Explanatory Booklet on the Forest Map of South India. Sheets: Belgaum-Dharwar-Panaji, Shimoga, Mercara-Mysore.

J.-P. Pascal

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Shimoga
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CONTENTS

INTRODUCTION

This explanatory booklet deals with the first three sheets of the Forest Map of South India which plans to cover in six sheets, at the scale of 1 : 250,000, the main forest regions in Karnataka, Kerala, Tamil Nadu and Goa (Fig. 1).

Earlier a vegetation map of Peninsular India at the scale of 1 : 1,000,000 was published by the French Institute of Pondicherry in collaboration with the Indian Council of Agricultural Research.

Two sheets of the above mentioned map *Cape Comorin* and *Mysore* (Gaussen *et al.* 1961, 1965) cover the entire area included in this booklet.

During the last twenty years, the forest area has changed considerably, mainly as a result of population growth (from 17 to 20% according to the States in the last 10 years). In some regions which are already over-populated (for example, Kerala) where the entire good agricultural land has been under cultivation for long, the increase in population results in fresh clearing of wooded areas. At present one can observe new settlements particularly at the foot of the Ghats in northern Kerala and on the border of the Karnataka plateau in Sirsi, Siddapur and Yellapur regions.

Deforestation takes place not only to settle the increasing population but also to accommodate the huge hydroelectric projects in less populated regions. For example on the border of the Karnataka plateau the dams will double in number when the projects under execution or already planned (Supa, Varahi, Savehaklu, Chakra, Bedhti...) are completed.

To this one should add the continuous increase in the requirement of wood by industry and fuelwood by the population. This leads to an increased intensity of tree felling and acceleration of its rhythm; over-exploitation may bring about a rapid degradation of the forest if not its total destruction.

In view of this situation, the need for a more rational management of the forest heritage is necessary, mainly regarding the policies of deforestation and afforestation, conversions, and choice of areas to be protected and the level of exploitation permitted.

Therefore, during the last decade, a certain number of schemes have been undertaken on the study of the ecology and the functioning of different types of forests, the impact of major development projects, the selection of species used in afforestation etc. ....

Thus it also became necessary to have a new vegetation map at a bigger scale, better adapted to the needs. Agreements were signed between the French Institute of Pondicherry and the Governments of Karnataka, Kerala and Tamil Nadu States for the preparation of a forest map at the scale of 1 : 250,000, showing the actual state of the forests, their environmental conditions (climatic, edaphic, biotic, administrative) and their potentialities.

This mapping is a synthesis of different types of information. It is obviously based on the experience gained from the earlier mapping scheme at 1:1,000,000. However, the larger scale of 1 : 250,000 calls for a greater degree of precision. New fundamental research had to be carried out concerning the structure, floristic composition and dynamism of the formations as also a more detailed mapping of the bioclimates of the region.* Interpretation of the Landsat imageries also added considerable accuracy to the limits of the vegetation types.

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* These recent fundamental works have already been published (LEGRIS *et al.* 1981; PASCAL 1982, 1984).

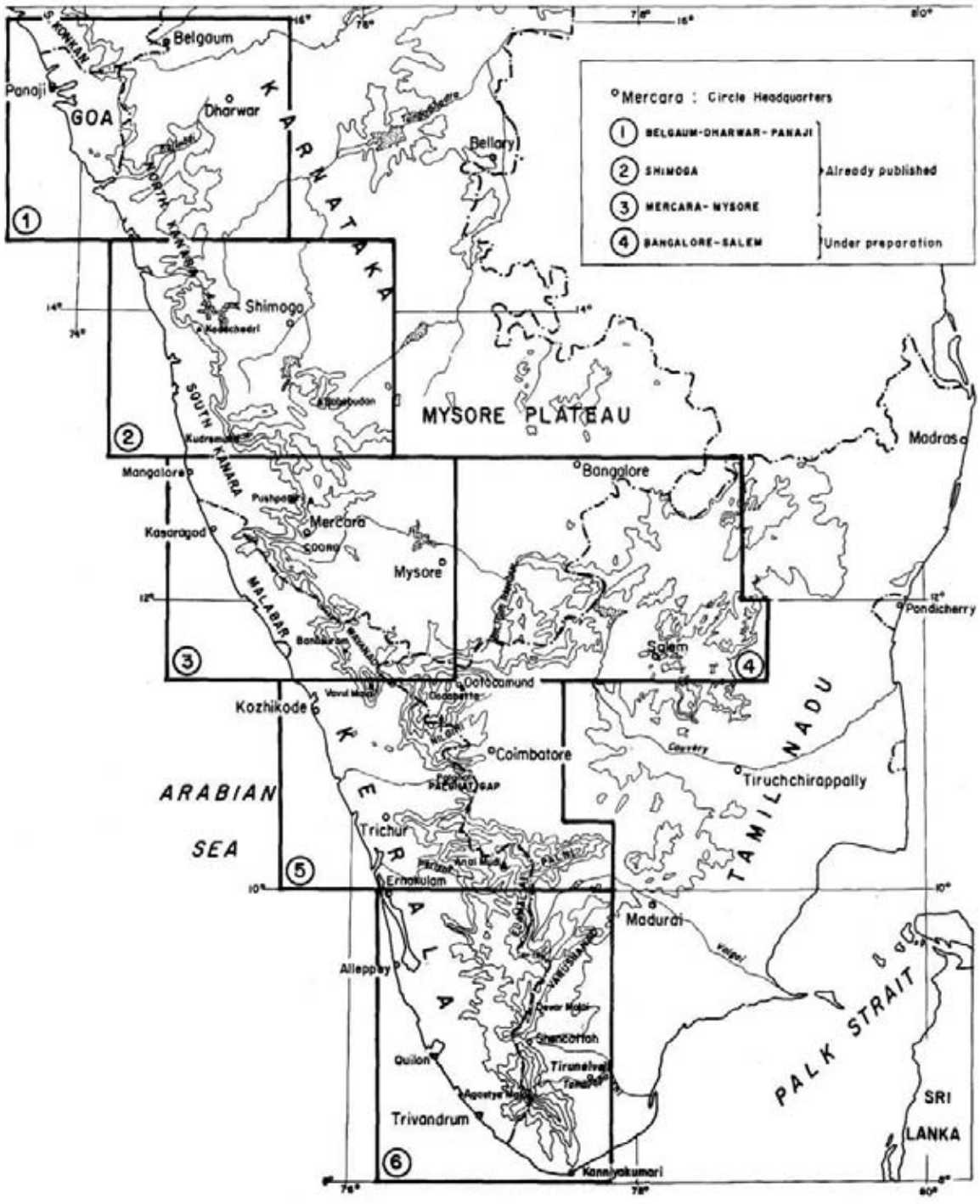

Fig.1. FOREST MAP OF SOUTH INDIA: KEY MAP

Chapter I

CONCEPTS AND METHODS

Rational management of vegetation cover raises many problems; the cartographic synthesis should give particulars on several categories of information:

- location of vegetation and characterization of different plant formations;
- representation of environmental parameters;
- dynamism of formations in relation to their environment.[1]

I. LOCATION AND IDENTIFICATION OF VEGETATION COVER

1. *Framework and sources*

The cartography must take into account not only the forests already managed by the Forest Department but also those under the Revenue Department and the private ones. As a matter of fact, information on the general distribution pattern of the forests is necessary to know their accessibility, the fragmentation and isolation of forest blocks, the continuity of migratory routes etc...

For the first three sheets of the map, nearly 250 reserved forests were visited within 5 years, to collect field data on the floristic composition of different formations and on their altitudinal and latitudinal limits. For most of the forest types the structure has been studied on sample plots.

The information obtained from field studies has been complemented with the existing literature (see bibliography) and with the data supplied by the Forest Department: working plans, stock maps, enumeration data, location of plantations, legal status of the forests etc...

The limits and most of the identifications of the formations have been taken from Landsat satellite imagery. Enlargements at 1 : 250,000 of MSS 5 and false colour composite (FCC) were used.

[1] For more details on the vegetation maps see GAUSSEN H. (1959).

2. *Identification of different formations with the help of satellite imageries*[2]

The frequency of data collection by Landsat over a given region is theoretically 18 days. However, during the monsoon period, from May to October, the cloud cover makes the whole or part of the recording useless. Recordings which are both of good quality for each of the 4 spectral bands, and show less than 10 per cent cloud cover prove quite rare: 3 to 6 images per scene during the period 1972-1981. For this reason we have used the imageries of different years (1973, 1975, 1977 and 1981), mostly taken in the dry season between January and March.

2.1 *Dense evergreen forests*

MSS 5: High density, very dark shade, practically black, homogeneous texture; no change according to the different seasons of the year.

FCC: Bright red, homogeneous.

There is a possibility of mistaking the water bodies for the dense evergreen forests on MSS 5. However, doubts can be clarified by consulting the FCC where water bodies appear in blue. Certain plantations, particularly the coffee ones, may also be confused with the evergreen forests.

It is difficult to separate the dense humid evergreen forests from the semi-evergreen or the disturbed evergreen forests. However, the latter have lesser density and less homogeneous texture, particularly on FCC.

[2] MSS : multispectral scanner. For Landsat 1, 2, 3 each scene (185 x 185 km) is covered with 4 spectral bands:

MSS 4 (0.5 - 0.6 µ m, green)

MSS 5 (0.6 - 0.7 µ m, red)

MSS 6 (0.7 - 0.8 µ m, near infra red)

MSS 7 (0.8 - 1.1 µ m, near infra red)

The FCC is obtained by superimposition of MSS 4, 5 and 7 each with an arbitrary colour : yellow, red and blue respectively.

The size of a pixel is 56 m x 79 m, the repetition rate is 18 days and the orbit altitude 918 km.

On the other hand, the dense evergreen or the semi-evergreen forests contrast sharply with the deciduous forests during the dry period (January-March) on MSS 5. This enabled us to identify and delimit accurately the *Kan* forests of the Sorab and Sirsi area, the evergreen or semi-evergreen vestiges in the reserved forests of Hanigeri and Ubbur to the west of Shimoga as also the semi-evergreen nature of some forest islets in the coastal region of South Kanara.

The classification of the evergreen forests into different types has been based on the data collected in the field and not on the satellite imagery.

2.2 *Deciduous forests*

MSS 5: They can be easily recognised by comparing the imageries of the seasons when the trees are in leaf and when they are leafless. They come out in medium grey colour with variable density.

FCC: Light red to pink, sometimes brown.

The differences in density appear mainly on MSS 5 and less so on FCC. The later, however, helps in clearing doubts regarding the shadows and the changes of colours linked to the nature or the humidity of the soil. This remark is also valid for the more open formations.

Whereas the dense deciduous forest can be easily recognised, it is difficult to separate the open forest, or woodland, from the more open formations like savanna-woodland or tree-savanna. Several intermediate stages exist which were identified with field data.

As the moist and the dry deciduous forests are characterized by their floristic composition, they can be identified only by field studies.

2.3 *Non-forest formations*

They are grouped into three broad categories:
- tree savanna, to grass-savanna
- scrub-woodland to dense thicket,
- discontinuous thicket to low scattered shrubs.

These formations are difficult to identify on the satel lite imageries. They may also be confused with crops.

MSS 5: From light grey to medium grey. The density is greater and the shade darker for the least open formations like scrub-woodland and dense thickets.

FCC: The colour varies from red to light pink with the opening of the stand. The FCC usually helps in distinguishing these formations from the neighbouring croplands. The changes in colours due to soil characteristics lead to considerable confusion on MSS 5. Sometimes it is possible to separate the thickets from the savanna after the passage of fire: dark shade on MSS 5 and blue-green colour on FCC.

In the regions where these different formations appear as a mosaic, we have represented only the dominant formation. In many cases, the identification has been made through field data and the recent toposheets at 1:50,000 scale.

2.4 *Plantations*

The identification of the plantations depends on their nature, their age and their environment. For example, a plantation of deciduous species (Teak or *Hevea)* appears in light grey during the deciduous season. It can be made out if it is surrounded by dense evergreen forests, but not if located within the deciduous forests.

Coffee plantations which are numerous in the mapped region, cannot be made out from the dense humid evergreen forests on MSS 5 or on FCC. However, they come out clearly when surrounded by deciduous forests as in the region of Mudigere-Belur. The nature of the plantations, and their location have been checked with the help of the information supplied by the Forest Department and from the recent toposheets.[3]

II. CHARACTERIZATION OF DIFFERENT FORMATIONS AND THEIR CARTOGRAPHIC REPRESENTATION

The different plant formations are characterized by their physiognomy, phenology and floristic composition.

1. *Physiognomy*

The physiognomy criteria retained are among the simplest:
- stratification of the formation and dominant biological form (trees, shrubs, undershrubs).
- density and coverage of the dominant stratum.

The physiognomic classification adopted is[4]:
- dense forest
- woodland to savanna-woodland
- tree savanna to grass savanna
- scrub-woodland to dense thicket
- discontinuous thicket to low scattered shrubs

We have considered a forest as dense when the canopy cover is more than 80%; between 50 and 80% it has

[3] Further information concerning spectral signatures of different formations of a neighbouring region, the Palni hills, is provided by BELLAN (1981).

[4] Details on the structure of these physiognomical types are given in Chapter III. The literature on the classification of the types of vegetation is very abundant. See particularly AUBREVILLE (1956) and MONOD (1963).

been classified as woodland. The estimation of the density was made as follows: measure of the canopy cover on sample plots and correlation with the density shown by the Landsat imagery at the same point, from which we have extrapolated density figures to the adjacent areas.

From a cartographic point of view, the same methodology has been used as in the 1/1,000,000 vegetation map of India. The opening of the formations is indicated by symbols: plain colour (dense forest), oblique thick bands (woodland), crossed stripes (dense thicket), big dots (tree savanna), small dots (grass savanna, scattered shrubs).

2. *Phenology*

According to the relative percentages of evergreen and deciduous species, the forests are separated into 3 categories: evergreen, semi-evergreen and deciduous forests.

Evergreen forest: the evergreen species constitute at least 95% of the stand. The deciduous species, found mainly in the openings, do not exceed 5% of the individuals.

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

Semi-evergreen forests: these are of two main types:

- The dominant stratum includes a mixture of evergreen and deciduous species, the latter making up more than 5%.
- The evergreen species are either absent or rare in the dominant stratum. But they constitute practically the whole of the lower strata as is often the case in the secondary forests in humid environment. We will see further that the potentialities of these two types of semi-evergreen forests can be very different.

On the map, the evergreen or semi-evergreen forests appear either in purple, blue-green or green colours according to the altitude; the moist deciduous forests in brown (with or without horizontal purple lines); the dry deciduous forests in yellow or orange.

3. *Floristic composition*

Formations with the same physiognomy and the same phenology are further divided into *forest types* according to the main differences in their floristic composition. 15 types have been recognized in the evergreen and semi-evergreen climax forests and 3 types in the deciduous climax forests.

The types are named after some species selected for their abundance or their characterizing value, or both (for example: *Dipterocarpus indicus-Kingiodendron pinnatum-Humboldtia brunonis* type or *Mesua ferrea-Palaquium ellipticum* type). On the map, the different evergreen types are separated by means of additional patterns or letters in dark purple or in black. These patterns also give an information on the floristic richness of the forest types: the richer in species the forest the more prominent the pattern. Thus, the gradual decrease in species richness in the evergreen forests of the plains and low altitudes is indicated by the succession: thick dark purple checks, horizontal or vertical dark purple lines, fine slanting black dots and finally only by the letter K.

In the deciduous climax forests[5], the floristic differences are not very important and they are mainly expressed by the relative abundance of certain characteristic species such as *Lagerstroemia microcarpa* (syn. *L. lanceoata*)[6], *Anogeissus latifolia*, *Terminalia paniculata*. Except under peculiar edaphic conditions, these changes depend on the west-east rainfall gradient (see Chapter II). When the rainfall gradient is strong the limit between the moist and dry deciduous forests is well marked, but when the gradient is less marked, as in North Kanara, the limits are not sharp; instead a transition takes place over a distance of about 20 km. Then, the limit chosen to distinguish the two types corresponds to the disappearance towards the east of *Dillenia pentagyna* which is a characteristic specie in moist deciduous forests.

III. REPRESENTATION OF ECOLOGICAL CONDITIONS

1. *Climatic conditions*

There are many publications on the bioclimates of the mapped area (see Chapter II). However, the scale of the map made it necessary to collect additional climatic information. The data from nearly 3000 raingauge stations and about 50 temperature recording

[5] The deciduous forests have been separated into "moist" and "dry" types (In annexe 1 a correspondence has been given between our classification and that of CHAMPION and SETH, 1968). However, these terms are not used with the same meaning. In forest literature, the distinction between the two types is mainly based on structure (especially height and density). According to these criteria a "dry deciduous" forests may occur under annual rainfall above 3000 mm. Following GAUSSEN *et al.* (1961, 1965) we prefer to give priority to environmental criteria.

[6] See annexe 2 for a list of synonyms

stations have been synthesized in a bioclimatic map of the Western Ghats at 1/500 000 (Pascal, 1982).

The climatic conditions are expressed on the forest map by means of colours according to Gaussen's method.[7]

The colours assigned to the rainfall range vary from very dry to very humid, in the following order: red, orange, yellow, light blue, dark blue. Those corresponding to the temperatures of the coldest month from cold to hot are yellow, orange, red.

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

The decrease of temperature with the altitude appears on the map, in the humid zone, by change of colours from purple to blue-green and then green.

The altitudinal transition is more or less extensive but quite often too narrow to be shown on the map. The same holds true for certain peculiar fades, strongly influenced by the climatic conditions, such as the crest fades.

The overlap between the three classes of elevation in the legend (low, medium, high) can be explained by:

- the differences in the altitudinal zonation according to exposure,
- the shift of this zonation, from south to north due to the progressive lengthening of the dry season.

The decrease in rainfall from west to east is expressed by the sequence of colours: purple (or blue-green, or green according to the altitude), brown, yellow, orange. The evergreen and semi-evergreen forests growing in very wet or wet conditions therefore appear in purple, blue-green or green; the moist deciduous forests growing in less humid environment are shown in brown and the dry deciduous forests in yellow and orange, according to the degree of dryness of their environment.

2. *Edaphic conditions*

Data on forest soils are rare. The documentation concerns mainly agricultural lands. The large scale surveys (soil map 1954; Chatterji U.N. 1958; Raychaudhuri, 1962) or the broad synthesis made for the 1/1,000,000 map (Gaussen *et al.* 1961, 1965) cannot give enough details for a cartography at 1/250,000. For these reasons, the edaphic conditions are shown on the map only when the soil becomes a predominant ecological factor which we have shown with symbols.

For example, L indicates an induration of the soil (laterite cap) which generally does not permit the regrowth of a forest.

P indicates the *Poeciloneuron indicum* gregarious facies in the Western Ghats from 13°N to 14°N (Shimoga sheet). This peculiar facies develops under a very high rainfall on soils derived from rocks of the Dharwar system (Pascal, 1984). The existence of the *Poeciloneuron* facies is probably linked to edaphic factors but this aspect requires further study.

3. *Biotic pressure and administrative information*

The degradation of forests is mainly related to the intensity of the anthropic pressure.

The density of the population has been shown on the map, to give an estimate of its needs (firewood, grazing-ground ...) Towns and villages with a population of over 1000 are represented by circles, the sizes of which are proportional to the population. The figures used are from the 1971 census corrected by the preliminary report of the 1981 census. The development of human activities often takes place along roads. The accessibility of forests may indicate greater exploitation facility but also a higher risk of degradation. Therefore, the road network, including the main forest tracks, has been shown on the map.

The legal status of the forests is also an important information. Among the forest managed by the Forest Department (reserved forests, minor forest, "betha", revenue land etc ...) only the reserved forests (sometimes called state forests), are outlined on the map by a thick black line and identified by a number. This number refers to a list at the bottom of the sheet in which the forests are classified according to their situation in the territorial division of the Forest Administration (Range, Division, Circle, State). When changes in nomenclature or numbering have taken place, we have given the equivalence between the new and the old nomenclature. For example, forest n°100 in the Shimoga sheet corresponds to block CLV administratively classified in Bhatkal Range (Honavar Division, North Kanara Circle). This forest block was previously n° = XXXIII in the old "interior High Forests of Karwar and Honavar Division".

