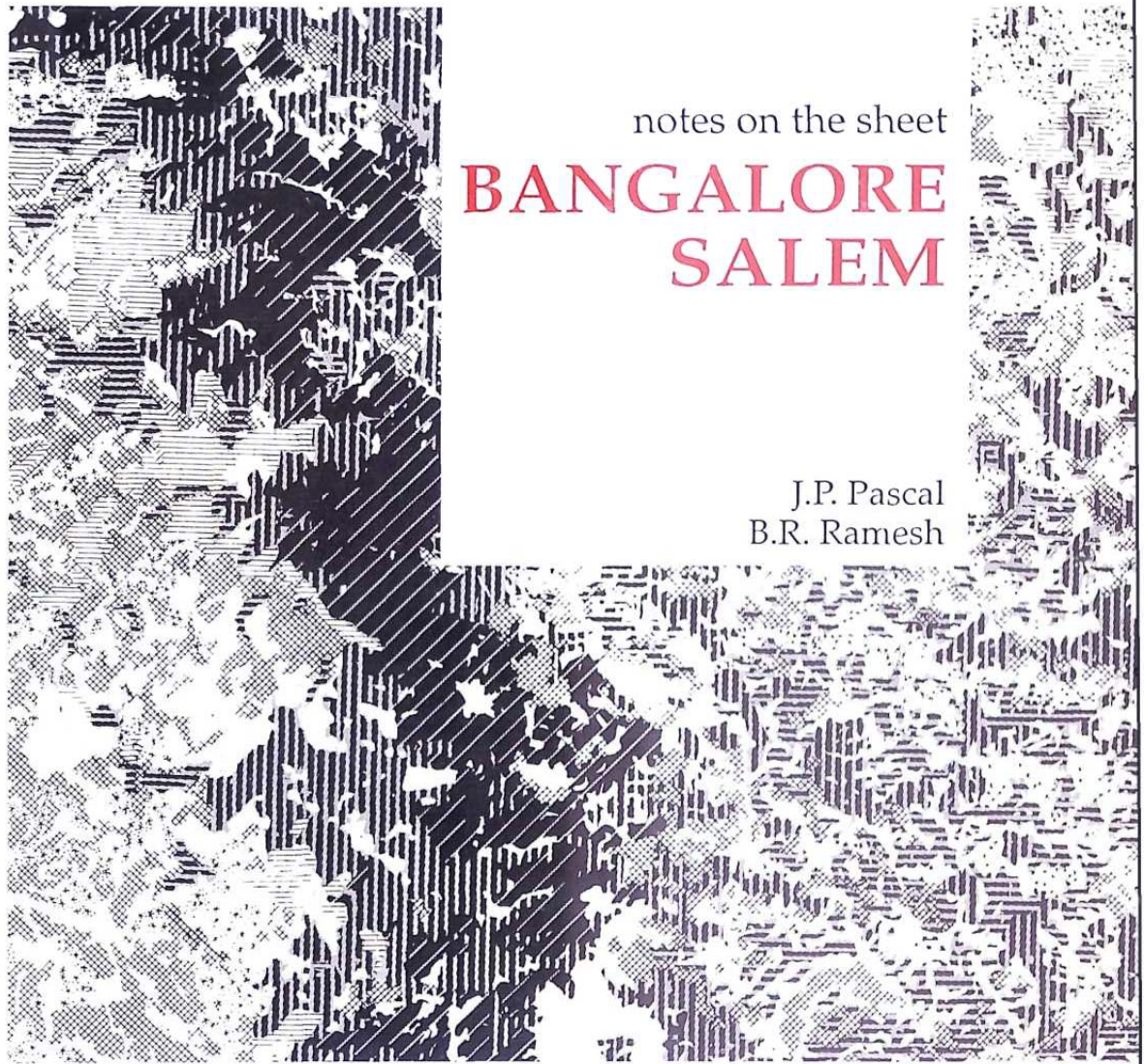
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# FOREST MAP OF SOUTH INDIA

notes on the sheet

## BANGALORE SALEM

J.P. Pascal  
B.R. Ramesh



publications du département d'écologie

INSTITUT FRANÇAIS DE PONDICHÉRY

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# CONTENTS

INTRODUCTION	01
CHAPTER ONE: CONCEPTS AND METHODS	
I. Location and identification of vegetation cover	02
II. Typology of the different formations	02
III. Representation of ecological conditions	04
IV. Identification of climax formations	05
V. Dynamic relationships	07
CHAPTER TWO: CLIMATE	09
I. Rainfall	09
II. Temperature	13
III. Dry season	14
CHAPTER THREE: VEGETATION TYPES	15
I. Dry Vegetation types	15
A. <i>Albizia amara</i> - <i>Acacia</i> spp. type	15
B. <i>Gyrocarpus jacquini</i> and/or <i>Hardwickia binata</i> types	16
C. <i>Anogeissus latifolia</i> - <i>Chloroxylon swietenia</i> - <i>Albizia amara</i> type	18
D. <i>Anogeissus latifolia</i> - <i>Pterocarpus marsupium</i> - <i>Terminalia</i> spp. type	19
E. <i>Anogeissus latifolia</i> - <i>Tectona grandis</i> - <i>Terminalia alata</i> type	21
II. Moist Vegetation types	22
A. Low elevation (below 1000 m)	22
B. Medium elevation (altitude 750-1400 m)	22
C. High elevation (altitude 1300-1800 m)	26
REFERENCES ON THE SHEET (or cited in the text)	28
ANNEXES: Floristic lists of the forest types	31
I. Dry Vegetation types	32
- <i>Albizia amara</i> - <i>Acacia</i> spp. type	32
- <i>Gyrocarpus jacquini</i> and/or <i>Hardwickia binata</i> types	34
- <i>Anogeissus latifolia</i> - <i>Chloroxylon swietenia</i> - <i>Albizia amara</i> type	38
- <i>Anogeissus latifolia</i> - <i>Pterocarpus marsupium</i> - <i>Terminalia</i> spp. type	41
II. Moist Vegetation types	45
A. Medium elevation types	45
- <i>Elaeocarpus tuberculatus</i> - <i>Michelia champaca</i> - <i>Canarium strictum</i> type	45
- <i>Mesua ferrea</i> - <i>Palaquium ellipticum</i> - <i>Olea glandulifera</i> type	48
- <i>Diospyros ovalifolia</i> - <i>Memecylon lushingtonii</i> - <i>Olea glandulifera</i> type	51
B. High elevation types	53
- <i>Schefflera</i> spp.- <i>Gordonia obtusa</i> - <i>Meliosma arnottiana</i> type	53
- <i>Schefflera capitata</i> - <i>Neolitsea zeylanica</i> - <i>Meliosma</i> spp. Type	56

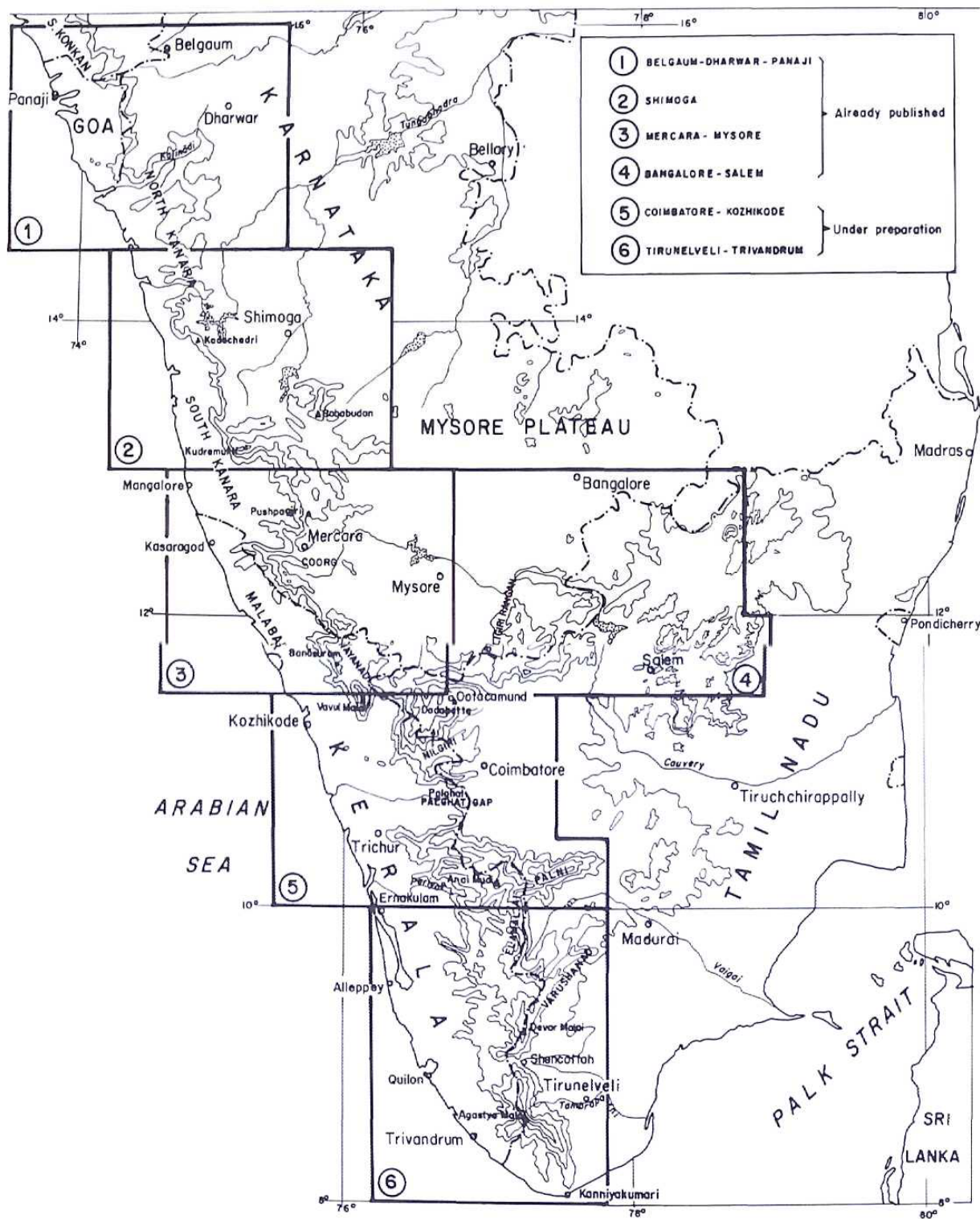


Fig.1. FOREST MAP OF SOUTH INDIA : KEY MAP .

## INTRODUCTION

During the last fifty years, the forested area has changed considerably, mainly due to the rapid population growth. In overpopulated regions, the increase in population necessitates fresh clearing of wooded areas for agricultural and other purposes. New settlements can be observed, for example, in the foothills of the Ghats in northern Kerala and near the border of the Karnataka plateau in Sirsi, Siddapur and Yellapur regions.

The need to accommodate the rising population, as well as the construction of huge hydroelectric projects (some of which have already been completed, while others are still underway) in less populated areas, also lead to deforestation. Moreover, the continuous and ever increasing demand for wood by industries and for fuel wood by the population greatly accelerate tree felling operations. Overexploitation has thus brought about a rapid degradation of the forest, if not its total destruction in some areas.

A more rational management of the forest heritage is necessary, especially decisions concerning deforestation and afforestation policies, conversions, the choice of areas to be selected, and the degree of exploitation that may be permitted.

Thus, during the last few decades, several policies have been formulated with a view to protecting en-

dangered forests. Studies have also been carried out on the ecology and functioning of different forest types, the impact of major development projects, selection of species for afforestation programmes, etc., besides the creation of Wildlife Parks and Sanctuaries, Biosphere Reserves, and imposition of a ban on felling for a certain number of years in some of the endangered forests.

In order to meet these requirements, it became necessary to prepare a new vegetation map at an appropriate scale showing the actual state of the Forests, their environmental conditions (climate, edaphic, biotic, administrative) and their potentialities.

An agreement was signed between the French Institute of Pondicherry and the Forest Departments of Karnataka, Kerala and Tamil Nadu to map the main forested regions of these states, in six sheets, at the scale of 1: 250 000 (Fig. 1).

Three sheets with an explanatory booklet have already been published (Pascal *et al.* 1982 a, b; 1984; 1986). They cover an area of nearly 90 000 km<sup>2</sup>, from 16° N up to 11°30' N. The Bangalore-Salem sheet presented here is the eastward extension of the Mercara-Mysore sheet, and concerns the south-eastern part of the Mysore plateau and the hills of the Eastern Ghats dominating the Tamil Nadu piedplain.



## Chapter I

# CONCEPTS AND METHODS

The methodologies and concepts used in preparing this sheet are similar to those used for the three earlier ones (Pascal *et al.* 1982a, b; 1984; 1986) and are based on the method developed by Gaussen for the International Map of the Vegetation and of Environmental Conditions, at the scale of 1:1 000 000. The originality of this method lies in complementing the map of the types of formations (for example, forests, savannas, thickets) with additional information, such as the climatic environment of these formations (precipitation and temperature) and the dynamic relationships between them. This kind of cartography thus provides information not only on the different types of vegetation and their extent, but also on their evolutionary potentialities in relation to the nature and intensity of anthropic pressure.

### I - LOCATION AND IDENTIFICATION OF THE VEGETATION COVER

The method followed for the preparation of the map is illustrated in Fig. 2.

Field trips over almost 4 years to more than half of the 453 Reserved Forests found on the sheet enabled the constitution of a database which include the physiognomic and structural description as well as the floristic composition of the stand in each forest.

Field observations were complemented by existing literature (see References) and by data provided by the Forest Department: Working Plans, stock maps, 10% enumeration data, location of plantations, legal status of forests, etc.

The forests were demarcated by interpreting satellite imageries: Landsat (MSS, TM), SPOT and IRS.

### II - TYPOLOGY OF THE DIFFERENT FORMATIONS

The plant formations were characterised by their physiognomy, phenology and floristic composition.

#### 1. *Physiognomy*

The formations were classified according to their dominant biological strata (trees, shrubs, undershrubs

and herbs), density of the stand and the cover provided by the dominant stratum. Based on these criteria they were distinguished as:

- *Dense forest*: here, the term forest is strictly reserved for formations dominated by a tree stratum. A forest was considered as dense when the canopy cover was more than 80%.

- *Woodland to savanna-woodland*: the tree stratum of these formations is discontinuous, the percentage of cover varying between 80 and 50% for woodlands and between 50 and 20% for savanna-woodlands, where the ground is covered by a continuous carpet of tall grasses at least during the monsoon. Naturally, all the intermediate stages between these two formations are present.

- *Tree savanna to grass savanna*: these formations are characterised by a continuous grass cover with a few scattered trees (tree savanna), or shrubs (shrub savanna), or devoid of any woody species (grass savanna). Here also all the intermediate stages are encountered.

- *Scrub-woodland to dense thicket*: scrub-woodlands have a sparse and discontinuous tree layer. The grass cover is replaced by a dense and continuous scrub or shrubby layer often composed of thorny, spiny species. The tree stratum has disappeared in the dense thickets.

- *Discontinuous thicket to low scattered shrubs*: these formations are more open and lower in stature than those mentioned above. The shrubby layer becomes discontinuous. Palatable and unarmed species grow only in the middle of shrubs and are protected by thorny and spiny plants. Some scattered trees emerge here and there. In the low scattered shrub formation, the soil is more exposed to erosion as they only have a sparse grass cover with small interspersed shrubs.

Some of these physiognomic types are derived from each other through degradation because of man's destructive activity and grazing or, conversely, due to a gradual change following their protection. This dynamic link will be dealt later.

#### 2. *Phenology*

Based on the percentages of evergreen and deciduous species, the formations are classified into three categories: evergreen, semi-evergreen and deciduous.

*Evergreen forests*: evergreen species constitute at least 95% of the stand. Deciduous species, found mainly in the openings, do not exceed 5% of the individuals.

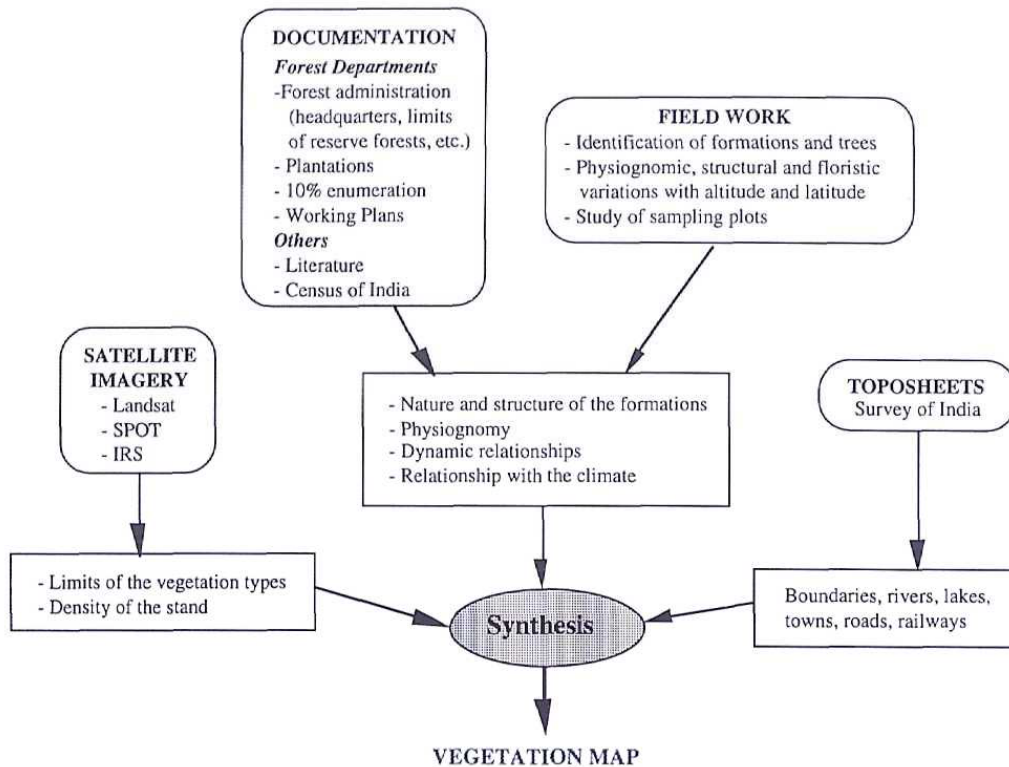


Fig. 2. Method followed for the preparation of the map

*Deciduous forests:* all the trees of the top canopy shed their leaves at the same time.

*Semi-evergreen forests* may be divided into two major groups: (i) The dominant stratum includes a mixture of evergreen and deciduous species, the latter comprising more than 5%. (ii) Evergreen species are absent or rare in the dominant stratum, but constitute practically the whole of the lower stratum, as is often the case in secondary forests in a humid environment. The recovering capabilities of these two types of semi-evergreen forests can be very different.

### 3. Floristic composition

Formations with similar physiognomy and phenology are further divided into *forest types* based on the main differences in their floristic composition.

The typology is based on the tree species which appear to be most characteristic of a milieu or certain climatic conditions. For example, those which are most sensitive to a reduction in temperature or rainfall, to the

rainfall regime, lengthening of the dry period, etc. They were also selected because of their relative abundance.

For example, in the *Mesua ferrea* - *Palaquium ellipticum* - *Olea glandulifera* type confined to the Bili-giri Rangan Hills and which is subjected to both the eastern and western climatic influences, *Mesua* and *Palaquium* were chosen not just for their abundance, but mostly because these two species find their eastern-most limit here. They occur in forest patches isolated from the forest continuum of the Western Ghats where they are common, specially at medium elevations. Thus, they represent the floristic link between this forest type and the evergreen forests of the Western Ghats. *Olea glandulifera* is not found in the wet evergreen forests of the Western Ghats and is characteristic of the drier regions exposed to the east. It represents the eastern influence which is also found in this forest.

Throughout the dry zone, one passes gradually from one type to another, with very little change in the species encountered. These types differ more in the relative

densities of the species. Thus, the composition of the *Anogeissus - Pterocarpus - Terminalia* type resembles that of the *Anogeissus - Chloroxylon - Albizia* type which, in turn, has many species in common with the

*Albizia - Acacia* type. The changes are generally gradual, particularly with increase in altitude. The local conditions, edaphic or of exposure, sometimes modify the limits of the altitudinal zonation (Fig. 3).

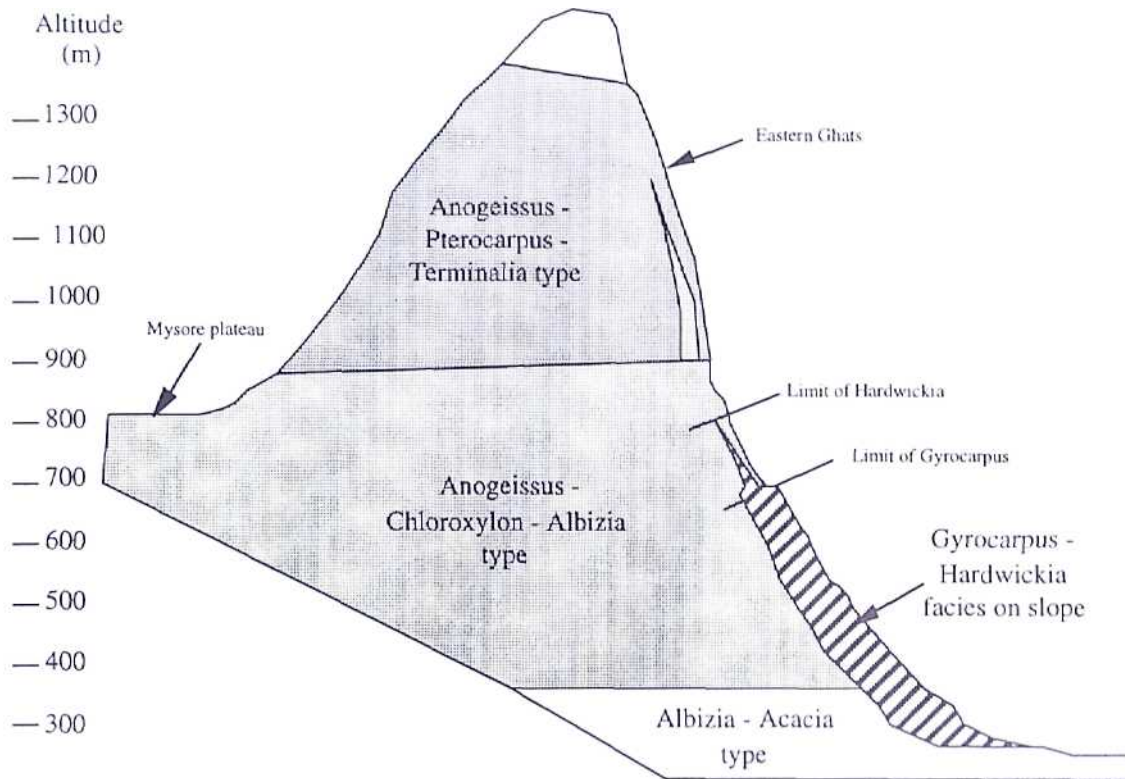


Fig. 3. Altitudinal zonation of the dry vegetation types

### III - REPRESENTATION OF ECOLOGICAL CONDITIONS

#### 1. Climate

The climatic conditions corresponding to each forest type in the mapped region necessitates a detailed study of the bioclimates. A synthesis of the whole of the Western Ghats was made at the scale of 1:500 000 (Pascal 1982c). Nevertheless, it was necessary to extend this work to the east of Biligiri Rangan Hills in order to cover the whole of the mapped region (see Chapter 2).

On the map, the climatic conditions are expressed by colours, following Gaussen's method (Bagnouls and Gaussen, 1953; Gaussen, 1959) which is also recommended by UNESCO (1973). The colours assigned to the rainfall range, varying from very dry to very humid, are in the following order: red, orange, yellow, light blue and dark blue. Colours corresponding to the three classes of mean temperature of the coldest month, ranging from cold to hot, are yellow, orange and

red. Thus, a forest growing under a rainy (blue) and warm (red) climate will be represented in blue + red = purple. Another forest situated in a rainy and cool environment would be shown in blue + yellow = green and a formation in a dry and hot environment would appear in red (dry) + red (hot) = red.

#### 2. Biotic pressure and administrative information

Degradation of the forest is mainly related to the intensity of anthropic pressure.

Population density is shown on the map to provide an estimate of its requirements (in fuelwood, fodder, etc.). Towns and villages with a population exceeding 1000 persons are represented by circles whose diameter is proportional to the population (figures are from the 1991 census). As human activities are often along roadsides, accessibility of a forest is an indication of its potential for exploitation and risk of degradation. Hence, the network of roads, including important forest tracks, have been shown on the map.

Information on the legal status of the forests is also important. Among the forests managed by the Forest Department (Reserve forests, minor forests 'betta', revenue land, etc.), only the Reserve forests are outlined and identified by a number on the map. This number refers to a list given in the lower part of the sheet where the forests are classified according to their position in the territorial division of the Forest Administration (Range, Division, Circle, State). The administrative information is supplemented by the limits of Divisions and Circles and by the location of the headquarters of the Forest Department. A small scale inset also shows the boundaries of Circles and Divisions.

#### IV - IDENTIFICATION OF CLIMAX FORMATIONS

The first step was to identify the most advanced type of formation (forest, woodland, scrub-woodland, thickets, etc.) for each set of environmental conditions encountered in the mapped region. These formations should, according to Clements (1916, 1936), correspond to the *climax* under optimum conditions. However, this concept is debatable elsewhere as it supposes a state of equilibrium between the milieu and the vegetation.