The administrative information is supplemented by the limits of Division and Circles and by the location of Ranges, Divisions and Circles headquarters. To avoid any confusion, these are the only names appearing in black on the map. A small scale inset also depicts the boundaries of Circles and Divisions.

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[7] BAGNOULS F., GAUSSEN H, (1953); GAUSSEN H. (1959). This method is recommended by UNESCO (1973).

IV. DYNAMIC RELATIONSHIPS AND POTENTIALITIES

The dynamic relationships appear from the classification of the formations in the legend. The formations are grouped as follows:

- *climax formations* in equilibrium with the present conditions of the environment without human interference;
- *formations potentially linked to the climax,* which may return to climax if they are protected;
- *degraded stages* classified in increasing order of degradation, deriving from climax forests but their return to climax is no longer naturally probable.

A. The concept of forest climax

According to Clements (1916, 1936), a *climax* is the mature, stable and optimal state of a phytocoenose representing the final outcome of a progressive series of successive stages of vegetation. Under a given climate all the successions converge towards a unique climax. This is the concept of *climatic climax*.

This notion has been slightly modified by many authors; for example Whittaker (1953) emphasized the role of the topographic and biotic factors besides the climatic factors. He proposes to analyse the climax in terms of communities linked to the main gradients of the environment.

The concept of the forest as a mosaic[8] formed by the juxtaposition in space of forest islets at different stages of regeneration (sylvigenetic stages) and the recent studies of dynamics of dense evergreen forests[9] have led to further enlargement of the concept of climax. According to the classical notion one can consider as climax only the sylvigenetic stages of the mosaic where the floristic and structural reconstitution of the forest is achieved. We prefer to extend the definition of climax to the whole mosaic when it is in equilibrium with the environmental conditions from a triple point of view, viz. sylvigenetic dynamics, structure and total floristic composition.

a. *Sylvigenetic dynamic:* homeostatic phases and dynamic phases may be distinguished. The relative percentages of occurrence of these phases seem to be linked to the environment conditions. The phases called *homeostatic* in which architectural realisation is achieved, present a definite structure and a definite floristic composition, which are characteristics of the forest.

The *dynamic* phases correspond to the different stages of reconstitution of cover after a natural opening (as for example a gap created by a fallen tree-*chablis).* They constitute a way of self regeneration of the forest. In this manner the pioneer species, "cicatricial" (coming up in blanks, *sensu* Mangenot, 1953) or "nomads" (Van Steenis 1958) also belong to the climax.

b. *Structure:* in a given forest all the trees may be divided into three sets (Oldeman 1974; Hallé *et al* 1978 p. 320): the set of the *future* comprising the young developing individuals; the set of the *present* formed by the adult trees of the forest and the set of the *past* constituted by the individuals that are dead or dying naturally or through damage. The latter may be of any age.

The trees of the present set are vertically grouped in *structural ensembles*. The different structural ensembles define a "layering" which varies according to the sylvigenetic phases and the topography. In the field, this "layering" of adult trees can hardly be visualised due to the density of younger individuals occupying the entire vertical space.

c. *Floristic:* a similar structure can be obtained with different species; the floristic composition and the place of each species in the ecosystem are therefore essential characteristics of the climax. Some species have a wide distribution and are found in several types of forests. This is the case for most of the heliophilous species, but also for many sciaphylous species. On the contrary some others have a more restricted distribution; more closely linked to the local environmental conditions and can therefore be chosen as characteristic of the climax forest type.

B. Dynamic relationships and successional stages

The formations have been divided into two groups corresponding to the two broad categories of climax formations in the mapped region.

1. *Group 1: Evergreen or semi-evergreen climax forests and their degradation*[10]

The legend of the map reflects the dynamic relationships shown in the Fig. 2.

1.1. *Sub-group A*

Sub-group A includes climax forests and those potentially related to the climax.

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[8] AUBREVILLE (1938)
[9] HALLE *et al.* (1978), HARTSHORN (1978), KAHN (1983), OLDEMAN (1974), WHITMORE (1978).
[10] For more details see PASCAL (1984).

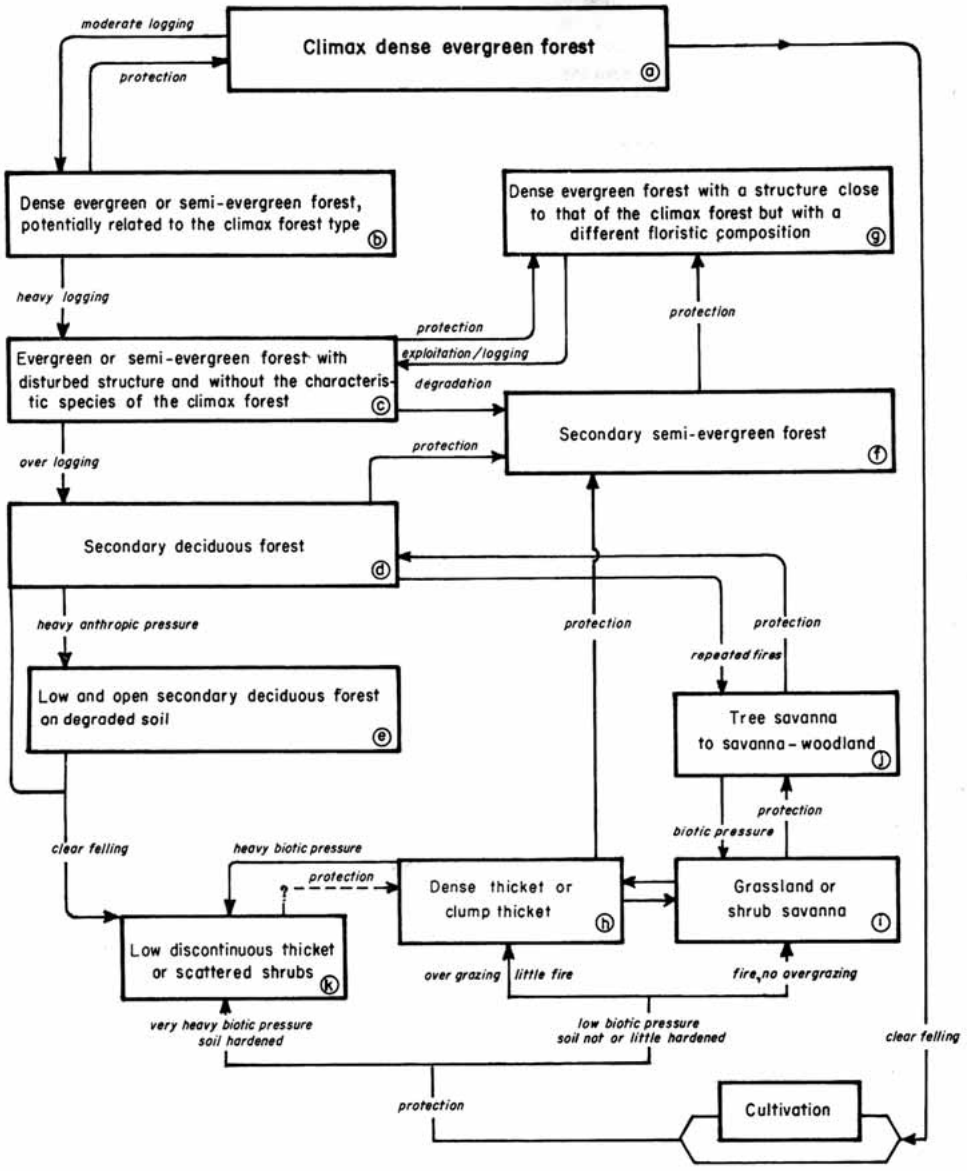

Fig. 2. Dynamic relationships of the stages of succession derived from a wet evergreen forest

(dry season > 4 months)

The climax forests, not yet exploited, are in equilibrium with the environmental conditions (a in Fig. 2). Forests potentially related to the climax have been moderately logged and the characteristic species are still present (b in Fig. 2). Prevention of exploitation and prolonged protection will allow the reconstitution of a forest *structurally and floristically* similar to the initial climax.

The forests in *sub-group A* appear on the map either in plain colour (dense evergreen forest), or in thick slanting bands (slightly perturbed evergreen and semi-evergreen forests).

The altitudinal variations among the different types are shown by the following sequence of colours: purple, blue-green, green (see 'climatic conditions' above).

1.2. *Sub-group B*

Sub-group B corresponds to the formations for which a natural return to the climax forest is no longer probable. It is subdivided according to the intensity of degradation.

1.2.1. *Evergreen and semi-evergreen forests*

They are divided into two categories:

* *The disturbed forests*: These are heavily exploited forests showing structural disturbances and a considerable change in the floristic composition (c in Fig. 2).

If protected they may progress - under favourable conditions - towards a formation whose structure would be identical to that of the initial forest but whose floristic composition would be different because of the remoteness of the seedbearers of the sensitive characteristic species. However, these species could grow if planted (g in Fig. 2).

These disturbed forests cover a large area. They are very common in the northern zone where the dry season being very long, the effects of exploitation are more pronounced. They have been separated into three groups on the maps according to the altitudinal zonation. In fact, the structural and floristic differences are very little between the forests of low and medium elevations. The difference of colour (purple or blue-green) implies that they have derived from different original forest types.

* *The secondary forests*: They represent stages of regrowth after a more or less complete destruction of the initial evergreen formation.

They are found generally in the areas where the anthropic activities have been very intensive, followed by a relative protection.

They correspond essentially to forests f in Fig. 2 as well as to the intermediate stages (between d and f on one hand, and f and g on the other).

The secondary forests are shown by horizontal lines in purple, blue-green, or green according to the elevation.

1.2.2. *Deciduous secondary formations*

These formations develop when, through anthropic action, the opening of the stands results in important changes in soil conditions and in humidity (d in Fig. 2).

Floristically and structurally these formations are close to the moist deciduous climax forests (group II. A), but they mainly differ in the composition of the under storey (see Chap. III).

These structural and floristic affinities are indicated on the map by the use of the same colour (brown). The wetter environment, and therefore the evolutive potentiality of secondary forests, is shown by a thin horizontal purple line superimposed on the brown colour.

Under heavy anthropic pressure, the stand becomes more open, low and twisted. The progressive degradation of the exposed soil and the more intense dryness eliminate more species, favouring an enrichment of more resistant species such as *Xylia xylocarpa* (e in Fig. 2).

The protection at the level of the secondary deciduous forest (d in Fig. 2) results in gradual closing of the canopy. This evolution leads to an enrichment in evergreen species and the forest progresses towards the f stage. All the intermediate stages can be observed and it is often difficult to classify a forest in one category or the other.

1.2.3. *Other degraded stages*

Under this title we grouped even more degraded formations which cannot be considered as forests.

**Tree savanna to grass savanna* (i and partly j in Fig. 2)

They constitute the stages resulting from the process of opening of the secondary deciduous forests when fires are frequent and grazing moderate.

Tree and shrub savannas appear over the entire distribution area of evergreen forests. Grass savannas are mainly located in zones exposed to strong winds or hilly ones. Although most of them result from degradation, some grass savannas are probably climax formations.

* *Thicket to low scattered shrubs* (h and k in Fig. 2)

These degraded stages appear under high anthropic pressure and when over-grazing becomes the dominant factor. It is not uncommon to see them alternate with savanna, especially on the moist border of the plateau where they are mainly clump-thickets.

In the hills of the coastal zone of North and South Kanara, the thickets are usually the result of shifting cultivation. They are generally low and scattered formations developed on very indurated soils, characterized by the abundance of *Sapium insigne* and sometimes *Acacia catechu*.

2. *Group II: Deciduous climax forests and their degradation*

Mainly located on the plateau in the mapped area, the deciduous climax forests are generally easily accessible and have been subject to heavy and continuous anthropic pressure for a long time. Shifting cultivation, over-exploitation, over-grazing and repeated fires are responsible for severe degradation.[11] Except in very protected areas, dense forest is rare.

According to the more important cause of degradation, the structure gets altered in two different ways:

- open forest, savanna-woodland, tree savanna, when fire is the dominant factor;
- scrub woodland, dense thicket, low discontinuous thicket, scattered under-shrubs when over-grazing dominates and illicit felling is important.

The stages of degradation deriving from each of the 3 deciduous types have been given the same colour as that of the original type (brown, yellow or orange).

In fact, this representation leads to the separation of very similar if not identical secondary formations. Indeed, there is not much difference between the low scattered shrubs stage obtained by the degradation of the *Lagerstroemia-Tectona-Dillenia* moist deciduous forest, and the low scattered shrubs stage derived from the *Anogeissus-Tectona-Terminalia* dry deciduous forest.

One may raise the question of the nature of the original deciduous climax formations. When rainfall exceeds 1200 mm and edaphic conditions are not unfavourable, the climax corresponds to a dense forest. On the contrary, under less than 1200 mm of rainfall, the climax is probably not a dense forest but an open forest or even a savanna-woodland.

The duration and importance of anthropic activities in these regions in disturbing the entire natural vegetation do not enable us to solve this problem.

C. Potentialities and substitution phenomenon

The degraded stages are sometimes floristically and structurally similar to other climax formations. For example, the secondary moist deciduous forests (B2 in the legend) are nearly identical to the moist deciduous climax forests of group II from which they differ by the presence of some evergreen species in the underwood.

However, they grow under very different climatic conditions and if given protection, they can evolve towards semi-evergreen formations. The potentialities of the climax deciduous and the secondary deciduous forests are therefore different.

When the secondary moist deciduous forest is stabilized for long in the new environmental conditions (biotic pressure, degradation of soil), it can be considered as a substitution for the initial evergreen climax forest.

This substitution phenomenon of one type of formation by another is found everywhere. For example, in the potential zone of the moist deciduous climax forest, an important opening, followed by a heavy and constant biotic pressure will lead to the substitution of the moist deciduous forest by a dry deciduous one. Before the complete substitution, there exist a transitional stage when the dry or moist nature of the forest is not very clear. This phenomenon is particularly in evidence over the North Kanara plateau.

[11] See GAUSSEN *et al.* (1966, p. 31, 32, 40, 48).

Chapter II

THE CLIMATE AND THE DISTRIBUTION OF NATURAL FORMATIONS IN RELATION TO CLIMATIC CONDITIONS

Among the climatic factors determining the vegetation and its zonation, rainfall and temperature are the only ones for which data are easily available and from these the length of dry season can be calculated.[12]

I. RAINFALL

In the concerned region, the climate is characterized by a monsoon regime superimposed on a regime of thermic convection rains linked to the passage of the sun to the zenith. Two pluviometric gradients are responsible for the zonation of the vegetation:

- a south-north gradient corresponding to the dates of arrival and withdrawal of the monsoon;
- a west-east gradient determined by the decrease of the monsoon rains towards the interior.

1. *The south-north rainfall gradient*

The monsoon bursts at the southern tip of India towards the end of May and invades the whole of peninsular India within 10 to 15 days. The withdrawal starts at the end of September in northern India and reaches Cape Comorin on the 1st December only (Banerjee 1952, Rao 1976).

The advance and more particularly the progressive withdrawal of the monsoon result in the shortening of the rainy season from south to north and the obvious corresponding increase of the dry season. The graphs of Allepey (9°29'N) and Karwar (14°47'N), the total rain of which is almost the same, bring out this phenomenon very clearly (Fig. 3).

2. *Progress of the monsoon rains towards the interior: the west-east gradient*

The region where the monsoon rains are abundant corresponds to a continuous strip, only 80 to 120 km wide, stretched in a direction parallel to the coast and the Ghats (Fig. 4a). This rainfall regime (Allepey-Mangalore) is illustrated by the following stations: Allepey, Mercara and Karwar (Fig. 3). The total rainfall can be considerable: for example at Agumbe, situated only at an altitude of 645 m, the annual average rainfall is 7460 mm distributed over 128 rainy days.

This humid area is followed to the east by a transitional zone where the effect of the monsoon, though noticeable, is reduced (Fig. 4a). In this transitional zone two rainfall regimes based on the relative importance of the July rains as compared to the May and October rains may be distinguished. In the Shimoga regime, the relative importance of the July rains is well pronounced (Fig. 3 Shimoga and Kushalnagar). In the Hassan regime the difference is not so well marked (Fig. 3 Dharwar and Hassan).

Thus, from west to east, a gradual decline of the summer rains—from the Allepey-Mangalore regime to the Hassan regime through the Shimoga regime—may be noticed.

Further eastwards, the rainfall regime is no more determined by the summer monsoon, but by thermic convections and, sometimes, from October to December by rains due to cyclonic disturbances affecting the Bay of Bengal (Blasco and Legris 1973, Rao K.N. 1981).

The transects in Fig. 5 drawn at three different latitudes clearly show the light penetration of the monsoon rains towards the interior. We have also shown in this figure the limits of the rainfall regimes.

At the latitude of Agumbe (Fig. 5b) for example, the rainfall which is already about 4000 mm near the coast, increases rapidly and regularly towards the interior. The wall of the Ghats (645 m) has a considerable effect

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[12] For more details on the climate of this area and on the relationships between bioclimates and vegetation see: BALSCO & LEGRIS (1973), LEGRIS (1963), LEGRIS & VIART (1961), MEHER-HOMJI (1963, 1980), PASCAL (1982, 1984), RAMAMURTHY (1972), RAO (1976) and Von LENGERKE (1977).

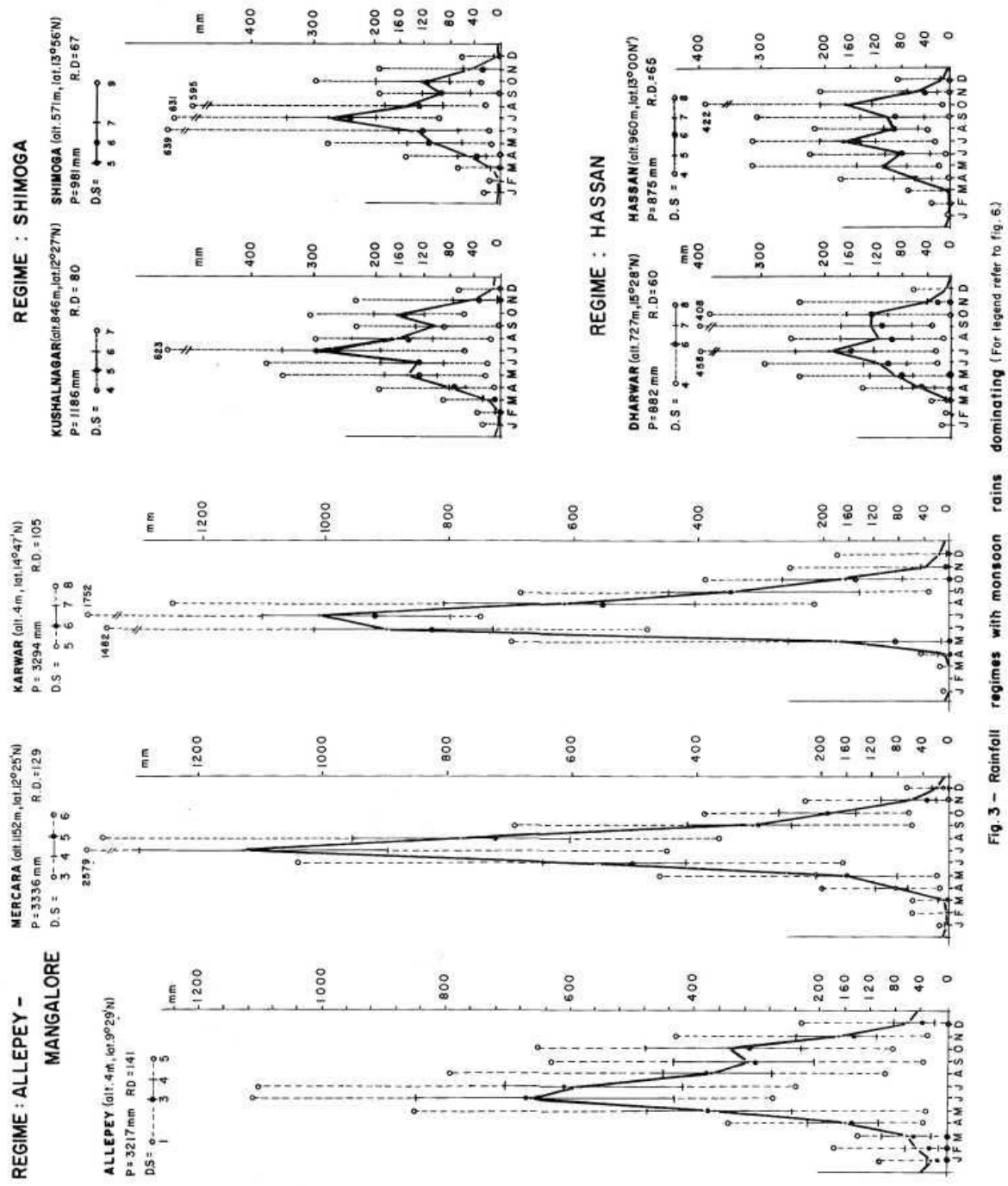

Fig. 3 — Rainfall regimes with monsoon rains dominating (For legend refer to fig. 6.)

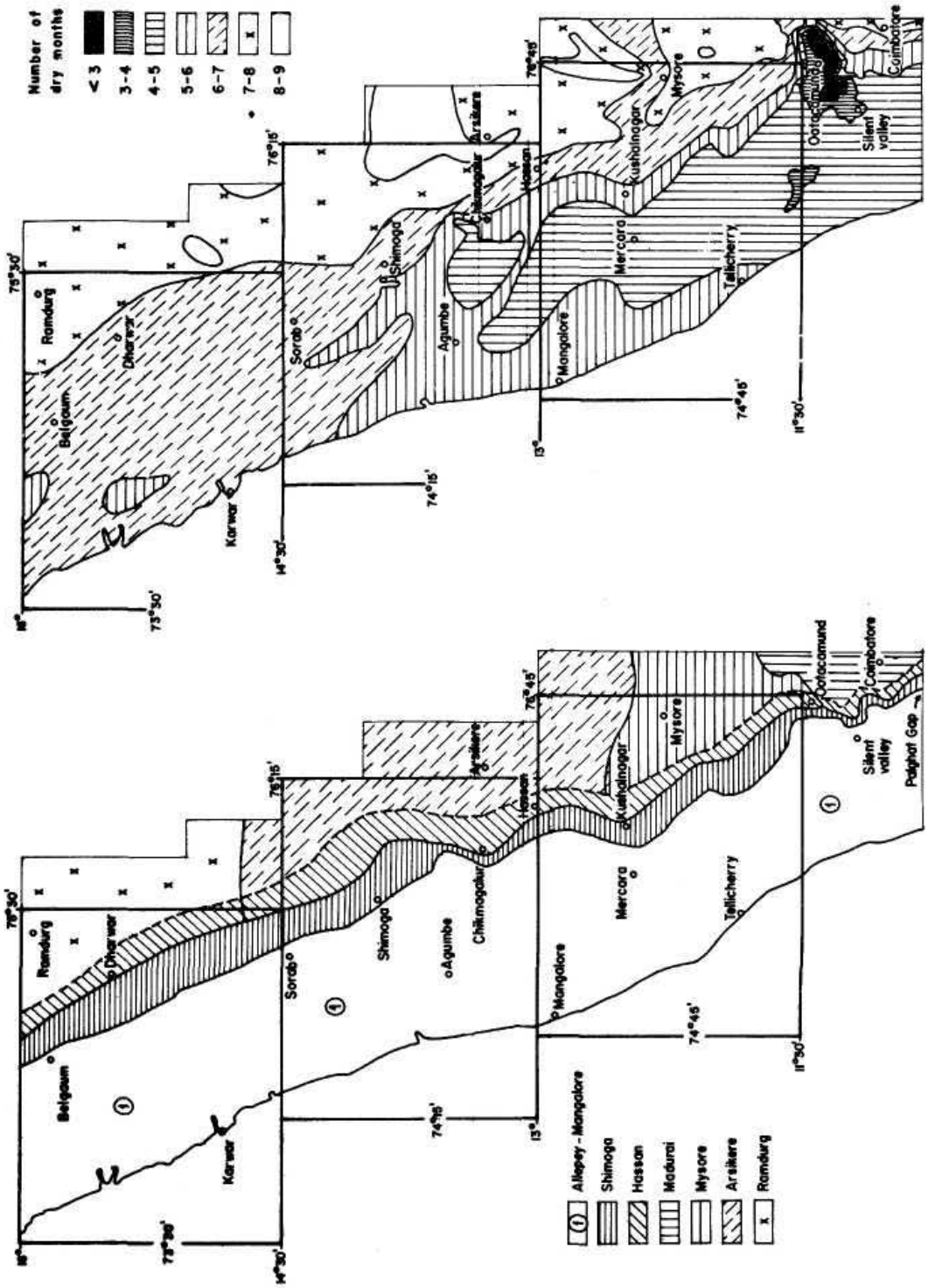

Fig. 4. a – Rainfall regimes b – Dry season

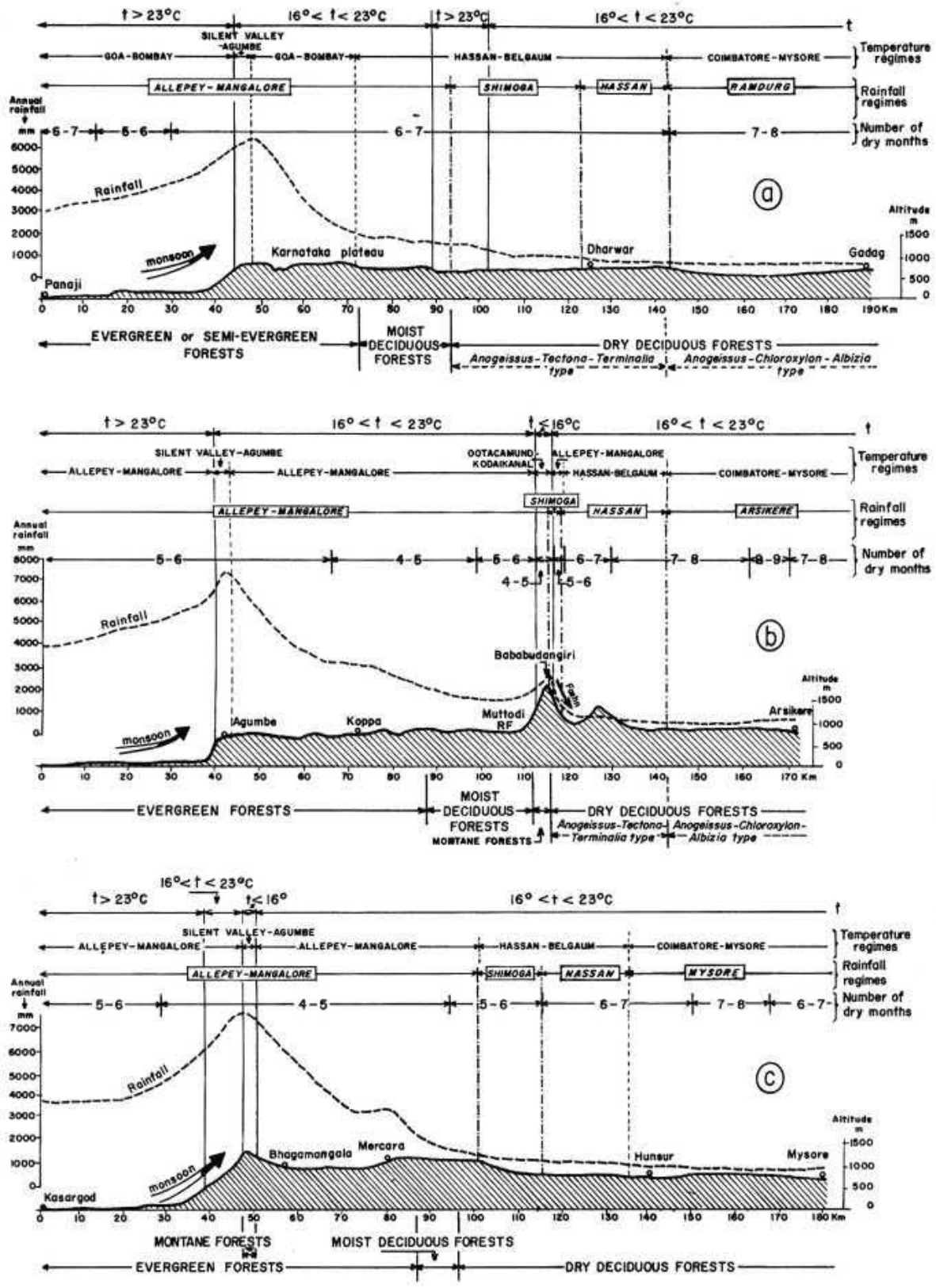

Fig. 5. Relationship between climatic factors and areas of climax plant formations

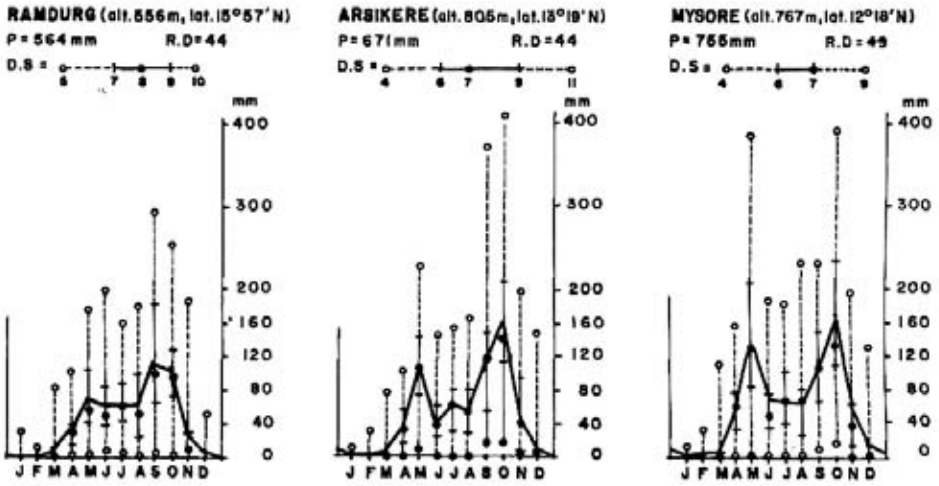

Fig. 6. *Rainfall regimes with convection rains dominating*

COMMON LEGEND FOR FIGURES 3 AND 6

rainfall and dry season

maximum
upper quartile (25%)
median (50%)
lower quartile (75%)
minimum

P = *annual average rainfall*
RD = *Number of rainy days*
DS = *Dry season (in months)*

since the rains increase from 5900 mm to 7500 mm in just 6 Km. The diminution over the plateau is also very rapid: from 7500 mm to 4000 mm within 15 Km and to 2000 mm within 50 km.

3. *Other rainfall gradients*

3.1 *Thermic convection rains*

They are linked to the warming up of the Indian peninsula with the passage of the sun to the zenith, together with the increase of atmospheric humidity. The resulting regimes are shown in Fig. 6. They correspond to the eastern parts of the mapped region (see also Fig. 4).

- The Mysore regime prevails over the plateau in a triangular area, protected to the west by the Western Ghats, and to the south-east by the Nilgiri border and the Biligiri Rangan Hills. It is characterized by almost equal peaks of rains in May and October (station: Mysore).
- In the Arsikere regime, which prevails to the north of the former, the October peak is distinctly more pronounced than the May one (station: Arsikere).

— Further northwards, under the Ramdurg regime, only one peak can be observed in September-October, the rainfall is nearly equal from May to August (station: Ramdurg).

3.2 *Variations linked to altitude and exposure*

The effect of altitude is more marked on the temperature than on the rainfall. The profiles in Fig. 5 show that the rainfall is initiated by the orographic effect. However, there is no rainfall-altitude gradient: it rains more in Agumbe (645 m) than on the Nilgiri reliefs (above 2000 m).

The role played by exposure is more important: windward slopes receive more rains than leeward slopes.

II. TEMPERATURE

The main gradient of temperature is linked to the elevation. Temperature data are available for only a few stations, mainly towns located on the coastline or on the plateau. Due to this paucity of data, the

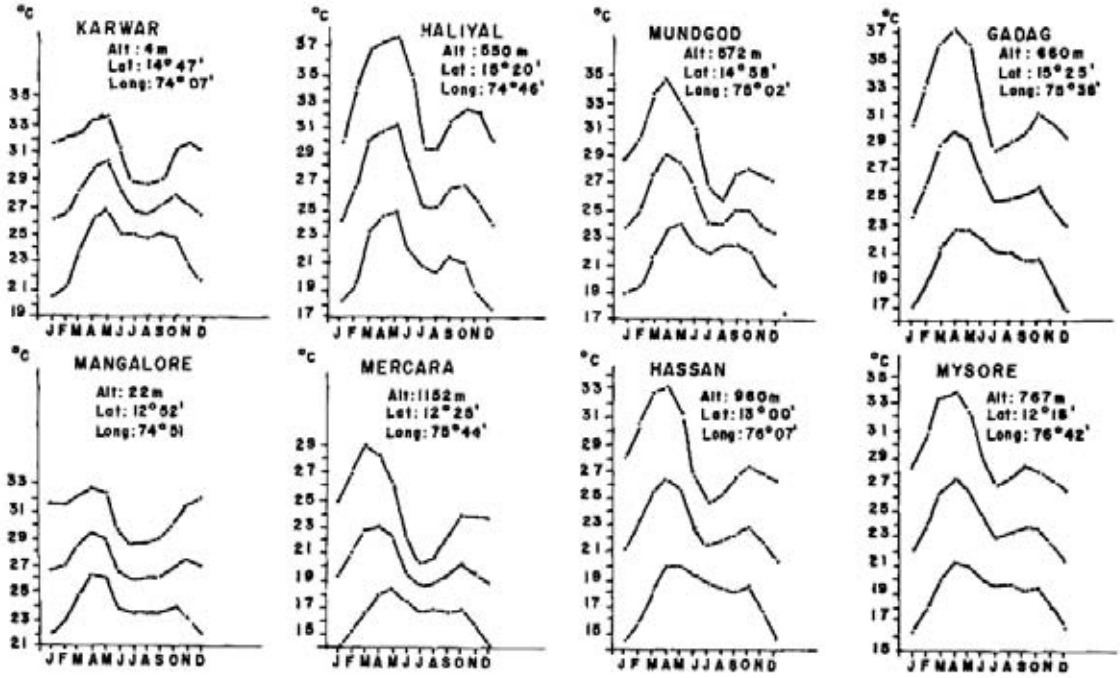

Fig. 7- Temperatures: maximum, mean and minimum

temperature between recording stations is estimated by a graphic method.

The gradient of the mean temperature of the coldest month (t) varies from sea level (t = 26°) to 2300 m (t = 12°). It is practically constant (0.8 to 0.9°C for 100 m) between the altitude of 400 m and 1500 m.

The temperature is also much influenced by the exposure. Leeward stations, subject to the warming effects of descending winds *(foehn)* experience temperatures distinctly higher than windward stations at the same elevation.

Fig. 7 gives maximum, mean and minimum temperatures of the stations located from sea level to the plateau at two different latitudes.

In the area where the monsoon rains are abundant, July is the coldest month on the basis of mean temperature. January is the coldest in higher latitudes (from Karwar northwards), on the exposed localities or at higher elevation, using the same criterion. On the plateau it is December. However, if we take into account the minimum temperature and not the mean one, then the lowest temperatures are always recorded during the dry period, from December to February.

III. DRY SEASON

The length of the dry season is one of the limiting climatic factors. It plays an important role in the selection of species and consequently in the distribution of the main types of formations.

Taking into account the limitations of data available to measure the intensity of dryness, the dry season was calculated according to the method of Bagnouls and Gaussen (1953) which has the advantage of using the most common information: a month is considered dry when the rainfall (in mm) is less than twice the value of the mean temperature (in C°). The number of dry months is calculated for each individual year. The average of these values is used in our classification.

As the dry season is determined by the combination of rainfall and temperature, it naturally varies according to the three main gradients of these two factors.

1. *The south-north gradient*

In the mapped region (Fig. 4b), the length of the dry period increases regularly from south to north in relation to the dates of arrival and withdrawal of the monsoon.

This lengthening in latitude is limited to the area corresponding to the monsoon rainfall regime. The dry season is thus of 4 to 5 months from the Palghat Gap up to the 13°30'N (except near the coast where it exceeds 5 months right from Tellicherry (11°45'N), from 13°30' up to 14°15'N approximately, it lasts from 5 to 6 months and to the north of this latitude it is more than 6 months almost everywhere.

The increase of the dry season in relation to the latitude explains the changes in the floristic composition of places situated at relatively short distances.

In these areas, the length of the dry season is not correlated to the total amount of rainfall since it rains more in Goa (6 to 7 dry months) than in Kozhikode (4 to 5 dry months).

2. *The west-east gradient*

At the latitude of the Palghat Gap (Fig. 1) the length of the dry season increases from 5 to 8 months over a distance of only 30 km. Further north on the Mysore plateau, the gradient remains very steep: from 5 to 8 dry months in places 55 km away in the Chikmagalur area (Fig. 4b). Finally, to the north of Sorab, the west-east gradient becomes less important.

3. *The altitudinal gradient*

The relation between the dry period with the altitude appears clearly in the Nilgiri hills and even on the western elevated zone of the Wayanad plateau (southern region in the Mercara-Mysore sheet) where the dry season lasts less than 4 months and sometimes even less than 3.

Further north where the altitude is lower, the base and the slopes of the Ghats and the border of the plateau have a shorter dry season than the coastal zone (Fig. 4b).

4. *The interannual variability*

We have illustrated the variability of the dry season by means of quartiles (Figs. 3 and 6). This variability has considerable effects in the dry regions. Two or three supplementary dry months during a given year can have catastrophic consequences for the crops or the availability of water.

For example, in Mysore (Fig. 6), the duration of the dry season varies between 4 and 9 months. However; for 50% of the years the dryness lasts for 6 or 7 months.

In the moist regions, the variability is less important but remains significant: in Mercara (Fig. 3), the dry season varies between 3 and 6 months, and for 50% of the year it lasts for 4 to 5 months. Exceptional dry spells affect production of coffee berries.

The variability is important in the transitional zones. In the Sorab region for example, on the Karnataka plateau, it may explain the vulnerability of the semi-evergreen ("Kan") forests.

IV. RELATIONSHIPS BETWEEN CLIMATE AND NATURAL VEGETATION

The relationships between the bioclimates and the climax vegetation appear on the profiles in Fig. 5. They are given for all the mapped types in Table 1.

1. *The evergreen or semi-evergreen climax types*

They are found in the mapped region under a rainfall exceeding 2000 mm, distributed according to the Allepey-Mangalore regime: summer monsoon rains.

The only exceptions are:

- The "Kan forests" of the Sorab area which grow under a rainfall ranging from 1500 to 2000 mm. We consider these forests as relics maintained by favourable edaphic conditions and their microclimate which is more moist than the present regional climate.
- the "sholas" (above 1800 m) where the rainfall may be relatively low.

The differences between the evergreen types are related to the lowering of the temperature in altitude and the increase in the length of the dry season in latitude. It may be pointed out that the dry season can be very long in these regions, and that pure evergreen types can still exist with a 6 to 7 months' dry seasons.

However, the *Mesua-Palaquium* type and the *Poeciloneuron-Palaquium-Hopea* type are found under similar climate and their differences are due to edaphic factors.

2. *The climax deciduous types*

In the concerned region, the climax deciduous types appear only on the Karnataka plateau to the east of the evergreen formations.[13]

Three types are recognized. They are correlated to the eastwards decrease of rainfall, change in the rainfall regime and increase of the dry season (Fig. 4). The *Lagerstroemia-Tectona-Dillenia* moist deciduous type is found under the Mangalore-Allepey regime (with a rainfall less than 2000 mm). The *Anogeissus-Tectona-Terminalia* type appears under the transitional Shimoga and Hassan regimes (Fig. 3). The *Anogeissus-Chloroxylon-Albizia* type develops when the regime is no more affected by the monsoon (Ramdurg, Arsikere, Mysore diagrams-Fig. 6).

[13] These climax deciduous forests should not be confused with the secondary deciduous forests derived from the degradation of evergreen formations.