##### 1. Modifications introduced by human activities

The antiquity and intensity of man's action in the whole of this region has greatly modified the plant formations in such a way that the *climax* is rarely observed. Most often, a degraded formation is all that remains, sometimes far away from the potential *climax* of the place. The remnant species and formations, adapted to these very harsh microclimatic conditions, are mostly the same, whereas the bioclimates can be quite different. Degradation results in a kind of convergence in the vegetation, making it difficult to propose a theoretical reconstruction of what could have been the *climax*.

On the other hand, the areas of some formations which could locally correspond to a *climax*, have been extended due to man's action. They now dominate in places where they did not constitute the original *climax* formation and now form what appears a substitute *climax*. Such is the case of a considerable part of the tree savannas and scrub-woodlands, as well as the grass savannas on hills and mountains. Other formations, such as the evergreen forest patches or semi-deciduous forests confined to the talwegs, present a simplified structure and have lost some of their most sensitive species.

##### 2. *Hardwickia binata* formations

The definition and delimitation of *Hardwickia binata* forest types posed a different kind of problem. Several

*vegetation series* with *Hardwickia* were recognized by Gaussen *et al.* on the maps at the scale of 1/100 000. The Cape Comorin sheet (Gaussen *et al.* 1961a, b) which goes up to 12°N does not identify any series characterised by *Hardwickia*, even though it covers the part of the Eastern Ghats and the plateau to the east of Biligiri Rangan Hills where *Hardwickia* is quite common. The *Hardwickia* - *Anogeissus* series is found from the extreme southern part of the Mysore sheet (Gaussen *et al.* 1965, 1966), mostly on skeletal soils. Another series makes its appearance on the Madras sheet (Gaussen *et al.* 1962, 1964), to the north of 13°N: the *Hardwickia* - *Pterocarpus santalinus* - *Anogeissus* series. Hence the greater part of this series is located to the north of the Bangalore - Salem sheet. At the most, only a few highly degraded thickets in the Bangarapet region can be considered to belong to it. Considering the very small area covered by this series on the sheet and the degraded condition of the stands (where *Hardwickia* is most often absent) that can be attributed to it, this series has not been represented on the sheet. Formations where *Hardwickia* is common are mostly situated on the eastern edge of the plateau and on the low elevation slopes of the Eastern Ghats. They were grouped under *Gyrocarpus jacquini* and/or *Hardwickia binata* types (on slopes, skeletal soils and as transitional facies). Indeed, very often *Hardwickia* is found growing in association with *Gyrocarpus*, especially on steep slopes. The presence of *Hardwickia* is indicated by the letter 'H'.

##### 3. Teak forests

Teak is found in the deciduous formations on the slopes of the Biligiri Rangan Hills (BRH), on the reliefs around Madeshwara Malai and on the mountains dominating the pediplain of Tamil Nadu (Shevaroy, Chitteri, Elagiri) when precipitation exceeds 900 mm. However, teak is never as abundant as in the deciduous forests situated further west on the plateau which receives the major part of precipitation during the summer monsoon (see Mercara - Mysore sheet). It therefore seemed preferable to indicate this difference by retaining only some forests, situated on the western slopes of the BRH where teak is quite abundant, in the *Anogeissus* - *Tectona* - *Terminalia* type. The other forests where teak is clearly less common are included in the *Anogeissus* - *Pterocarpus* - *Terminalia* type. The presence of teak is indicated by the letter 'T' on the map.

##### 4. Riparian forests

Some formations may be considered as specific to edaphic conditions which are particularly humid, for example, *Terminalia arjuna* - *Syzygium cumini* - *Pongamia pinnata* type which is confined to talwegs on the slopes of the Eastern Ghats at elevations generally

**Table 1. Correspondence between the Forest Map of South India's classification and that of Champion and Seth (1968)**

Forest Map of South India		Champion & Seth			
DRY VEGETATION TYPES	Forests	Albizia - Acacia spp. type		6A/C1 - Southern thorn forest	
		Gyrocarpus and/or Hardwickia - scrub - woodland - savanna - woodland		6A/C1 - Southern thorn forest 5A/E4 - Hardwickia forest	
		Anogeissus - Chloroxylon - Albizia		5A/C3 - Southern dry mixed deciduous forest	
		Anogeissus - Pterocarpus - Terminalia spp.		5A/C3 - Southern dry mixed dec. forest 5/2S1 - Secondary dry deciduous forest	
		Anogeissus - Tectona - Terminalia		5A/C1b- Dry teak forest	
	Degraded stages	Savanna - woodland to tree savanna		5/DS2 - Dry savanna forest	
		Scrub - woodland to thicket		5/DS1 - Dry deciduous scrub 6A/C1 - Southern thorn thicket 6A/C2Ds1 - Southern thorn scrub	
		Discontinuous thicket to low scattered shrubs		6A/Ds3 - Southern Euphorbia scrub	
	MOIST VEGETATION TYPES	Forests	Low elevation	Terminalia - Syzygium - Pongamia	4E/Rs1 - Riparian fringing forest
Medium elevation			Elaeocarpus - Michelia - Canarium	Tropical wet evergreen forests	Sub-group 2A 1 A/C3 - Southern hilltop tropical evergreen forest
			Mesua - Palaquium - Olea		
			Diospyros - Memecylon - Olea	Sub-tropical broad-leaved hill forests	8A/C1 - Southern sub-tropical hill forest
High elevation			Schefflera - Gordonia - Meliosma sp.		
			Schefflera - Neolitsea - Meliosma spp.		
Vaccinium - Neolitsea - Meliosma spp.					
Degraded stages	Semi-evergreen forests				
	Tree savanna to grassland		8A/DS1 - South Indian subtropical hill savanna 11A/DS2 - Southern montane wet grassland		

lower than 1000 m. Another riparian type, the *Elaeocarpus tuberculatus* - *Michelia champaca* - *Canarium strictum* type is found on the western slopes at medium elevations in the BRH. Everywhere else, at medium and high elevations, the evergreen and semi-evergreen patches found in the talwegs do not represent the riparian type proper but seem to be the relics of forests that were once widespread but are now confined to the more humid pockets, anthropic pressure having taken a heavy toll of the evergreen forest. Although these forest patches are important elements for the conservation of biodiversity in this region, they could not be mapped because their size is too small for the scale of the map (1 mm = 250 m).

Table 1 groups all the forest types found on the sheet, as well as the different physiognomic stages derived through their gradual degradation, and gives their correspondence with Champion and Seth's (1968) classification which is generally followed in forest literature.

## V - DYNAMIC RELATIONSHIPS

Although it is still possible to find some *climax* formations (*sensu* Clements) in this region, most often they are formations corresponding to more or less degraded stages of succession. An attempt can be made to

relate the different existing stages by observing the evolution of stands subjected to intense anthropic pressure or, conversely, those protected from the action of man and his animals. The formations can thus be classified into degradation or recovering series (Gausson 1966).

On the map, all the stages belonging to the same series are shown in the colour corresponding to the climatic conditions of the series. Physiognomically identical stages, resulting from the degradation of formations which were initially different and hence growing under different conditions, can thus be distinguished by their colour. The latter will indicate that the climatic conditions not being the same, the potentialities of recovery will not be the same either.

However, the possibilities of a return to the *climax* formation should be nuanced. Indeed, certain degradations in the plant cover are accompanied by a considerable degradation of the soil, especially by erosion. These new edaphic conditions may hinder recovery. Moreover, several species found in one physiognomic stage are no longer found in more degraded stages where moisture conditions are different. Their reappearance in the stand during a gradual recovery would depend on the proximity of seed-bearers. The reconstituted formation may thus be much poorer in species than the initial formation. There would thus be a reconstitution of the physiognomy and phenology, but not of the biodiversity.

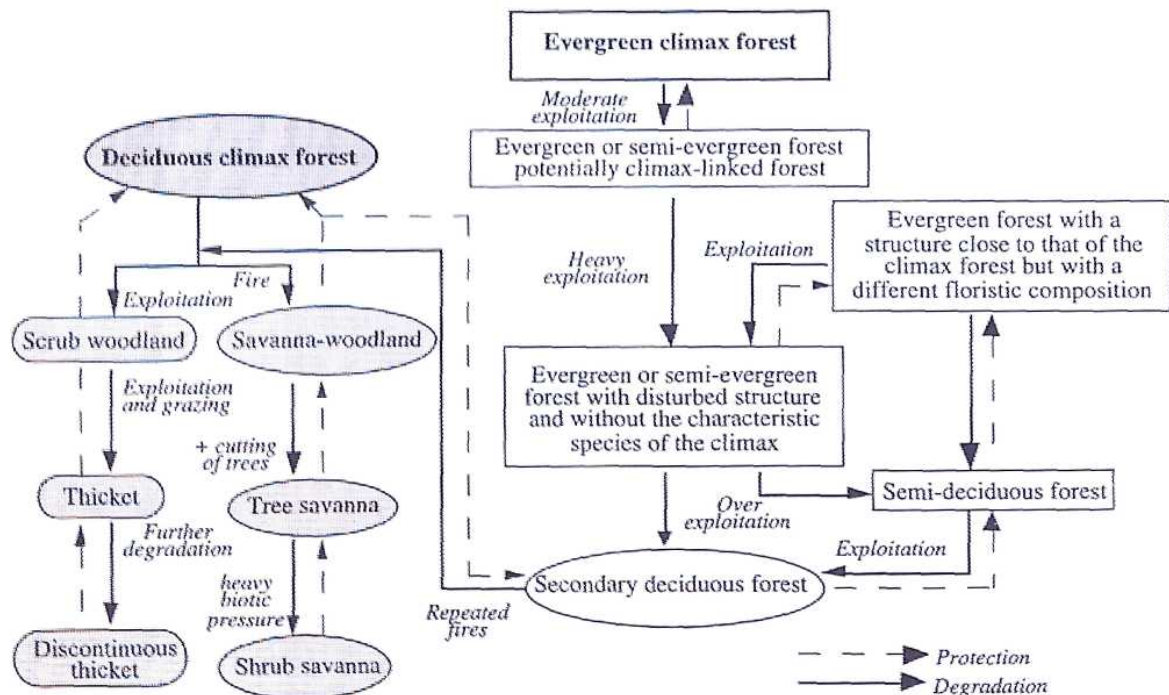


Fig. 4. Stages of succession derived from climax forests

These dynamic relationships are illustrated in Fig. 4.

In the legend of the sheet, the formations have been divided into two groups corresponding to two broad ecological categories: dry vegetation types and moist vegetation types.

### 1. Dry vegetation types

The most evolved physiognomic stage corresponding to the *climax* would depend on the amount of precipitation. Along the gradient of decreasing rainfall, it would be deciduous forest, savanna-woodland or scrub-woodland. Each of these *climax* stages could be more or less degraded by human interference.

Mostly situated in accessible areas, the dry formations have been subjected to intense and continuous anthropic pressure from a long time. Shifting cultivation, overexploitation, overgrazing and repeated fires are responsible for severe degradation. Two main degradation paths can be outlined:

(i) overexploitation, excessive cutting of wood or overgrazing convert a forest into scrub-woodland, to dense thicket, and then to increasingly lower and discontinuous thickets, and finally to barren soil.

(ii) exploitation and grazing accompanied by frequent fires which, by favouring the growth of grasses, gradually lead to a savanna-woodland, then tree savanna, shrub savanna and finally, to grass savanna.

### 2. Moist vegetation types

Some of the moist formations correspond to riparian forests. Those forests may be found in dry as well as moist regions. Because of their special ecological location, they are generally able to resist man's interference to a better extent, but under excessive pressure they get transformed first into a semi-deciduous forest, then to deciduous and lastly into increasingly open physiognomic stages (savanna-woodland, tree savanna, shrub savanna). The presence of some evergreen species is evidence of higher soil moisture.

Other *climax* evergreen formations have been separated according to altitude (medium and high elevations). They are found only on the reliefs and receive on the one hand, the highest rainfall, and on the other, an appreciable amount of moisture from occult precipitations (dew, mist) as a result of low temperatures. These evergreen formations are mostly confined to talwegs which further increase the humidity. Human activity first transforms them into semi-deciduous forests, then gradually into tree savanna, shrub savanna and finally into grassland. These grasslands of secondary origin should not be confused with those of edaphic or climatic origin which are often found towards the summits.

## Chapter II

# CLIMATE

In the studied area, the number of meteorological stations is high enough to enable a relatively accurate study of the bioclimatic conditions. However, most of these stations record only the rainfall, and very few, the temperature. Other parameters generally necessary for a more detailed study (evaporation, wind, etc.) are available only for big towns.

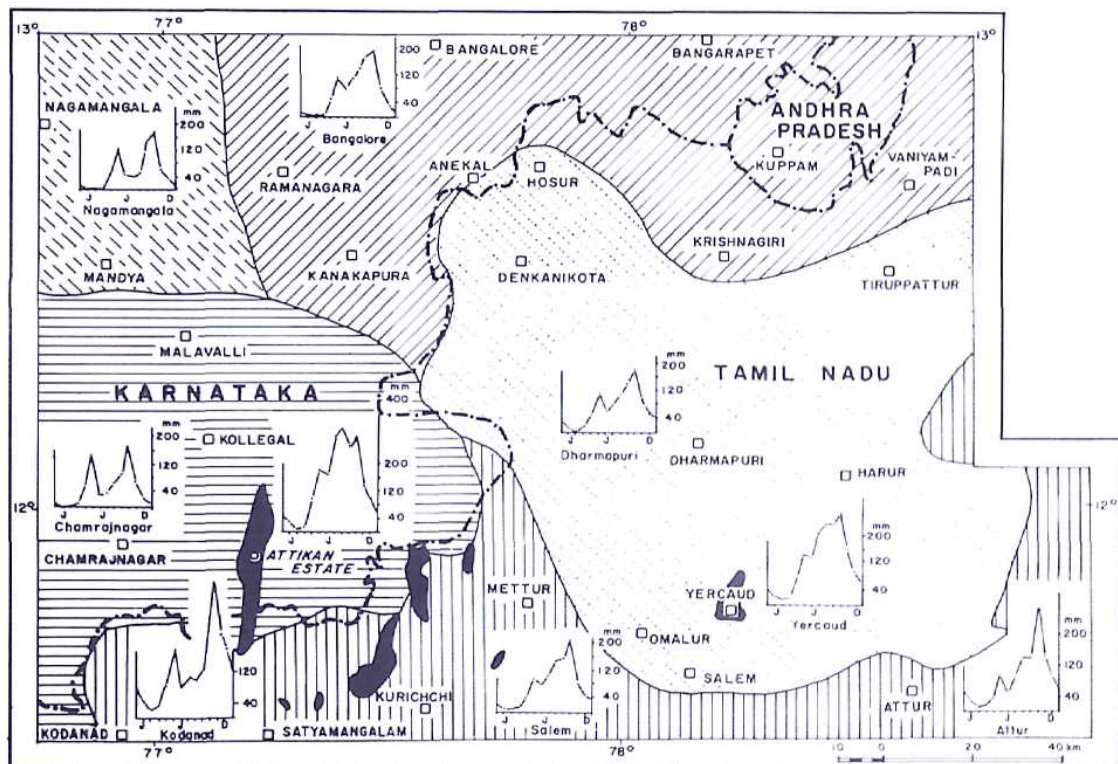
Therefore, the characterisation of the bioclimates is based only on climatic parameters which are commonly available, *viz.*, rainfall and temperature, from which the length of the dry season is calculated.




## I - RAINFALL

Two important aspects of rainfall are rainfall regime (*i.e.* season of occurrence of rains) and rainfall amount.

### 1. Rainfall regime

The rainfall regimes are illustrated in Fig. 5. The most striking feature in this region is the small amount of rain brought by the southwest monsoon, which falls on just a few reliefs in the southern part of the sheet (Biligiri Rangan Hills, Shevaroy). For the remaining



-  S.W. monsoon rains equal or more than October rains. No dry period between May and October.
-  The peaks in May and October are of equal value ( $O/M < 1.2$ ). The 4 months after May are drier than May. Tendency to bixerism. No influence of S.W. monsoon.
-  October peak slightly higher than that of May ( $O/M = 1.3 - 1.4$ ). The 4 months after May are drier than May. Slight tendency to bixerism. No influence of S.W. monsoon.




-  October peak distinctly higher than that of May ( $O/M = 1.4 - 1.6$ ). September rains almost equal to that of October. Only 1 or 2 months after May are drier than May (near Bangarpet,  $O/M = 1.7 - 1.8$ , and 3 months after May drier).
-  October peak distinctly higher than that of May ( $O/M = 1.4 - 1.6$ ). September rainfall much lower than in October. 2 or 3 months after May drier than May.
-  October peak much higher than that of May ( $O/M = 1.7 - 2.3$ ;  $> 3$  near Attur). Rainfall in August slightly lower or equal to September and both much lower than in October.

Fig. 5. Rainfall regimes



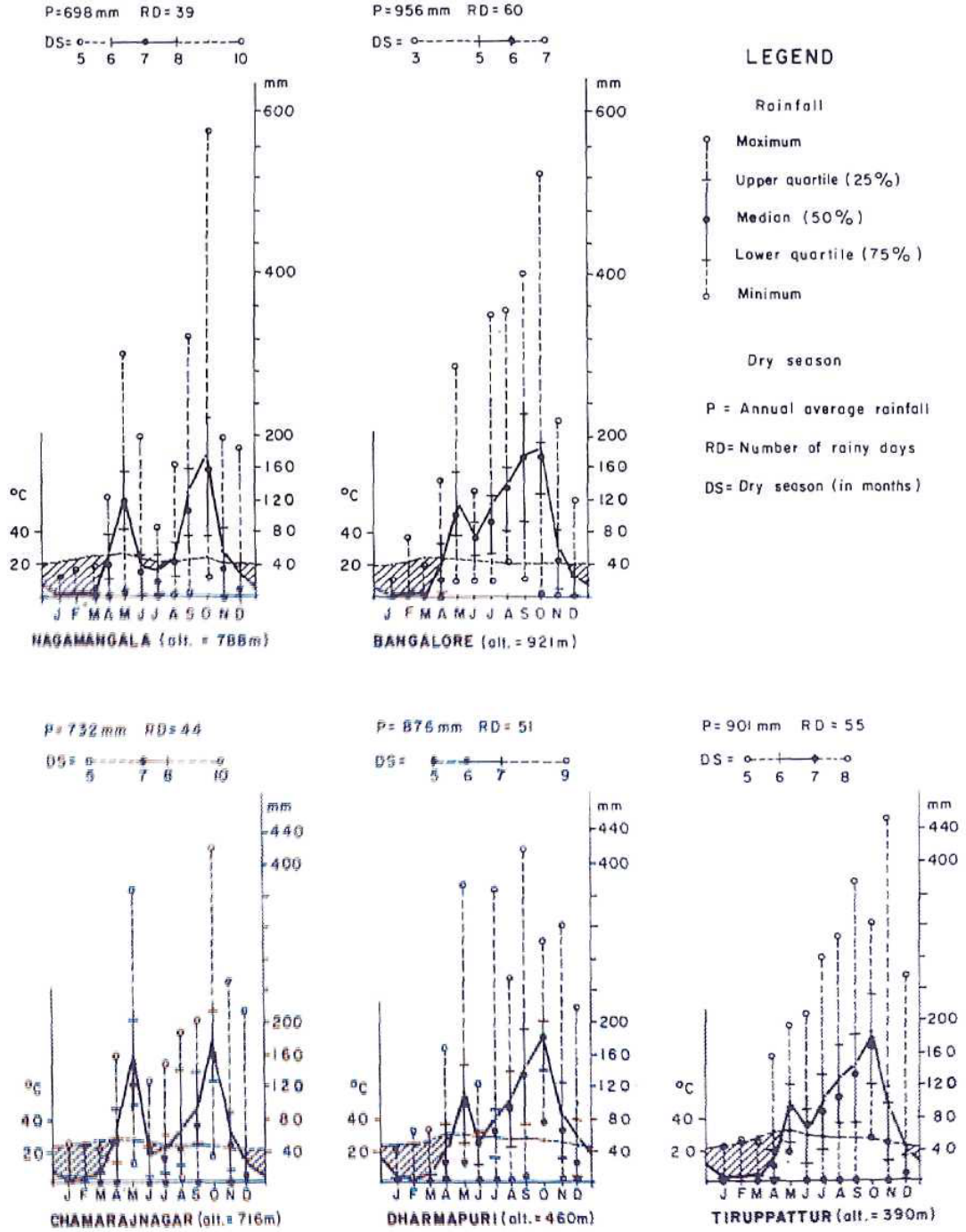


Fig. 6a. Ombrothermic diagrams

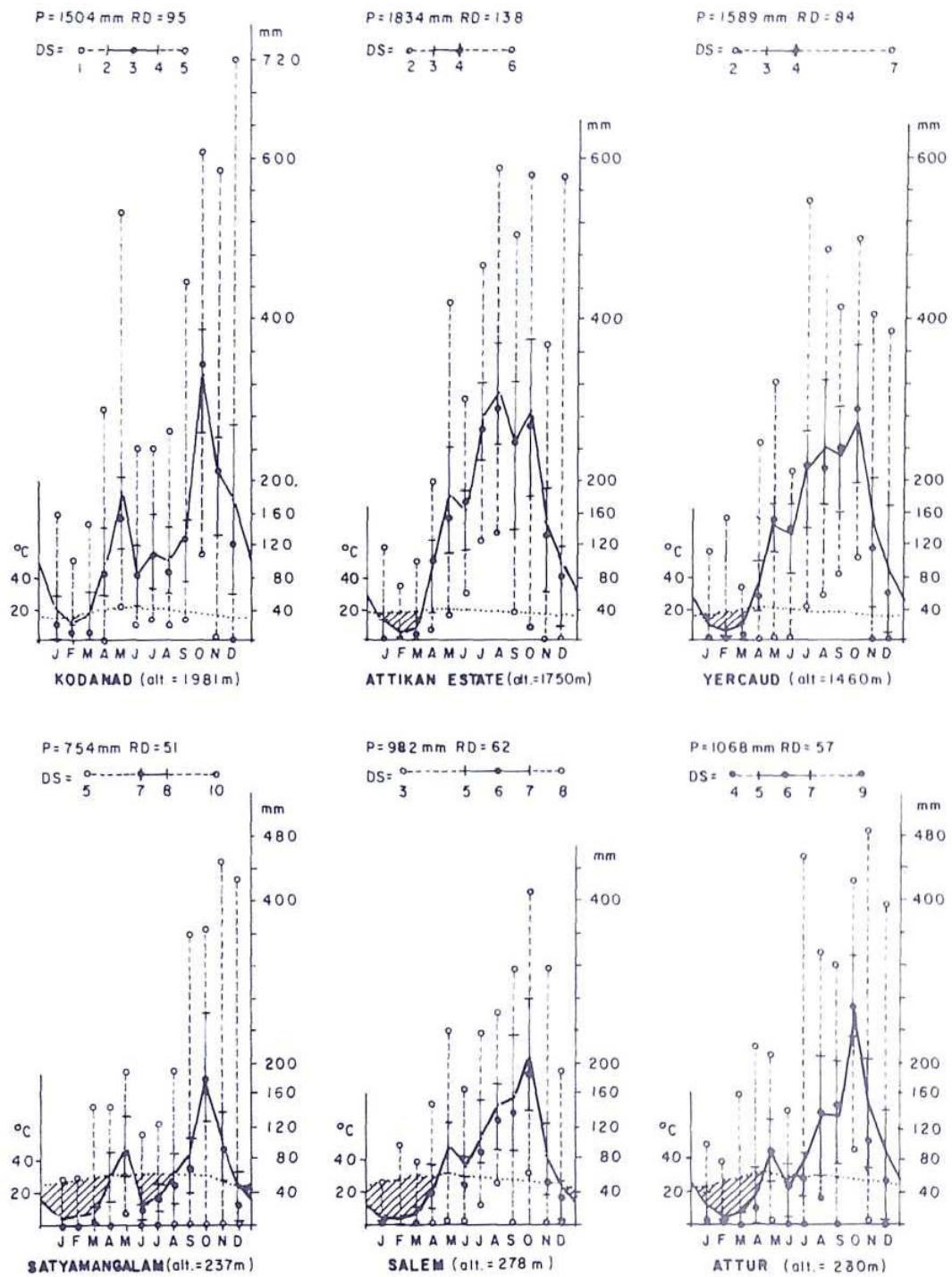


Fig. 6b. Ombrothermic diagrams

part, rainfall is generally from convection movements (peaks in May and September-October) or from depressions which form in the Bay of Bengal towards the end of the year.

a) *West-east gradient*

The shift towards the east is reflected in the gradual modifications in the relative abundance of rainfall in May and October. The main change observed is the dissymmetry in the peaks in May and September-October. In Chamrajnagar the two peaks are quite similar, while in Bangalore and Dharmapuri the peak in October is one and a half times higher (Fig. 5 and Fig. 6a), and in Salem two times higher (Fig. 6b) than the peak in May.

The equal importance of the two peaks in Chamrajnagar, which is also found in Mysore, is due to its location in the shelter of the reliefs to the east as well as to the west. However, beyond this sheltered location, the dissymmetry becomes apparent at the same longitude (Nagamangala, Fig. 6a).

b) *Influence of the year end depressions*

From October to December, the regions exposed to the east receive rainfall from depressions originating in the Bay of Bengal and moving towards India. The

formation of these depressions is very variable in number, as well as in intensity, from one year to another. This irregularity can be seen, for example, in the quartiles of Attur, Allikan Estate and Kodanad (Fig. 6b). It is observed that this influence is felt quite far inland as Kodanad is located in the Nilgiris. Besides the convective rains and the summer monsoon, the BRH and Shevaroy summits also receive rainfall from the depressions of October-November-December.

c) *North-south variations*

Two main trends are observed.