Table 1: Relationship between the climax forest types and the bioclimates

			RAINFALL Annual (mm)	RAINFALL regime	TEMPERATURE (C°) t	TEMPERATURE (C°) m̄	TEMPERATURE (C°) T	DRY SESAON (month)
EVERGREEN AND SEMI EVERGREEN CLIMAX FORESTS	Low elevation types	Dipterocarpus indicus– Kingiodendron pinnatum– Humboldtia brunonis	2000–6000	Allepey–Mangalore	>20	⩾14	25–31	4–5
		Dipterocarpus indicus– Humboldtia brunonis– Poeciloneuron indicum	5000–8000		>20	⩾12.5	25–27	4,5 slope 5–5.5 plateau
		Dipterocarpus indicus– Persea macrantha	>2000		20–23	13–16	25–29	5–6
		Dipterocarpus indicus– Diospyros candolleana– Diospyros oocarpa	3500–7000		>20	>15	25–30	5–6 slope 6–7 plateau
		Persea macrantha– Diospyros spp.– Holigarna spp.	2000–6000		>23	⩾15	28–31	6–7
		Diospyros spp.– Dysoxylum malabaricum– Persea macrantha = Kan forest	1500–2000		23–24.5	>18	26.5–28.5	6–7
	Medium elevation types	Cullenia exarillata– Mesua ferrea– Palaquium ellipticum	3000–5000	Allepey–Mangalore	16–23	9–18	24–25	2–5
		Mesua ferrea– Palaquium ellipticum–	2000–5000		17–22	<15	23–25	4–5
		Poeciloneuron indicum– Palaquium ellipticum– Hopea ponga	5000–7000		18–20	<15	23–25	4–5
		Memecylon umbellatum Syzygium cumini– Actinodaphne angustifolia	5000–6500		17–22.5	<15	25–30	5–7
	High elevation types	Schefflera spp.– Meliosma arnottiana– Gordonia obtusa	⩾2000	Allepey–Mangalore	13.5–17	9–13	20–25	3–6
		Montane = Shola type	900–6000	Allepey–Mangalore, Mysore, Madurai	<13.5	<10	16–20.5	0–4
DECIDUOUS CLIMAX FORESTS	moist types	Lagerstroemia microcarpa– Tectona grandis– Dillenia pentagyna	1500–2000	Allepey–Mangalore	>20	13–20	25–31	4–7
	dry deciduous types	Anogeissus latifolia– Tectona grandis– Terminalia alata	750–1500	Shimoga, Hassan	>20	13–20	25–31	5–8
		Anogeissus latifolia– Chloroxylon swietenia– Albizia amara	<800	Ramdurg, Arsikere, Mysore	>20	13–22	26–31	7–8

t = mean temperature of the coldest month; T = mean temperature of the hottest month.
m = mean of minimums of the coldest month of a year; m̄ = mean of m

Chapter III

VEGETATION TYPES

Their description follows the legend order.

I. GROUP I: EVERGREEN AND SEMI-EVERGREEN CLIMAX FORESTS AND THEIR STAGES OF DEGRADATION[14]

A. Dense evergreen and semi-evergreen cimax and potentially related forests

These evergreen or semi-evergreen forests have been divided into distinct *types* according to the differences in their floristic composition and structure.

Structurally, they can be divided into two groups of unequal importance: the *high forests,* the canopy of which is at least 30 m high, which are by far the more important, and the *low forests,* which generally do not exceed 25 m. All the types of low and medium elevations with the exception of the *Memecylon-Syzygium-Actino-daphne* type belong to the first group.

The second group includes, besides this latter type, the sub-montane *Schefflera-Gordonia-Meliosma* type. The sholas of the montane zone are practically absent in the mapped region (see Blasco, 1971).

1. *The high forests*

1.1 *General*

These are the dense forests corresponding to the rain forest of Richards (1952). The upper storey is 30 to 40 m high; it is often dominated by emergents sometimes over 50 m. The trunks are tall, straight and smooth with a high branching.

The base of the bole is often enlarged into buttresses sometimes terminating in surface-roots. Stilt roots are common. These forests are also characterised by the abundance of lianas, epiphytes, epiphyllous plants and by the frequency of cauliflory. The leaves present convergence phenomena: they are generally of medium size (mesophyllous) and very often have marked leaf-tips. The large majority of trees are evergreen. The herbaceous stratum is nearly absent.

1.2 *Spatial structure*

1.2.1 *Architecture*

Fig. 8 presents the architecture of these forests by vertical profiles and plans from three Reserved Forests under different latitudes. Only the trees, shrubs and lianas with a girth of more than 10 cm are represented. The trees are classified into present, past or future sets as per the method of Oldeman (see Chap. I, IV A). This method brings out a layering of adult trees which determine the *structural ensembles.*

Fig. 9 gives as an example, the distribution of the structural ensembles in relation to height/diameter for the three forests illustrated in Fig. 8. The trees of the set of the present are divided into four structural ensembles (S.E.) for $G \geq 10$ cm. S.E. I includes trees ranging in height from 20 to 40 m. They are sometimes dominated by emergents which may exceed 50 m. This S.E. I practically forms a continuous cover with the exception of the openings created by the fallen trees. The lower structural ensembles (II, III, IV) are less dense and they never form a continuous cover. They occupy respectively the 12-22 m, 8-14 and < 8 m levels.

In the forest, this layering of the set of the present is generally masked by the trees of the future.

1.2.2 *Density, basal area, biomass.*

The data concerning these parameters are very rare. Table II presents the values obtained from 7 sampling plots of 1600 m^2 each.

The density (number of trees/ha) doubles according to the localities; the variation in the biomass estimated according to the biovolume (D^2H) is less pronounced: from 1920 to 3086 m^3/ha. The basal area[15] is relatively high : 59.6 to 70 m^2/ha. S.N. Rai (1981), however,

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[14] For details on structure and floristic composition of each type and their degraded stages, see PASCAL (1984).

[15] Sum of the section of stems at 1.30 m height or above the buttresses.

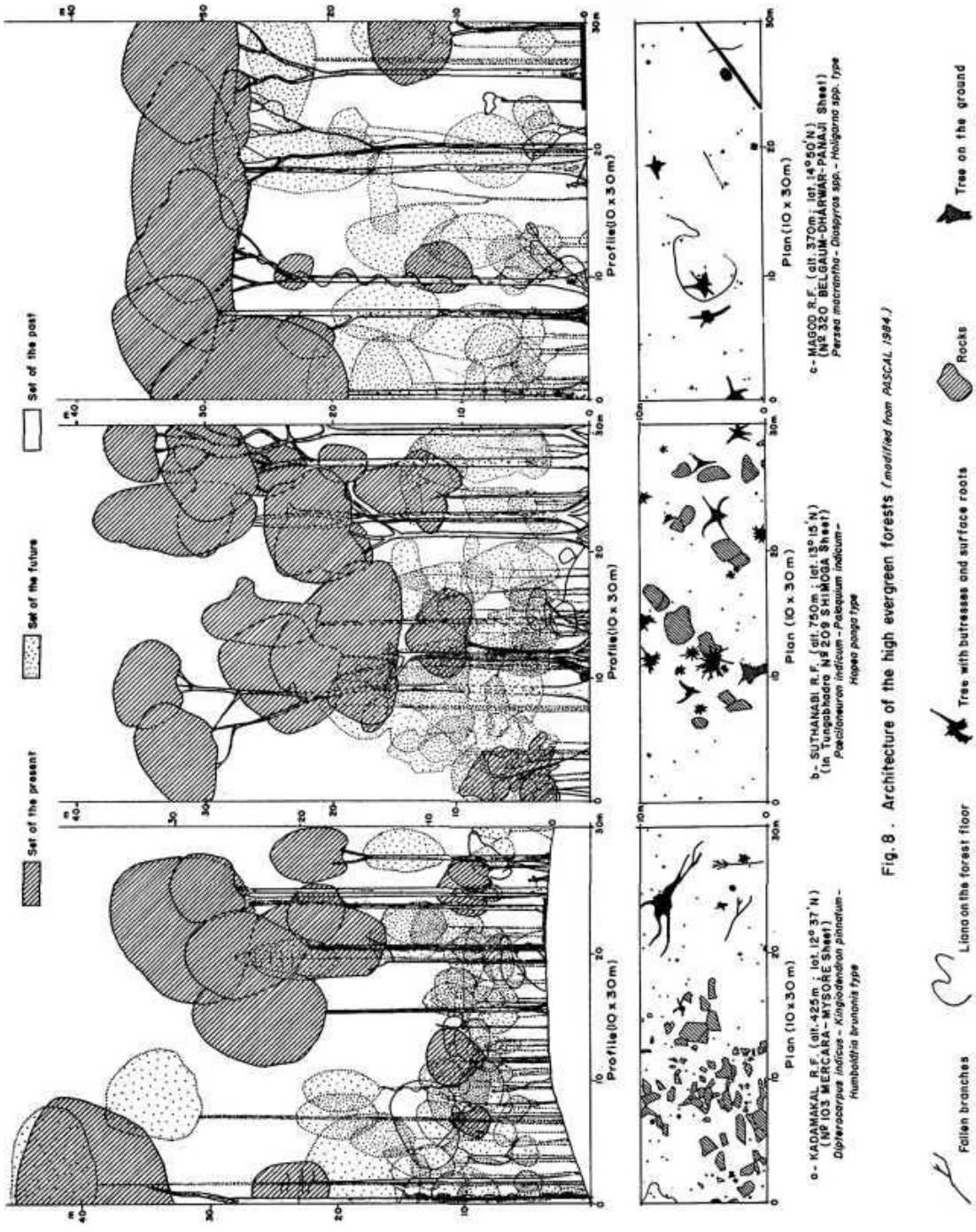


Fig. 8 . Architecture of the high evergreen forests (*modified from PASCAL 1984*)

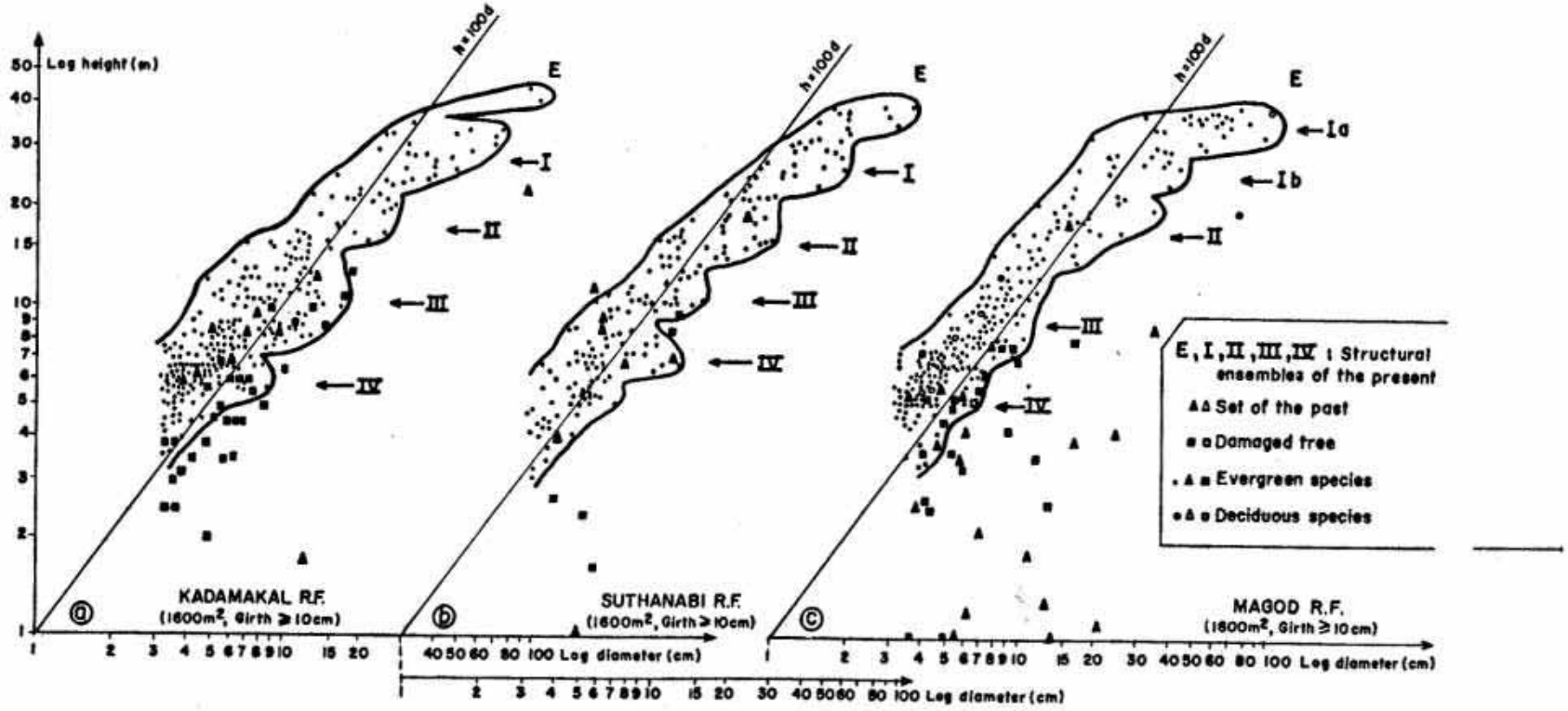


Fig. 9. Relationship between height and diameter – Structural ensembles *(modified from PASCAL 1984)*

This figure shows the distribution of the structural sets in relation to the height and diameter. The trees growing in conformity of their *initial model* are more or less distributed along the line H = 100D. The trees regenerating after damage are situated to the left of this line. These two categories constitute the set of the future. Those which reiterate spontaneously occupy the right side of the line. They form the set of the present. They can be separated in *structural ensembles* which correspond to the layering of the forest. This layering is almost entirely masked in the natural forest by the trees of the future set.

The badly damaged, dying or dead trees which constitute the set of the past are to be found on either side of the line H = 100D or at the base of the graph when they are broken.

Table II: Density, basal area and D^2H

	Girth class				Structural ensembles (%)				
					Present			Future	Past
	G ≥ 10 cm	G ≥ 40	G ≥ 80	G ≥ 120	Total	E.S.I, Emergents	Es. II, III, IV		
Density (trees/ha)	1200-2926	257-644	178-307	95-194	16.1-38.2	8.8-16.3	3.7-21.9	53.4-79.3	4.3-14.0
Basal area (m^2/ha)	59.6-70.0			38.9-61.2					
D^2H (m^3ha)	1920-3086				85.3-95.9	81.9-93.4	0.4-6.1	3.8-8.9	0.1-5.8

Source: Pascal, 1984-Modified

reports values twice lower (between 32 and 36 m^2/ha) in slightly disturbed forests.

The bulk of the biomass is contributed by the emergents and the trees of S.E. I of the present (81.9 to 93.4%): though it is only 8.8 to 16.3% of the individuals. The proportion is reversed for the set of the future: 53.4 to 79.3% of the individuals contribute only 3.8 to 8.9% of biomass.

It may be pointed out that in these forests, under normal condition; the contribution of the set of the past to the biomass is quite low: 0.1-5.8%.

1.2.3 *Structural variations*

Generally these *high forests* present a large homogeneity in their spatial structure for the entire mapped region. This homogeneity is reflected in the similarity in the vertical distribution of the structural ensembles of the present, in the similar values of the basal areas and biomasses and in the concentration of the biomass in the emergent and the S.E. I of the present.

The adaptations to the increase of the dry season and to special conditions (such as location on the slopes) are manifested by structural adjustments in three directions:

- increased concentration of the biomass in S.E. I,
- disappearance of emergents and progressive com pressing of the S.E. I towards its top,
- impoverishment of the lower structural ensembles.

1.3 *Floristic structure*

1.3.1 *Floristic richness*

Table III gives the *floristic richness* of the different forest types for the tree species reaching at least the S.E. IV in the adult stage. The shrubs and herbaceous strata, the lianas and the epiphytes have not been counted and the results are slightly under-estimated.

The number of species varies from 125 to 174 but under unfavourable conditions there is a diminution of the floristic richness; for example, only 84 species are recorded in the *Poeciloneuron-Palaquium-Hopea* type which is confined to peculiar edaphic conditions and 101 species in the "Kan forests" growing under unfavourable climatic conditions.

1.3.2. *Floristic diversity*

The Shannon-Weiner's (H') index is generally comprised between 3.6 and 4.3 but can be lower (2.1) when the environmental conditions are adverse as in the forests with a gregarious population of *Poeciloneuron* (Bhagvati RF).

The values of the floristic richness and diversity for these *high forests* are lower than those of the homologous formations of Malaysia-Indonesia, Africa and Amazonia. This is most probably the consequence of a longer period of dryness (of more than 4 months) in Karnataka.

1.4 *Floristic composition*

Whereas the structure of the *high forests* varies only slightly in the mapped continuum, the floristic changes appearing with the altitude and the latitude explain the distinction of various *forest types* within the continuum.

1.4.1 *Floristic lists*

A floristic list for each of these types is given in Annex 3. Though not exhaustive, these lists, represent nearly 90% of the individuals (excluding epiphytes,

Table III: Floristic richness

Types	Floristic richness (number of species)
Dipterocarpus indicus- Kingiodendron pinnatum- Humboldtia brunonis type	166
Dipterocarpus indicus- Humboldtia brunonis- Poeciloneuron indicum type	125
Dipterocarpus indicus- Diospyros candolleana- Diospyros oocarpa type	152
Persea macrantha- Diospyros spp.- Holigarna spp. type	150
Diospyros spp.- Dysoxylum malabaricum- Persea macrantha type = Kan forest	101
Cullenia exarillata- Mesua ferrea- Palaquium ellipticum type	174 (150)*
Mesua ferrea- Palaquium ellipticum type	126
Poeciloneuron indicum- Palaquium ellipticuin- Hopea ponga type	84

* North of Palghat gap only

ferns, and herbaceous strata). The place of the different species in the spatial structure of the forest is indicated, as well as their ecological preference (riparian, openings, etc.).

1.4.2. *Floristic variations along the continuum*[16]

There is a common pool of relatively tolerant evergreen species found almost throughout the continuum. The differences between the forest types are made out by the occurrence or the abundance of some species sensitive to the environmental conditions. These changes are generally gradual through a transitional zone.

* At low altitude.

Up to about 13°15'N the high forest types of low altitude are characterized by the abundance of two families : the Dipterocarpaceae *(Vateria, Dipterocarpus, Hopea)* and the Caesalpiniaceae *(Kingiodendron, Humboldtia)*. From 13°15' to 14°25'N, these two families gradually lose their importance. Further north, most of the sensitive species having disappeared; the forests are mainly composed of the more tolerant species of the common pool together with some new species adapted to the longer dry season. In these forests, Ebenaceae *(Diospyros)* is the dominant family.

In the *Poeciloneuron* edaphic facies, this species may have an equal or even higher importance than that of the Dipterocarpaceae.

* At medium altitude.

Up to the Karnataka boundary (Brahmagiri Ghats), the forests are characterized by the abundance of *Cullenia exarillata*. Beyond the Brahmagiri Ghats they are dominated by four families: Clusiaceae, Sapotaceae, Euphorbiaceae and Meliaceae. Among the other families are the Elaeocarpaceae, Lauraceae, Icacinaceae. The relative importance of the Lauraceae increases with the altitude.

2. *The low forests*

In the mapped region, the *low forests* belong to the *Memecylon-Syzygium Actinodaphne* medium elevation type and to the *Schefflera-Gordonia-Meliosma* submontane type.

2.1. *Spatial structure*

2.1.1 *General architecture*

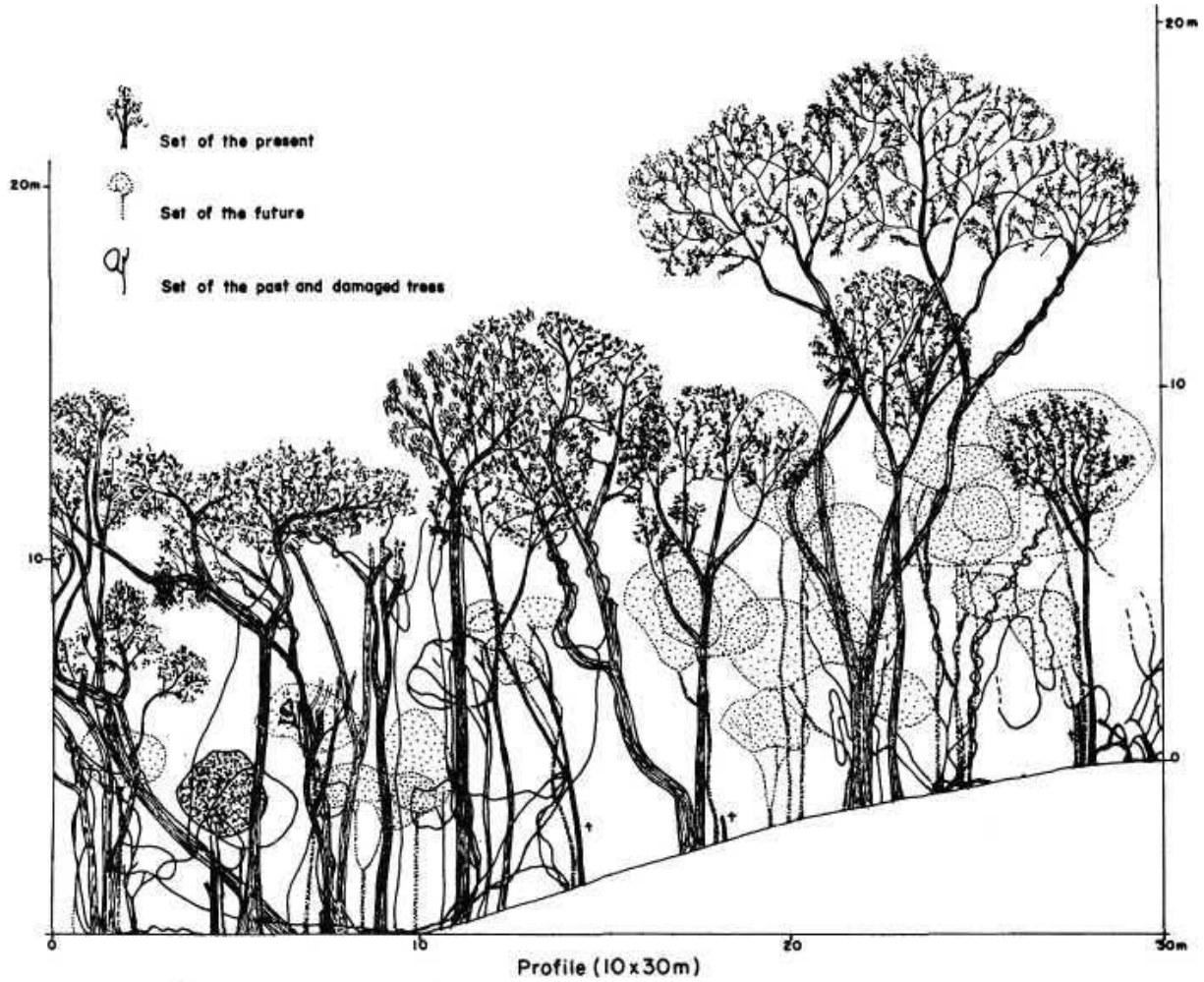
Though they are floristically very different, these two types have a fairly similar spatial structure.

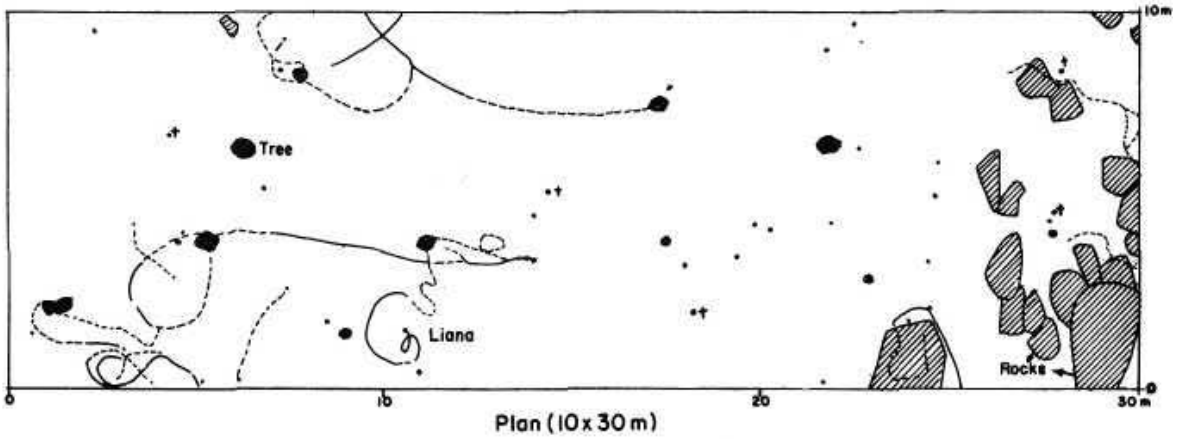
The formation is low, with an upper storey of 10 to 20 m. The trees are stunted, twisted, short boled, covered with lichens and epiphytes. The leaves are generally small (meso- and microphyllous). The canopy is made up of dense and joint crowns. The general aspect is illustrated by the profile in Fig. 10 for the *Memecylon-Syzygium-Actinodaphne* type.

The distribution of the structural ensembles (Fig. 11) is simple compared to that of the *high forests*: there are two structural ensembles above 7 m instead of three.

The S.E. I, which is compact, ranges between 10 and 20 m; there are also a few rare emergents over 20m high. The S.E. II, not very distinct from the base of the S.E.I, includes small trees 7 to 10 m high at the adult age. S.E. III can also be found between 3.5 and 5 m.

[16] See PASCAL (1984 Chap. XVI).





KANKUMBI R.F. (alt.780m; lat. 15°37'N.)
(Nº 59 BELGAUM-DHARWAR-PANAJI Sheet)

Fig.10. Architecture of a low evergreen forest *(modified from PASCAL 1984)*

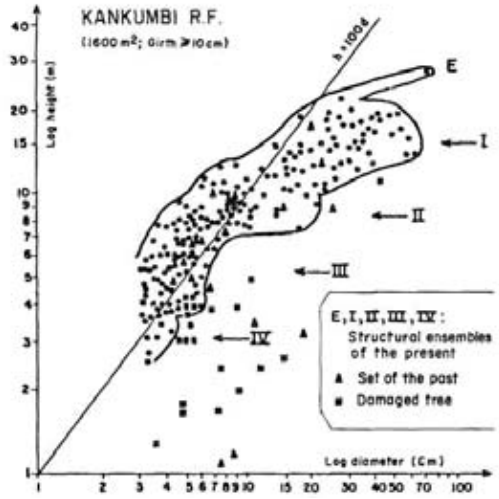


Fig. II. Relationship between height and diameter-Structural ensembles
(After PASCAL 1984) For explanation see fig.9)

2.1.2 *Density, basal area, biomass*

The values change considerably from place to place. A study conducted in the southern part of the area of *Memecylon-Syzygium-Actinodaphne* type (see Table IV) gives a density of 1787 trees/ha (G ≥ 10 cm) i.e. a value comprised within the range obtained for the *high forests:* 1200-2926 (Table II). The basal area is distinctly lower: 40.3 m^2 as against 60 to 70 m^2/ha for the *high forests*. The D^2H (estimate of the biomass by the bio-volume) is also lower: 839 against 1920-3086 m^3/ha, i.e. 2 to 4 times less. Here also more than 90% of the biomass is concentrated in S.E. I.

Though no quantitative study has been done on the *Schefflera-Gordonia-Meliosma* type, from the general aspect of the formation we may expect similar results.

2.2 *Floristic structure*

The *floristic richness* calculated from trees and shrubs of G ≥10 cm gives values ranging between 90 and 100 species, i.e. less than that for the *high forests* when they are not under unfavourable environmental conditions. On the contrary, the values of the *floristic diversity* are quite comparable to those of the *high forests*.

2.3 *Floristic composition*

The floristic composition of the two types is very different. They also differ from those of the *high forest* types.

2.3.1 The *Memecylon-Syzygium-Actinodaphne* type

The type extends from 15°20'N up to the latitude of Bombay; within this area its floristic composition varies with the lengthening of the dry period from south to north. A list (in Annex 3) gives the floristic composition and the place of the species in the spatial structure. The species which do not occur in the mapped region (limited up to 16°N) are indicated separately.

The S.E. I is largely dominated by *Memecylon umbellatum* (25 to 30% of trees and of the total IVI[17]) and by *Syzygium* spp. (10 and 20% of the total IVI) of which some individuals can emerge from the canopy.

2.3.2 The *Schefflera-Gordonia-Meliosma* type

For this type we have retained the nomenclature given by Gaussen *et al.* (1965-66). However, this nomenclature does not bring out the essential floristic facts: the domination of the Lauraceae *(Litsea, Cinnamomum, Alseodaphne, Neolitsea* ...) particularly conspicuous from 1400 to 1600 m and of the Myrtaceae *(Eugenia, Syzygium, Rhodomyrtus).*

The Araliaceae are also well represented with 5 species of *Schefflera* some of which begin as epiphytes. A floristic list is also given in Annex 3.

3.*Type of transition*

From 15°25'N the hilly areas of the Ghats are covered with a type of forest having structural and floristic characters intermediate between those of the *Persea-Diospyros-Holigama* high forest type and those of the *Memecylon-Syzygium-Actinodaphne* low forest type.

In these transition forests, the canopy, 25 to 35 m high, is constituted of evergreen species with large ecological amplitude, heliophilous or light-tolerant mixed with many deciduous species. *Memecylon* is abundant in the under storey.

In the exposed facies, the trees become lower, twisted and *Memecylon* comes up in the upper storey. The general appearance is then very close to that of the *Memecylon-Syzygium-Actinodaphne* type.

B. Secondary or degraded stages

The formations resulting from the degradation of the dense evergreen forests have been grouped under this title.

The dynamic relationships between these formations have been discussed in Chapter I (see Fig. 2).

[17] Importance value index.

Table IV: Comparison of structural parameters between a low evergreen forest and a secondary semi-evergreen forest

	Density (trees/ha)		Basal area (m^2/ha)		D^2H (m^3/ha)
	G ≥ 10cm	G ≥ 120cm	G ≥ 10cn	G ≥ 120cm	
Low evergreen forest (Memecylon-Syzygium-Actinodaphne type) (Kankumbi RF)	1787	94	40.3	19.0	839.1
Secondary semi-evergreen forest (Panamberi RF)	2080	90	42.1	20.9	839.1

1. *Evergreen and semi-evergreen forests*

They are divided into two groups according to their structure and floristic composition.

1.1 *Disturbed Forests*

1.1.1. *Spatial structure*

The main features may be summed up as follows:
- disappearance of emergents;
- structural ensemble I relatively low (25 to 35 m) and not forming a continuous cover;
- dense under storey invaded by a proliferation of saplings, following the openings due to exploitation.

In the course of time, the spatial structure of the initial forest tends to reconstitute itself. However, we do not find any more emergents. Therefore, all the intermediate stages can be observed but the floristic composition and structure will still show the effects of past disturbances.

1.1.2 *Floristic composition*

The floristic changes are:

- Disappearance of the least tolerant sciaphilous species which are often the characteristic species of the different types *(Dipterocarpus indicus, Kingiodendron pinnatum, Cullenia exarillata* etc...).

- Multiplication of evergreen species of large eco logical amplitude, light-tolerant or even heliophilous[18] such as :

Alstonia scholaris, Artocarpus hirsutus, Canarium strictum, Carallia brachiata, Cinnamomum spp., *Dimocarpus longan, Ficus* spp., *Holigarna arnottiana, H. grahamii, Hopea ponga, Mangifera indica, Mimusops elengi, Myristica dactyloides, Persea macrantha, Polyalthia fragrans, Prunus ceylanica, Syzygium cumini* etc. in **the** SEI.

Antidesma menasu, Aporosa lindleyana, Caryota urens, Clerodendrum viscosum, Flacourtia montana, Leea indica, Macaranga peltata, Mallotus spp., *Olea dioica* etc... in the lower ensembles.

- Enrichment in deciduous species like *Lagerstroemia microcarpa, Terminalia bellerica, T. paniculata, T. alata, Albizia odoratissima, Dillenia pentagyna, Schleichera oleosa, Sterculia* spp., *Stereospermum chelonoides, Tetrameles nudiflora, Grewia tiliaefolia, Trewia nudiflora*.

1.2 *Secondary forests*

These formations form forest islets in the coastal zone of South Kanara. They are also common on the plateau particularly between Sringeri and Tirthahalli and between Sirsi and Siddapur.

They are very different from place to place. We are giving 3 examples of the more common types.

1.2.1 *The mixed semi-evergreen forests of South Kanara*

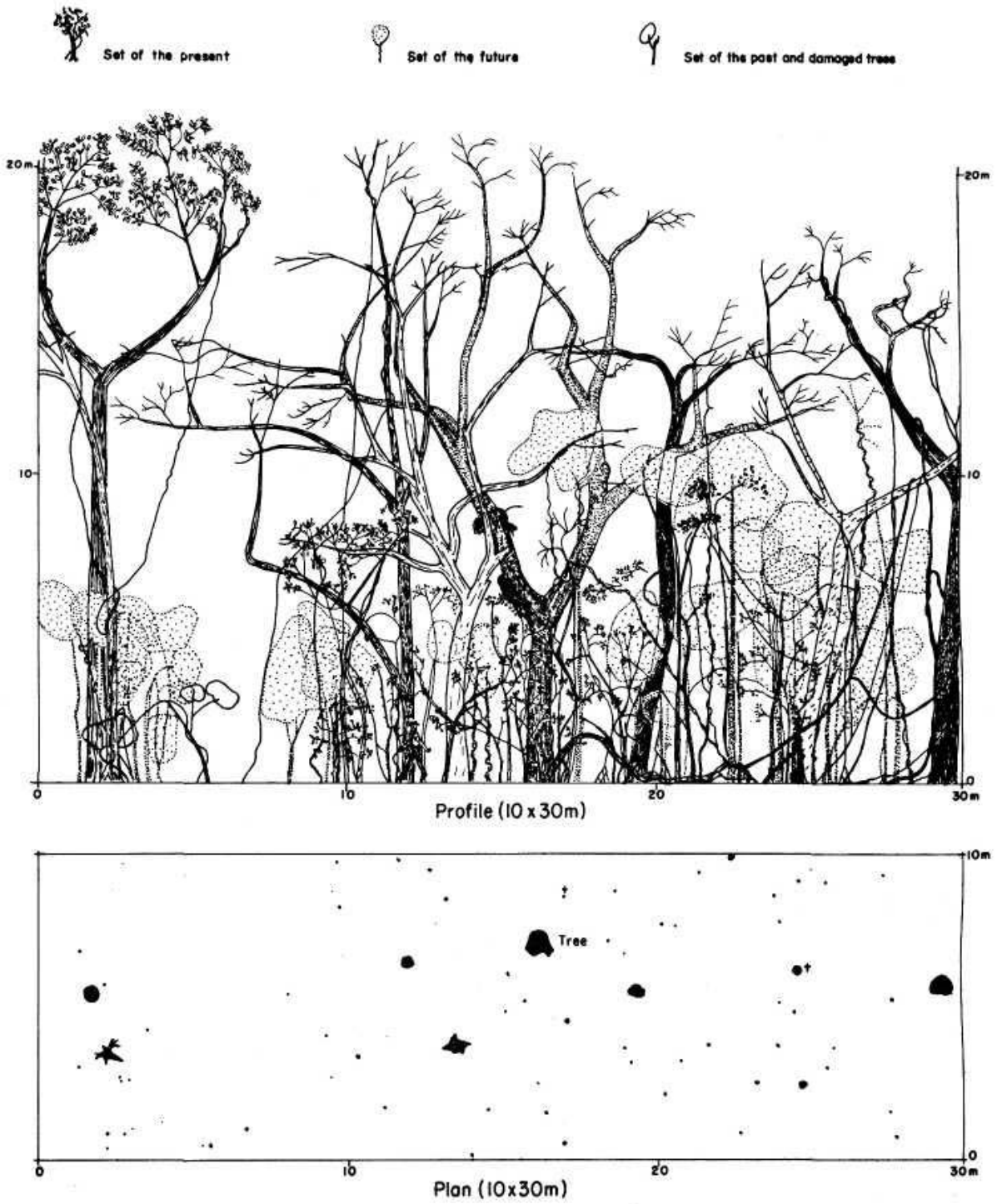
According to the relative percentages of evergreen and deciduous species, all the intermediate stages are found between the semi-evergreen and the moist deciduous secondary forests, both types being very often observed side by side.

- *Structure*

Fig. 12 shows a structural profile made in the Panamberi RF. The height of the stand hardly exceeds 20 m. The majority of the biggest trees are deciduous with a very low branching (5 m approximately) widely spread out.

The under storey is dense, jumbled, very rich in lianas. The distribution of the structural ensembles appears on Fig. 13. In the S.E. I, comprised between 15

[18] These species form a common stock for all the disturbed forests. It is moreover interesting to note the floristic convergence between this type of formation, obtained by degradation, and the dense forest type with *Persea-Diospyros-Holigarna* growing naturally under a longer dry season.



PANAMBERI R.F. (alt. 30m ; lat. 13° 08' N)
(N° 65 SHIMOGA Sheet)

Fig. 12. Architecture of a secondary semi-evergreen forest *(modified from PASCAL 1984)*

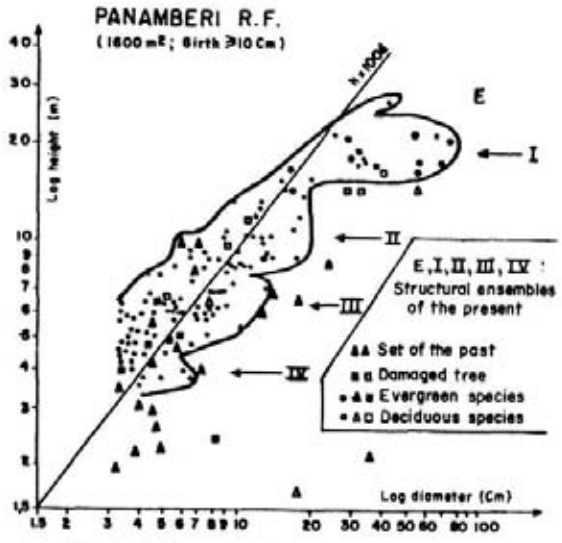


Fig. 13. Relationship between height and diameter - Structural ensembles
(After PASCAL 1984) For explanation see fig. 9)

and 22 m, deciduous individuals are twice as numerous as evergreen ones.

The S.E. II formed of trees 7.5 to 15 m high is practically evergreen. It is also the case of the shrubs of the lower structural ensembles. The set of the future is also almost entirely evergreen.

Therefore the semi-evergreen nature of this formation is mostly due to the domination of deciduous trees in the S.E. I.

From the evergreen nature of the set of the future we can deduct that in case of absolute protection, the normal evolution of this forest will be towards a more and more evergreen stand.

The spatial distribution of structural ensembles reminds one of the low evergreen forests (see above the *Memecylon-Syzygium-Actinodaphne* type). This "structural convergence" is also found in the values of structural parameters as shown in Table IV.

- *Floristic composition*

It is mixed: the species of the secondary deciduous forests *(Lagerstroemia microcarpa, Terminalia* spp. etc.), are found along with the more tolerant and heliophilous representatives of the evergreen flora among which *Artocarpus hirsutus, Holigarna arnottiana* and *Carallia brachiata* play an important role in the S.E.I.

1.2.2 *Gregarious Hopea parviflora formations*

These forests, are common in South Kanara where they are often private. They are characterized by the abundance of *Hopea parviflora* which may constitute almost pure stands.[19] The canopy is dense, with crowns touching each other. The height varies between 15 and 25 m. The understorey is impoverished because of the constant exploitation for fire wood. Besides *Hopea parviflora* (when the stand is not pure), these forests contain most of the evergreen species with large ecological amplitude and also the deciduous species common in the *disturbed forests* (see above).

1.2.3 *Hopea ponga _ Dimocarpus longan _ Mimusops elengi secondary forests*

These forests appear mainly over the plateau where they form secondary copses. Their age, height, density and floristic composition vary from place to place.

Some contain almost pure stands of *Hopea ponga*. The formation is then very similar to the gregarious population of *Hopea parviflora* of South Kanara. The height ranges from 10 to 20 m and the canopy is closed. Other forests have a less homogeneous floristic composition. The upper strata (10 to 25 m) is then dominated, besides *Hopea ponga*, by *Dimocarpus longan* and *Mimusops elengi* which are associated with the light-demanding and light-tolerant evergreen species mentioned above and also some deciduous species.

In the under storey *Ixora brachiata, Memecylon talbotianum, Aporosa lindleyana, Leea indica* etc... dominate.