(i) increasing dissymmetry, from north to south, in the May and October peaks which reinforce the west-east gradient. In Attur, located to the southeast, the two gradients are maximum and the October peak is more than three times higher than the one in May. The sheltered Mysore - Chamrajnagar region is a special case as already mentioned.

(ii) increase in the September rainfall with latitude. North of 12°30', the peaks in September and October are more or less similar.

The region around Dharmapuri (Bara Mahals) is in an intermediate situation, reinforced by its position in the shelter of the Shevaroy, Chitteri, Kalrayan and

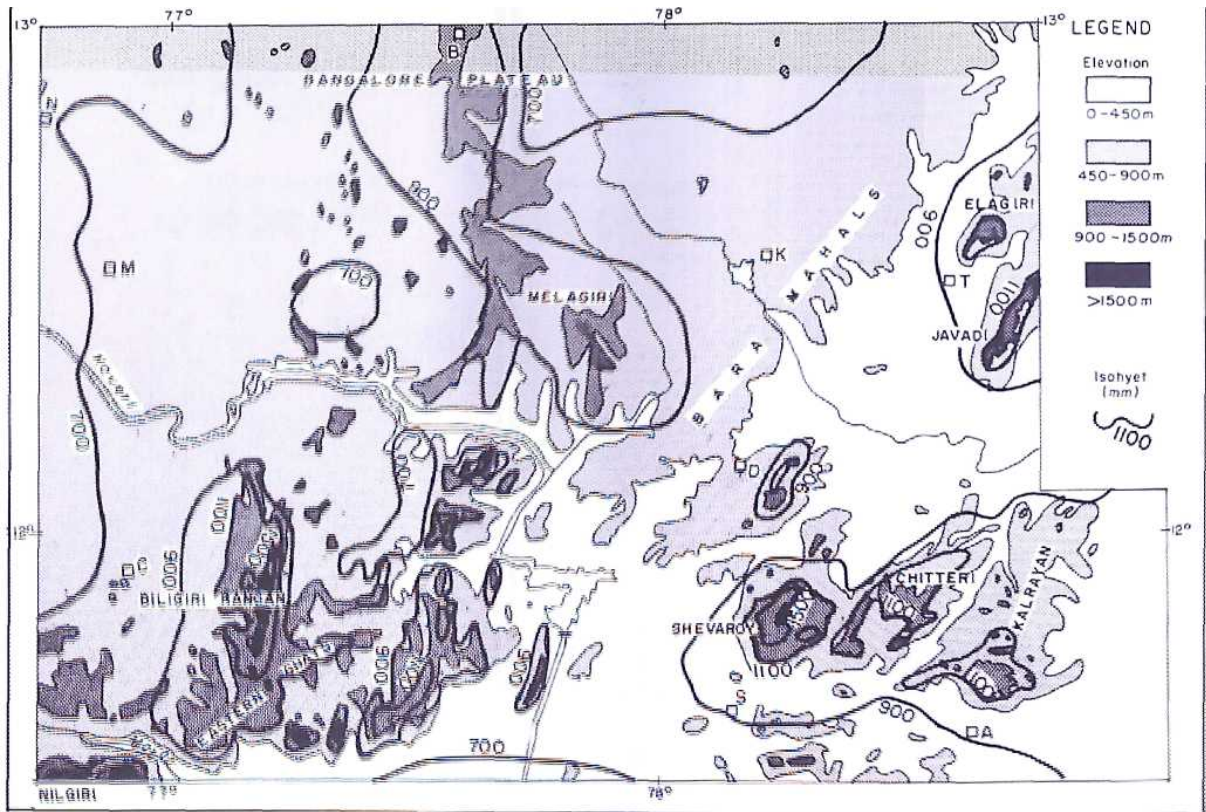


Fig. 7. Rainfall

Javadi hills. This regime extends slightly over the plateau upto Hosur, following the Tamil Nadu-Karnataka border.

The cumulative influences of these variations and rainfall patterns result in six distinct areas with similar rainfall regimes (shown by different designs in Fig. 5).

## 2. Annual rainfall

The annual rainfall value is the result of the influences of the different rainfall regimes and particular topographic situations (exposure, altitude). The rainfall distribution is given in Fig. 7. In the mapped region, rainfall varies from about 500 mm to the west of Chamrajnagar to nearly 1900 mm in the Biligiri Rangan Hills (BRH).

The driest areas are situated in the western part of the plateau, the southernmost part of the sheet and in the northeast (around Bangarapet and Kolar Gold Fields). Two more dry pockets are also found on the plateau, as a result of their sheltered location: one to the south of Kanakapura and the other along the Marthahalli river.

Rainfall exceeds 900 mm in the Nilgiris, around BRH, in the most exposed zones of the Eastern Ghats<sup>1</sup>, along a crest-line joining Melagiri and Bangalore, and around the Javadi-Elagiri and Shevaroy-Chitteri-Kalrayan hills.

Only the mountain reliefs get rainfall higher than 1100 mm. BRH and Shevaroy are the only two stations where it exceeds 1500 mm; however, it is always less than 2000 mm. The case is the same in the small part of the Nilgiris included in the sheet.

Table 2. Mean temperature (°C)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Bangalore	20.9	23.0	25.7	27.3	26.8	24.4	23.2	23.3	23.3	23.2	21.8	20.5	23.6
Coonoor	14.0	15.2	17.1	18.7	19.5	18.6	17.9	18.1	17.6	16.9	15.3	14.5	17.0
Dharmapuri	23.0	25.2	27.7	30.3	29.9	28.3	28.0	27.3	26.9	26.0	24.2	22.9	26.7
Kolar Gold Fields	20.2	22.5	25.4	28.0	27.7	25.6	24.8	24.2	24.1	23.3	21.7	20.3	24.0
Mandya	22.2	24.4	26.5	28.4	27.3	25.3	25.1	24.8	25.1	25.1	24.9	22.9	25.2
Mettur Dam	25.3	27.3	30.3	31.6	31.8	30.5	29.3	28.9	28.7	27.7	26.6	24.9	28.6
Salem	25.4	27.0	29.4	31.1	31.2	29.7	28.5	28.3	28.1	27.5	25.8	25.1	28.1
Talavady	23.7	25.1	26.6	27.7	27.3	26.6	25.3	25.8	25.8	25.5	24.8	23.8	25.7
Tiruppattur	22.9	24.8	27.3	29.5	30.5	29.3	28.2	28.1	27.6	26.5	24.2	22.7	26.8
Yercaud	16.0	17.6	20.0	21.7	21.8	20.3	19.1	18.8	18.7	18.1	16.4	15.6	18.6

<sup>1</sup> Geographically, the BRH, the Javadi, Elagiri, Shevaroy, Chitteri and Kalrayan hills form part of the Eastern Ghats. However, we will treat Javadi, Elagiri, Shevaroy, Chitteri and Kalrayan as hills of Tamil Nadu and retain the term Eastern Ghats only for the edge of the Mysore plateau.

## II - TEMPERATURE

The huge number of reliefs in this region breaks the monotony of the rainfall distribution. The corresponding temperature gradient enables the development of more humid formations. Rainfall related to orographic effect is augmented by occult precipitations, dew and fog resulting from lower temperatures.

Temperature obviously plays a role in the selection of species. Thus a number of species selected to designate a forest type are species with a narrow altitudinal amplitude—for example, *Gyrocarpus* and *Hardwickia*. Some families, such as Lauraceae, Myrtaceae and Araliaceae, are particularly well developed in the coldest regions.

Temperatures are higher in the plains (Table 2). The mean of the hottest month is 30.3 -31.8° C. In the region corresponding to the very dissymmetric rainfall regime (Salem), (the hottest month is May and the maxima exceed a mean value of 29°C during 4 months (March to June). The maximum is in April in stations less exposed to the eastern influence (Dharmapuri). Throughout the plains, the coldest month is December with mean values between 22.7° and 25.1° C.

Temperatures are naturally slightly lower on the plateau. The hottest month is April (27.3°-28.4°C), while the coldest month passes from December to January as we go westwards. This change corresponds to slightly lower temperatures: 20.2°-20.5°C in the east and 22.2°-23.7°C in the west.

At very high elevations, the temperature becomes a limiting factor for several species. In Coonoor and Yercaud, the mean minimum (in January) is between 14.5° and 15.6° C, while the mean maximum (in May) is around 20° C (19.5-21.8).

### III -DRY SEASON

The length of the dry season is another limiting factor for the vegetation. It plays an important role in the selection of species and, consequently, in the distribution of the main vegetation types.

Taking into account the limitations in the data available for accurately measuring the intensity of dryness, the dry season was calculated following Gaussen and Bagnoul's (1953) method: a month is considered dry when the rainfall (in mm) is less than twice the value of the mean temperature (in C). The ombrothermic diagrams (Fig. 6a,b), where the ordinates were established according to this ratio, help in immediately recognizing the dry months. A slightly more accurate estimate can be made by calculating the number of dry months separately for each year. The average thus obtained is generally higher than that seen in ombrothermic diagrams which have a tendency to underestimate interannual variations. Fig.6 also gives the variations in the monthly rainfall and in the number of dry months in the form of quartiles.

In the major part of the sheet, the dry season thus calculated ranges from 6 to 8 months. It is generally 7 to

8 months in regions with low rainfall (less than 700 mm) and 5 to 6 months when the rainfall exceeds 900 mm. It is only on the highest reliefs (Nilgiris, BRH, Shevaroy) that the dry season is limited to 3 or 4 months.

However, these mean values should not mask the large interannual variations. Thus, in Satyamangalam and Chamrajnagar, the dry season in 50% of the years is 7-8 months, but the extreme values vary between 5 and 10 months, *i.e.*, from simple to double. In Kodanad, in the Nilgiris, the extremes are 1 to 5 months. It is therefore clear that such constraining factors impose a very strict selection on plant species.

Another aspect to be considered in this region is the frequency of bixerism. With the exception of the crest on the plateau from the Melagiris to Bangalore, the BRH and summits of the Eastern Ghats, all the regions experience a second period of dryness after May. This period, generally 1-2 months (2-3 in the west), varies in duration and intensity from one region to another, and also from year to year, but on the average, it is observed in 6 out of 10 years.

The climatic conditions described above lead to certain adaptations in the natural vegetation, such that the major bioclimatic limits of the principal vegetation types found in the sheet can be distinguished quite easily. Naturally, some formations such as the riparian forests, for example, are found only under certain edaphic conditions and do not fit with these climatic limits.

These bioclimatic limits are described at the beginning of the study of each type.

## Chapter III

# VEGETATION TYPES

### I - DRY VEGETATION TYPES

#### A. *Albizia amara* - *Acacia* spp. type

This type greatly exceeds the limits of the Bangalore - Salem sheet. It covers most of the dry regions of the plains and hills of low elevation (less than 600 m) of Tamil Nadu (Gausson *et al.* 1961a,b, 1962, 1963: Cape Comorin and Madras sheets). It also appears in the driest regions of the Mysore plateau (rainfall about 450 to 600 mm). However, it is not found on calcimorphic soils (Gausson *et al.* 1966).

In the Bangalore - Salem sheet, it is found on the plains up to the foot of the hills, except for a part of Bara Mahals where it seems to be replaced by the *Anogeissus* - *Chloroxylon* - *Albizia* type. Nevertheless, it is difficult to distinguish these two types precisely, as they are both highly degraded and represented now by almost similar formations. The *Albizia* - *Acacia* type is again found on the plateau, in a small dry zone around Bangarapet, where the rainfall is less than 600 mm.

The rainfall regime corresponding to its distribution area is strongly dissymmetric with the rainfall peak in October distinctly higher than the one in May, for example, Satyamangalam (Fig. 6b). Rainfall generally varies between 600 and 1000 mm and the dry period from 6 to 8 months, spread over two seasons: a long season from December to April and a shorter one, of 1 to 3 months, after May.

Most often this type is represented by more or less degraded thickets, generally distant from one another and surrounded by cultivated land. These formations have resulted from intense and continuous biotic pressure acting on them since centuries. However, in some cases, especially at the foot of the hills, the *Albizia* - *Acacia* type is still found as scrub-woodland, a physiognomic stage which is now difficult to specify whether it represents the *climax* of the type or not.

In a general way, the *Albizia* - *Acacia* type is replaced on the slopes by the *Gyrocarpus* - *Acacia* type with which it shares a large number of species.

The description of this type is that of Gausson *et al.* (1963), complemented by a few additions from our own surveys.

#### 1. *Scrub* - *woodland*

These formations include an upper stratum 10 to 12 m high, generally composed of deciduous species, and an undergrowth of thorny shrubs and climbers which is sometimes almost impenetrable. A grass cover is present between the shrubs, specially in the clearings.

##### - Tree stratum

*Acacia chundra*<sup>1</sup>  
*Acacia leucophlœa*  
***Albizia amara***  
*Azadirachta indica*  
*Canthium dicoccum*  
*Chloroxylon swietenia*  
*Cleistanthus collinus*  
***Erythroxylon monogynum***  
*Strychnos potatorum*  
***Wrightia tinctoria***  
*Ziziphus mauritiana*  
***Ziziphus xylopyrus***

##### - Understorey

*Acacia ferruginea*  
*Acacia latronum*  
***Atalantia monophylla***  
*Benkara malabarica*  
*Canthium dicoccum*  
*Capparis divaricata*  
*Carissa spinarum*  
***Catunaregam dumetorum***  
*Commiphora berryi*  
*Dichrostachys cinerea*  
***Euphorbia antiquorum***  
*Flacourtia indica*  
*Gmelina asiatica*  
*Lantana camara*  
*Maytenus emarginata*  
***Pterolobium hexapetalum***  
***Securinega leucopyrus***  
*Tarenna asiatica*

##### - Small shrubs and grass cover:

***Acalypha fruticosa***  
*Aristida adscensionis*  
*Aristida hystrix*  
***Barleria buxifolia***  
*Cassia auriculata*

<sup>1</sup> The most common species are indicated in bold.

*Dodonaea viscosa*

and under moderate grazing:

*Aristida funiculata*

*Eragrostiella bifaria*

*Heteropogon contortus*

*Tragus biflorus*

### 2. Dense thicket

This formation is derived from the preceding one by degradation. Species which provide timber and fuel-wood, specially *Albizia amara*, *Chloroxylon swietenia*, *Azadirachta indica* and *Wrightia tinctoria*, have been overexploited. This degradation results in drier conditions favouring the growth of spiny and climbing species such as *Pterolobium indicum* and *Acacia pennata*. The ground is covered by an impenetrable undergrowth composed of shrubs about 4 m high, with a few isolated trees.

The floristic composition is more or less the same as that of the undergrowth of scrub-woodlands. The dominant species are:

***Acacia pennata***

*Albizia amara*

*Canthium dicoccum*

***Capparis divaricata***

*Catunaregam dumetorum*

*Chloroxylon swietenia*

***Dichrostachys cinerea***

*Flacourtia indica*

*Maytenus emarginata*

***Pterolobium***

***hexapetalum***

***Securinega leucopyrus***

*Ziziphus xylopyrus*

### 3. Discontinuous thicket to low scattered shrubs

The low discontinuous thicket is still more degraded than the preceding stage and is heavily grazed. It is easy to move between these 2-4 m high, thick thorny shrubs. Thornless and edible species grow in the middle of these bushes, away from the reach of animals. A few isolated trees emerge in some places. Climbing and thorny species are abundant and a sparse grass cover is found between the shrubs.

Increasing degradation gradually leads to the last stage: scattered shrubs. The soil is then highly exposed to erosion, and has only a thin graminaceous cover of *Aristida adscensionis*, *A. hystrix* and sometimes *Cymbopogon coloratus*. A few scattered undershrubs are found:

***Barleria buxifolia***

*Calotropis gigantea*

***Cassia auriculata***

***Dodonaea viscosa***

***Euphorbia antiquorum***

*Euphorbia tirucalli*

*Opuntia dillenii*

On steep and eroded slopes, there is hardly any vegetation left between the rocks. *Aristida hystrix* is very scattered and the shrubs are also far apart.

### B. *Gyrocarpus jacquini* and/or *Hardwickia binata* types

Formations on the slopes from the foothills up to elevations of 600 to 700 m are grouped under this type. *Gyrocarpus* type is found from the southern tip of India on the eastern slopes of the Ghats up to northwest of Madras on poor, most often skeletal, soils.

On the sheet, these formations occupy most of the lower slopes of the Eastern Ghats and the hills of Tamil Nadu. They are also found on the steep slopes of the valleys of the Kaveri and its tributaries where they form the transition to the *Anogeissus* - *Chloroxylon* - *Acacia* type which generally succeeds them in altitude.

The *Gyrocarpus* type has a large number of species in common with the *Albizia* - *Acacia* type and, in the highest parts, some species of the next type. This type is well characterised by the presence of *Gyrocarpus jacquini* which is often very common.

On the slopes and in the valleys of the Eastern Ghats<sup>2</sup>, *Gyrocarpus* is associated with *Hardwickia binata* which also seems to be adapted to skeletal soils and hardly grows above 800 m. *Hardwickia* is less common on the slopes of the eastern hills (Shevaroy, Kalrayan, Javadi).

The formations found on the part of the plateau dominating the valleys of the Kaveri and its tributaries (for example, Madeshwaramalai plateau) where *Hardwickia* and *Gyrocarpus* are still found, have been included in this type. However, *Gyrocarpus* becomes increasingly rare and then disappears completely as we go towards the interior of the plateau. The forest type then corresponds to the *Hardwickia* - *Anogeissus* series described by Gaussen *et al.* (1966) which we have not identified separately here.

At the northern limit of the sheet (in the Bangarapet region) begins the *Hardwickia* - *Pterocarpus santalinus* - *Anogeissus* series (described by Gaussen *et al.* 1962, 1963) whose area extends far north up to 17° N. We have not recognised this series as it is represented here only by a few thickets which are, moreover, highly degraded.

The intensity of biotic pressure has resulted in the disappearance of large areas of other formations in the

<sup>2</sup> See footnote Chapter II

plains and on the plateau. On the other hand, the *Gyrocarpus* and *Hardwickia* types are relatively better protected as they are generally found occupy in a less accessible sites. On the plateau, in the one and same zone, are found thorny/spiny thickets of *Anogeissus - Chloroxylon - Albizia* type on flat terrain, whereas on steep slopes, where man and cattle have no easy access, prevail savanna-woodland or tree savanna with *Hardwickia*. Topography seems to play an important role in separating the *Anogeissus - Chloroxylon - Albizia* and *Hardwickia* types.

These formations receive rainfall between 500 and 900 mm, with a very dissymmetric distribution in the September-October and May rainfall. This dissymmetry gradually disappears towards the interior of the plateau, which also corresponds to the disappearance of *Gyrocarpus*. The number of dry months is 6-8 months, most often distributed over two periods. Considering the exposure and low water retaining capacity of the soils which are generally skeletal, this dry period actually corresponds to intense drought conditions aggravated by a wide inter-annual variability.

#### 1. *Scrub-woodland and thicket*

The *Gyrocarpus - Hardwickia* type is most often found as scrub-woodland or thicket which may be low and discontinuous when degradation is more intense. The physiognomies are comparable to those described in the preceding type. Generally the tree stratum is clear and the trees are stunted and less than 15 m high.

The best represented species in this type are:

*Boswellia serrata*  
*Cochlospermum religiosum*  
***Commiphora caudata***  
***Givotia rottleriformis***  
***Gyrocarpus jacquini***  
*Hardwickia binata*  
*Sterculia urens*

Most of the other common species belong to the *Albizia - Acacia* type though there are some coming from the deciduous forest type located higher up in elevation:

*Abrus precatorius*  
***Acacia chundra***  
*Acacia caesia*  
*Acacia latronum*  
*Acacia leucophlæa*  
***Albizia amara***  
*Albizia odoratissima*  
*Anogeissus latifolia*  
*Azadirachta indica*

***Barleria acuminata***  
*Bombax ceiba*  
*Bridelia crenulata*  
*Butea parviflora*  
*Calotropis gigantea*  
*Canthium parviflorum*  
*Cardiospermum halicacabum*  
***Catunaregam dumetorum***  
*Chloroxylon swietenia*  
*Chukrasia tabularis*  
*Cissus quadrangularis*  
*Cordia monoica*  
***Dalbergia paniculata***  
*Dendrocalamus strictus*  
*Dichrostachys cinerea*  
*Diospyros melanoxylon*  
***Dodonaea viscosa***  
*Dolichandrone falcata*  
*Ehretia pubescens*  
*Emblica officinalis*  
***Erythroxylon monogynum***  
***Euphorbia antiquorum***  
*Euphorbia nivulia*  
***Ficus mollis***  
*Gardenia latifolia*  
*Garuga pinnata*  
*Hiptage benghalensis*  
***Lannea coromandelica***  
*Lantana camara*  
***Limonia acidissima***  
*Maytenus emarginata*  
*Polyalthia cerasoides*  
*Premna tomentosa*  
*Pterocarpus marsupium*  
***Pterolobium hexapetalum***  
*Rhus mysorensis*  
*Santalum album*  
*Sapindus emarginatus*  
*Sarcostemma acidum*  
*Schleichera oleosa*  
***Securinea leucopyrus***  
*Strychnos potatorum*  
*Tarenna asiatica*  
*Terminalia bellerica*  
*Vitex altissima*  
***Wrightia tinctoria***  
*Wrightia tomentosa*  
*Ziziphus mauritiana*  
***Ziziphus ænoplia***  
*Ziziphus xylopyrus*

In the low and discontinuous thickets, some species such as *Hardwickia* and *Anogeissus* are not found any more, while the formation becomes richer in thorny and climbing plants.



## 2. Savanna-woodland and tree savanna

On the plateau, a little away from the eastern influence, besides the scrub-woodlands and thickets are found more open formations with a bigger and practically continuous grassy cover which may be considered as savanna-woodlands or tree savanna depending on the tree density. The trees are stunted and rarely exceed a height of 10 m in savanna-woodlands and 8 m in tree savannas. The main species are:

***Acacia chundra***  
*Acacia leucophlœa*  
***Albizia amara***  
***Anogeissus latifolia***  
***Boswellia serrata***  
*Butea monosperma*  
*Cassia auriculata*  
*Cassia fistula*  
*Catunaregam dumetorum*  
*Chloroxylon swietenia*  
***Dalbergia paniculata***  
*Diospyros melanoxylon*  
*Dodonaea viscosa*  
***Dolichandrone atrovirens***  
*Dolichandrone falcata*  
***Embliba officinalis***  
*Erythroxyton monogynum*  
*Flacourtia indica*  
*Gardenia latifolia*  
***Grewia tiliifolia***  
***Hardwickia binata***  
*Holoptelea integrifolia*  
***Lannea coromandelica***  
*Maytenus emarginata*  
*Premna tomentosa*  
*Pterocarpus marsupium*  
*Securinega leucopyrus*  
*Sterculia urens*  
*Stereospermum personatum*  
*Tarenna asiatica*  
***Wrightia tinctoria***  
*Ziziphus xylopyrus*

Among the grasses:

*Aristida adscensionis*  
*Aristida hystrix*  
*Cymbopogon martini*  
***Heteropogon contortus***

### C. *Anogeissus latifolia* - *Chloroxylon swietenia* - *Albizia amara* type

This type occupies an intermediate position between the preceding type and the *Anogeissus* – *Pterocarpus* –

*Terminalia* (APT) type. It is generally found between 600 and 900 m, but can sometimes go up to 1200 m under slightly drier conditions.

Because of its altitudinal range, it can actually extend only over the plateau. If present, it constitutes just a brief transition between the *Gyrocarpus* - *Hardwickia* and *Anogeissus* - *Pterocarpus* - *Terminalia* types over steep slopes.

On the plateau, its area occupies the western part of the sheet up to the foot of the Biligiri Rangan Hills where, at about 900 m, it is followed by the APT or *Anogeissus* - *Tectona* - *Terminalia* (ATT) types. This type also stops at the level of the more humid crest between Bangalore and the Melagiris. It is found again to the east of this region along the edge of the plateau except for the dry pocket (already mentioned) near Bangarapet. The presence of *Anogeissus* in the Bara Mahals at the foot of the Eastern Ghats leads to the supposition that, in this region, it may also be found at lower elevations. However, this cannot be stated categorically because of the highly degraded condition of the relic formations.

According to Gaussen *et al.* (1966) the area of this type extends northwards up to a latitude slightly above Belgaum.

This distribution area corresponds to rainfall between 600 and 900 mm. The rainfall regime does not seem to play a determining role because this type is found in regions where the rainfall peaks of September-October and May are highly dissymmetric (like in Nagamangala, Fig. 6a), as well as in places where the two peaks are similar (Chamrajnagar). The number of dry months varies between 6 and 8 months in two periods in the mapped region.

It is difficult to know now what would have been the *climax* of this type. Under the joint onslaught of drought and exploitation for fuelwood, the best stands rarely attain the physiognomy of savanna-woodland. Away from the hills, only increasingly degraded stages, from thickets to low scattered shrubs are found.

## 1. Savanna-woodland to tree savanna

All the intermediates between these two stages are present, with physiognomies similar to those described in the preceding type.

- Tree stratum (about 10 m high)

*Aegle marmelos*  
***Albizia amara***  
***Anogeissus latifolia***  
*Azadirachta indica*  
*Bauhinia racemosa*  
***Buchanania axillaris***  
*Cassia fistula*

***Chloroxylon swietenia***  
*Dalbergia paniculata*  
*Dendrocalamus strictus*  
*Diospyros melanoxylon*  
***Dolichandrone falcata***  
***Emblica officinalis***  
*Holarrhena antidysenterica*  
*Holoptelea integrifolia*  
***Lannea coromandelica***  
***Limonia acidissima***  
*Madhuca longifolia* var. *latifolia*  
*Premna tomentosa*  
*Stereospermum personatum*  
*Strychnos potatorum*  
***Wrightia tinctoria***

On the slopes, *Gyrocarpus jacquini* and *Cochlospermum religiosum* can be found, but they are not very common.