2. *Secondary moist deciduous forests*

These secondary forests occupy large areas within the zone of the wet evergreen formations. They are very similar in structure and floristic composition to the moist deciduous climax forests situated further eastwards, with which they are often confused.

2.1 *Structure*

The height and the quality of the stand mainly depend on the depth and the fertility of the soil, as well as on the intensity of the anthropic pressure. The height can vary from 10 to 30 m but is generally between 15 and 25 m. The distribution of the structural ensembles is similar to that of the deciduous climax forests (see Fig. 15). There are: a more or less compact S.E. I

[19] In some areas, however, the abundance of *Hopea parviflora* results from plantations.

richer in individuals, ranging from 12 to 30 m, a less dense S.E. II, from 6 to 12 m, and a lower S.E. comprising small trees and shrubs of the under storey lower than 6 m.

The set of the future is generally weak due to the continuous pressure of the local population.

2.2 *Floristic composition*

A floristic list of the most common species is given in Annex 3. The S.E. I, almost totally deciduous, is composed of the same trees as that of the moist deciduous climax forests: *Lagerstroemia microcarpa, Terminalia* spp., *Dillenia pentagyna, Albizia odoratissima* etc... However, *Tectona grandis* does not develop well under natural conditions in these forests except on good soils. Other species, such as *Schleichera oleosa* and especially *Xylia xylocarpa* are more frequent. Some rare evergreen species *(Artocarpus* spp., *Carallia brachiata* ...) are associated with the deciduous trees of the upper stratum.

The S.E. II is also mostly constituted by deciduous species *(Cassia fistula, Careya arborea, Emblica officinalis ...).* Locally *Strychnox nux-vomica* becomes dominant. The humid climate allows the development of some evergreen heliophilous species like *Aporosa lindleyana, Olea dioica* and *Flacourtia montana.*

The proportion of evergreen species increases in the lower S.E. where they are more numerous than the deciduous species: *Callicarpa tomentosa, Leea indica, Clerodendrum viscosum* etc... mingled with *Ziziphus* spp., *Helicteres isora, Holarrhena antidysenterica*. However, the under storey is generally not dense.

The shrub layer is sometimes exclusively composed of *Lantana camara* and/or *Eupatorium odoratum.*

3.*Other degraded stages*

3.1*Tree savanna to grass savanna*[20]

Their structure is simple: trees and shrubs scattered in a continuous grass cover. The density of trees and shrubs diminishes from tree savanna to grass savanna. In the latter stage only the grass layer subsists.

- *The tree and shrub layer.* It is formed of twisted and low branched individuals rarely exceeding 7 to 8 m. These are generally fire resistant species of which the saplings can grow under intense dry condition: *Wendlandia notoniana, Ziziphus rugosa, Z. oenoplia, Careya arborea, Emblica officinalis, Glochidion* sp., *Gardenia turgida, G. gummifera* and the dwarf palm *Phoenix humilis.* Together with these species, almost always present, we find some trees of the deciduous forests but here they are only moderately high: *Terminalia paniculata, T. chebula, Buchanania lanzan, Bridelia* sp, *Butea monosperma* and more rarely *Lagerstroemia microcarpa* and *Pterocarpus marsupium.*

- *The grass layer.* It is mainly composed of cespitose grasses, the height of which is sometimes 1.50 m. The genera involved are *Andropogon, Arundinella, Chrysopogon, Cymbopogon, Heteropogon, Pollinia* and *Themeda*.

These cespitose Graminae are mixed with other herbs and under-shrubs like *Crotalaria, Desmodium, Hypericum, Knoxia, Leucas, Lobelia, Osbeckia* etc...

3.2 *Dense thicket to low scattered shrubs*

The structure and the floristic composition vary according to the degradation due to human interference.

3.2.1 *Clump thickets*

These thickets appear like isolated spheres organized around one or two shrubs (3 to 6 m high). These shrubs are surrounded by thorny or unpalatable under-shrubs and lianas.

Inside the sphere, thus protected from *grazing* and in a wetter micro-climate, are found young individuals of evergreen heliophilous and light-tolerant species of the neighbouring forests. Between the spheres, the soil, more or less indurated, is covered by herbs which are permanently grazed.

The trees or shrubs forming the heart of the sphere belong to the species commonly encountered in the savannas, sometimes associated with species of the heliophilous evergreen flora which, generally, have a very limited development.

The thorny shrubs and under-shrubs that provide protection are *Ziziphus rugosa, Z. oenoplia, Z. nummularia, Atalantia wightii, Maytenus emarginata, Carissa congesta, Randia brandisii, Xeromphis spinosa, Bridelia stipularis, Lantana camara, Canthium dicoccum,* with which are mixed *Ixora coccinea, Ixora* sp., *Vitex negundo, Phoenix humilis, Psychotria* sp., *Gnidia glauca, Ardisia* sp., *Phyllanthus* sp., *Melastoma malabathricum, Osbeckia* spp., *Leucas* sp., *Euphorbia* sp., *Zeuxine longilabris* etc.

The commonest lianas are *Carissa inermis, Connarus* sp., *Zanthoxylum ovalifolium, Celastrus paniculata, Toddalia asiatica, Artabotrys zeylanicus, Elaeagnus kologa, Uvaria narum, Jasminum* spp. (among which

[20] References on the savannas of South India are very abundant. But they mainly concern grass savannas and particularly montane grasslands or the grasslands of Maharashtra State which are outside the mapped area. For studies concerning this area, see the general references in the annex.

J. malabaricum), Smilax spp., *Canthium* sp., *Hemidesmus indicus, Abrus precatorius, Rubus* sp., *Dioscorea* sp., *Dalbergia sympathetica, Cyclea peltata* etc...

3.2.2 *Sapium insigne - Syzygium caryophyllatum - Ixora coccinea thicket.*

This formation is mainly encountered in the coastal zones. It usually appears in the stage of low scattered shrubs because of very high anthropic pressure.

Under best conditions, these thickets are composed of scattered shrubs, 4 to 6 m high, dominated by *Sapium insigne* along with twisted and stunted small trees, coppicing from the stock, like *Strychnos nux-vomica* (locally very abundant), *Terminalia paniculata, T. chebula, Aporosa lindleyana, Careya arborea* and sometimes *Syzygium cumini.*

The frutescent or suffrutescent strata are constituted almost entirely by thorny and/or unpalatable species: *Gardenia gummifera, Ixora coccinea, Syzygium caryophyllatum, Ziziphus oenoplia, Z. rugosa, Z. xylopyrus, Xeromphis spinosa, Carissa congesta, Lantana camara, Flacourtia indica, Bridelia* sp., *Canthium dicoccum, C. parviflora, Tarenna asiatica, Holarrhena antidysenterica, Memecylon* sp., *Melastoma malabathricum, Ficus asperrima, Phoenix humilis* sometimes associated with *Santalum album* and saplings of *Cinnamomum zeylanicum* and *Diospyros* sp.

The lianas are numerous: *Calycopteris floribunda, Diploclisia glaucescens, Asparagus racemosus, Argyrea* sp., *Cassytha filiformis, Reissantia indica, Acacia pennata, Smilax* sp., *Hemidesmus indicus, Cyclea peltata, Dioscorea sp., Jasminum malabaricum, Uvaria narum.*

In the region nearest to the sea *Acacia catechu* becomes the most common shrubby species.

II. GROUP II: DECIDUOUS CLIMAX FORESTS AND THEIR DEGRADATION STAGES

These formations cover large areas to the east of the evergreen or semi-evergreen climax forests.

According to the climatic gradients, three types of deciduous forests can be recognised in the mapped region:

- *Lagerstroemia microcarpa - Tectona grandis - Dillenia pentagyna* type.
- *Anogeissus latifolia - Tectona grandis - Terminalia alata (= T. tomentosa)* type.
- *Anogeissus latifolia - Chloroxylon swietenia - Albizia amara* type.

The third type, which grows in the drier regions, is represented in the mapped area only by very degraded stages, mainly low discontinuous thicket and scattered under-shrubs.

A. Structure

The structures of the three deciduous types have been dealt with together because of a very close similarity at every stage.

1. *Dense forest*

This formation is found only in the first two types. The dense forest rarely covers large continuous areas; it more often forms a mosaic with the open forest.

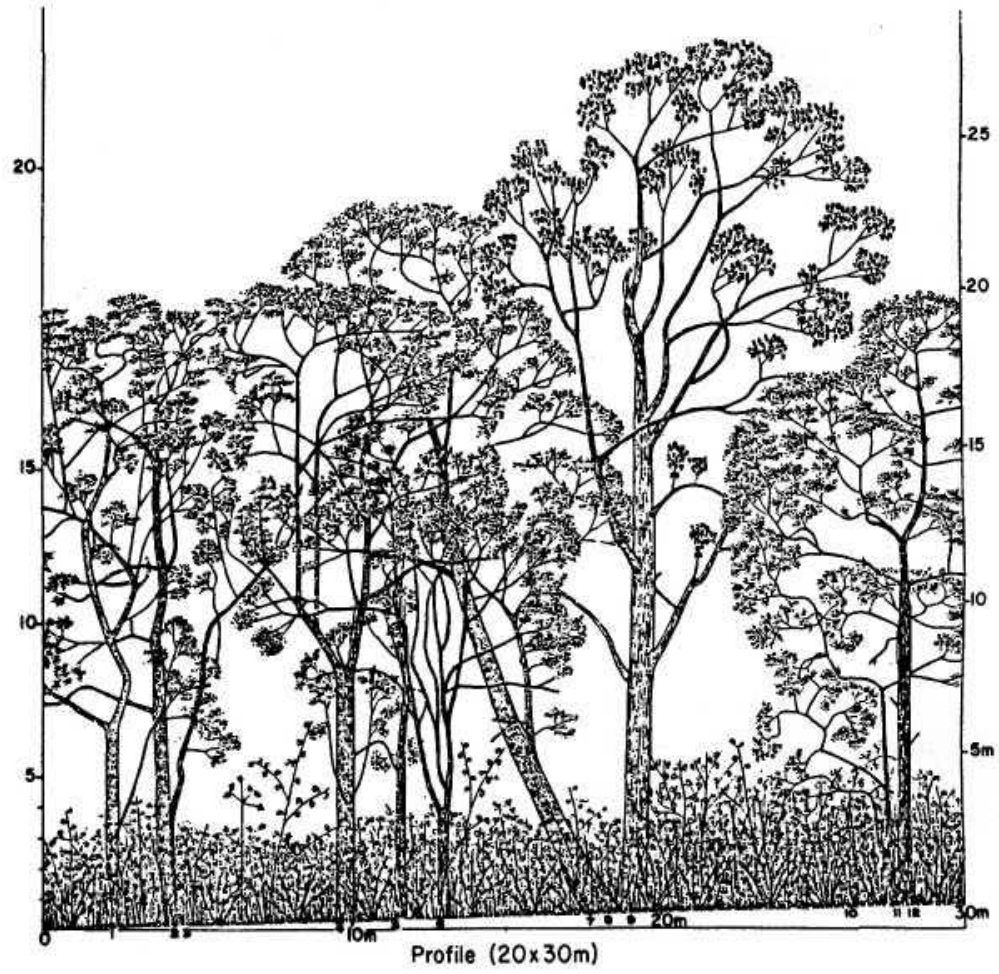
The dense forest is multistoried as illustrated by the profile in Fig. 14 and by the distribution of the structural ensembles in Fig. 15 a.[21]

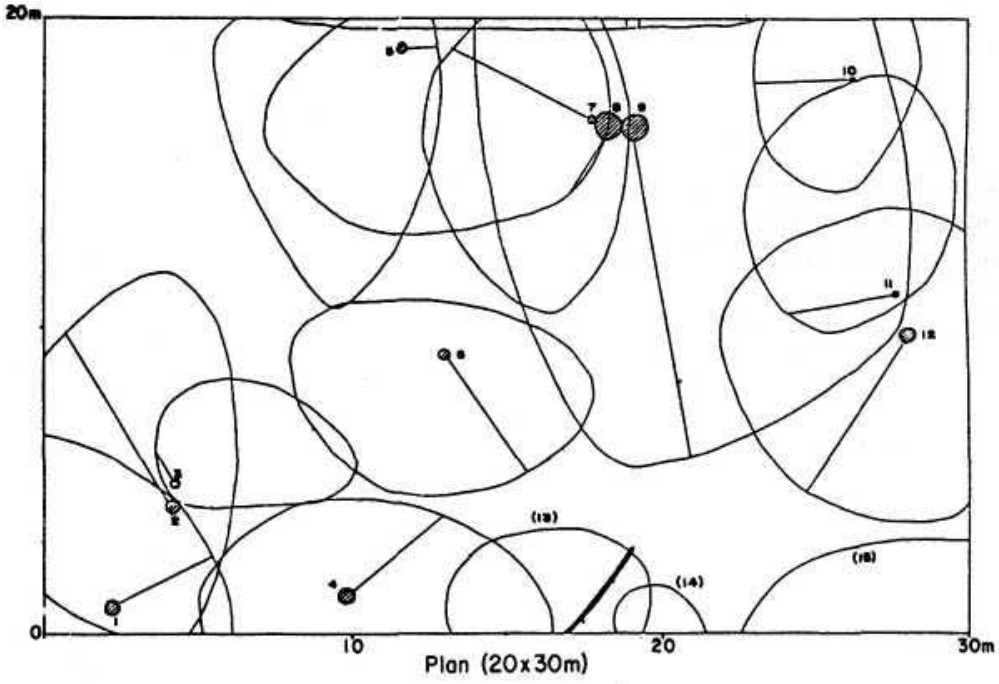
- The height of the S.E. I vary according to the forests from 20 to 30 m; the crowns almost touch each other in the dense patches but usually the cover is about 80%. The trees are generally low branched. However, some species may be represented by well-shaped individuals with straight boles (e.g. *Terminalia, Haldina, Tectona, Lagerstroemia).* The S.E. I is almost entirely constituted by deciduous species.
- The S.E. II is formed of trees, 6 to 12 m high, scattered in the formation.
- The lower structural ensembles include shrubs and under-shrubs generally less than 6 m high. They are not so dense and usually evergreen. The bushy and herbaceous strata are not well developed in the dense forests. Their importance increases with the opening of the stand.
- The set of the future is generally not well stocked due to the removal of firewood.

An example of the values of the main structural parameters is given in Table V. The density of big trees ($G \geq 120$ cm), the basal area and the biomass (estimated by the biovolume D^2H) are quite comparable to those of the low evergreen forests and the secondary semi-evergreen forests (see Table IV).

This structure corresponds to the optimal stage of the deciduous types in the region. It may get modified either naturally, in relation to decreasing rainfall towards the east or in the wake of the anthropic interference.

[21] This profile was made at Begur RF (in the Tiger Project) which is a transitional forest between the *Lagerstroemia-Tectona-Dillenia* type and the *Anogeissus-Tectona-Terminalia* type (LEGRIS *et al.*, 1981).





BEGUR R.F. (alt. 675 m ; lat. 11°50'N)
(Nº 149 MERCARA - MYSORE Sheet)

Fig.14. Architecture of a deciduous forest *(After P.LEGRIS et al. 1981)*

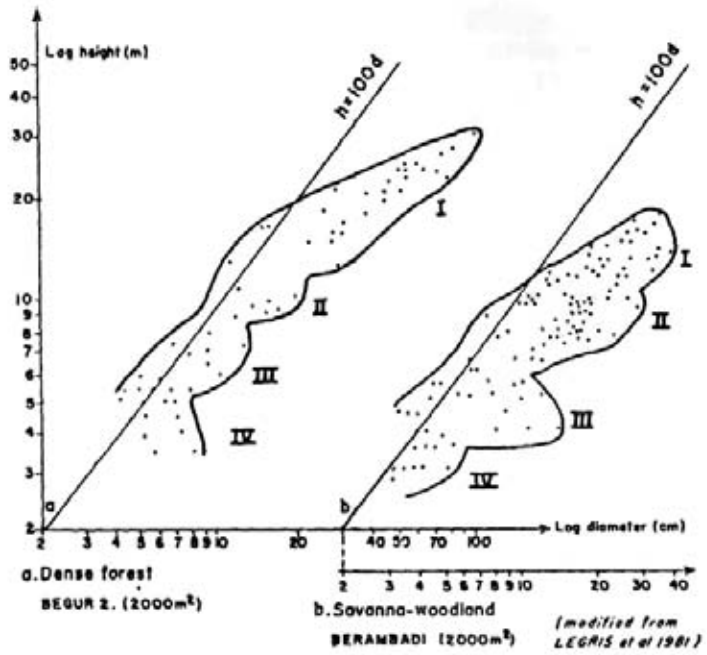


Fig.15. Relationship between height and diameter – Structural ensembles

2. *Open forest to tree savanna*

The modification of the structure takes place in the following manner:

- more and more important opening of the stand;
- gradual reduction in the height of the canopy;
- reduction in the number of structural ensembles and relative increase of the importance of shrubs;
- progressive decline in the basal area and in the tree biomass;
- decrease in floristic richness and floristic diversity of trees and shrubs;
- concomitant development of the herbaceous layer.

A savanna-woodland, an intermediate stage between an open forest and a tree savanna, is illustrated by Figs. 15b and 16.[22] A structural comparison between this formation and a dense forest is shown in Table V. Halfway through the process of degradation, the tree biomass is reduced to 1/3 of its value and the density of trees with girth over 120 cm is 10 times less, whereas small stems are twice as numerous as in the dense forest.

3. *Scrub-woodland to low scattered shrubs*

In this series, the process of degradation is slightly different.

In the scrub-woodland, there remain groups of trees of S.E. I rarely exceeding 20 m, separated by patches of thorny and/or unpalatable shrubby species.

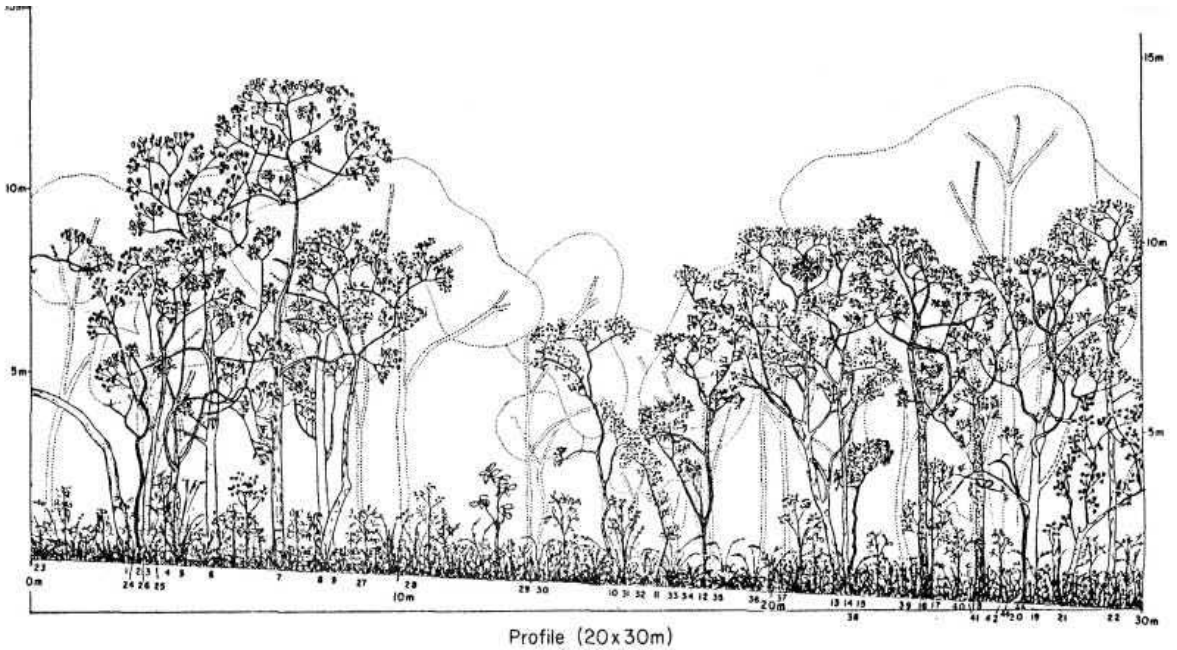
The dense thicket results from illicit feelings, mainly for firewood. The trees produce coppice shoots which, along with the thorny shrubs, constitute a thicket, which is rather difficult to penetrate. Reaching a height of 5 m under best conditions, this thicket is dotted with isolated trees, 10 to 20 m in height (Fig. 17).[23]

When over-grazing accompanies illicit cutting, the result is a low discontinuous thicket. Mutilated trees regenerating from coppices are mixed with thorny and unpalatable species but the general height is between 2 and 3 m, and the soil can be seen between the bushes. It is covered by a poor herbaceous layer which cattle browse and trample.