- Undergrowth

***Acacia chundra***  
*Acacia latronum*  
*Argyreia cuneata*  
*Canthium dicoccum*  
***Carissa spinarum***  
***Catunaregam dumetorum***  
*Cipadessa baccifera*  
*Diospyros melanoxylon*  
*Diospyros montana*  
*Dodonaea viscosa*  
***Erythroxylon monogynum***  
*Gmelina asiatica*  
***Ixora arborea***  
*Mundulea sericea*  
*Rivea hypocrateriformis*  
*Securinega leucopyrus*

- Graminaceous cover

*Aristida adscensionis*  
*Aristida hystrix*  
*Chrysopogon fulvus*  
*Heteropogon contortus*

2. *Dense thicket to low scattered shrubs*

These degradation stages are the result of abusive and continuous exploitation of wood which has practically removed the tree stratum. The resulting increase in dryness at the level of the undergrowth and overgrazing favour the growth of thorny species. Among the most common species may be cited:

***Acacia chundra***  
*Acacia latronum*  
*Albizia amara*  
*Anogeissus latifolia* (shrub form)

*Apluda varia*  
*Aristida hystrix*  
***Barleria prionitis***  
***Canthium dicoccum***  
*Cassia auriculata*  
***Catunaregam dumetorum***  
***Chloroxylon swietenia***  
*Cymbopogon martini*  
*Dichrostachys cinerea*  
*Dodonaea viscosa*  
***Erythroxylon monogynum***  
*Euphorbia antiquorum*  
*Heteropogon contortus*  
***Ixora arborea***  
*Lantana camara*  
*Limonia acidissima*  
***Maytenus emarginata***  
*Phoenix humilis*  
*Pterolobium hexapetalum*  
*Rhus mysorensis*  
*Santalum album* (some times quite common)  
***Securinega leucopyrus***  
*Strychnos potatorum*  
***Tarenna asiatica***  
***Ziziphus ænoplia***

Under intense biotic pressure, these dense thickets are reduced to discontinuous thickets whose shrubs are separated by large barren areas. In the ultimate stage, only a few shrubs which are inedible for animals are left on the denuded sites

**D. *Anogeissus latifolia* - *Pterocarpus marsupium* - *Terminalia* spp. type**

This type includes formations which resemble the *Anogeissus* – *Tectona* - *Terminalia* spp. (ATT) type, but differs from it in that here teak is usually rare under natural conditions (its presence is indicated on the map by the letter T).

These formations are found between 900 and 1350 m on the slopes of the Biligiri Rangan Hills and of the reliefs of the Eastern Ghats and hills of Tamil Nadu (Shevaroy, Kalrayan, etc.). Similar formations are also found in the more humid zone of the plateau connecting Guttirayan, Melagiris and Bangalore.

Rainfall is higher than 900 mm, and often between 1100 and 1400 mm. The rainfall regime is dissymmetric, except for a part of BRH, with practically no summer monsoon rains. This difference may be essential for the richness in teak because in the three sheets situated in the west (Belgaum-Dharwar-Panaji, Shimoga and Mercara-Mysore), the ATT type is always found in

regions with a rainfall regime strongly dominated by rains in June-July. The dry season is 5-6 months.

Most often, the type is represented by savanna-woodlands or tree savannas. A true dense deciduous forest is rare and is found only as small patches in the more humid valleys which are relatively protected from human interference. In regions where biotic pressure is intense, the type is degraded into scrub-woodland, and then increasingly to low and discontinuous thickets.

#### 1. Savanna-woodland to tree savanna

The physiognomies are the same as those of similar formations in the other types.

##### - Upper stratum

*Albizia odoratissima*  
**Anogeissus latifolia**  
*Bauhinia purpurea*  
*Bauhinia racemosa*  
*Bombax ceiba*  
**Buchanania lanzan**  
*Butea monosperma*  
**Careya arborea**  
*Celtis tetrandra*  
**Dalbergia latifolia**  
**Dalbergia paniculata**  
*Ficus microcarpa*  
*Ficus tsihela*  
*Garuga pinnata*  
*Gmelina arborea*  
**Grewia tiliifolia**  
*Holoptelea integrifolia*  
*Hymenodictyon excelsum*  
**Kydia calycina**  
*Lagerstræmia parviflora* (rare)  
*Premna tomentosa*  
**Pterocarpus marsupium**  
*Schleichera oleosa*  
*Schrebera swietenoides*  
*Sterculia guttata*  
*Sterculia villosa*  
**Stereospermum personatum**  
*Syzygium cumini*  
*Tectona grandis* (rare)  
**Terminalia alata**  
*Terminalia bellirica*  
*Terminalia chebula* (locally abundant)  
**Terminalia paniculata**  
*Toona ciliata*

##### - Intermediate stratum

*Bridelia retusa*  
*Canthium*  
*dicoccum*  
*Casearia elliptica*

##### **Cassia fistula**

*Catunaregam torulosa*  
*Chukrasia tabularis*  
**Clausena indica**  
*Dendrocalamus strictus*  
*Diospyros montana*  
**Emblia officinalis**  
*Eriolæna hookeriana*  
**Glochidion velutinum**  
*Litsea deccanensis*  
*Mallotus philippensis*  
*Meyna laxiflora*  
*Radermachera xylocarpa*  
*Streblus asper*  
*Wrightia tinctoria*  
*Ziziphus rugosa*

##### -Undergrowth

**Argyreia cuneata**  
*Breynia rhamnoides*  
*Cipadessa baccifera*  
*Clerodendrum serratum*  
*Flemingia macrophylla*  
**Grewia hirsutus**  
**Helicteres isora**  
*Indigofera cassioides*  
*Leea chinensis*  
*Mæsa indica*  
*Munronia pinnata*  
**Pavetta tomentosa**  
*Phœnix humilis*  
*Polygala arillata*  
*Tarenna asiatica*

The most common grasses are:

*Cymbopogon nardus*  
**Themeda cymbaria.**

*Boswellia serrata*, *Givotia rottleriformis* and *Sterculia urens* are sometimes found in the transition to the *Gyrocarpus* type.

*Shorea roxburghii* is sometimes found in pure patches, generally on shallow clayey soil (for example, in Tali RF (Housur Range) and also in Chitteri Hills).

#### 2. Dense thicket to low scattered shrubs

The main tree species in a stunted form are:

*Acacia leucophlæa*  
*Albizia amara*  
**Anogeissus latifolia**  
*Buchanania lanzan*  
*Chloroxylon swietenia*  
**Dalbergia paniculata**  
**Grewia tiliifolia**  
*Premna tomentosa*

*Pterocarpus marsupium*  
*Terminalia alata*

In the bushy stratum are found most of the species cited in the preceding types:

***Acacia chundra***  
*Carissa carandas*  
***Catunaregam torulosa***  
***Cipadessa baccifera***  
*Clematis gouriana*  
*Dodonaea viscosa*  
*Erythroxylon monogynum*  
*Flacourtia indica*  
***Lantana camara***  
*Pterolobium hexapetalum*  
*Santalum album* (locally quite common)  
*Tarenna asiatica*

**E. *Anogeissus latifolia* - *Tectona grandis* -  
*Terminalia alata* type**

This type is practically absent in this region. It is found only in a small zone, richer in teak, on the western flank of the BRH, between 900 and 1200 m and in some tree savannas on the northern slope of the Nilgiris, at elevations below 1100 m. In all other places, the density of teak is too low to relate the formations to this type.

A more detailed description is given in the explanatory booklet (Pascal 1986). Only the most common species are cited here.

- Dominant stratum

*Albizia lebbek*  
***Albizia odoratissima***  
***Anogeissus latifolia***  
*Bombax ceiba*  
***Buchanania lanzan***  
*Dalbergia latifolia*  
*Dalbergia paniculata*  
*Garuga pinnata*  
*Haldina cordifolia*  
*Holoptelea integrifolia*  
***Lagerstræmia parviflora***  
*Lannea coromandelica*  
***Pterocarpus marsupium***  
*Schrebera swietenoides*  
*Shorea roxburghii* (localised)  
***Stereospermum personatum***  
***Tectona grandis***  
***Terminalia alata***  
*Terminalia chebula*  
***Terminalia paniculata***

- Intermediate stratum

***Bauhinia racemosa***  
*Bridelia retusa*

*Butea monosperma*  
***Careya arborea***  
***Cassia fistula***  
*Dendrocalamus strictus*  
*Diospyros melanoxylon*  
***Emblica officinalis***  
*Flacourtia indica*  
*Gmelina arborea*  
***Grewia tiliifolia***  
*Holarrhena antidysenterica*  
*Ougeinia oojeinensis* (localised)  
*Wrightia tinctoria*

- Undergrowth

*Acacia chundra*  
*Canthium dicoccum*  
*Carissa congesta*  
*Casearia elliptica*  
*Catunaregam torulosa*  
*Diospyros montana*  
***Helicteres isora***  
***Lantana camara***  
*Leea asiatica*  
*Maytenus emarginata*  
*Mundulea sericea*  
*Thespesia lampas*  
***Ziziphus ænoplia***  
*Ziziphus rugosa*

- Ground cover: herbs, small sized shrubs and grasses

*Achyranthes aspera*  
*Apluda mutica* var. *aristida*  
*Aristida hystrix*  
*Bidens biternata*  
***Chromolaena odorata***  
*Crotalaria calycina*  
*Crotalaria hirsuta*  
*Crotalaria sericea*  
***Cymbopogon coloratus***  
***Cymbopogon confertiflorus***  
***Cymbopogon martini***  
***Desmodium pulchellum***  
*Elephantopus scaber*  
*Gomphostemma heyneanum*  
***Grewia hirsuta***  
*Heteropogon contortus*  
*Hibiscus furcatus*  
***Indigofera wightii***  
*Justicia simplex*  
*Leucas marruboides*  
*Ophiopogon intermedius*  
*Sida acuta*  
***Themeda triandra***.

## II - MOIST VEGETATION TYPES

### A. Low elevation (below 1000 m)

Moist formations at low elevations are poorly represented on the sheet. In fact, except for some special situations, the general climatic conditions are not conducive for their spread, and human activities further contribute to their reduction. They are thus found only in the valleys. The best formations are on the western slopes of the Biligiri Rangan Hills; elsewhere, they are most often confined to river banks, in the most inaccessible regions.

*Terminalia arjuna* - *Syzygium cumini* - *Pongamia riparian* type

Under best conditions, this type occurs as forest galleries with a top canopy often exceeding 20 m. The stratification underneath is distinctly 3 or 4 layered. Big buttressed trees can also be seen near streams. However, the canopy does not generally exceed 15 m and the stratification below is not clearly defined.

Among the most common species are:

- Dominant stratum

*Anthocephalus cadamba*  
*Celtis tetrandra*  
*Chukrasia tabularis*  
***Madhuca longifolia***  
***Mangifera indica***  
***Pongamia pinnata***  
*Salix tetrasperma*  
*Spondias pinnata*  
***Syzygium cumini***  
***Terminalia arjuna***  
*Toona ciliata*

- Understorey

*Atalantia monophylla*  
*Homonioia riparia* (on river bed)  
*Vitex leucoxyton*

- Undergrowth includes

*Glycosmis pentaphylla*  
*Salix* sp.

### B. Medium elevation (altitude 750-1400 m)

The area of the formations at medium elevations is very limited as seen on the map. They are found naturally on the reliefs, most often in the form of forest patches subject to intense anthropic pressure. Very often their

area is too small to be depicted on a map at this scale (250m = 1 mm).

#### 1. *Elaeocarpus tuberculatus* - *Michelia champaca* - *Canarium strictum riparian* type

Narrow strips of tall evergreen forests are encountered along streams in the middle of deciduous forests. They depend on the high moisture content of the soil.

These ripicole forests are found between 1000 and 1400 m. They are more common on the slopes of BRH and the Eastern Ghats than on the hills dominating the plains of Tamil Nadu, and better developed on the western slopes than on the eastern slopes. Sometimes, they are gradually replaced towards lower elevations by the preceding type. At higher elevations, they constitute only a facies of evergreen forests. In areas having good drainage, they are usually replaced by the *Diospyros* - *Memecylon* - *Olea* type.

It is in this kind of formation that we find a remarkable tree of *Michelia champaca*, worshipped for its great antiquity. Located in Gundal Valley (BRH), this pluricentenary tree attracts devotees from distant places. The Reserved Forest in which this tree is found is named after the vernacular Kannada name of this species, Dodda Sampige.

A detailed description of this type is given in Ramesh (1989), from which the floristic list given in the Annexe is also taken. Four arborescent strata and one shrubby and herbaceous stratum are recognized. The tallest trees such as *Elaeocarpus tuberculatus* and *Salix tetrasperma* exceed 25 m. The remaining species of the upper stratum are between 20 and 25 m.

Only the important species of the different structural ensembles are given below:

- Upper stratum

*Acrocarpus fraxinifolius*  
***Aphanamixis polystachya***  
***Bischofia javanica***  
***Canarium strictum***  
*Cassine glauca*  
***Dimocarpus longan***  
*Elaeocarpus serratus*  
*Elaeocarpus tuberculatus*  
*Ficus nervosa*  
*Ficus tsjahela*  
*Ficus virens*  
*Mangifera indica*  
*Meliosma pinnata* ssp. *arnottiana*  
*Michelia champaca*  
*Persea macrantha*  
*Salix tetrasperma*  
***Syzygium cumini***  
***Toona ciliata***

A few deciduous species are sometimes found in this stratum; however, they are less common:

*Celtis tetrandra*  
*Dalbergia latifolia*  
*Grewia tiliifolia*  
*Pterocarpus marsupium*  
*Stereospermum personatum*  
*Terminalia alata*

- Dominant strata:

***Actinodaphne lawsonii***  
***Antidesma menasu***  
***Canthium dicoccum***  
*Casearia ovata*  
*Cinnamomum sulphuratum*  
*Cinnamomum travancoricum*  
*Cryptocarya neilgherrensis*  
***Euodia lunu-ankenda***  
*Ficus mollis*  
*Ficus racemosa*  
***Litsea floribunda***  
*Mallotus philippensis*  
***Neolitsea zeylanica***  
*Olea glandulifera*  
*Phæbe paniculata*  
***Viburnum punctatum***  
*Xantolis tomentosa*

Several species are found only in openings where they are also more abundant:

*Callicarpa tomentosa*  
*Chionanthus ramiflora*  
*Clerodendrum viscosum*  
*Glochidion velutinum*  
*Macaranga peltata*  
*Mallotus tetracoccus*  
*Meyna laxiflora*  
*Sterculia guttata*

A few deciduous species are also found, most often at the edges or in openings:

*Careya arborea*  
*Cassia fistula*  
*Emblica officinalis*  
*Erythrina stricta*  
*Kydia calycina*

- Undergrowth:

*Ardisia solanacea*  
*Atalantia wightii*  
*Cipadessa baccifera*  
*Clausena indica*  
***Cocculus laurifolius***  
*Eriolæna hookeriana*  
*Helicteres isora*

*Mæsa indica*  
*Nothapodytes fetida*  
*Psychotria elongata*  
*Psychotria nigra*  
*Symplocos cochinchinensis*  
*Syzygium malabaricum* (swampy habitats)  
*Ziziphus rugosa*

- Shrubs and herbaceous layer

Paucity of species in this stratum may be attributed to rocky outcrops and eroded soils. Common shrubs and herbs found are:

*Arisæma* sp.  
*Chasalia ophioxyloides*  
*Cipadessa baccifera*  
*Elatostema lineolatum*  
*Globba bulbifer*  
*Munronia pinnata*  
*Pavetta indica*  
*Polygonum chinensis*

- Climbers

*Allophylus cobbe*  
*Asparagus racemosus*  
***Calamus gamblei***  
*Carissa inermis*  
*Diploclisia glaucescens*  
*Entada pursætha*  
*Gnetum ula*  
***Hiptage benghalensis***  
*Jasminum azoricum*  
***Mezoneuron cuculatum***  
*Peperomia* sp.  
*Piper hymenophyllum*  
*Scutia myrtina*  
*Toddalia asiatica* var. *floribunda*

2. *Mesua ferrea* - *Palaquium ellipticum* - *Olea glandulifera* evergreen forest type

This type is represented only by a forest patch of 0.5 km<sup>2</sup> in the Gundal Valley in the BRH, at an elevation of 1300-1400 m. It has, nevertheless, been classified as a type because of the originality of its floristic composition which expresses both the western and eastern influences. In fact, this is the eastern limit for a large number of characteristic species of the Western Ghats, such as *Mesua ferrea* and *Palaquium ellipticum*. Characteristic species of the eastern slopes, like *Olea glandulifera*, are found growing along with them.

Ramesh (1989) has made a detailed study of this type. The basal area and height of the formation are quite comparable to those of the dense evergreen forests of the Western Ghats. Floristic richness is also high, as 107 tree species have been enumerated. However, the

density is less, probably a consequence of human interference, which is also expressed in the richness of species characteristic of openings (the forest patch is adjacent to a coffee estate). This relic forest is thus in imminent danger of disappearing.

Only species which are very common or interesting from the phytogeographic point of view are cited here. The complete floristic list is given in the Annexe.

Emergents and upper canopy trees :

*Aglaia jainii*  
*Beilschmiedia wightii*  
*Canarium strictum*  
*Casearia ovata*  
*Cinnamomum keralense*  
***Dimocarpus longan***  
*Diospyros ovalifolia*  
*Diospyros sylvatica*  
*Eleocarpus serratus*  
*Epiprinus mallotiformis*  
*Ficus nervosa*  
*Litsea oleoides*  
*Mesua ferrea*  
***Myristica dactyloides***  
***Neolitsea zeylanica***  
***Palaquium ellipticum***  
*Persea macrantha*  
*Phæbe paniculata*  
*Toona ciliata*

- Middle storey:

*Actinodaphne bourdillonii*  
*Agrostistachys meeboldii*  
*Aphanamixis polystachya*  
*Artocarpus heterophyllus*  
*Bischofia javanica*  
*Cinnamomum malabathrum*  
*Cryptocarya neilgherrensis*  
*Euodia lunu-ankenda*  
*Isonandra perrottetiana*  
*Litsea floribunda*  
*Macaranga peltata*  
*Meliosma simplicifolia* var. *pungens*  
*Olea glandulifera*  
*Sterculia guttata*

- Understorey:

*Antidesma menasu*  
*Ardisia pauciflora*  
*Chionanthus ramiflora*  
*Clerodendrum viscosum*  
*Mallotus philippensis*  
*Mallotus stenanthus*  
*Mallotus tetracoccus*  
***Meiogyne pannosa***  
*Neopeltandra longipes*

*Syzygium hemisphericum*  
*Villebrunea integrifolia*

- Shrubs and herbaceous layer:

*Arisæma* sp.  
*Atalantia wightii*  
*Clausena dentata*  
*Elatostema lineolatum*  
*Nilgirianthus barbatus*  
*Ophiopogon intermedius*  
*Psychotria elongata*

- Climbers:

*Allophylus cobbe*  
*Calamus gamblei*  
*Carissa inermis*  
*Gnetum ula*  
*Hiptage benghalensis*  
*Piper* sp.  
*Toddalia asiatica* var. *floribunda*  
*Zanthoxylum tetraspermum*

3. *Diospyros ovalifolia* - *Memecylon lushingtonii* - *Olea glandulifera* evergreen to semi-evergreen forest type

This type is characterised by the abundance of species typical of the Eastern Ghats, like the three species used to designate the type. Another distinguishing feature of this type is the absence of some of the characteristic species of the Western Ghats, such as *Mesua ferrea*, *Miclielia champaca* and *Palaquium ellipticum*.

It is found in the valleys of the Eastern Ghats, on the hills of Tamil Nadu and the eastern flank of BRH, with rainfall of 900 to 1200 mm and at elevations generally between 1100 and 1400 m. Above this elevation, it is succeeded by a transitional formation dominated by Lauraceae.

Generally it occurs as forest patches which are sometimes quite dense. However, very often their size is too small to be mapped at this scale. Thus this type is not shown in the western part of the Kalrayan Hills or on the Javadi hills, although some small pockets of forests can still be found there.

Physiognomically, it occurs as low forest with trees seldom higher than 15 m, often quite degraded by man. The height of the formation gradually decreases towards the margin. There is no distinct stratification under the canopy.

The main species are:

- Canopy trees

*Aglaia roxburghiana*  
***Aphanamixis polystachya***  
*Bischofia javanica* (along streams)

***Canthium dicoccum***

***Celtis timorensis***

***Diospyros ovalifolia***

*Euodia lunu-ankenda*

*Ficus microcarpa*

*Ficus tsjahela*

***Litsea floribunda***

***Mallotus philippensis***

*Mangifera indica*

***Memecylon lushingtonii***

***Neolitsea zeylanica***

*Nothopegia beddomei*

*Olea glandulifera*

*Persea macrantha*

*Phoebe paniculata*

*Syzygium cumini*

*Vernonia monosis*

- Trees and shrubs under the canopy:

*Alphonsea sclerocarpa*

***Antidesma menasu***

*Atalantia wightii*

***Cipadessa baccifera***

***Clausena indica***

*Cocculus laurifolius*

*Euonymus crenulatus*

*Maesa indica*

*Milium eriocarpa*

***Notapodytes foetida***

*Pavetta indica*

***Psychotria nigra***

*Scolopia crenata*

- Under shrubs:

*Elatostema lineolatum*

***Nilgirianthus heyneanus***

*Ophiopogon intermedius*

- Climbers:

*Allophylus cobbe*

*Asparagus racemosus*

*Clematis gouriana*

*Entada pursaetha*

***Hiptage benghalensis***

*Jasminum azoricum*

*Piper hymenophyllum*

*Sageretia filiformis*

*Smilax perfoliata*

***Toddalia asiatica* var. *floribunda***

***Uvaria narum***

*Ventilago maderaspatana*

Towards the upper limit of this type are found species which are more characteristic of higher elevations.

*Casearia ovata*

*Cinnamomum travancoricum*

*Fagraea ceilanica*

*Ixora notoniana*

*Meliosma pinnata* ssp. *arnottiana*

*Schefflera capitata*

*Xantolis tomentosa*

A few more heliophilous species are found specially near the edges or in openings:

***Callicarpa tomentosa***

*Celtis tetrandra*

***Chionanthus ramiflora***

***Glochidion neilgherrense***

*Macaranga peltata*

*Mallotus tetracoccus*

*Meyna laxiflora*

***Murraya paniculata***

*Sapindus laurifolius*

*Sterculia guttata*

*Trichilia connaroides*

#### 4. Semi-evergreen forests

This type is recognised on the basis of the absence of any typical or characteristic species of the other types at this elevation (*Diospyros ovalifolia*, *Memecylon lushingtonii*, *Olea glandulifera*, *Mesua ferrea*, etc.). It occurs in small pockets which, in Biligir Rangan Hills, are confined to altitudes between 1100 and 1400 m and are mostly transitional to the evergreen types. Several deciduous species of the neighbouring forests are found growing along with the evergreen species.

***Antidesma menasu***

***Aphanamixis polystachya***

*Ardisia solanacea*

*Atalantia wightii*

***Bischofia javanica***

***Callicarpa tomentosa***

***Canthium dicoccum***

*Cassia fistula*

*Celtis tetrandra*

*Chionanthus ramiflorus*

*Chasalia ophioxylodes*

***Cinnamomum malabathrum***

*Colebrookia oppositifolia*

***Dalbergia latifolia***

*Dalbergia paniculata*

*Dimocarpus longan*

*Diospyros montana*

***Elaeocarpus serratus***

*Emblia officinalis*

*Eriolæna hookeriana*

***Euodia lunu-ankenda***

*Glochidion velutinum*



***Grewia tiliifolia***  
*Kydia calycina*  
*Litsea deccanensis*  
***Litsea floribunda***  
*Maesa indica*  
***Mallotus philippensis***  
***Neolitsea zeylanica***  
*Nothapodytes foetida*  
*Nothopogia beddomei*  
*Persea macrantha*  
*Phoebe paniculata*  
*Piper hymenophyllum*  
*Pterocarpus marsupium*  
***Scolopia crenata***  
***Sterculia guttata***  
*Syzygium cumini*  
*Terminalia alata*  
***Terminalia paniculata***  
*Toona ciliata*  
*Uvaria narum*  
*Wendlandia thyrsoides*

Some patches of such semi-evergreen forests on the southeastern slope of BRH constitute a transition to the higher elevation type. The deciduous species are more or less the same as above. The formation becomes richer in Lauraceae and other evergreen species, particularly:

*Meliosma simplicifolia* ssp. *pungens*  
*Vernonia monosis*  
*Viburnum punctatum*  
*Xantolis tomentosa*

### C. High elevation (altitude 1300-1800 m)

With the exception of the highest peaks of the BRH (1816 m) and Shevaroy (1649 m), the elevation is less than 1600 m. High elevation forests encountered thus belong to a transition stage, between 1350-1700 m, and are rich in Lauraceae and Myrtaceae. The three types distinguished at these elevations share a major part of their floristic composition. They differ in the absence of some species as one moves from west to east, and the appearance or concomitant domination of some others which are more typical of the eastern influence.

These forests are generally confined to the very sheltered areas, often in valleys where the atmospheric humidity and soil moisture are more favourable for their growth. All around and on the peaks, the natural vegetation is constituted by tree savannas, shrub savannas or grasslands.