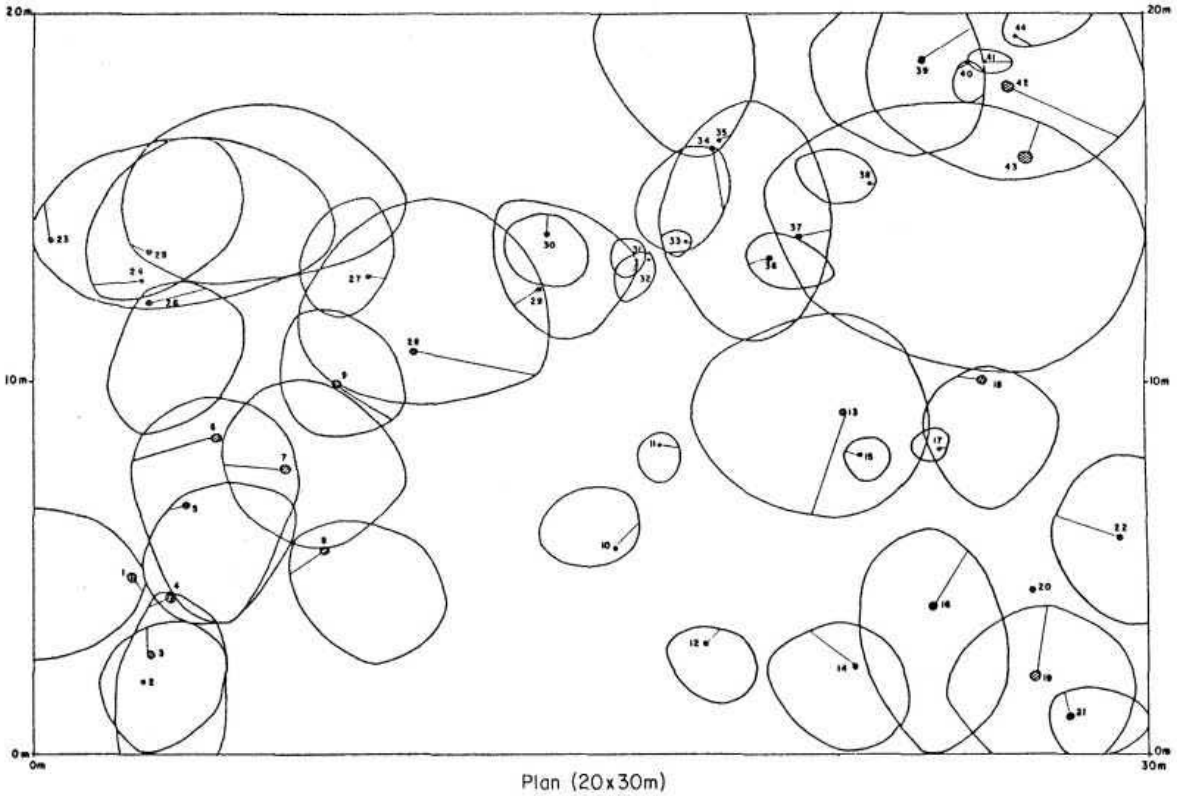
The ultimate stage of degradation is constituted by some under-shrubs, 1 to 2 m in height at the most, and scattered. The soil is covered with boulders and stones, with frequent parent rock outcrops. The herbaceous

[22] Profile drawn in Berambadi RF, Tiger Project (LEGRIS *et al.*1981).

[23] Profile drawn in Moyar RF (Tiger Project): intermediate stage between a dense thicket and a low thicket (LEGRIS *et al.*, 1981).



Profile (20x30m)



Plan (20x30m)

BERAMBADI R.F. (alt. 870m ; lat. 11°42'N)
(Nº 150 MERCARA - MYSORE Sheet)

Fig.16. Architecture of a savanna-woodland *(After P. LEGRIS et al. 1981)*

Table V: Structural parameters of a dense deciduous forest and savanna woodland (partly from LEGRIS *et al.* 1981)

	% of cover	Density G≥10 cm	(tree/ha) G≥ 120cm	Basal area (m^2/ha)	D^2H (m^3/ha)	Floristic richness (sp/2000m^2)	Floristic diversity (H')
Dense forest (Begur R.F.)	79	310	95	31.9	956	19	3.5
Savanna-woodland (Berambadi R.F.)	59	660	10	22.0	275	12	2.8

cover when present is reduced to patches. This stage is reached when clearing and grazing are excessive.

B. Floristic composition

Because of floristic differences, the three deciduous types are dealt with separately.

1. *Lagerstroemia-Tectona-Dillenia* type

It corresponds to the moist deciduous forest of the forest literature.[24]

1.1 *Dense forest*

The list of the main species constituting this formation with their abundance, their place in the spatial structure and their ecological habit (riparian, openings, etc.) are given in Annex 3. Changes in edaphic conditions lead to modifications in the floristic composition. For example, *Anogeissus latifolia* becomes more abundant on shallow soils, and poorly drained low-lying areas are sometimes colonised by *Shorea roxburghii*. In moist sites, especially under riparian conditions, *Mangifera indica, Madhuca longifolia, Lagerstroemia flos-reginae, Terminalia arjuna, Eugenia* sp., *Pongamia pinnata* etc. dominated.

1.2 *Open forest and savannas*

These open stages which usually alternate, mosaic like, with the dense forest, become more frequent with the diminution of the rainfall towards the east.

- In the *open forest,* the most common species are *Terminalia alata, T. paniculata, Lagerstroemia microcarpa, Tectona grandis, Dillenia pentagyna, Dalbergia latifolia, Albizia odoratissima, Careya arborea, Emblica officinalis, Grewia tiliaefolia, Buchanania lanzan, Cassia fistula, Butea monosperma, Mallotus philippensis*. **The common** shrubs **are** *Ziziphus oenoplia, Z. rugosa, Gnidia glauca, Xeromphis* spp., *Clerodendrum viscosum, Helicteres isora, Flacourtia indica, Diospyros montana*. The under storey is often overgrown by *Lantana camara* or *Eupatorium odoratum*.

The open forests are quite frequently invaded by *Bambusa arundinacea* which forms clumps 10 to 25m in high with a diameter of 3 to 4m.

- In the *savanna-woodland,* the dominant tree species are *Emblica officinalis, Terminalia chebula, Cassia fistula, Buchanania lanzan, Careya arborea, Pterocarpus marsupium*. The continuous grass cover is constituted mainly by *Aristida hystrix* and *Cymbopogon martini*.

1.3 *Thickets*

When they are present, the most common arborescent species are *Buchanania lanzan, Terminalia paniculata, T. alata, Careya arborea, Butea monosperma, Cassia fistula, Albizia odoratissima, Emblica officinalis, Lagerstroemia microcarpa, Pterocarpus marsupium, Anogeissus latifolia, Grewia tiliaefolia. Lannea coromandelica, Gmelina arborea*. These species are commonly represented by mutilated individuals with coppice shoots. They are associated with shrubs of which the most common are *Diospyros montana, Carissa congesta, Xeromphis spinosa, Ziziphus rugosa, Z. oenoplia, Lantana camara, Gnidia glauca, Maytenus emarginata, Flacourtia indica* and *Ixora* sp.; *Santalum album* is quite common as are also the bamboos *Bambusa arundinacea* and *Dendrocalamus strictus*.

The lianas are numerous: *Dioscorea* spp., *Acacia* spp., *Toddalia asiatica, Moullava spicata, Ventilago calyculata. V. maderaspatana, Clematis gouriana, Jasminum* sp., *Aristolochia tagala, Calycopteris floribunda, Cyclea peltata, Cissampelos pareira* etc...

[24] Annex 1 gives a correspondance between our classification and that of CHAMPION and SETH (1968).

Profile and plan (30 x 5m)

MOYAR R.F. (alt. 850m ; lat. 11° 38'N)
(Nº 148 MERCARA - MYSORE Sheet)

Fig. 17. Architecture of a thicket *(After P. LEGRIS et al. 1981)*

2. *Anogeissus-Tectona-Terminalia* type

2.1 *Dense forest*

The list of the species constituting this forest type is given in Annex 3. Most of the species of the preceding *Lagerstroemia-Tectona-Dillenia* type are also found in this type.

The differences lie in a group of species which can no longer tolerate the more intense dryness and therefore disappear or become rare. Among these species *Lagerstroemia microcarpa, Dillenia pentagyna, Alstonia scholaris, Vitex altissima, Anthocephalus chinensis, Mallotus philippensis, Callicarpa tomentosa, Clerodendrum viscosum* etc. may be mentioned.

On the contrary some species become more frequent, especially *Anogeissus latifolia* which is the main species of the upper canopy. In the eastern regions, which are a transition area, this type is enriched by elements characteristic of the *Anogeissus-Chloroxylon-Albizia* type : *Chloroxylon swietenia, Albizia amara, Cochlospermum religiosum, Commiphora caudata, Gyrocarpus jacquinii, Givotia rottleriformis* etc...

2.2 *Open forest and savanna*

They cover a larger area than the dense forests. The arborescent stratum bears nearly the same species as the dense forests, but is lower and more scattered.

The grass cover is continuous in the savanna-woodland and savanna stages.

2.3 *Thickets*

2.3.1 *Scrub-woodland and dense thickets*

The tree species, often coppice regrowth, are the following: *Anogeissus latifolia, Terminalia alata, Buchanania lanzan, Careya arborea, Butea monosperma, Soymida febrifuga, Chloroxylon swietenia, Stereospermum personatum, Lagerstroemia parviflora, Cordia* sp., *Tectona grandis, Dalbergia paniculata, Grewia tiliaefolia, Cleistanthus collinus, Bauhinia racemosa*. The under storey mainly formed of thorny

and/or unpalatable species includes *Holarrhena antidysenterica, Carissa congesta, Maytenus emarginata, Xeromphis spinosa, Diospyros montana, D. melanoxylon, Flacourtia indica, Erythroxylon monogynum, Santalum album, Acacia* spp., *Tarenna asiatica, Ziziphus oenoplia, Z. xylopyrus, Gardenia* sp., *Capparis* sp., *Lantana camara, Ixora* spp., *Cassia* spp., *Dodonaea viscosa*.

The lianas which are encountered in large number belong to the following genera: *Dioscorea, Acacia, Calycopteris, Ventilago, Aristolochia, Cissampelos etc*.

2.3.2 *Low discontinuous thicket to scattered undershrubs*

The arborescent species are represented only by rare stunted individuals. The thicket is mainly composed of *Maytenus emarginata, Lantana camara, Carissa congesta, Diospyros melanoxylon, Xeromphis spinosa, Ziziphus oenoplia, Z. xylopyrus, Santalum album, Erythroxylon monogynum, Gardenia* sp., *Euphorbia antiquorum, Ixora parviflora, Phoenix humilis, Tarenna asiatica, Rhus mysorensis, Dichrostachys cinerea, Dodonaea viscosa, Cassia auriculata* and many stragglers among which *Acacia intsia* and *A. pennata*.

The most open stages are dominated by *Dodonaea viscosa, Cassia auriculata, Maytenus emarginata, Pterolobium hexapetalum* and *Euphorbia antiquorum*.

3. *Anogeissus-Chloroxylon-Albizia* type

Under this type are grouped the formations classified in different "series" in the Notes on the Mysore sheet (Gaussen *et al*. 1966) : the *Albizia amara* and *Acacia* series, the *Hardwickia-Anogeissus* series, the *Anogeissus-Chloroxylon-Albizia* series. Indeed, these series are very similar.

Moreover, in the mapped area they are represented only by very degraded stages: scrub-woodland to low scattered shrubs.

The arborescent species are *Anogeissus latifolia, Chloroxylon swietenia, Azadirachta indica, Holoptelea integrifolia, Dalbergia paniculata, Cochlospermum religiosum, Stereospermum personatum, Lannea coromandelica, Albizia amara, Hardwickia binata* (locally abundant), *Diospyros melanoxylon, Commiphora caudata, Sapindus laurifolia, Dolichandrone falcata, Gyrocarpus jacquinii, Euphorbia antiquorum, Santalum album, Aegle marmelos*.

The shrubby stratum includes *Acacia latronum, A. leucophloea, A. chundra, Maytenus emarginata, Xeromphis spinosa, Dichrostachys cinerea, Erythroxylon monogynum, Ziziphus oenoplia, Z. xylopyrus, Cassia auriculata, Lantana camara, Ixora* sp., *Pterolobium hexapetalum*.

The more degraded stages are constituted by shrubs and under-shrubs such as *Cassia auriculata. Dodonaea viscosa, Euphorbia antiquorum, Xeromphis spinosa, Tarenna asiatica, Calotropis gigantea, Acacia latronum, Ziziphus oenoplia, Z. xylopyrus*.

CONCLUSION: INTEREST AND APPLICATIONS

The possibilities of using this kind of map are numerous. They result from the synthesis in the same document of data concerning vegetation on one hand, and the physical and biotic environment on the other. The cartographic synthesis of these data brings out correlations which constitute new information.

This type of cartography is therefore not only a graphic means of representation of data but also a tool for new information research.

a) *Inventories*

The areas occupied by the various forest types, or their degradation stages, can be measured by simple planimetry.

The global production of the formations of an area can be estimated from the map when data concerning biomass or wood production in representative plots are available. In fact the map should be used when selecting plots for statistical inventories (systematic or stratified sampling).

b) *Enrichment and conversion*

The map provides essential guidelines for forest management plans, especially for the selection of the suitable zones for plantation or conversion. These zones can be traced out taking into account the optimal ecology of the selected species and their natural areas of distribution.

For example Teak could be successfully planted over the entire potential area of the moist deciduous climax forest where the soil is not too indurated. On the contrary, the results will be less successful in the secondary deciduous forests with higher rainfall where conditions are more suitable for the growth of soft wood species like *Bombax* and *Ailanthus*.

Plywood species like *Vateria indica* have been successfully tried in the semi-evergreen patches of South Kanara district. The map brings out similar semi-evergreen pockets where this species could be planted with a fair chance of success. The evergreen or semi-evergreen degraded forests on the lower slopes of the Ghats in this area may also be enriched with *Vateria*.

The zones to be enriched or reconverted can be mapped in a simpler manner from the base map.

The same reasoning is applicable to the selection of zones favourable for the introduction of exotic species. The map facilitates the task of selecting zones having climatic characteristics and forest formations comparable to those of the area of origin of the species to be introduced.

c) *Evaluation of the impact of high developments*.

The map also helps in evaluating the impact of high development projects in forested regions. For example to estimate the eventual consequences of a dam project (numerous in this region) or the impact of major mining operations: quantification of the wooded area likely to disappear; consequences of the opening of new roads; best sites for the settlement of labour population and of those to be shifted from the places of new projects.

d) *Determination of the sensitive zones*

In some regions, the equilibrium between the plant-cover and the surrounding conditions, especially anthropic pressure and climate, is fragile. For example, the regions with a high density of human population located at latitudes where the soil degrades easily after the destruction of the vegetation or, after large openings in the canopy and the hilly regions receiving high rainfall where soils get rapidly eroded because of exposure.

The map helps in selecting the zones that are either to be protected on a priority basis or where exploitation has to be moderate and strictly controlled.

For example, in the southern part of Wayanad division and northern part of Kozhikode division (cf. Mercara-Mysore Sheet), the existing forests are subject to great anthropic pressure. From the eastern hilly side, coffee plantations are replacing the forests, whereas on the heavily populated western side the forests recede upto the mid-slopes. Thus the remaining forests are confined to a narrow track along the Western Ghats; most of these forests are not classified as Reserved or State Forest. Unless immediate steps are taken for their conservation, they are likely to disappear leaving a gap in the continuity of the evergreen continuum with adverse consequences like the acceleration of erosion and the hampering of the movement of the large herbivores.

e) *Selection of biosphere reserves and zones of interest for gene pool conservation*

Most of the parameters involved in the selection of the biosphere reserves are to be found in the map :

- continuity and extent of forest cover,
- nature of plant formations
- location of the habitats of animal populations and probable migration routes,
- distance from main roads and populated zones

etc...

Some forest types are represented by very small areas and are likely to vanish without protection, resulting in genetic erosion.

Such is the case, for example, of the *Poeciloneuron* gregarious forest and the adjoining montane forest of South Bhadra RF (n° 208 - Shimoga Sheet); the montane forests of Bababudangiri (n° 173 - Shimoga Sheet) the relict Dipterocarp reserved forests of Hanigeri and Ubbur (n° 309 and 328 Shimoga Sheet) and the "Kan" forests around Sorab (Shimoga and Belgaum-Dharwar-Panaji Sheets).

The best way of using a map of forest resources would be to initiate a dialogue between the cartographers who also know the ecological environment and the users who face a series of particular problems. The comprehensive maps where the maximum information is available can then be used for the elaboration of very simple thematic maps for specific purposes, as for example the maps of the vulnerability of forest formations in western Karnataka which is now under preparation.

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Annex I : Corespondence between the Forest Map of South India's Classification and that of Champion and Seth 1968.