Temperature plays a predominant role at this elevation. Rainfall is generally between 1500 and 1800 mm and the dry season is reduced to 3 or 4 months (Attikan Estate, Yercaud)

These forests, locally called sholas, are low formations rarely exceeding a height of 15m, with low branching, stunted trees, often loaded with mosses, lichens and other epiphytes. Stratification is not evident. Many of these forests have become highly degraded, mostly as a result of fires lit annually in the neighbouring savannas.

#### 1. *Schefflera* spp. - *Gordonia obtusa* - *Meliosma* spp. type

This type occupies only a very small area on the map, on the upper slopes of the Nilgiris. It extends towards the west (see Mercara-My sore sheet) and naturally to the southwest all along the Western Ghats. The floristic list is given in the Annexe. Only the main species are cited here, emphasizing the richness in Lauraceae and Myrtaceae members. *Schefflera* is represented by 5 species.

*Alseodaphne malabarica*  
*Apollonias arnottii*  
***Cinnamomum verum***  
*Cinnamomum sulphuratum*  
*Cryptocarya neilgherrensis*  
*Elaeocarpus serratus*  
*Euonymus crenulatus*  
*Gomphandra coriacea*  
***Gordonia obtusa***  
*Litsea floribunda*  
*Litsea oleoides*  
***Litsea stocksii***  
*Meliosma pinnata* ssp. *arnottiana*  
***Meliosma simplicifolia* ssp. *pungens***  
***Neolitsea zeylanica***  
*Persea macrantha*  
***Phæbe wightii***  
*Rhodomyrtus tomentosa*  
*Schefflera capitata*  
***Schefflera micrantha***  
*Schefflera racemosa*  
*Syzygium arnottianum*  
***Syzygium caryophyllatum***  
***Syzygium hemisphericum***  
*Turpinia cochinchinensis*  
*Viburnum punctatum*

#### 2. *Schefflera capitata* - *Neolitsea zeylanica* - *Meliosma* spp. type

This type is found in BRH, still covering vast areas. It is the best represented type at these elevations on the sheet and has been studied in detail (Ramesh 1989).

The complete floristic list, which includes about a hundred species, is given in the Annexe. Only the most common species are mentioned below:

***Actinodaphne lawsonii***

*Bischofia javanica*  
*Casearia ovata*  
*Cinnamomum malabathrum*  
***Cinnamomum sulphuratum***  
***Cryptocarya neilgherrensis***  
*Daphniphyllum neilgherrense*  
*Eurya japonica*  
*Glochidion neilgherrense*  
*Ligustrum gamblei*  
***Litsea floribunda***  
*Maesa indica*  
***Meliosma simplicifolia* ssp. *pungens***  
***Neolitsea zeylanica***  
*Olea glandulifera*  
***Persea macrantha***  
*Phoebe paniculata*  
***Psychotria elongata***  
***Rapanea wightiana***  
*Schefflera capitata*  
***Symplocos cochinchinensis* ssp. *laurifolia***  
*Symplocos foliosa*  
*Syzygium cumini*  
*Vernonia monosis*  
*Viburnum punctatum*  
***Xantolis tomentosa***

### 3. *Vaccinium neilgherrense* - *Neolitsea zeylanica* - *Meliosma* spp. type

This type is found only in a few forest patches on the summit of the Shevaroy. The forests are generally quite disturbed by man who settled in this hill a longtime ago. A major part of the area of this type has been converted into coffee estates.

#### Trees

***Antidesma menasu***  
*Apodytes beddomei*  
***Canthium dicoccum* var. *umbellatum***  
*Chionanthus ramiflora*  
*Cyathea gigantea*  
*Elaeocarpus serratus*  
*Garuga pinnata*  
***Ilex denticulata***  
*Ligustrum perrottetii*  
*Macaranga peltata*  
*Meliosma pinnata* ssp. *arnottiana*  
***Meliosma simplicifolia* ssp. *pungens***  
***Neolitsea zeylanica***  
*Persea macrantha*  
***Rapanea capitellata***  
*Symplocos cochinchinensis*  
*Syzygium cumini*

***Vernonia monosis***  
***Vaccinium neilgherrense***

#### Shrubs

***Maesa indica***  
*Nilgirianthus heyneanus*  
***Psychotria elongata***

#### Climbers

***Celastrus paniculatus***  
*Elaeagnus kologa*  
*Gnetum ula*  
*Hiptage benghalensis*  
*Smilax zeylanica*  
***Toddalia asiatica* var. *floribunda***

### 4. Tree savanna, shrub savanna and grassland

The successional status of these savannas is still not well established. Some may be *climax* whereas others are seral in nature. Therefore they have been treated together here.

A continuous grass carpet covers the spaces separating the 'sholas'. Most often some scattered shrubs and bushes are found, giving the formation an aspect of a shrub savanna or tree savanna, like on the slopes of the Nilgiris where the shrubs are a little bigger.

Among the shrubs may be cited:

*Chionanthus ramiflora*  
***Emblica officinalis***  
***Glochidion neilgherrense***  
*Glochidion velutinum*  
***Wendlandia thyrsoides***  
*Phoenix humilis* (sometimes dominant)

The most common herbaceous species are:

***Artemisia parviflora***  
*Coleus* sp.  
*Conyza stricta*  
***Curcuma neilgherrense***  
*Cyanotis fasciculata*  
*Exacum bicolor*  
*Habenaria* sp.  
***Hypericum mysorensis***  
*Lagera alata*  
*Oldenlandia* sp.  
***Phlebophyllum kunthianum***

The most common grasses are:

***Cymbopogon flexuosus***  
*Cymbopogon nardus*  
***Themeda cymbaria***  
*Themeda triandra*

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## ANNEXES: FLORISTIC LISTS OF THE FOREST TYPES

### LEGEND

#### *Indication of structural level and life form*

E, I, II, III, IV,	: emergent, structural ensembles I, II, III, IV
T	: big tree
t	: small tree
S	: shrub or under-shrub
H	: herb
L	: liana, climber
Ep	: epiphyte
St	: strangler
P	: parasite

#### *Indication of frequency*

VC	: very common
C	: common
O	: occasional
R	: rare

#### *Indication of ecological preference and geographical distribution*

R	: riparian, humid localities
Op	: openings
M	: margin of the forest
A	: savanna-woodland to tree savanna
B	: scrub-woodland
*	: in the transition zone with the high elevation forest
K	: Kerala
N.K.	: North Kanara
W.G.	: endemic of Western Ghats

#### *Indication of phenology*

D	: deciduous species
EV	: evergreen species

**ALBIZIA AMARA - ACACIA SPP. TYPE**  
**(Scrub-woodland)**

<i>DICOTYLEDONS</i>					
<b>APOCYNACEAE</b>				<b>EUPHORBIACEAE</b>	
Carissa carandas L.	S	r		Cleistanthus collinus (Roxb.) Benth.	t C
Carissa opaca L.	S	C		Euphorbia antiquorum L.	t C
Carissa spinarum L.	S	O		Euphorbia nivulia Buch.-Ham.	t r
Wrightia tinctoria (Roxb.) R. Br.	T	VC		Givotia rottleriformis Griff.	T O
				Jatropha glandulifera Roxb.	S O
<b>ASCLEPIADACEAE</b>				Securinea leucopyrus (Willd.) M. Arg.	S VC
Hemidesmus indicus (L.) R. Br.	L	r		<b>FABACEAE (Caesalpinioideae)</b>	
Sarcostemma acidum (Roxb.) Voigt	L	O		Bauhinia racemosa Lam.	T O
Wattakaka volubilis (L.f.) Stapf	L	r		Hardwickia binata Roxb.	T C
				Pterolobium hexapetalum (Roth)	
<b>ASTERACEAE</b>				Sant. & Wagh	L VC
Notonia grandiflora Wall. ex DC.	S	r		<b>FABACEAE (Faboideae)</b>	
				Dalbergia latifolia Roxb.	T C
<b>BORAGINACEAE</b>				Dalbergia paniculata Roxb.	T O
Cordia monoica Roxb.	S	r		<b>FABACEAE (Mimosoideae)</b>	
				Acacia chundra (Roxb.) Willd.	T VC
<b>BURSERACEAE</b>				Acacia ferruginea DC	t r
Commiphora berryi (Arn.) Engl.	S	r		Acacia latronum Willd.	t r
				Acacia leucophloea (Roxb.) Willd.	T O
<b>CACTACEAE</b>				Albizia amara (Roxb.) Boiv.	T C
Opuntia dillenii (Ker Gawl.) Haw.	S	O		Albizia odoratissima (L. f.) Benth.	T r
				Dichrostachys cinerea Wight & Arn.	t VC
<b>CAPPARIDACEAE</b>				<b>FLACOURTIACEAE</b>	
Capparis divaricata Lam.	L	r		Flacourtia indica (Burm f. ) Merr.	S O
Capparis sepiaria L.	L	O		<b>HERNANDIACEAE</b>	
				Gyrocarpus jacquini Roxb.	T O
<b>CELASTRACEAE</b>				<b>LINACEAE</b>	
Cassine glauca (Rottb.) Kuntze	T	r		Hugonia mystax L	S O
Maytenus emarginata (Willd.)				<b>LOGANIACEAE</b>	
Ding Hou	S	O		Strychnos potatorum L. f.	T O
Maytenus ovata (Wight & Am.) Loes.	S	r		<b>LORANTHACEAE</b>	
				Dendrophthoe falcata (L.f.) Ettingsh.	P O
<b>COMBRETACEAE</b>				<b>MALVACEAE</b>	
Anogeissus latifolia (Roxb.) Wall.	T	C		Kydia calycina Roxb.	t r
Combretum ovalifolium Roxb.	L	r		<b>MELIACEAE</b>	
				Azadirachta indica A. Juss.	T O
<b>EBENACEAE</b>					
Diospyros ferrea (Willd) Bakh.	T	O			
Diospyros melanoxylon Roxb.	T	O			
Diospyros montana Roxb.	T	O			
<b>ERYTHROXYLACEAE</b>					
Erythroxylum monogynum Roxb.	t	VC			

**MORACEAE**Ficus benghalensis *L.*

T O

**OLEACEAE**Jasminum auriculatum *Vahl*

L O

**RHAMNACEAE**Scutia myrtina (*Burm.f.*) *Kurz*

L r

Ziziphus mauritiana *Lam.*

t O

Ziziphus oenoplia *Mill.*

L C

Ziziphus xylopyrus (*Retz.*) *Willd.*

T C

**RUBIACEAE**Benkara malabarica (*Lam.*) *Tirven.*

S C

Canthium dicoccum (*Gaertn.*) *T. & B.*

T O

Catunaregam dumetorum *Tirven.*

S C

Hymenodictyon excelsum *Wall.*

T r

Ixora arborea *Roxb.*

t O

Tarenna asiatica (*L.*) *Kuntze*

S C

**RUTACEAE**Atalantia monophylla *Corr.*

T C

Atalantia racemosa *Wight & Arn.*

T r

Chloroxylon swietenia *DC.*

T O

Clausena dentata (*Willd.*) *Roem.*

t O

Toddalia asiatica (*L.*) *Lam.*

L c

**SAPINDACEAE**Cardiospermum halicacabum *L.*

L O

Sapindus emarginatus *Vahl*

T O

**SAPOTACEAE**Manilkara hexandra (*Roxb.*) *Dubard*

T r

**SOLANACEAE**Solanum pubescens *Willd.*

S O

**STERCULIACEAE**Sterculia urens *Roxb.*

T O

**TILIACEAE**Grewia tenax (*Forsk.*) *Fiori*

S O

Grewia tiliifolia *Vahl*

T O

**VERBENACEAE**Gmelina asiatica *L.*

S r

Lantana camara *L.*

S C

Premna latifolia *Roxb.*

T O

Premna tomentosa *Willd.*

T r

Vitex altissima *L.f.*

T r

**VITACEAE**Cissus quadrangularis *L.*

L O

**MONOCOTYLEDONS****ARECACEAE**Phoenix humilis *Royle*

t O

**DIOSCOREACEAE**Dioscorea oppositifolia *L.*

L O

**LILIACEAE**Gloriosa superba *L.*

L O

**POACEAE**Dendrocalamus strictus (*Roxb.*) *Nees*

T O



**GYROCARPUS JACQUINI AND / OR HARDWICKIA BINATA TYPES**  
(On slopes, skeletal soils and as transition facies)

<b>DICOTYLEDONS</b>				Radermachera xylocarpa (Roxb.) Schum.	T	O	A,B
				Stereospermum personatum (Hassk.) Chatterjee	T	O	B
<b>ACANTHACEAE</b>				<b>BIXACEAE</b>			
Rhinacanthus nasutus (L.) Kurz	S	O	B	Cochlospermum religiosum (L.) Alston	T	O	A,B
<b>ALANGIACEAE</b>				<b>BOMBACACEAE</b>			
Alangium salvifolium (L.f.) Wang.	t	r	A,B	Bombax ceiba L.	T	O	B
<b>ANACARDIACEAE</b>				<b>BORAGINACEAE</b>			
Buchanania axillaris (Desr.) Ramam.	T	r	A,B	Cordia gharaf (Forssk.) Ehrenb.	T	O	B
Buchanania lanzan Spreng.	T	C	B	Cordia macleodii (Griff.) Hk. f. & T.	T	O	B
Lanea coromandelica (Houtt.) Merr.	T	C	A,B	Cordia monoica Roxb.	S	C	A,B
Rhus mysorensis Heyne	S	O	A,B	<b>BURSERACEAE</b>			
Semecarpus anacardium L. f.	T	r	B	Boswellia serrata Roxb. ex Colebr.	T	C	A,B
Spondias pinnata (L. f.) Kurz	T	r	B	Commiphora berryi (Arn.) Engl.	S	C	A,B
<b>ANNONACEAE</b>				Commiphora caudata Engl.	T	C	A,B
Polyalthia cerasoides (Roxb.) Bedd.	T	r	A,B	Garuga pinnata Roxb.	T	O	A,B
<b>APOCYNACEAE</b>				<b>CACTACEAE</b>			
Carissa carandas L.	S	r	A,B	Opuntia dillenii (Ker Gawl.) Haw.	S	O	A,B
Carissa opaca L.	S	C	B	<b>CAPPARIDACEAE</b>			
Holarrhena antidysenterica (Roxb.) Wall.	S	r	B	Cadaba fruticosa (L.) Druce	S	O	A,B
Wrightia tinctoria (Roxb.) R. Br.	T	C	A,B	Capparis divaricata Lam.	t	O	B
Wrightia tomentosa R. & S.	T	r	B	Capparis sepiaria L.	L	C	A,B
<b>ARALIACEAE</b>				<b>CELASTRACEAE</b>			
Schefflera stellata (Gaertn.) Harms.	t	O	B	Cassine glauca (Rottb.) Kuntze	T	r	A,B
<b>ARISTOLOCHIACEAE</b>				Celastrus paniculatus Willd.	L	O	B
Aristolochia indica L.	L	O	A,B	Maytenus emarginata (Willd.) Ding Hou	S	C	A,B
<b>ASCLEPIADACEAE</b>				Maytenus ovata (Wight & Arn.) Loes.	S	r	A,B
Calotropis gigantea (L.) R. Br.	S	O	B	Maytenus wallichiana (Wight & Arn.) Raju & Babu	S	r	B
Hemidesmus indicus R. Br.	L	O	A,B	Pleurostyliia opposita (Wall.) Alston	T	r	A,B
Sarcostemma acidum (Roxb.) Voigt	L	O	A,B	<b>COMBRETACEAE</b>			
Secamone emetica (Retz.) R. Br.	L	O	A,B	Anogeissus lalifolia (Roxb.) Wall.	T	C	A,B
Wattakaka volubilis (L.f.) Stapf	L	r	A	Combretum ovalifolium Roxb.	L	r	B
<b>ASTERACEAE</b>				Terminalia alata Heyne ex Roth	T	C	B
Chromolaena odorata (L.) King & Robin.	S	C	B	Terminalia arjuna Wight & Arn.	T	r	B
Notonia grandiflora Wall. ex DC.	S	O	A,B	Terminalia bellirica (Gaertn.) Roxb.	T	O	B
<b>BIGNONIACEAE</b>				Terminalia chebula Retz.	T	O	A,B
Dolichandrone atrovirens Sprague	T	C	A,B	Terminalia paniculata Roth	T	O	A,B
Dolichandrone falcata Seem.	T	O	A				

**CONVOLVULACEAE**

<i>Argyrea cuneata</i> (Willd.) Ker Gawl.	S	O	B
<i>Rivea hypocrateriformis</i> (Desr.) Choisy	L	r	B

**EBENACEAE**

<i>Diospyros ebenum</i> Koenig	T	r	B
<i>Diospyros exsculpta</i> Bedd.	T	O	B
<i>Diospyros ferrea</i> (Willd.) Bakh.	T	O	A,B
<i>Diospyros melanoxylon</i> Roxb.	T	O	A,B
<i>Diospyros montana</i> Roxb.	T	r	A,B

**EHRETIACEAE**

<i>Carmona retusa</i> (Vahl) Masam.	S	O	B
<i>Ehretia ovalifolia</i> Wight	S	O	B
<i>Ehretia pubescens</i> Benth.	S	C	A,B

**ERYTHROXYLACEAE**

<i>Erythroxylum monogynum</i> Roxb.	t	C	A,B
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**EUPHORBIACEAE**

<i>Breynia rhamnoides</i> (Retz.) M. Arg.	S	C	B
<i>Bridelia crenulata</i> Roxb.	T	O	B
<i>Cleistanthus collinus</i> (Roxb.) Benth.	T	O	A,B
<i>Drypetes sepiaria</i> (W. & A.) Pax & Hoffm.	T	r	B
<i>Embllica officinalis</i> Gaertn.	T	C	A,B
<i>Euphorbia antiquorum</i> L.	T	C	A,B
<i>Euphorbia nivulia</i> Buch.-Ham.	T	r	B
<i>Givotia rottleriformis</i> Griff.	T	C	A,B
<i>Jatropha glandulifera</i> Roxb.	S	O	A,B
<i>Jatropha gossypifolia</i> L.	S	O	B
<i>Mallotus philippensis</i> (Lam.) M. Arg.	T	r	B
<i>Securinega leucopyrus</i> (Willd.) M. Arg.	S	C	A,B

**FABACEAE (Caesalpinioideae)**

<i>Bauhinia racemosa</i> Lam.	T	O	A,B
<i>Cassia auriculata</i> L.	S	C	B
<i>Cassia fistula</i> L.	T	O	A,B
<i>Hardwickia binata</i> Roxb.	T	C	A,B
<i>Pterolobium hexapetalum</i> (Roth) Sant. & Wagh	L	C	A,B
<i>Tamarindus indica</i> L.	T	r	A,B

**FABACEAE (Faboideae)**

<i>Abrus precatorius</i> L.	L	C	B
<i>Butea monosperma</i> (Lam.) Taub.	T	O	B
<i>Butea parviflora</i> Roxb.	S	r	B
<i>Dalbergia latifolia</i> Roxb.	T	O	A,B
<i>Dalbergia paniculata</i> Roxb.	T	C	A,B
<i>Derris scandens</i> (Roxb.) Benth.	L	O	B
<i>Erythrina suberosa</i> Roxb.	T	r	B
<i>Indigofera cassioides</i> Rottl. ex DC.	S	O	B
<i>Mundulea sericea</i> (Willd.) A. Cheval.	t	r	A
<i>Pongamia pinnata</i> (L.) Pierre	T	r	A,B
<i>Pterocarpus marsupium</i> Roxb.	T	O	A,B

**FABACEAE (Mimosoideae)**

<i>Acacia caesia</i> (L.) Willd.	L	r	A,B
<i>Acacia chundra</i> (Roxb. ex Rottl.) Willd.	T	C	A,B
<i>Acacia ferruginea</i> DC.	T	r	B
<i>Acacia latronum</i> Willd.	t	O	B
<i>Acacia leucophloea</i> (Roxb.) Willd.	T	O	A,B
<i>Acacia pennata</i> (L.) Willd.	L	C	A,B
<i>Acacia torta</i> (Roxb.) Craib.	L	r	A
<i>Albizia amara</i> (Roxb.) Boiv.	T	C	A,B
<i>Albizia lebbeck</i> (L.) Benth.	t	r	A,B
<i>Albizia marginata</i> (Lam.) Merr.	T	r	B
<i>Albizia odoratissima</i> (L.f.) Benth.	T	r	A,B
<i>Albizia procera</i> Benth.	T	O	B
<i>Dichrostachys cinerea</i> Wight & Arn.	t	C	A,B
<i>Mimosa rubicaulis</i> Lam.	L	r	B

**FLACOURTIACEAE**

<i>Flacourtia indica</i> (Burm.f.) Merr.	S	O	A,B
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**HERNANDIACEAE**

<i>Gyrocarpus jacquini</i> Roxb.	T	C	A,B
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**LAURACEAE**

<i>Litsea deccanensis</i> Gamble	T	r	B
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**LINACEAE**

<i>Hugonia mystax</i> L.	S	O	B
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**LOGANIACEAE**

<i>Strychnos nux-vomica</i> L.	T	r	A,B
<i>Strychnos potatorum</i> L.f.	T	O	A,B

**LORANTHACEAE**

<i>Dendrophthoe falcata</i> (L.f.) Ettingsh.	P	O	A,B
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**LYTHRACEAE**

<i>Lagerstroemia parviflora</i> Roxb.	T	O	B
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**MALPIGHIACEAE**

<i>Hiptage benghalensis</i> (L.) Kurz	L	O	A,B
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**MALVACEAE**

<i>Kydia calycina</i> Roxb.	t	O	B
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**MELASTOMATAACEAE**

<i>Memecylon lushingtonii</i> Gamble	t	r	A
<i>Memecylon umbellatum</i> Burm. f.	t	r	A

**MELIACEAE**

<i>Azadirachta indica</i> A. Juss.	T	O	A
<i>Chukrasia tabularis</i> A. Juss.	T	O	B
<i>Cipadessa baccifera</i> Miq.	S	C	B
<i>Soymida febrifuga</i> A. Juss.	T	O	A,B
<i>Toona ciliata</i> Roemer	T	O	A

**MENISPERMACEAE**

Pachygone ovata ( <i>Poir.</i> ) <i>Hk. f. &amp; T.</i>	L	r	B
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**MORACEAE**

<i>Ficus amplissima</i> <i>Smith</i>	T	r	B
<i>Ficus arnottiana</i> <i>Miq.</i>	T	O	B
<i>Ficus benghalensis</i> <i>L.</i>	T	O	A,B
<i>Ficus microcarpa</i> <i>L. f.</i>	T	O	A,B
<i>Ficus mollis</i> <i>Vahl</i>	T	C	A,B
<i>Ficus tsjahela</i> <i>Burm. f.</i>	T	O	B
<i>Ficus virens</i> <i>Aiton</i>	T	O	A

**MORINGACEAE**

<i>Moringa concanensis</i> <i>Nimmo</i>	T	O	B
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**MYRTACEAE**

<i>Syzygium cumini</i> ( <i>L.</i> ) <i>Skeels</i>	T	O	B
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**OCHNACEAE**

<i>Ochna squarrosa</i> <i>L.</i>	t	r	B
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**OLEACEAE**

<i>Chionanthus ramiflora</i> <i>Roxb.</i>	T	O	B
<i>Jasminum auriculatum</i> <i>Vahl</i>	L	O	B
<i>Jasminum cuspidatum</i> <i>Rottl.</i>	S	C	B
<i>Olea glandulifera</i> <i>Wall. ex G. Don</i>	T	O	B
<i>Schrebera swietenoides</i> <i>Roxb.</i>	T	O	A,B

**OPILIAEAE**

<i>Cansjera rheedii</i> <i>Gmel.</i>	L	O	A,B
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**RANUNCULACEAE**

<i>Clematis gouriana</i> <i>Roxb. ex DC.</i>	L	O	B
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**RHAMNACEAE**

<i>Scutia myrtina</i> ( <i>Burm. f.</i> ) <i>Kurz</i>	L	O	A,B
<i>Ventilago maderaspatana</i> <i>Gaertn.</i>	L	O	B
<i>Ziziphus horrida</i> <i>Roth</i>	t	O	B
<i>Ziziphus mauritiana</i> <i>Lam.</i>	T	O	A,B
<i>Ziziphus oenoplia</i> <i>Mill.</i>	L	C	A,B
<i>Ziziphus rugosa</i> <i>Lam.</i>	L	O	B
<i>Ziziphus xylopyrus</i> ( <i>Retz.</i> ) <i>Willd.</i>	T	O	A,B

**RUBIACEAE**

<i>Benkara malabarica</i> ( <i>Lam.</i> ) <i>Tirven.</i>	S	R	A,B
<i>Canthium dicoccum</i> ( <i>Gaertn.</i> ) <i>Merr.</i>	T	C	A,B
<i>Canthium parviflorum</i> <i>Lam.</i>	S	O	A,B
<i>Catunaregam dumetorum</i> <i>Tirven.</i>	S	C	A,B
<i>Catunaregam torulosa</i> ( <i>Dennst.</i> ) <i>Tirven.</i>	t	O	B
<i>Ceriscoides turgida</i> ( <i>Roxb.</i> ) <i>Tirven.</i>	t	r	A,B
<i>Deccania pubescens</i> ( <i>Roth</i> ) <i>Tirven.</i>	T	r	A
<i>Gardenia gummifera</i> <i>L. f.</i>	T	r	B
<i>Gardenia latifolia</i> <i>Ait.</i>	T	O	A,B
<i>Gardenia resinifera</i> <i>Roth</i>	T	C	A,B

<i>Haldina cordifolia</i> ( <i>Roxb.</i> ) <i>Ridsdale</i>	T	r	A,B
<i>Hymenodictyon excelsum</i> ( <i>Roxb.</i> ) <i>Wall.</i>	T	r	A,B
<i>Ixora arborea</i> <i>Roxb. ex Smith</i>	t	O	A,B
<i>Mitragyna parvifolia</i> ( <i>Roxb.</i> ) <i>Korth.</i>	T	O	A,B
<i>Morinda coreia</i> <i>Buch.-Ham.</i>	T	C	A,B
<i>Paveta indica</i> <i>L.</i>	S	O	B
<i>Tarenna asiatica</i> ( <i>L.</i> ) <i>Kuntze</i>	S	C	A,B

**RUTACEAE**

<i>Atalantia monophylla</i> ( <i>L.</i> ) <i>Correa</i>	T	C	A,B
<i>Chloroxylon swietenia</i> <i>DC.</i>	T	C	A,B
<i>Citrus medica</i> <i>L.</i>	t	O	B
<i>Clausena dentata</i> ( <i>Willd.</i> ) <i>Roem.</i>	t	C	B
<i>Limonia acidissima</i> <i>L.</i>	t	O	A,B
<i>Murraya paniculata</i> ( <i>L.</i> ) <i>Jack</i>	S	O	B
<i>Naringi crenulata</i> ( <i>Roxb.</i> ) <i>Nicolson</i>	T	O	A,B
<i>Pleiospermum alatum</i> ( <i>Wall.</i> ) <i>Swingle</i>	t	C	A,B
<i>Toddalia asiatica</i> ( <i>L.</i> ) <i>Lam.</i>	L	C	A,B

**SANTALACEAE**

<i>Osyris quadripartita</i> <i>Salzm. ex Decne.</i>	S	O	A,B
<i>Santalum album</i> <i>L.</i>	T	O	A,B

**SAPINDACEAE**

<i>Allophylus cobbe</i> ( <i>L.</i> ) <i>Raeusch.</i>	t	C	B
<i>Cardiospermum halicacabum</i> <i>L.</i>	L	C	A,B
<i>Dodonaea viscosa</i> ( <i>L.</i> ) <i>Jacq.</i>	S	C	A,B
<i>Lepisanthes tetraphylla</i> ( <i>Vahl</i> ) <i>Radlk.</i>	t	O	B
<i>Sapindus emarginatus</i> <i>Vahl</i>	T	O	A,B
<i>Schleichera oleosa</i> ( <i>Lour.</i> ) <i>Oken</i>	T	O	A,B

**SAPOTACEAE**

<i>Madhuca longifolia</i> ( <i>Koen.</i> ) <i>Macbr.</i>	T	O	B
<i>Manilkara hexandra</i> ( <i>Roxb.</i> ) <i>Dubard</i>	T	r	B
<i>Manilkara roxburghiana</i> ( <i>Wight</i> ) <i>Dub.</i>	T	r	B

**SIMAROUACEAE**

<i>Ailanthus excelsa</i> <i>Roxb.</i>	T	O	B
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**SOLANACEAE**

<i>Solarium pubescens</i> <i>Willd.</i>	S	C	A,B
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**STERCULIACEAE**

<i>Eriolaena hookeriana</i> <i>Wight &amp; Arn.</i>			
<i>Helicteres isora</i> <i>L.</i>	t	O	B
<i>Pterospermum suberifolium</i> ( <i>L.</i> ) <i>Lam.</i>	S	O	B
<i>Sterculia colorata</i> <i>Roxb.</i>	T	r	B
<i>Sterculia urens</i> <i>Roxb.</i>	T	r	B
<i>Sterculia villosa</i> <i>Roxb. ex DC.</i>	T	C	A,B
	T	O	B

**TILIACEAE**

<i>Grewia flavescens</i> <i>Juss.</i>	L	O	B
<i>Grewia orbiculata</i> <i>Rottl.</i>	t	O	A,B
<i>Grewia rhamnifolia</i> <i>Heyne ex Roth</i>	L	C	A,B

<i>Grewia tenax (Forssk.) Fiori</i>	S	O	A,B
<i>Grewia tiliifolia Vahl</i>	T	C	A,B
<i>Grewia villosa Willd.</i>	S	C	A,B
<b>ULMACEAE</b>			
<i>Celtis tetrandra Roxb.</i>	T	O	B
<i>Holoptelea integrifolia Pl.</i>	T	O	A,B
<i>Trema orientalis Bl.</i>	T	r	B
<b>VERBENACEAE</b>			
<i>Clerodendrum serratum (L.) Moon</i>	S	O	B
<i>Gmelina arborea Roxb.</i>	T	O	B
<i>Gmelina asiatica L.</i>	S	O	A,B
<i>Lantana camara L.</i>	S	C	A,B
<i>Premna latifolia Roxb.</i>	T	O	B
<i>Premna tomentosa Willd.</i>	T	O	A,B
<i>Tectona grandis L. f.</i>	T	O	A,B
<i>Vitex altissima L. f.</i>	T	O	A,B
<b>VITACEAE</b>			
<i>Ampelocissus tomentosa (Roth) Pl.</i>	L	O	A
<i>Cissus pallida Pl.</i>	L	O	A,B
<i>Cissus quadrangularis L.</i>	L	C	A,B

**MONOCOTYLEDONS****ARECACEAE***Phoenix humilis Royle*

t C B

**DIOSCOREACEAE***Dioscorea oppositifolia L.*

L O A,B

*Dioscorea pentaphylla L.*

L C A

**LILIACEAE***Asparagus racemosus Willd.*

L C A,B

*Gloriosa superba L.*

L O A,B

**POACEAE***Dendrocalamus strictus Nees*

T O A,B

**ANOGEISSUS LATIFOLIA - CHLOROXYLON SWIETENIA -  
ALBIZIA AMARA TYPE**

<b>DICOTYLEDONS</b>				<b>BORAGINACEAE</b>			
<b>ALANGIACEAE</b>				<i>Cordia macleodii (Griff.) Hk. f. &amp; T.</i>	T	O	B
<i>Alangium salvifolium (L. f.) Wang.</i>	t	r	B	<i>Cordia monoica Roxb.</i>	S	r	A
<b>ANACARDIACEAE</b>				<b>BURSERACEAE</b>			
<i>Buchanania axillaris (Desr.) Ramam.</i>	T	C	A,B	<i>Boswellia serrata Roxb.</i>	T	O	B
<i>Buchanania lanzan Spreng.</i>	T	O	B	<i>Commiphora caudata Engl.</i>	T	C	A,B
<i>Lannea coromandelica (Houtt.) Merr.</i>	T	C	B	<i>Garuga pinnata Roxb.</i>	T	O	B
<i>Mangifera indica L.</i>	T	r	B	<b>CACTACEAE</b>			
<i>Rhus mysorensis G. Don</i>	S	r	A	<i>Opuntia dillenii (Ker Gawl.) Haw.</i>	S	C	A
<i>Spondias pinnata (L. f.) Kurz</i>	T	r	B	<b>CAPPARIDACEAE</b>			
<b>ANNONACEAE</b>				<i>Cadaba fruticosa (L.) Druce</i>	S	O	A
<i>Miliusa eriocarpa Dunn</i>	t	r	B	<i>Capparis sepriaria L.</i>	L	C	A,B
<i>Polyalthia cerasoides (Roxb.) Bedd.</i>	T	O	A,B	<b>CELASTRACEAE</b>			
<b>APOCYNACEAE</b>				<i>Cassine glauca (Rottb.) Kuntze</i>	T	r	A,B
<i>Carissa carandas L.</i>	S	O	A	<i>Maytenus emarginata (Willd.) Ding Hou</i>	S	C	A
<i>Carissa opaca L.</i>	S	O	A,B	<i>Maytenus ovata (Wight &amp; Arn.) Loes.</i>	S	O	A,B
<i>Carissa spinarum L.</i>	S	C	A	<i>Pleurostyliya opposita (Wall.) Alston</i>	T	O	A
<i>Wrightia tinctoria (Roxb.) R. Br.</i>	T	C	A,B	<b>COMBRETACEAE</b>			
<b>ARALIACEAE</b>				<i>Anogeissus latifolia (Roxb.) Wall.</i>	T	VC	A,B
<i>Schefflera stellata (Gaertn.) Harms</i>	St	O	B	<i>Combretum ovalifolium Roxb.</i>	L	r	A
<b>ASCLEPIADACEAE</b>				<i>Terminalia alata Heyne ex Roth</i>	T	O	B
<i>Hemidesmus indicus R. Br.</i>	T	O	A	<i>Terminalia bellirica (Gaertn.) Roxb.</i>	T	O	B
<i>Sarcostemma acidum (Roxb.) Voigt</i>	L	O	A,B	<i>Terminalia chebula Retz.</i>	T	O	B
<i>Secamone emetica (Retz.) R. Br.</i>	L	O	A,B	<b>CONVOLVULACEAE</b>			
<b>ASTERACEAE</b>				<i>Argyreia cuneata (Willd.) Ker Gawl.</i>	S	C	B
<i>Chromolaena odorata (L.) King &amp; Robin.</i>	S	C	B	<i>Rivea hypocrateriformis Choisy</i>	L	r	A
<i>Notonia grandiflora Wall. ex DC.</i>	S	O	A,B	<b>EBENACEAE</b>			
<b>BIGNONIACEAE</b>				<i>Diospyros chloroxylon Roxb.</i>	T	r	A
<i>Dolichandrone atrovirens Sprague</i>	T	O	A	<i>Diospyros ebenum Koenig</i>	T	r	A,B
<i>Dolichandrone falcata Seem.</i>	T	O	A	<i>Diospyros exsculpta Bedd.</i>	T	O	A,B
<i>Stereospermum personatum (Hassk.) Chatterjee</i>	T	C	A	<i>Diospyros ferrea (Willd.) Bakh.</i>	T	C	A,B
	T	O	A,B	<i>Diospyros melanoxylon Roxb.</i>	T	O	A,B
				<i>Diospyros montana Roxb.</i>	T	r	A,B
				<i>Diospyros ovalifolia Wight</i>	T	O	B
<b>BIXACEAE</b>				<b>EHRETIACEAE</b>			
<i>Cochlospermum religiosum (L.) Alston</i>	T	O	B	<i>Carmona retusa (Vahl) Masam.</i>	S	O	A,B
<b>BOMBACACEAE</b>				<i>Ehretia pubescens Benth.</i>	S	C	A,B
<i>Bombax ceiba L.</i>	T	O	A				

**ERYTHROXYLACEAE**Erythroxylum monogynum *Roxb.* t C A,B**EUPHORBIAEAE**Breynia rhamnoides (*Retz.*) *M. Arg.* S C BBridelia crenulata *Roxb.* T O BCleistanthus collinus (*Roxb.*) *Benth.* t O BDrypetes sepiaria (*Wight & Arn.*) t r B*Pax & Hoffm.* T C A,BEmbllica officinalis *Gaertn.* t C BEuphorbia antiquorum *L.* t r BEuphorbia nivulia *Buch.-Ham.* t O AEuphorbia tirucalli *L.* T O A,BGivotia rottleriformis (*Griff.*) *Pax & Hoffm.* S C A,BSecurinega leucopyrus (*Willd.*) *M. Arg.* S C A,BSuregada angustifolia *Muell. Arg.* T O B*Airy Shaw***FABACEAE (Caesalpinioideae)**Bauhinia racemosa *Lam.* T O A,BCassia fistula *L.* T O A,BHardwickia binata *Roxb.* T O A,BPterolobium hexapetalum (*Roth*) L C A,B*Sant. & Wagh*Tamarindus indica *L.* T r A,B**FABACEAE (Faboideae)**Abrus precatorius *L.* L O A,BButea monosperma (*Lam.*) *Taub.* T O AButea parviflora *Roxb.* L r ADalbergia latifolia *Roxb.* T O A,BDalbergia paniculate *Roxb.* T C A,BErythrina suberosa *Roxb.* T r AMundulea sericea (*Willd.*) *A. Cheval.* t r APongamia pinnata (*L.*) *Pierre* T r BPterocarpus marsupium *Roxb.* T O A,B**FABACEAE (Mimosoideae)**Acacia chundra (*Roxb. ex Rottl.*) *Willd.* T C AAcacia ferruginea *DC.* T O AAcacia latronum *Willd.* t r BAcacia leucophloea (*Roxb.*) *Willd.* t O BAcacia pennata (*L.*) *Willd.* L C A,BAlbizia amara (*Roxb.*) *Boiv.* T VC A,BAlbizia lebbeck (*L.*) *Willd.* T O AAlbizia marginata (*Lam.*) *Merr.* T r AAlbizia odoratissima (*L.f.*) *Benth.* T r BAlbizia procera (*Roxb.*) *Benth.* T r BDichrostachys cinerea *Wight & Arn.* t C A,B**FLACOURTIACEAE**Flacourtia indica (*Burm.f.*) *Merr.* S C A,B**HERNANDIACEAE**Gyrocarpus jacquini *Roxb.* T C A,B**LAURACEAE**Litsea deccanensis *Gamble* T r B**LOGANIACEAE**Strychnos potatorum *L. f.* T O A,B**MALPIGHIACEAE**Hiptage benghalensis (*L.*) *Kurz* L O B**MALVACEAE**Kydia calycina *Roxb.* t r B**MELASTOMATAEAE**Memecylon lushingtonii *Gamble* t r AMemecylon umbellatum *Burm.f.* t r A,B**MELIACEAE**Azadirachta indica *A. Juss.* T O BChukrasia tabularis *A. Juss.* T r BCipadessa baccifera *Miq.* S C B**MENISPERMACEAE**Pachygone ovata (*Poir.*) *Hk.f. & T.* L O A**MORACEAE**Ficus benghalensis *L.* T O BFicus microcarpa *L. f.* T O BFicus mollis *Vahl* T C A,BFicus virens *Aiton* T r BStreblus asper *Lour.* t O B**MYRTACEAE**Syzygium cumini (*L.*) *Skeels* T O B**OLEACEAE**Chionanthus ramiflora *Roxb.* T r BJasminum auriculatum *Vahl* L O A,BJasminum cuspidatum *Rottl.* S C A,BLigustrum gamblei *Ramam.* T O B**OPIACEAE**Cansjera rheedii *Gmel.* L O A,B**RHAMNACEAE**Sageretia parviflora (*Klein*) *G. Don* L r A,BScutia myrtina (*Burm.f.*) *Kurz* L O A,BVentilago maderaspatana *Gaertn.* L O AZiziphus mauritiana *Lam.* T O AZiziphus oenoplia *Mill.* L C A,BZiziphus xylopyrus (*Retz.*) *Willd.* T C A,B**RUBIACEAE**Benkara malabarica (*Lam.*) *Tirven.* S O A,BCanthium dicoccum (*Gaertn.*) *Merr.* T C A,B

Canthium parviflorum <i>Lam.</i>	S	C	A,B
Catunaregam dumetorum <i>Tirven.</i>	S	C	A,B
Gardenia gummifera <i>L. f.</i>	T	r	B
Gardenia latifolia <i>Aiton</i>	T	O	A,B
Gardenia resinifera <i>Roth</i>	T	C	B
Haldina cordifolia ( <i>Roxb.</i> ) <i>Ridsdale</i>	T	r	A
Hymenodictyon excelsum ( <i>Roxb.</i> ) <i>Wall.</i>	T	r	A,B
Ixora arborea <i>Roxb.</i>	t	C	A,B
Mitragyna parvifolia ( <i>Roxb.</i> ) <i>Korth.</i>	T	r	A,B
Morinda coreia <i>Buch.-Ham.</i>	T	r	A
Tarenna asiatica ( <i>L.</i> ) <i>Kuntze</i>	S	C	A,B
<b>RUTACEAE</b>			
Aegle marmelos ( <i>L.</i> ) <i>Corr.</i>	t	O	B
Atalantia monophylla ( <i>L.</i> ) <i>Correa</i>	T	C	A,B
Atalantia racemosa <i>Wight &amp; Arn.</i>	T	r	A,B
Chloroxylon swietenia <i>DC.</i>	T	C	A,B
Citrus medica <i>L.</i>	t	r	A
Clausena dentata ( <i>Willd.</i> ) <i>M.Roem.</i>	t	O	B
Limonia acidissima <i>L.</i>	T	O	A
Murraya paniculata ( <i>L.</i> ) <i>Jack.</i>	S	O	A,B
Naringi crenulata ( <i>Roxb.</i> ) <i>Nicolson</i>	T	r	A,B
Toddalia asiatica ( <i>L.</i> ) <i>Lam.</i>	L	C	A,B
<b>SANTALACEAE</b>			
Santalum album <i>L.</i>	T	O	A,B
<b>SAPINDACEAE</b>			
Cardiospermum halicacabum <i>L.</i>	L	O	A
Dodonaea viscosa ( <i>L.</i> ) <i>Jacq.</i>	S	C	A,B
Lepisanthes tetraphylla ( <i>Vahl</i> ) <i>Radlk.</i>	t	O	B
Sapindus emarginatus <i>Vahl</i>	T	O	A,B
Schleichera oleosa ( <i>Lour</i> ) <i>Oken</i>	T	O	A,B
<b>SAPOTACEAE</b>			
Madhuca longifolia ( <i>Koen.</i> ) <i>Macbr.</i>	T	O	B
Manilkara hexandra ( <i>Roxb.</i> ) <i>Dubard</i>	T	r	A
Mimusops elengi <i>L.</i>	T	r	A,B
<b>SOLANACEAE</b>			
Solanum pubescens <i>Willd.</i>	S	C	B

**STERCULIACEAE**Sterculia urens *Roxb.***TILIACEAE**Grewia orbiculata *Rottl.*Grewia rhamnifolia *Heyne ex Roth*Grewia tenax (*Forssk.*) *Fiori*Grewia tiliifolia *Vahl***ULMACEAE**Celtis tetrandra *Roxb.*Holoptelea integrifolia (*Roxb.*) *Pl.***VERBENACEAE**Gmelina arborea *Roxb.*Gmelina asiatica *L.*Lantana camara *L.*Premna tomentosa *Willd.*Tectona grandis *L. f.*Vitex altissima *L. f.***VITACEAE**Cissus pallida *Pl.*Cissus quadrangularis *L.***MONOCOTYLEDONS****DIOSCOREACEAE**Dioscorea oppositifolia *L.***LILIACEAE**Asparagus racemosus *Willd.***POACEAE**Dendrocalamus strictus *Nees***SMILACACEAE**Smilax perfoliata *Lour.*

T	C	A,B
t	r	B
L	C	A,B
S	O	A
T	C	B
T	O	B
T	O	A,B
T	r	B
S	O	B
S	C	A,B
T	O	A,B
T	O	A,B
T	O	A,B
L	O	A,B
L	C	A
<b>MONOCOTYLEDONS</b>		
L	C	A
L	C	A
T	O	A,B
L	O	B

**ANOGEISSUS LATIFOLIA - PTEROCARPUS MARSUPIUM -  
TERMINALIA SPP. TYPE**

<b>DICOTYLEDONS</b>			<b>BIGNONIACEAE</b>		
<b>ACANTHACEAE</b>			Dolichandrone atrovirens <i>Sprague</i>		
Thunbergia fragrans <i>Roxb.</i>	L	O A	Dolichandrone falcata <i>Seem.</i>	T	O B
<b>ALANGIACEAE</b>			Radermachera xylocarpa ( <i>Roxb.</i> ) <i>Schum.</i>		
Alangium salvifolium ( <i>L. f.</i> ) <i>Wang.</i>	t	O B	Stereospermum personatum ( <i>Hassk.</i> ) <i>Chatterjee</i>	T	C A,B
<b>ANACARDIACEAE</b>			<b>BOMBACACEAE</b>		
Buchanania axillaris ( <i>Desr.</i> ) <i>Ramam.</i>	T	O A	Bombax ceiba <i>L.</i>		
Buchanania lanzan <i>Spreng.</i>	T	C A,B	<b>BORAGINACEAE</b>		
Lannea coromandelica ( <i>Houtt.</i> ) <i>Merr.</i>	T	O A	Cordia dichotoma <i>Forst.</i>		
Mangifera indica <i>L.</i>	T	r A	Cordia macleodii ( <i>Griff.</i> ) <i>Hk.f. &amp; T.</i>		
Nothopegia beddomei <i>Gamble</i>	t	r A,B	<b>BURSERACEAE</b>		
Semecarpus anacardium <i>L. f.</i>	T	O A,B	Boswellia serrata <i>Roxb. ex Colebr.</i>		
<b>ANNONACEAE</b>			Commiphora caudata <i>Engl.</i>		
Milium eriocarpa <i>Dunn.</i>	t	r A	Garuga pinnata <i>Roxb.</i>		
Polyalthia cerasoides ( <i>Roxb.</i> ) <i>Bedd</i>	T	O A,B	<b>CAPPARIDACEAE</b>		
Uvaria narum <i>Wall.</i>	L	O A,B	Capparis divaricata <i>Lam.</i>		
<b>APOCYNACEAE</b>			Capparis sepiaria <i>L.</i>		
Carissa carandas <i>L.</i>	S	O B	<b>CELASTRACEAE</b>		
Holarrhena antidysenterica ( <i>Roxb.</i> ) <i>Wall.</i>	S	C B	Cassine glauca ( <i>Rottb.</i> ) <i>Kuntze</i>		
Wrightia tinctoria ( <i>Roxb.</i> ) <i>R. Br.</i>	T	C A,B	Celastus paniculatus <i>Willd.</i>		
Wrightia tomentosa <i>R. &amp; S.</i>	T	r A	Maytenus emarginata ( <i>Willd.</i> ) <i>Ding Hou</i>		
<b>ARALIACEAE</b>			Maytenus ovata ( <i>Wight &amp; Arn.</i> ) <i>Loes.</i>		
Schefflera stellata ( <i>Gaertn.</i> ) <i>Harms.</i>	St	O A,B	Pleurostyliya opposita ( <i>Wall.</i> ) <i>Alston</i>		
<b>ARISTOLOCHIACEAE</b>			<b>COMBRETACEAE</b>		
Aristolochia indica <i>L.</i>	L	O B	Anogeissus latifolia ( <i>Roxb.</i> ) <i>Wall.</i>		
<b>ASCLEPIADACEAE</b>			Terminalia alata <i>Heyne ex Roth</i>		
Hemidesmus indicus <i>R. Br.</i>	L	r A,B	Terminalia bellirica ( <i>Gaertn.</i> ) <i>Roxb.</i>		
Sarcostemma acidum ( <i>Roxb.</i> ) <i>Voigt</i>	L	O A,B	Terminalia chebula <i>Retz.</i>		
Secamone emetica ( <i>Retz.</i> ) <i>R. Br.</i>	L	O A,B	Terminalia paniculata <i>Roth</i>		
Wattakaka volubilis ( <i>L.f.</i> ) <i>Stapf</i>	L	r A	<b>CONVOLVULACEAE</b>		
<b>ASTERACEAE</b>			Argyreia cuneata ( <i>Willd.</i> ) <i>Ker Gawl.</i>		
Chromolaena odorata ( <i>L.</i> ) <i>King&amp;Robin.</i>	S	C A	Argyreia pilosa <i>Wight &amp; Arn.</i>		
Notonia grandiflora <i>Wall. ex DC.</i>	S	O A	Rivea hypocrateriformis ( <i>Desr.</i> ) <i>Choisy</i>		
Vernonia divergens <i>Edgew.</i>	S	O B	<b>EBENACEAE</b>		
<b>BARRINGTONIACEAE</b>			Diospyros ebenum <i>Koenig</i>		
Careya arborea <i>Roxb.</i>	T	C A,B	Diospyros exsculpla <i>Bedd.</i>		
			Diospyros ferrea ( <i>Willd.</i> ) <i>Bakh.</i>		



Diospyros melanoxydon <i>Roxb.</i>	T	O	A,B	<b>LAURACEAE</b>			
Diospyros montana <i>Roxb.</i>	T	r	A,B	Litsea deccanensis <i>Gamble</i>	T	r	A,B
Diospyros ovalifolia <i>Wight</i>	T	r	A	Litsea ligustrina <i>Hk. f.</i>	t	r	B
				Neolitsea zeylanica <i>Merr.</i>	t	r	B
<b>EHRETIACEAE</b>				<b>LOGANIACEAE</b>			
Carmona retusa ( <i>Vahl</i> ) <i>Masam.</i>	S	O	A,B	Strychnos nux-vomica <i>L.</i>	T	O	A
<b>ERYTHROXYLACEAE</b>				Strychnos potatorum <i>L.f.</i>	T	C	A,B
Erythroxylum monogynum <i>Roxb.</i>	t	C	A,B	<b>LORANTHACEAE</b>			
<b>EUPHORBIACEAE</b>				Dendrophthoe falcata ( <i>L.f.</i> ) <i>Ettingsh.</i>	P	O	A
Breynia rhamnoides ( <i>Retz.</i> ) <i>M. Arg.</i>	S	C	A,B	<b>LYTHRACEAE</b>			
Bridelia crenulata <i>Roxb.</i>	T	C	A,B	Lagerstroemia parviflora <i>Roxb.</i>	T	O	A
Bridelia retusa <i>Spreng.</i>	t	C	A,B	<b>MALPIGHIACEAE</b>			
Emblica officinalis <i>Gaertn.</i>	T	C	A,B	Hiptage benghalensis ( <i>L.</i> ) <i>Kurz</i>	L	O	A,B
Givotia rottleriformis <i>Griff.</i>	T	C	A,B	<b>MALVACEAE</b>			
Glochidion velutinum <i>Wight</i>	T	C	A	Kydia calycina <i>Roxb.</i>	t	C	A,B
Mallotus philippensis ( <i>Lam.</i> ) <i>M. Arg.</i>	t	O	A,B	<b>MELASTOMATACEAE</b>			
Securinega leucopyrus ( <i>Willd.</i> ) <i>M. Arg.</i>	S	O	A,B	Memecylon lushingtonii <i>Gamble</i>	t	r	A
<b>FABACEAE (Caesalpinioideae)</b>				Memecylon umbellatum <i>Burm. f.</i>	t	r	A,B
Bauhinia purpurea <i>L.</i>	T	O	A	<b>MELIACEAE</b>			
Bauhinia racemosa <i>Lam.</i>	T	C	A,B	Aglaia roxburghiana ( <i>W. &amp; A.</i> ) <i>Miq.</i>	T	r	A,B
Cassia fistula <i>L.</i>	T	C	A,B	Chukrasia tabularis <i>A. Juss.</i>	T	O	A,B
Hardwickia binata <i>Roxb.</i>	T	r	A	Cipadessa baccifera <i>Miq.</i>	S	C	A,B
Pterolobium hexapetalum ( <i>Roth</i> ) <i>Sant. &amp; Wagh</i>	L	O	A,B	Melia dubia <i>Cav.</i>	T	r	A
<b>FABACEAE (Faboideae)</b>				Toona ciliata <i>Roemer</i>	T	r	A,B
Butea monosperma ( <i>Lam.</i> ) <i>Taub.</i>	T	C	A,B	<b>MENISPERMACEAE</b>			
Butea parviflora <i>Roxb.</i>	L	O	B	Pachygone ovata ( <i>Poir.</i> ) <i>Hk. f. &amp; T.</i>	L	r	A,B
Dalbergia latifolia <i>Roxb.</i>	T	C	A,B	<b>MORACEAE</b>			
Dalbergia paniculate <i>Roxb.</i>	T	C	A,B	Ficus amplissima <i>Smith</i>	T	r	A
Erythrina suberosa <i>Roxb.</i>	T	r	A	Ficus arnottiana <i>Miq.</i>	T	O	A
Indigofera cassioides <i>Rottl. ex DC.</i>	T	O	A,B	Ficus benghalensis <i>L.</i>	T	O	A
Pongamia pinnata ( <i>L.</i> ) <i>Pierre</i>	S	O	A,B	Ficus microcarpa <i>L.f.</i>	T	O	A,B
Pterocarpus marsupium <i>Roxb.</i>	T	r	A	Ficus mollis <i>Vahl</i>	T	O	A
	T	C	A,B	Ficus tsjahela <i>Burm. f.</i>	T	r	A,B
<b>FABACEAE (Mimosoideae)</b>				Ficus virens <i>Aiton</i>	T	r	A
Acacia chundra ( <i>Roxb. ex Rottl.</i> ) <i>Willd.</i>	T	C	B	Streblus asper <i>Lour.</i>	t	O	B
Acacia leucophloea ( <i>Roxb.</i> ) <i>Willd.</i>	T	O	A,B	<b>MYRSINACEAE</b>			
Acacia pennata ( <i>L.</i> ) <i>Willd.</i>	L	C	A,B	Ardisia solanacea <i>Roxb.</i>	S	r	A,B
Acacia torta ( <i>Roxb.</i> ) <i>Craib.</i>	L	r	A	Embelia basaal <i>A. DC.</i>	L	r	A
Albizia amara ( <i>Roxb.</i> ) <i>Boiv.</i>	T	r	A,B	Embelia tsjeriam-cottam <i>A. DC.</i>	L	r	A,B
Albizia lebbeck ( <i>L.</i> ) <i>Benth.</i>	T	O	A,B	<b>MYRTACEAE</b>			
Albizia marginata ( <i>Lam.</i> ) <i>Merr.</i>	T	O	A	Syzygium cumini ( <i>L.</i> ) <i>Skeels</i>	T	O	A,B
Albizia odoratissima ( <i>L. f.</i> ) <i>Benth.</i>	T	O	A,B	<b>OCHNACEAE</b>			
Dichrostachys cinerea <i>Wight &amp; Arn.</i>	t	O	A,B	Ochna squarrosa <i>L.</i>	t	r	A
Mimosa rubicaulis <i>Lam.</i>	L	O	A,B				
<b>FLACOURTIACEAE</b>							
Casearia elliptica <i>Willd.</i>	t	O	A,B				
Flacourtia indica ( <i>Burm. f.</i> ) <i>Merr.</i>	S	O	A,B				
<b>HERNANDIACEAE</b>							
Gyrocarpus jacquini <i>Roxb.</i>	T	C	B				

**OLEACEAE**

Chionanthus malabarica <i>Bedd.</i>	T	r	A
Chionanthus ramiflora <i>Roxb.</i>	T	O	A,B
Jasminum auriculatum <i>Vahl</i>	L	O	A,B
Jasminum cuspidatum <i>Rottl.</i>	S	C	A,B
Ligustrum gamblei <i>Ramam.</i>	T	O	A,B
Olea glandulifera <i>Wall. ex G. Don</i>	T	O	A,B
Schrebera swietenoides <i>Roxb.</i>	T	O	A

**OPILIACEAE**

Cansjera rheedii <i>Gmel.</i>	L	O	A,B
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**RANUNCULACEAE**

Clematis gouriana <i>Roxb. ex DC.</i>	L	C	A,B
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**RHAMNACEAE**

Sageretia parviflora ( <i>Schultes</i> ) <i>Don</i>	L	O	A,B
Scutia myrtina ( <i>Burm.f.</i> ) <i>Kurz</i>	L	C	A,B
Ventilago maderaspatana <i>Gaertn.</i>	L	O	A
Ziziphus oenoplia <i>Mill.</i>	L	C	A,B
Ziziphus rugosa <i>Lam.</i>	L	C	A
Ziziphus xylopyrus ( <i>Retz.</i> ) <i>Willd.</i>	T	O	A,B

**ROSACEAE**

Rubus niveus <i>Thunb.</i>	L	C	A,B
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**RUBIACEAE**

Benkara malabarica ( <i>Lam.</i> ) <i>Tirven.</i>	S	r	A,B
Canthium dicoccum ( <i>Gaertn.</i> ) <i>Merr.</i>	T	C	A,B
Canthium parviflorum <i>Lam.</i>	S	r	A,B
Catunaregam dumetorum <i>Tirven.</i>	S	C	A,B
Catunaregam torulosa ( <i>Dennst.</i> ) <i>Tirven.</i>	t	r	A,B
Gardenia latifolia <i>Ait.</i>	T	O	A,B
Haldina cordifolia ( <i>Roxb.</i> ) <i>Ridsdale</i>	T	O	A,B
Hymenodictyon excelsum ( <i>Roxb.</i> ) <i>Wall.</i>	T	r	A
Ixora arborea <i>Roxb. ex Smith</i>	t	O	A,B
Mitragyna parvifolia ( <i>Roxb.</i> ) <i>Korth.</i>	T	r	A,B
Morinda coreia <i>Buch.-Ham.</i>	T	C	A
Pavetta indica <i>L.</i>	S	O	A
Pavetta tomentosa <i>L.</i>	S	C	A
Tarenna asiatica ( <i>L.</i> ) <i>Kuntze</i>	S	O	A,B
Wendlandia thyrsoides ( <i>R. &amp; S.</i> ) <i>Steud.</i>	t	O	A,B

**RUTACEAE**

Atalantia monophylla ( <i>L.</i> ) <i>Correa</i>	T	O	A,B
Atalantia racemosa <i>Wight &amp; Arn.</i>	T	O	A
Chloroxylon swietenia <i>DC.</i>	T	r	A,B
Citrus medica <i>L.</i>	t	r	A
Clausena dentata ( <i>Willd.</i> ) <i>Roem.</i>	t	O	A,B
Clausena indica <i>Oliv.</i>	S	C	A,B
Limonia acidissima <i>L.</i>	T	O	A
Murraya paniculata ( <i>L.</i> ) <i>Jack</i>	T	O	A,B
Naringi crenulata ( <i>Roxb.</i> ) <i>Nicolson</i>	T	O	A,B
Toddalia asiatica ( <i>L.</i> ) <i>Lam.</i>	T	C	A,B

**SANTALACEAE**

Osyris quadripartita <i>Salzm. ex Decne</i>	S	r	A,B
Santalum album <i>L.</i>	T	r	A,B

**SAPINDACEAE**

Allophylus cobbe ( <i>L.</i> ) <i>Raesch.</i>	t	C	A
Allophylus serratus ( <i>Roxb.</i> ) <i>Kurz</i>	L	C	A,B
Dodonaea viscosa ( <i>L.</i> ) <i>Jacq.</i>	S	O	A,B
Sapindus emarginatus <i>Vahl</i>	T	C	A
Schleichera oleosa ( <i>Lour.</i> ) <i>Oken</i>	T	O	A,B

**SAPOTACEAE**

Madhuca longifolia ( <i>Koen.</i> ) <i>Macbr.</i>	T	O	A,B
Mimusops elengi <i>L.</i>	T	O	A
Xantolis tomentosa ( <i>Roxb.</i> ) <i>Rafin.</i>	t	O	A,B

**SIMAROUBACEAE**

Ailanthus excelsa <i>Roxb.</i>	T	r	B
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**STERCULIACEAE**

Eriolaena hookeriana <i>Wight &amp; Arn.</i>	t	O	A,B
Helicteres isora <i>L.</i>	S	C	A,B
Pterospemum suberifolium ( <i>L.</i> ) <i>Lam.</i>	T	r	A
Sterculia guttata <i>Roxb.</i>	T	O	A
Sterculia urens <i>Roxb.</i>	T	C	A
Sterculia villosa <i>Roxb. ex DC.</i>	t	C	A

**TTLIACEAE**

Grewia rhamnifolia <i>Heyne ex Roth</i>	L	O	A,B
Grewia tenax ( <i>Forsk.</i> ) <i>Fiori</i>	S	r	A
Grewia tiliifolia <i>Vahl</i>	T	C	A,B
Triumfetta pilosa <i>Roth</i>	S	O	B

**ULMACEAE**

Celtis tetrandra <i>Roxb.</i>	T	O	A
Holoptelea integrifolia <i>Pl.</i>	T	O	A,B
Trema orientalis <i>Bl.</i>	T	r	A

**VERBENACEAE**

Gmelina arborea <i>Roxb.</i>	T	r	A,B
Lantana camara <i>L.</i>	S	C	A,B
Premna latifolia <i>Roxb.</i>	T	C	A
Premna tomentosa <i>Willd.</i>	T	O	A,B
Tectona grandis <i>L. f.</i>	T	O	A
Vitex altissima <i>L. f.</i>	T	O	A,B

**VITACEAE**

Cissus pallida <i>Pl.</i>	L	O	A
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**MONOCOTYLEDONS****ARECACEAE**

Phoenix humilis <i>Royle</i>	t	O	A,B
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**DIOSCOREACEAE**Dioscorea oppositifolia *L.*Dioscorea pentaphylla *L.*

L	C	A,B
L	C	B

**LILIACEAE**Asparagus racemosus *Willd.*

L	C	A,B
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**POACEAE**Dendrocalamus strictus *Nees*

T	C	A,B
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**SMILACACEAE**Smilax perfoliata *Lour.*

I.	O	A
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**GYMNOSPERMS****GNETACEAE**Gnelum ula *Brogn.*

L	O	B
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**ELAEOCARPUS TUBERCULATUS - MICHELIA CHAMPACA -  
CANARIUM STRICTUM TYPE**

<b>DICOTYLEDONS</b>				<b>ELAEOCARPACEAE</b>			
<b>ACANTHACEAE</b>				Elaeocarpus serratus <i>L.</i>	I,II	C	
<i>Nilgiranthus heyneanus (Nees) Brem.</i>	H	C		Elaeocarpus tuberculatus <i>Roxb.</i>	I,E	C	
<b>ANACARDIACEAE</b>				<b>EUPHORBIACEAE</b>			
<i>Mangifera indica L.</i>	I,E	C		<i>Antidesma menasu Miq. ex Tul.</i>	III,IV	O	
<i>Spondias pinnata (L.f.) Kurz</i>		O	M	<i>Bischofia javanica Bl.</i>	II	C	
<b>ANNONACEAE</b>				<i>Embllica officinalis Gaertn.</i>	III	O	M,D
<i>Uvaria narum (Dunal) Wall. ex Wt. &amp; Arn.</i>	L	C		<i>Glochidion neilgherrense Wt.</i>	III	r	M
<b>APIACEAE</b>				<i>Glochidion velutinum Wt.</i>	III	O	M
<i>Centella asiatica (L.) Urb.</i>	H			<i>Macaranga peltata (Roxb.) M. Arg.</i>	I,III	O	Op
<b>APOCYNACEAE</b>				<i>Mallotus philippensis (Lam.) M. Arg.</i>	II,III	C	
<i>Carissa inermis Vahl</i>	L	O		<i>Mallotus tetracoccus (Roxb.) Kurz</i>	II,III	O	Op
<b>ARALIACEAE</b>				<b>FABACEAE (Caesalpinioideae)</b>			
<i>Schefflera capitata (Wt. &amp; Arn.) Harms</i>	II,III	O		<i>Acrocarpus fraxinifolius Wt.</i>	I,E	O	D
<b>BIGNONIACEAE</b>				<i>Caesalpinia decapetala (Roth) Alston</i>	L	C	M
<i>Oroxylum indicum (L.) Benth. ex Kurz</i>	III	r	M,D	<i>Cassia fistula L.</i>	III	O	M,D
<i>Radermachera xylocarpa (Roxb.) K. Schum.</i>	III	O	M,D	<i>Mezoneuron cucullatum (Roxb.) Wt. &amp; Arn.</i>	L	r	
<i>Stereospermum colais (Buck.-Ham. ex Dillw.) Mabblerley</i>	I	O	M,D	<b>FABACEAE (Faboideae)</b>			
<b>BORAGINACEAE</b>				<i>Dalbergia latifolia Roxb.</i>	I	O	M,D
<i>Cordia macleodii (Griff.) J. Hk. &amp; Th.</i>	III	r	M,D	<i>Dalbergia paniculata Roxb.</i>	I	O	M,D
<b>BURSERACEAE</b>				<i>Erythrina stricta Roxb.</i>	III	O	M,D
<i>Canarium strictum Roxb.</i>	I,II	C	Op	<i>Pterocarpus marsupium Roxb.</i>	I,II	O	M,D
<b>CAPRIFOLIACEAE</b>				<b>FABACEAE (Mimosoideae)</b>			
<i>Viburnum punctatum Buch.-Ham. ex D. Don</i>	II,III			<i>Acacia pennata (L.) Willd.</i>	L	O	M
<b>CELASTRACEAE</b>				<i>Albizia odoratissima (L.f.) Benth.</i>	I,II	O	M,D
<i>Cassine glauca (Rottb.) Kuntze</i>	I,E	O		<i>Entada pursaetha DC.</i>	L	C	
<b>COMBRETACEAE</b>				<b>FLACOURTIACEAE</b>			
<i>Terminalia alata Heyne ex Roth</i>	I	O	M,D	<i>Casearia ovata (Lam.) Willd.</i>	II,III	O	
<i>Terminalia bellirica (Gaertn.) Roxb.</i>	I	O	M,D	<i>Scolopia crenata (Wt. &amp; Arn.) Clos.</i>	III,IV	C	
				<b>ICACINACEAE</b>			
				<i>Nothapodytes nimmoniana (Grah.) Mabblerley</i>	IV	O	
				<b>LAURACEAE</b>			
				<i>Actinodaphne lawsonii Gamble</i>	II,III	O	
				<i>Actinodaphne malabarica Balak</i>	II,III	r	
				<i>Cinnamomum sulphuratum Nees</i>	II,III	C	
				<i>Cinnamomum travancoricum Gamble</i>	II,III	C	
				<i>Cryptocarya neilgherrensis Meissn.</i>	II	C	

Litsea deccanensis <i>Gamble</i>	III	O		Syzygium cumini ( <i>L.</i> ) <i>Skeels</i>	I,II	C	
Litsea floribunda ( <i>Bl.</i> ) <i>Gamble</i>	II	C		Syzygium malabaricum ( <i>Bedd.</i> )	IV	C	
Neolitsea zeylanica ( <i>Nees</i> ) <i>Merr.</i>	II,III	C		<i>Gamble</i>			
Persea macrantha ( <i>Ness</i> ) <i>Kosterm.</i>	I	C		<b>OLEACEAE</b>			
Phoebe paniculata <i>Nees</i>	II,III	C	IV	Chionanthus ramiflora <i>Roxb.</i>	III	O	M
<b>LECYTHIDACEAE</b>				Jasminum azoricum <i>L.</i>	CI	C	
Careya arborea <i>Roxb.</i>	II,III	O	M,D	Ligustrum perrottetii <i>A. DC.</i>	III	O	M
<b>MAGNOLIACEAE</b>				Olea glandulifera <i>Wall. ex G. Don</i>	II	O	
Michelia champaca <i>L.</i>	I,E	C		<b>PIPERACEAE</b>			
<b>MALPIGHIACEAE</b>				Peperomia sp.	Ep	C	
Hiptage benghalensis ( <i>L.</i> ) <i>Kurz</i>	L	C		Piper hymenophyllum <i>Miq.</i>	C	C	
<b>MALVACEAE</b>				<b>RHAMNACEAE</b>			
Kydia calycina <i>Roxb.</i>	II	O	M,D	Scutia myrtina ( <i>Burm.f.</i> ) <i>Kurz</i>	CI	O	
<b>MELASTOMATACEAE</b>				Ziziphus rugosa <i>Lam.</i>	IV	O	M
Memecylon lushingtonii <i>Gamble</i>	III	r	Op	<b>ROSACEAE</b>			
Memecylon talbotianum <i>Brandis</i>	III,IV	r		Prunus ceylanica ( <i>Wt.</i> ) <i>Miq.</i>	II		
<b>MELIACEAE</b>				Rubus fairholmianus <i>Gard.</i>	L		M
Aphanamixis polystachya ( <i>Wall.</i> )				Rubus niveus <i>Thunb.</i>	L		M
<i>Parker</i>	I	C		<b>RUBIACEAE</b>			
Chukrasia tabularis <i>A. Juss.</i>	I	O		Canthium dicoccum ( <i>Gaertn.</i> ) <i>Merr.</i>	II,III	C	
Cipadessa baccifera ( <i>Roth</i> ) <i>Miq.</i>	S	C		Catunaregam torulosa ( <i>Dennst.</i> )			
Munronia pinnata ( <i>Wall.</i> ) <i>Harms</i>	H	O		<i>Tirven.</i>	III	C	Op
Toona ciliata <i>M. Roem.</i>	I,II	C	Op	Chasalia ophioxylodes ( <i>Wall.</i> ) <i>Craib.</i>	S	O	
Trichilia connaroides ( <i>Wt. &amp; Arn.</i> )				Meyna laxiflora <i>Robyns</i>	III	C	Op
<i>Bent.</i>	II	r	Op	Mussaenda glabrata ( <i>J. Hk.</i> ) <i>Hutch.</i>	S	O	M
<b>MENISPERMACEAE</b>				<i>ex Gamble</i>	S	O	
Cocculus laurifolius <i>DC.</i>	IV	C		Pavetta indica <i>L.</i>	S	O	Op
Diploclisia glaucescens ( <i>Bl.</i> ) <i>Diels</i>	L	C		Pavetta tomentosa <i>Roxb. ex J.E. Sm.</i>	S	r	
<b>MORACEAE</b>				Psychotria bisulcata <i>Wt. &amp; Arn.</i>	IV	C	
Artocarpus heterophyllus <i>Lam.</i>	II	O		Psychotria elongata ( <i>Wt.</i> ) <i>J. Hk.</i>	IV	C	
Ficus hispida <i>L.f.</i>	II	r		Psychotria nigra ( <i>Gaertn.</i> ) <i>Alston</i>			
Ficus microcarpa <i>L.f.</i>	I,II	O		Wendlandia thyrsoides	III,IV	O	M
Ficus mollis <i>Vahl</i>	II	O		<i>(Roem. &amp; Schult.) Steud.</i>			
Ficus nervosa <i>Heyne ex Roth</i>	I,II	r		<b>RUTACEAE</b>			
Ficus racemosa <i>L.</i>	II	O		Atalantia wightii <i>Tanaka</i>	IV	C	
Ficus talbotii <i>King</i>	II	r		Clausena indica ( <i>Dalz.</i> ) <i>Oliver</i>	IV	O	
Ficus tsjahela <i>N. Burman</i>	I	C		Euodia lunu-ankenda ( <i>Gaertn.</i> ) <i>Merr.</i>	III	C	
Ficus virens <i>Aiton</i>	I	C		Murray a paniculata ( <i>L.</i> ) <i>Jack.</i>	IV	O	
<b>MYRISTICACEAE</b>				Toddalia asiatica ( <i>L.</i> ) <i>Lam.</i>			
Myristica dactyloides <i>Gaertn.</i>	II	r		var. floribunda ( <i>Wall.</i> ) <i>Gamble</i>	L	C	
<b>MYRSINACEAE</b>				<b>SABIACEAE</b>			
Ardisia solanacea <i>Roxb.</i>	IV			Meliosma pinnata ( <i>Roxb.</i> ) <i>Walp.</i>	I,II	C	
Maesa indica ( <i>Roxb.</i> ) <i>DC.</i>	IV			ssp. arnottiana ( <i>Walp.</i> ) <i>Beus.</i>			
<b>MYRTACEAE</b>				Meliosma simplicifolia ( <i>Roxb.</i> ) <i>Walp.</i>	II	C	
Eugenia thwaitesii <i>Duthie</i>	IV	r		ssp. pungens ( <i>Walp.</i> ) <i>Beus.</i>			
				<b>SALICACEAE</b>			
				Salix tetrasperma <i>Roxb.</i>	I,E	O	

**SAPINDACEAE**

*Allophylus cobbe (L.) Raeusch.*  
*Dimocarpus longan Lour.*  
*Sapindus laurifolia Vahl*

L	C	
I	C	
II	O	Op

**SAPOTACEAE**

*Xantolis tomentosa (Roxb.) Raf.*

II,III	O	
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**STERCULIACEAE**

*Eriolaena hookeriana Wt. & Arn.*  
*Helicteres isora L.*  
*Sterculia guttata Roxb. ex DC.*

IV	O	M,D
IV	O	M,D
II	C	Op,D

**SYMPLOCACEAE**

*Symplocos cochinchinensis (Lour.)  
 Moore ssp. laurina (Retz.) Noot.*

IV	C	M
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**TILIACEAE**

*Grewia tiliifolia Vahl*

I	C	M
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**ULMACEAE**

*Celtis tetrandra Roxb.*  
*Trema orientalis (L.) Bl.*

I	C	Op,D
III,IV	C	Op

**URTICACEAE**

*Elatostema lineolatum Wt.*  
*Procris crenata C. Robinson*  
*Villebrunea integrifolia Gaud.*

H	C	
H	C	
III	O	Op

**VERBENACEAE**

*Callicarpa tomentosa (L.) Murray*  
*Clerodendrum viscosum Vent.*

III	C	Op
III	C	Op

*Gmelina arborea Roxb.*

*Lantana camara L.*  
 var. *aculeata (L.) Mold.*

III	O	M,D
IV,S	O	M

**VITACEAE**

*Cayratia sp.*

L	C	
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**MONOCOTYLEDONS****ARACEAE**

*Arisaema sp.*

H	C	
---	---	--

**ARECACEAE**

*Calamus gamblei Becc.*

L	O	
---	---	--

**LILIACEAE**

*Asparagus racemosus Willd.*

L	C	
---	---	--

**POACEAE**

*Dendrocalamus sp.*

IV	O	M
----	---	---

**SMILACACEAE**

*Smilax perfoliata Lour.*

L	O	
---	---	--

**ZINGIBERACEAE**

*Globba bulbifera Roxb.*

H	C	
---	---	--

**GYMNOSPERMS****GNETACEAE**

*Gnetum ula Brogn.*

L	C	
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<b>MELIACEAE</b>									
<i>Aglaia jainii</i> Viswa. & Rama.	I,II	O						L	O
<i>Aphanamixis polystachya</i> (Wall.) Parker	I,II							L	O
<i>Munronia pinnata</i> (Wall.) Harms	H								
<i>Toona ciliata</i> M. Roem.	I		Op,M						
<b>MENISPERMACEAE</b>									
<i>Cocculus laurifolius</i> DC.	IV	O							
<b>MORACEAE</b>									
<i>Artocarpus heterophyllus</i> Lam.	II	O							
<i>Ficus microcarpa</i> L.f.	I,II	O							
<i>Ficus nervosa</i> Heyne ex Roth	I,II	O							
<i>Ficus laevis</i> Bl. var. <i>macrocarpa</i> (Miq.) Corner	L	r							
<b>MYRISTICACEAE</b>									
<i>Myristica dactyloides</i> Gaertn.	I,II	O							
<b>MYRSINACEAE</b>									
<i>Ardisia pauciflora</i> Heyne ex Roxb.	IV	O							
<b>MYRTACEAE</b>									
<i>Syzygium cumini</i> (L.) Skeels	I,II	O							
<i>Syzygium gardneri</i> Thw.	I+E	r							
<i>Syzygium hemisphericum</i> (Wt.) Alston	III,IV	O							
<b>OLEACEAE</b>									
<i>Chionanthus mala-elengi</i> (Dennst.) P.S. Green	IV	r							
<i>Chionanthus ramiflora</i> Roxb.	I,II,III	C	Op,M						
<i>Olea glandulifera</i> Wall. ex G. Don	I,II	O							
<b>PIPERACEAE</b>									
<i>Peperomia</i> sp.	Ep	C							
<i>Piper hymenophyllum</i> Miq.	L	C							
<b>ROSACEAE</b>									
<i>Prunus ceylanica</i> (Wt.) Miq.	II	r							
<b>RUBIACEAE</b>									
<i>Chasalia ophioxylodes</i> (Wall.) Craib.	H	C							
<i>Coffea arabica</i> L.	S	C							
<i>Psychotria elongata</i> (Wt.) J. Hk.	S	C							
<b>RUTACEAE</b>									
<i>Atalantia wightii</i> Tanaka	S	O							
<i>Clausena dentata</i> (Willd.) Roem. & Schult.	S	O							
<i>Euodia lunu-ankenda</i> (Gaertn.) Merr.	II	O							
<i>Murraya paniculata</i> (L.) Jack.	IV	O	Op						
<i>Toddalia asiatica</i> (L.) Lam. var. <i>floribunda</i> (Wall.) Gamble								L	O
<i>Zanthoxylum tetraspermum</i> Wt. & Arn.								L	O
<b>SABIACEAE</b>									
<i>Meliosma pinnata</i> (Roxb.) Walp. Ssp. <i>arnottiana</i> (Walp.) Beus.	I,II	O							
<i>Meliosma simplicifolia</i> (Roxb.) Walp. Ssp. <i>pungens</i> (Walp.) Beus.	II	C							
<b>SAPINDACEAE</b>									
<i>Allophylus cobbe</i> (L.) Raeusch.	L							L	Op
<i>Dimocarpus longan</i> Lour.	I+E	C							
<b>SAPOTACEAE</b>									
<i>Chrysophyllum lanceolatum</i> (Bl.) DC.	I	r							
<i>Isonandra perrottetiana</i> DC.	II,III	C							
<i>Palaquium ellipticum</i> (Dalz.) Baillon	I+E	C							
<b>SOLANACEAE</b>									
<i>Solanum giganteum</i> Jacq.	S	C	Op						
<b>STERCULIACEAE</b>									
<i>Sterculia guttata</i> Roxb. ex DC.	II,III	O	Op						
<b>SYMPLOCACEAE</b>									
<i>Symplocos cochinchinensis</i> (Lour.) Moore ssp. <i>laurina</i> (Retz.) Noot.	III,IV	O	M						
<b>ULMACEAE</b>									
<i>Celtis tetrandra</i> Roxb.	I,II	O	Op						
<i>Trema orientalis</i> (L.) Bl.	III	C	Op						
<b>URTICACEAE</b>									
<i>Debregeasia longifolia</i> (N. Burman) Wedd.	IV	C	Op						
<i>Elatostema lineolatum</i> Wt.	H	C							
<i>Procris crenata</i> C. Robinson	Ep	C							
<i>Villebrunea integrifolia</i> Gaud.	III, IV	C	Op						
<b>VERBENACEAE</b>									
<i>Callicarpa tomentosa</i> (L.) Murray	III, IV	C	Op						
<i>Clerodendrum serratum</i> (L.) Moon	IV	O							
<i>Clerodendrum viscosum</i> Vent.	III, IV	C	Op						
<b>VITACEAE</b>									
<i>Cayratia</i> sp.	L	C							
<b>MONOCOTYLEDONS</b>									
<b>ARACEAE</b>									
<i>Arisaema</i> sp.	H	C							



**ARECACEAE**Calamus gamblei *Becc.*

L C

**LILIACEAE**Ophiopogon intermedius *D. Don*

H C

**ORCHIDACEAE**Anoectochilus elatior *Lindl.*

H O

Geodorum densiflorum (*Lam.*)  
*Schlechter.*

H C

**GYMNOSPERMS****GNETACEAE**Gnetum ula *Brong.*

L O

**PTERIDOPHYTES****CYATHEACEAE**Cyathea gigantea (*J. Hk.*) *Holtum*

IV r R

**DIOSPYROS OVALIFOLIA - MEMECYLON LUSHINGTONII -  
OLEA GLANDULIFERA TYPE**

<b>DICOTYLEDONS</b>				<b>GESNERIACEAE</b>			
<b>ACANTHACEAE</b>				Aeschynanthus perrottetii DC.	Ep	C	
Nilgirianthus heyneanus (Nees) Brem.	H	C		<b>ICACINACEE</b>			
<b>ANACARDIACEAE</b>				Nothapodytes foetida (Wt.) Sleumer	t	C	
Nothopogia beddomei Gamble	T	r		<b>LAURACEAE</b>			
<b>ANNONACEAE</b>				Cinnamomum travancoricum Gamble	T	C	
Miliusa eriocarpa Dunn	t,S	C		Litsea floribunda (Bl.) Gamble	T	C	
Uvaria narum (Dunal) Wall. ex Wt. & Arn.	C	C		Neolitsea zeylanica (Nees) Merr.	T	C	
<b>ARALIACEAE</b>				Persea macrantha (Nees) Kosterm.	T	O	
Schefflera capitata (Wt. & Arn.) Harms	t	O	*	Phoebe paniculata Nees	t	C	
<b>ASTERACEAE</b>				<b>LOGANIACEAE</b>			
Vernonia monosis C.B. Clarke	T	O	M,*	Fagraea ceilanica Thunb.	St	r	*
<b>BORAGINACEAE</b>				<b>MALPIGHIACEAE</b>			
Ehretia canarensis (Clarke) Gamble	S	r		Hiptage benghalensis (L.) Kurz	C	C	
<b>CELASTRACEAE</b>				<b>MALVACEAE</b>			
Cassine glauca (Rottb.) Kuntze	T	r		Abutilon sp.	S	O	
Euonymus crenulatus Wall. ex Wt. & Arn.	S	C		<b>MELIACEAE</b>			
<b>EBENACEAE</b>				Aphanamixis polystachya (Wall.) Parker	T	r	
Diospyros ovalifolia Wt.	T	VC		Cipadessa baccifera (Roth) Miq.	S	C	
<b>ELAEAGNACEAE</b>				Toona ciliata M. Roem.	T	r	
Elaeagnus kologa Schlecht.	C	O		Trichilia connaroides (Wt. & Arn.) Bent.	T	O	M
<b>EUPHORBIACEAE</b>				<b>MELASTOMATAACEAE</b>			
Antidesma menasu Miq. ex Tul.	t	C		Memecylon lushingtonii Gamble			
Bischofia javanica Bl.	T	C		<b>MENISPERMACEAE</b>			
Croton laccifer L.	t	r	M,*	Cocculus laurifolius DC.	t	O	
Glochidion neilgherrense Wt.	T	C	M	<b>MORACEAE</b>			
Macaranga peltata (Roxb.) M. Arg.	T	O	Op	Ficus microcarpa L.f.	T	O	
Mallotus philippensis (Lam.) M. Arg.	T	VC		Ficus nervosa Heyne ex Roth	T	r	
Mallotus tetracoccus (Roxb.) Kurz	T	O	Op	Ficus tsjahela N. Burman	T	C	
<b>FLACOURTIACEAE</b>				<b>MYRSINACEAE</b>			
Casearia ovata (Lam.) Willd.	T	r		Maesa indica (Roxb.) DC.	S	C	
Scolopia crenata (Wt. & Arn.) Clos.	t	C		Rapanea wightiana (Wall. ex DC.) Mez.	t	O	*

<b>MYRTACEAE</b>				Dimocarpus longan <i>Lour.</i>	T	r	
<i>Syzygium cumini (L.) Skeels</i>	T	C		<i>Sapindus laurifolia Vahl</i>	T	O	Op
<b>OLEACEAE</b>				<b>SAPOTACEAE</b>			
<i>Chionanthus ramiflora Roxb.</i>	T	C	M	<i>Xantolis tomentosa (Roxb.) Raf.</i>	T	O	*
<i>Jasminum azoricum L.</i>	C	C		<b>SOLANACEAE</b>			
<i>Ligustrum perrottetii A. DC.</i>	t		M	<i>Solanum sp.</i>	H	C	
<i>Olea glandulifera Wall. ex G. Don</i>	T	C		<b>STERCULIACEAE</b>			
<b>PIPERACEAE</b>				<i>Sterculia guttata Roxb. ex DC.</i>	T	C	Op,D
<i>Piper hymenophyllum Miq.</i>	C	C		<b>ULMACEAE</b>			
<b>ROSACEAE</b>				<i>Celtis tetrandra Roxb.</i>	T	O	Op,D
<i>Prunus ceylanica (Wt.) Miq.</i>	T	r		<i>Celtis timorensis Span.</i>	T	C	
<b>RUBIACEAE</b>				<b>URTICACEAE</b>			
<i>Canthium dicoccum (Gaertn.) Merr.</i>	T	VC		<i>Elatostema lineolatum Wt.</i>	H	VC	
<i>Ixora notoniana Wall. ex G. Don</i>	t	O	*	<b>VERBENACEAE</b>			
<i>Meyna laxiflora Robyns</i>	t	O	Op	<i>Callicarpa tomentosa (L.) Murray</i>	t	C	M
<i>Pavetta indica L.</i>	S	O		<b>VITACEAE</b>			
<i>Psychotria nigra (Gaertn.) Alston</i>	S	O		<i>Cayratia sp.</i>	C	C	
<i>Tarenna asiatica (L.) Schumann</i>	t,S	O	*				
<i>forma. rigida (Wt.) Raju</i>				<b>MONOCOTYLEDONS</b>			
<b>RUTACEAE</b>				<b>LILIACEAE</b>			
<i>Atalantia wightii Tanaka</i>	t,S	C		<i>Asparagus racemosus Willd.</i>	C	C	
<i>Clausena indica (Dalz.) Oliver</i>	S	C		<i>Ophiopogon intermedius D. Don</i>	H	C	
<i>Euodia lunu-ankenda (Gaertn.) Merr.</i>	T	C		<b>SMILACACEAE</b>			
<i>Murraya koenigii (L.) Spreng.</i>	S	O		<i>Smilax perfoliata Lour.</i>	C	O	
<i>Murraya paniculata (L.) Jack.</i>	S	C	M				
<i>Toddalia asiatica (L.) Lam.</i>				<b>PTERIDOPHYTES</b>			
<i>Var. floribunda (Wall.) Gamble</i>	C	C		<b>LYCOPODIACEAE</b>			
<b>SABIACEAE</b>				<i>Lycopodium phlegmaria L.</i>	H	C	
<i>Meliosma pinnata (Roxb.) Walp.</i>							
<i>ssp. arnottiana (Walp.) Beus.</i>	T	O	*				
<i>Meliosma simplicifolia (Roxb.) Walp.</i>							
<i>ssp. pungens (Walp.) Beus.</i>	T	O					
<b>SAPINDACEAE</b>							
<i>Allophylus cobbe (L.) Raensch.</i>	L	C					

**SCHEFFLERA SPP. - GORDONIA OBTUSA -  
MELIOSMA ARNOTTIANA TYPE**

<b>DICOTYLEDONS</b>					
<b>ACANTHACEAE</b>	H	C			
Nilgirianthus sp.					
<b>ANACARDIACEAE</b>					
Holigarna arnottiana <i>J. Hk.</i>	I	r			
Mangifera indica <i>L.</i>	II	O			
<b>ARALIACEAE</b>					
Schefflera capitata ( <i>Wt. &amp; Arn.</i> ) <i>Harms</i>	I	C			
Schefflera micrantha <i>Gamble</i>	I	O			
Schefflera racemosa <i>Harms</i>	I	C			
Schefflera venulosa <i>Harms</i>	St	C			
Schefflera wallichiana <i>Harms</i>	St	r			
<b>ARISTOLOCHIACEAE</b>					
Apama siliquosa <i>Lam.</i>	S	O			
<b>ASTERACEAE</b>					
Vernonia arborea <i>Ham.</i>	I	C			
<b>BALSAMINACEAE</b>					
Impatiens sp.	H	O			
<b>BURSERACEAE</b>					
Canarium strictum <i>Roxb.</i>	I	O			
<b>CAPRIFOLIACEAE</b>					
Viburnum punctatum <i>Buch.-Ham.</i> <i>ex D. Don</i>	I	C			
<b>CELASTRACEAE</b>					
Celastrus paniculatus <i>Willd.</i>	L	O			
Euonymus crenulatus <i>Wall.</i>	II	C			
Euonymus dichotomus <i>Heyne</i>	II	O			
<b>CLUSIACEAE</b>					
Garcinia gummu-gutta ( <i>L.</i> ) <i>Robson</i>	I	C			
Garcinia pictorius ( <i>Roxb.</i> ) <i>D'Arej</i>	I	r			
<b>CONVOLVULACEAE</b>					
Argyreia sp.	L	O			
<b>DILLENACEAE</b>					
Dillenia pentagyna <i>Roxb.</i>	I	O			
<b>ELAEAGNACEAE</b>					
Elaeagnus kologa <i>Schlecht.</i>	L	C			
<b>ELAEOCARPACEAE</b>					
Elaeocarpus munroii ( <i>Wt.</i> ) <i>Mast</i>	I	C			
Elaeocarpus serratus <i>L.</i>	I	C			
Elaeocarpus tuberculatus <i>Roxb.</i>	I	O			
<b>EUPHORBIACEAE</b>					
Agrostistachys indica <i>Dalz.</i>	II	O			
Agrostistachys meeboldii <i>Pax</i> & <i>Hoffm.</i>	I,II	r			
Antidesma menasu <i>Miq. ex Tul.</i>	III	C			
Aporosa sp.	II	C			
Daphniphyllum neigherrense <i>Ros.</i>	II	C	M		
Dimorphocalyx lawianus <i>J. Hk.</i>	III	O			
Glodchidion ellipticum <i>Wt.</i>	II,III	C	M		
Glodchidion fagifolium <i>J. Hk.</i>	II,III	r			
Glodchidion neilgherrense <i>Wt.</i>	II,III	C			
Glodchidion zeylanicum <i>A. Juss.</i>	II,III	O	M		
Macaranga peltata ( <i>Roxb.</i> ) <i>M. Arg.</i>	II	O			
Mallotus philippensis ( <i>Lam.</i> ) <i>M. Arg.</i>	I,II	C			
Mallolus tetracoccus ( <i>Roxb.</i> ) <i>Kurz</i>	II	O			
Sauropus androgynus <i>Merr.</i>	S	O			
<b>FABACEAE (Faboideae)</b>					
Derris sp.	L	O			
<b>FABACEAE (Mimosoideae)</b>					
Archidendron monadelphum ( <i>Roxb.</i> ) <i>Neilsen</i>	II	O			
<b>FLACOURTIACEAE</b>					
Casearia coriacea <i>Thw.</i>	II,III	C			
Casearia rubescens <i>Dalz.</i>	II,III	O			
Flacourtia montana <i>Graham</i>	II	O			
Hydnocarpus alpina <i>Wt.</i>	I	O			
Scolopia crenata ( <i>Wt. &amp; Arn.</i> ) <i>Clos.</i>	II	C			
<b>ICACINACEAE</b>					
Apodytes benthamiana <i>Wt.</i>	II	O			
Gomphandra coriacea <i>Wt.</i>	II,III	O			
<b>LAURACEAE</b>					
Actinodaphne malabarica <i>Balak</i>	I	O			
Alseodaphne semecarpifolia <i>Nees</i> var. <i>angustifolia</i> <i>Meisner</i>	I	C			

Apollonias arnottii <i>Nees</i>	II	O				
Beilschmiedia wightii <i>Benth. ex J. Hk.</i>	I	O				
Cinnamomum sulphuratum <i>Nees</i>	I,II	C				
Cinnamomum verum <i>Presl.</i>	I	O				
Cinnamomum wightii <i>Meissn.</i>	I	C				
Cryptocarya lawsonii <i>Gamble</i>	I	r				
Cryptocarya neilgherrensis <i>Meissn.</i>	I	C				
Litsea bourdillonii <i>Gamble</i>	I,II	O				
Litsea floribunda ( <i>Bl.</i> ) <i>Gamble</i>	I,II	C				
Litsea oleoides <i>J. Hk.</i>	II	C				
Litsea stocksii <i>J. Hk.</i>	I	C				
Neolitsea zeylanica ( <i>Nees</i> ) <i>Merr.</i>	II	C				
Persea macrantha ( <i>Nees</i> ) <i>Kosterm.</i>	I	C				
Phoebe wightii <i>Meisn.</i>	II	C				
<b>LEEACEAE</b>						
Leea indica ( <i>Burm.</i> ) <i>Merr.</i>	III,S	O				
<b>LOGANIACEAE</b>						
Fagraea ceilanica <i>Thunb.</i>	II	O				
<b>LYTHRACEAE</b>						
Lagerstroemia microcarpa <i>Wt.</i>	I	r				
<b>MAGNOLIACEAE</b>						
Michelia champaca <i>L.</i>	I	r				
<b>MELASTOMATACEAE</b>						
Memecylon gracile <i>Bedd.</i>	III	O				
Memecylon malabaricum ( <i>CL.</i> ) <i>Cogn.</i>	III	C				
<b>MELIACEAE</b>						
Toona ciliata <i>M. Roemer</i>	I	O				
Trichilia connaroides ( <i>Wt. &amp; Arn.</i> ) <i>Bent.</i>	I	O				
<b>MYRISTICACEAE</b>						
Myristica dactyloides <i>Gaertn.</i>	I	O				
<b>MYRSINACEAE</b>						
Ardisia rhomboidea <i>Wt.</i>	III,S	r				
Ardisia solanacea <i>Roxb.</i>	III,S	C				
Ardisia sonchifolia <i>Mez.</i>	III,S	O				
Rapanea sp.	S	C				
<b>MYRTACEAE</b>						
Eugenia mooniana <i>Wt.</i>	II	O				
Rhodomyrtus tomentosa <i>Wt.</i>	II,III	C				
Syzygium arnottianum <i>Walp.</i>	II	C				
Syzygium caryophyllatum ( <i>L.</i> ) <i>Alston</i>	I	C				
Syzygium cumini ( <i>L.</i> ) <i>Skeels</i>	I	O				
Syzygium hemisphericum ( <i>Walp.</i> ) <i>Alston</i>	II	O				
Syzygium rubicundum <i>Wt. &amp; Arn.</i>	II	C				
<b>OLEACEAE</b>						
Jasminum sp.	L	O				
Ligustrum gamblei <i>Ramam.</i>	II,III	C				M
Olea dioica <i>Roxb.</i>	II	O				
<b>PIPERACEAE</b>						
Piper sp.	L					
<b>PITTOSPORACEAE</b>						
Pittosporum neelgherrense <i>Wt. &amp; Arn.</i>	III	O				M
Pittosporum tetraspermum <i>Wt. &amp; Arn.</i>	III	C				M
<b>RANUNCULACEAE</b>						
Clematis gouriana <i>Roxb.</i>	L	O				
<b>RHAMNACEAE</b>						
Scutia myrtina ( <i>Burm.</i> ) <i>Kurz</i>	L	C				
<b>RUBIACEAE</b>						
Canthium neilgherrense <i>Wt.</i>	III,S	r				
Hedyotis stylosa <i>Br.</i>	H	C				
Ixora nigricans <i>Wt. &amp; Am.</i>	III,S	O				
Ixora notoniana <i>Wall.</i>	S	C				
Lasianthus rostratus <i>Wt.</i> Psychotria elongata <i>J. Hk.</i> Psychotria globicephala <i>Gamble</i> Psychotria truncata <i>Wall.</i>	S S S S	C C O O				
Randia sp.	S	O				
Saprosma sp.	II	C				
Tarenna asiatica ( <i>L.</i> ) <i>Schumam</i>	S	C				
Tricalysia apiocarpa <i>Gamble</i>	II	r				
Wendlandia thyrsoides ( <i>R. &amp; S.</i> ) <i>Steudel</i>	III	C				M
<b>RUTACEAE</b>						
Acronychia pedunculata ( <i>L.</i> ) <i>Miq</i> Euodia lunu-akenda ( <i>Gaertn.</i> ) <i>Merr.</i> Toddalia asiatica ( <i>L.</i> ) <i>Lam.</i>	II I,II L	C r C				
var. floribunda ( <i>Wall.</i> ) <i>Gamble</i>	I	r				
Zanlhoxyllum rhetsa ( <i>Roxb.</i> ) <i>DC.</i>	I	r				
<b>SABIACEAE</b>						
Meliosma pinnata ( <i>Roxb.</i> ) <i>Walp.</i> ssp. arnottiana ( <i>Wt.</i> ) <i>Beus.</i> Meliosma simplicifolia ( <i>Roxb.</i> ) <i>Walp.</i> ssp. pungens ( <i>Walp.</i> ) <i>Beus.</i>	I I	C C				
<b>SAPINDACEAE</b>						
Dimocarpus longan <i>Lour.</i>	I	C				
<b>SAPOTACEAE</b>						
Isonandra montana <i>Gamble</i>	II	C				
<b>SCROPHULARIACEAE</b>						
Sopubia delphinifolia ( <i>L.</i> ) <i>Don</i>	H	O				

**STAPHYLEACEAE**Turpinia cochinchinensis (*Lour.*) Merr.

Turpinia malabarica Gamble

**SYMPLOCACEAE**Symplocos cochinchinensis (*Lour.*)*Moore* ssp. *lauriana* (*Retz.*) Noot.Symplocos macrophylla *Wall. ex DC.*Symplocos racemosa *Roxb.***THEACEAE**Gordonia obtusa *Wt. & Arn.***URTICACEAE**Debregeasia longifolia (*Burm.*) *Wedd.*Elatostema lineolatum *Wt.***VERBENACEAE**Callicarpa tomentosa (*L.*) *Murray***VITACEAE**

Cayratia sp.

I	C	
I	O	
II	C	M
II	O	
III	O	
I,II	C	
S	O	
H	C	
II,III	C	M
L	O	

**MONOCOTYLEDONS****ARACEAE**Arisaema leschenaultii *Bl.***ARECACEAE**Calamus huegelianus *Mart.*Caryota urens *L.***PANDANACEAE**

Pandanus sp.

**SMILACACEAE**

Smilax sp.

H	O
L	O
I,II	O
S	O
L	O

**SCHEFFLERA CAPITATA - NEOLITSEA ZEYLANICA -  
MELIOSMA spp. TYPE**

<i>DICOTYLEDONS</i>							
<b>ACANTHACEAE</b>				Macaranga peltata (Roxb.) M. Arg.	T	O	Op
Barleria involucrata Nees	S	C	M	Mallotus philippensis (Lam.) M. Arg.	T	C	
Nilgirianthus foliosus (Wt.) Brem.	S	C	M	Mallotus tetracoccus (Roxb.) Kurz	T	O	Op
Nilgirianthus heyneanus (Nees) Brem.	H	C		Phyllanthus polyphyllus Willd.	S	r	M,Op
Nilgirianthus sp.	S	C		Securinega virosa (Roxb. ex Willd.) Pax & Hoffm.	S	r	Op
<b>APOCYNACEAE</b>				<b>FABACEAE (Caesalpinioideae)</b>			
Carissa inermis Vahl	L			Cassia fistula L.	T	r	Op
Rauwolfia densiflora (Wall.) Benth. ex J. Hk.	t	C		<b>FABACEAE (Mimosoideae)</b>			
<b>AQUIFOLIACEAE</b>				Albizia chinensis (Osbeck) Merr.	T	r	Op
Ilex denticulata Wall.	t	C		<b>FLACOURTIACEAE</b>			
<b>ARALIACEAE</b>				Casearia ovata (Lam.) Willd.	T	C	
Schefflera capitata (Wt. & Arn.) Harms	T	C		Scolopia crenata (Wt. & Arn.) Clos.	T	C	
Schefflera rostrata (Wt.) Harms var. micrantha (Clarke) Mahesh.	St	O		<b>ICACINACEAE</b>			
<b>ASTERACEAE</b>				Nothapodytes foetida (Wt.) Sleumer	t	C	
Vernonia monosis C.B. Clarke	T	C	M	<b>LAURACEAE</b>			
<b>CAPRIFOLIACEAE</b>				Actinodaphne lawsonii Gamble	T	C	
Viburnum coriaceum Bl.	t	C	M	Cinnamomum sulphuratum Nees	T	C	
Viburnum punctatum Buch.-Ham. ex D. Don	T	O	R	Cinnamomum travancoricum Gamble	T	C	
<b>CELASTRACEAE</b>				Cryptocarya neilgherrensis Meissn.	T	C	
Cassine glauca (Rottb.) Kuntze	T	O		Litsea floribunda (Bl.) Gamble	T	C	
Celastrus paniculatus Willd.	L	C		Neolitsea zeylanica (Nees) Merr.	T	C	
Euonymus crenulatus Wall. ex Wt. & Arn.	S,t	C		Persea macrantha (Nees) Kosterm.	T	O	
<b>ELAEAGNACEAE</b>				Phoebe paniculata Nees	T	C	
Elaeagnus kologa Schlecht.	L	O	M	<b>LOGANIACEAE</b>			
<b>ELAEOCARPACEAE</b>				Fagraea ceilanica Thunb.	St	C	
Elaeocarpus munronii (Wt.) Masters	T	r		Gardneria ovata Wall.	L	O	
Elaeocarpus serratus L.	T	O		<b>MALPIGHIACEAE</b>			
<b>EUPHORBIAEAE</b>				Hiptage benghalensis (L.) Kurz	L	C	
Bischofia javanica Bl.	T		R	<b>MELIACEAE</b>			
Daphniphyllum neilgherrense (Wt.) Rosenth.	T	C	M	Aphanamixis polystachya (Wall.) Parker	T	O	
Glochidion neilgherrense Wt.	T	C	M	Cipadessa baccifera (Roth) Miq.	S	C	
Glochidion velutinum Wt.	T	O	M	Toona ciliata M. Roem.	T	O	
				<b>MENISPERMACEAE</b>			
				Cocculus laurifolius DC.	t	O	
				<b>MORACEAE</b>			
				Artocarpus heterophyllus Lam.	T	r	