FOREST MAP OF SOUTH INDIA'S CLASSIFICATION					CHAMPION AND SETH'S CLASSIFICATION (1968)	
Group I : Evergreen and semi-evergreen climax forests and degradation	A - Evergreen and semi-evergreen climax forests	Low elevation types	Dipterocarpus - Kingiodendron - Humboldtia type		1A/C4. West coast tropical evergreen forest	Group I : Tropical wet evergreen forests
			Dipterocarpus - Humboldtia - Poeciloneuron type			
			Dipterocarpus - Persea type			
			Dipterocarpus - Diospyros - Diospyros type			
			Perseo - Diospyros - Holigarna type			
			Diospyros - Dysoxylum - Holigarna type			
		Medium elevation types	Cullenia - Mesua - Palaquium type		1A/C4 : West coast tropical evergreen forest (alt.< 1000m)	
			Mesua - Palaquium type			
			Poeciloneuron - Palaquium - Hopea type		1A/C3 : Southern hill tropical evergreen forest (alt.> 1000m)	
		High elevation types	Memecylon - Syzygium - Actinodaphne type		8A/C2 : Western subtropical hill forest	Group B : Subtropical broad-leaved hill forests
			Schefflera - Meliosma - Gordonia type		8A/C1 : Southern subtropical hill forest	
			Sholo type		IIA/C1 : Southern montane wet temperate forest	Group : II Montane wet temperature forests
	B - Secondary or degraded stages	Evergreen and semi-evergreen forests	Disturbed	low elevation medium elevation	2A/C2 : West coast semi evergreen forest (partly) 8ADS : Degradation stages of southern subtropical broad-leaved hill forests	
			Secondary		2A/C2 : West coast semi evergreen forest (partly)	
				gregarious Hopea	2A2S1 : West coast secondary evergreen Dipterocarp forest	
			Secondary moist deciduous forest	general —	3B/C2 : Southern moist mixed deciduous forest 3B/2S1 : Southern secondary moist mixed deciduous forest	
				teak present	3B/C1a : Very moist teak forest	
				bamboo facies	2B E3 : Moist bamboo brakes (partly)	
				Xylia facies	2B E4 : Lateritic semi-evergreen forest (Xylia mixed forest)	
		Other degraded stages	Tree savanna to grass savanna	low elevation	Laterite thorn forest	
				medium elevation	8A/DS1 : South indian subtropical hill savanna	
				high elevation	IIA/DS2 : Southern montane wet grassland	
			Thicket to scattered shrubs	low and medium elevation	1/2S1 : Pioneer Euphorbiaceous scrub 5 E7- : Laterite scrub	
				high elevation	IIA/DS1 : Southern montane wet scrub	
Group II : Deciduous climax forests and degradation	forests		Lagerstroemia - Tectona - Dillenia type : moist deciduous forest		3B/C1b : Moist teak forest 2B/E3 : Moist bamboo brake (Bamboo facies)	
		Dry deciduous	Anogeissus - Tectona - Terminalia type		5A/C1b : Dry teak forest 3B/C1c : Slightly moist teak forest (humid facies)	
			Anogeissus - Chloroxylon - Albizia type		5A/C3 : Southern dry mixed deciduous 5A/E4 : Hardwickia forest (Hardwickia facies)	
	degraded stages		Woodland to tree savanna		5/2S1 : Secondary dry deciduous forest 5/DS2 : Dry savanna forest	
			Scrub woodland to low scattered shrubs		5/DS1 : Dry deciduous scrub 6A/C1 : Southern thorn forest 5/DS3 : Euphorbia scrub	

ANNEX 2: LIST OF SYNONYMS

New names	*Old names*
Acronychia pedunculata *(L.) Miq.*	Acronychia laurifolia *Blume*
Actinodaphne malabarica *Balak.*	Actinodaphne hirsuta *Hk.*
Aglaia anamallayana *(Bedd.) Kost.*	Lansium anamallayanum *Bedd.*
Allophylus cobbe *(L.) Raeusch.*	Allophylus rheedii *(Wt.) Radlk.*
Anthocephalus chinensis *(Lam.) A. Rich.*	Anthocephalus indicus *A. Rich.*
Aphanamixis polystachya *(Wall.) Parker*	Amoora rohituka *W. & A.*
Apluda mutica *L.* var. aristata *(L.) Hachel ex Baker*	Apluda aristata *Linn.*
Archidendron monadelphum *(Roxb.) Nielsen.*	Pithecellobium bigeminum *(L.) Mart.*
Artocarpus gomezianus *Wall. ex Trecul* ssp. zeylanicus *Jar.*	Artocarpus lakoocha *Roxb.*
Artocarpus heterophyllus *Lam.*	Artocarpus integrifolia *Linn.*
Balanophora fungosa *J. & G. Forst.* ssp. indica *(Arn.) Hansen*	Balanophora indica *(Arn.) Wall. ex Griff.*
Bhesa indica *(Bedd.) Ding Hou*	Kurrimia indica *Gamble*
Bidens biternata *(Lour.) Sherff.*	Bidens pilosa *L.*
Bombax ceiba *L.*	Bombax malabaricum *DC.*
Bremekampia neilgherryensis *(Wt.) Sreem.*	Haplanthus neilgherryensis *Wt.*
Breynia retusa *(Dennst.) Alst.*	Breynia patens *Rolfe*
Breynia vitis-idaea *(Burm.f.) C.E.C. Fischer*	Breynia rhamnoides *M. Arg.*
Bridelia crenulata *Roxb.*	Bridelia roxburghiana *(Mueller) Gehrm.*
Butea monosperma *(Lam.) Taub.*	Butea frondosa *Koen.*
Callicarpa tomentosa *(L.) Murr.*	Callicarpa lanata *Linn.*
Calophyllum apetalum *Willd.*	Calophyllum wightianum *Wall.*
Calophyllum polyanthum *Wall. ex Choisy*	Calophyllum elatum *Bedd.*
Canthium angustifolium *Roxb.*	Plectronia rheedii *(DC.) Bedd.* var. angustifolia *(Roxb.) Gamble*
Canthium dicoccum *(Gaertn.) Merr.*	Plectronia didyma *(Gaertn.) Kurz*
Canthium neilgherrense *Wt.*	Plectronia neilgherrensis *Bedd.*
Canthium parviflorum *Lam.*	Plectronia parviflora *(Lam.) Bedd.*
Carallia brachiata *(Lour.) Merr.* Carmona retusa *(Vahl) Masu.*	Carallia integerrima *DC.*
Casearia elliptica *Willd.*	Ehretia microphylla *Lam.*
Casearia ovata *(Lam.) Willd.*	Casearia tomentosa *Roxb.*
Cassine glauca *(Roxb.) Kuntze*	Casearia esculenta *Roxb.*
Celtis timorensis *Span.*	Elaeodendron glaucum *Pers.*
Ceriscoides turgida *(Roxb.) Tirv.*	Celtis cinnamomea *Lindl.*
Chasalia ophioxyloides *(Wall.) Craib*	Gardenia turgida *Roxb.*
Chromolaena odorata *(L.) King & Robinson*	Chasalia curviflora *Thw.*
Chrysophyllum lanceolatum *(Bl.) DC.*	Eupatorium odoratum *L.*
	Chrysophyllum roxburghii *G. Don*

Cinnamomum malabathrum *(N. Burman) Bl.*	Cinnamomum macrocarpum *J. Hk.*
Cinnamomum verum *Presl.*	Cinnamomum zeylanicum *Garc. ex Blume*
Cleidion spiciflorum *(Burm. f.) Merr.*	Cleidion javanicum *Blume*
Clerodendrum viscosum *Vent.*	Clerodendrum infortunatum *L.*
Cochlospermum religiosum *(L.) Alston*	Cochlospermum gossypium *DC.*
Cordia gharaf *(Forsk.) Ehrenb. & Asch.*	Cordia rothii *Roem. & Sch.*
Cullenia exarillata *A Robyns*	Cullenia excelsa *Wt.*
Cynometra iripa *Kostel*	Cynometra mimusoides *Wall.*
Debregeasia longifolia *(Burm.) Wedd.*	Debregeasia velutina *Gaud.*
Decussocarpus wallichianus *(Presl.) de Laubenf.*	Podocarpus wallichiana *Presl.*
Dendrocnide sinuata *(Bl.) Chew.*	Laportea crenulata *Gaud.*
Desmodium triangulare *(Retz.) Merr.*	Desmodium cephalotes *Wall.*
var. congestum *(W. & A.) Sant.*	var. congestum *Prain.*
Desmodium velutinum *(Willd.) DC.*	Desmodium latifolium *DC.*
Desmos lawii *(J.Hk. & Th.) Safford*	Unona lawii *J. Hk. & Thorns.*
Dimocarpus longan *Lour.*	Nephelium longana *(Lam.) Camb.*
Diospyros buxifolia *(Blume) Hiern*	Diospyros microphylla *Bedd.*
Diplocyclos palmatus *(L.) Jeff.*	Bryonopsis laciniosa *(Linn.) Naud.*
Drypetes elata *(Bedd.) Pax etHoffm.*	Hemicyclia elata *Bedd.*
Drypetes malabarica *(Bedd.) Airy Shaw*	Cyclostemon malabaricus *Bedd.*
Drypetes oblongifolia *(Bedd.) Airy Shaw*	Cyclostemon macrophyllus *Bl.*
Drypetes roxburghii *(Wall.) Hurusawa*	Putranjiva roxburghii *Wall.*
Elaeocarpus tectorius *(Lour.) Poiret*	Elaeocarpus oblongus *Gaertn.*
Euodia lunu-ankenda *(Gaertn.) Merr.*	Evodia lunu-ankenda *Merr.*
Fahrenheitia zeylanica *(Thw.) Airy Shaw*	Ostodes zeylanicus *M. Arg.*
Ficus amplissima *Sm.*	Ficus tsiela *Roxb.*
Ficus drupacea *Thunb.*	Ficus mysorensis *Heyne ex Roth*
var. pubescens *(Roth) Corner*	
Ficus exasperata *Vahl*	Ficus asperrima *Roxb.*
Ficus microcarpa *L. f.*	Ficus retusa *Linn.*
Ficus mollis *Vahl*	Ficus tomentosa *Roxb.*
Ficus racemosa *L.*	Ficus glomerata *Roxb.*
Ficus tinctoria *Forst.*	Ficus gibbosa *Bl.*
ssp. parasitica *(Willd.) Corner*	var. tuberculata *(Roxb.) King*
Flacourtia indica *(Burm.) Merr.*	Flacourtia sepiaria *Roxb.*
Flemingia macrophylla *(Willd.) Prain*	Flemingia congesta *Roxb.*
Garcinia gummi-gutta *(L.) Robson*	Garcinia cambogia *(Gaertn.) Desr.*
Garcinia pictorius *(Roxb.) D'Arey*	Garcinia tinctoria *Dunn.*
Garcinia rubro-echinata *Kost.*	Garcinia echinocarpa *Thw.*
Garcinia talbotii *Raizada ex Sant.*	Garcinia malabarica *Talbot*
Gnida glauca *(Fresen.) Gilg*	Lasiosiphon eriocephalus *Dene.*
Gomphia serrata *(Gaert.) Kanis*	Ouratea angustifolia *Gilg.*
Grewia abutifolia *Vent. ex Juss.*	Grewia aspera *Roxb.*
Haldina cordifolia *(Roxb.) Ridsd.*	Adina cordifolia (Roxb.) *J. Brans.*
Hibiscus ovalifolius *(Forsk.) Vahl*	Hibiscus micranthus *L. f.*
Hopea ponga *(Dennst.) Mabberley*	Hopea wightiana *Wall. ex W. & A.*
Hopea utilis *(Bedd.) Bole*	Balanocarpus utilis *Bedd.*

Hydnocarpus laurifolia *(Dennst.) Sleumer*	Hydnocarpus wightiana *Blume*
Indigofera cassioides *DC.*	Indigofera pulchella *Roxb.*
Kingiodendron pinnatum *(DC.) Harms*	Hardwickia pinnata *Roxb.*
Lagerstroemia microcarpa *Wt.*	Lagerstroemia thomsonii *Koehne*
Lagerstroemia reginae *Roxb.*	Lagerstroemia flos-reginae *Retz.*
Lannea coromandelica *(Houtt.) Merr.*	Odina wodier *Roxb.*
Lantana camara *L.*	Lantana aculeata *L.*
Leea asiatica (L.) *Ridsdale*	Leea crispa *L.*
Leea indica *(Burm.) Merr.*	Leea sambucina *Willd.*
Lepianthes umbellata *(L.) Raf.*	Heckeria subpeltata *Kunth*
Lepisanthes tetraphylla *(Vahl) Radlk.*	Lepisanthes deficiens *Radlk.*
Ligustrum gamblei *Ramam.*	Ligustrum roxburghii *C. B. Cl.*
Loeseneriella arnottiana *(Wt.) A.C. Smith*	Hippocratea arnottiana *Wt.*
Loeseneriella bourdillonii *(Gamble) Ramam.*	Hippocratea bourdillonii *Gamb.*
Luvunga sarmentosa *(Bl.) Kurz*	Luvunga eleutherandra *Dalzell.*
Mackenziea caudata *(T. Anderson) Ramam.*	Strobilanthes caudatus *T. And.*
Madhuca longifolia *(L.) Macbride*	Bassia latifolia *Roxb.*
var. latifolia *(Roxb.) Chev.*	
Madhuca neriifolia *(Moon) H.J. Lam.*	Bassia malabarica *Bedd.*
Maesa indica *(Roxb.) DC.*	Maesa dubia *(Wall.) DC.*
	Maesa perrottetiana *A. DC.*
Mallotus tetracoccus *(Roxb.) Kurz*	Mallotus albus *Muell.*
Mammea suriga *(Buch.-Ham. ex Roxb.) Kost.*	Ochrocarpus longifolius *Bth. & J. Hk.*
Margaritaria indica *(Dalz.) Airy Shaw*	Prosorus indicus *Dalz.*
Mastixia arborea *(Wt.) Bedd.*	Mastixia meziana *Wengerin*
ssp. meziana *(Wangerin) Mathew*	
Maytenus emarginata *(Willd.) Ding Hou*	Gymnosporia montana *(Roth) Benth.*
Meiogyne pannosa *(Dalz.) Sinclair*	Unona pannosa *Dalz.*
Meiogyne ramarowii *(Dunn.) Gandhi*	Unona ramarowii *Dunn.*
Melia dubia *Cav.*	Melia composita *Willd.*
Meliosma pinnata *(Roxb.) Walp.*	Meliosma arnottiana *Walp.*
ssp. arnottiana *(Walp.) Beus.*	
Memecylon umbellatum *N. Burm.*	Memecylon edule *Roxb.*
Meyna laxiflora *Robyns*	Vangueria spinosa *Roxb.*
Moullava spicata *(Dalz.) Nicolson*	Wagatea spicata *(Dalz.) Wt.*
Mukia maderaspatana *(L.) Roemer*	Melothria maderaspatana *(L.) Cogn.*
Mundulea sericea *(Willd.) Cheval*	Mundulea suberosa *(DC.) Benth.*
Myristica dactyloides *Gaertner*	Myristica beddomei *King*
Naringi crenulata *(Roxb.) Nicolson*	Limonia crenulata *Roxb.*
Nothapodytes foetida *(Wt.) Sleumer*	Mappia foetida *(Wt.) Miers*
Nothopegia racemosa *(Dalz.) Ramam.*	Nothopegia dalzellii *Gamble*
Otonephelium stipulaceum *(Bedd.) Radlk.*	Nephelium stipulaceum *Bedd.*
Ougeinia oojeinensis *(Roxb.) Hochr.*	Ougeinia dalbergioides *Benth.*
Pajanelia longifolia *(Willd.) Schum.*	Pajanelia rheedi *Wt.*
Peliosanthes teta *And.*	Peliosanthes neilgherrensis *Wt.*
ssp. humilis *(And.) Jessop*	

Persea macrantha *(Nees) Kost.*	Machilus macrantha *Nees*
Phaulopsis dorsiflora *(Retz.) Sant.*	Micranthus oppositifolius *Wendl.*
Prunus ceylanica *(Wt.) Miq.*	Pygeum gardneri *J. Hk.*
Psychotria nigra *(Gaertn.) Alston*	Psychotria thwaitesii *J. Hk.*
Rhaphidophora laciniata *(N. Burm.) Merr.*	Rhaphidophora pertusa *(Roxb.) Schott*
Rinorea bengalensis *(Wall.) Kuntze*	Alsodeia zeylanica *Thw.*
Saraca asoca *(Roxb.) De Wilde*	Saraca indica *Linn.*
Sehleichera oleosa *(Lour.) Oken*	Schleichera trijuga *Willd.*
Shorea roxburghii *Don*	Shorea talura *Roxb.*
Spatholobus parviflorus *(Roxb.) O. Kuntze*	Spatholobus roxburghii *Benth.*
Spondias pinnata *(L. f.) Kurz.*	Spondias mangifera *Willd.*
Stereospermum personatum *(Hassk.) Chatt.*	Stereospermum tetragonum *DC.*
Striga asiatica *(L.) Kuntze* var. coccinea *(Benth.) Bennet*	Striga lutea *Lour.*
Symplocos cochinchinensis *(Lour.) Moore* ssp. laurina *(Retz.) Noot.*	Symplocos spicata *Roxb.*
Symplocos macrophylla *Wall. ex DC.*	Symplocos gardneriana *Wt.*
Symplocos racemosa *Roxb.*	Symplocos beddomei *C. B. Cl.*
Syzygium cumini *(L.) Skeels*	Syzygium jambolanum *(Lam.) DC.*
Syzygium hemisphericum *(Walp.) Al.*	Jambosa hemispherica *Walp.*
Syzygium laetum *(Ham.) Gandhi*	Jambosa laeta *(Ham.) Blume*
Syzygium occidentale *(Bourd.) Gandhi*	Jambosa occidentalis *(Bourd.) Gamble*
Taraktogenos macrocarpa *Bedd.*	Asteriastigma macrocarpa *Bedd.*
Tarenna asiatica *(L.) Schumam*	Chomelia asiatica *(L.) Kuntz.*
Taxillus tomentosus *(Roth) Van Tieghem*	Loranthus tomentosus *Heyne*
Terminalia alata *Roth*	Terminalia tomentosa *W. & A.*
Thespesia lampas *(Cav.) Dalz. & Gibs*	Hibiscus lampas *Cav.*
Toona ciliata *Roemer*	Cedrella toona *Roxb.*
Trichilia connaroides *(W. &A.) Bent.*	Heynea trijuga *Roxb.*
Vernonia arborea *Ham.*	Vernonia monosis *Bentham ex C.B. Cl.*
Viburnum punctatum *Don*	Viburnum acuminatum *Wall.*
Wahlenbergia erecta *(R. & S.) Tuyn*	Cephalostigma schimperi *Hochst.*
Wahlenbergia hookeri *(Cl.) Tuyn*	Cephalostigma hookeri *C. B. Cl.*
Wendlandia thyrsoidea *(R. & J.)Steudel*	Wendlandia notoniana *Wall.*
Wrightia arborea *(Dennst.) Mabberl.*	Wrightia tomentosa *R. & S.*
Xantolis tomentosa *(Roxb.) Raf.*	Sideroxylon tomentosum *Roxb.*
Xeromphis spinosa *(Thunb.) Keay*	Randia dumetorum *(Retz.) Lam.*
Xeromphis uliginosa *(Retz.) Mabes.*	Randia uliginosa *(Retz.) DC.*

ANNEX 3: FLORISTIC LISTS OF THE FOREST TYPES

LEGEND

Indication of structural level

E, I, II, III, IV	: emergent, structural ensembles I, II, III, IV
S	: shrub or under-shrub
H	: herb
L	: liana, climber
Ep	: epiphyte
P	: parasite

Indication of frequency

vc	: very common
C	: common
O	: occasional
r	: rare

Indication of ecological preference

R	: riparian, humid localities
O	: openings
M	: margin of the forest
K	: Kerala
N.K.	: North Kanara
T	: transitional zone
W. G.	: endemic of Western Ghats

Indication of phenology

D	: deciduous species
EV	: evergreen species

DIPTEROCARPUS INDICUS _ KINGIODENDRON PINNATUM _ HUMBOLDTIA BRUNONIS TYPE

DICOTYLEDONS

ACANTHACEAE			
Ecbolium linneanum *(Kurz) var. tetrastrans C.I.*	H	O	
Gymnostachyum latifolium *(Dalz.) T. Ander.*	H	O	WG
Mackenziea caudata *(T. Ander.) Ramam*	H	O	WG
Thunbergia mysorensis *(Wt.) Anders.*	L	O	WG
ANACARDIACEAE			
Holigarna arnottiana *J. Hooker*	I	Vc	WG
H. grahamii *(Wt.) Kurz*	I	Vc	WG
Mangifera indica *L.*	I+E	Vc	
Nothopegia racemosa *(Dalz.) Ramam*	II, III	C	
N. travancorica *J. Hooker*	III	C	WG
Semecarpus auriculata *Bedd.*	II	r	WG
ANCISTROCLADACEAE			
Ancistrocladus heyneanus *Grah.*	H	O	
ANNONACEAE			
Artabotrys zeylanicus *J. Hk. & Th.*	L	O	
Goniothalamus cardiopetalus *(Dalz.) J. Hk. & Th.*	III, IV	C	WG
Meiogyne pannosa *(Dalz.) Sinclair*	III, IV	C	WG
M. ramarowii *(Dunn) Gandhi*	III, IV	C	WG
Polyalthia cerasoides *(Roxb.) Bedd.*	II, III	C	
P. coffeoides *J. Hk. & Th.*	III	O	
P. fragrans *(Dalz.) Bedd.*	I	Vc	WG
APOCYNACEAE			
Alstonia scholaris *(L.) R. Br.*	I	O	O
ARALIACEAE			
Schefflera wallichiana *(W. & A.) Harms*	L	O	
ARISTOLOCHIACEAE			
Apama siliquosa *Lam.*	H, S	C	
ASCLEPIADACEAE			
Tylophora sp.	L	O	
BALSAMINACEAE			
Impatiens scapiflora *Roxb.*	H	O	WG
Impatiens sp.	H	O	
BIGNONIACEAE			
Pajanelia longifolia *(Willd.) Schum.*	II	O	O
BOMBACACEAE			
Bombax ceiba *L.*	I	r	O
BURSERACEAE			
Canarium strictum *Roxb.*	I	Vc	WG
CELASTRACEAE			
Euonymus indicus *Wall.*	III	C	WG
Lophopetalum wightianum *Arn.*	I+E	Vc	R
Microtropis stocksii *Gamble*	III	C	WG
CLUSIACEAE			
Calophyllum apetalum *Willd.*	I	C	WG R
C. polyanthum *Wall. ex Choisy*	I+E	Vc	
Garcinia gummi-gutta *(L.) Robson*	II	C	
G. indica *Choisy*	II	C	WG
G. morella *Desr.*	II	Vc	
G. pictorius *(Roxb.) D'Arcy*	II	O	
G. talbotti *Raizada ex Sant.*	II	O	WG
Mesua ferrea *L.*	I	Vc	
Poeciloneuron indicum *Bedd.*	I	Vc	WG
COMBRETACEAE			
Combretum latifolium *Bl.*	L	C	
Quisqualis malabarica *Bedd.*	L	r	WG
Terminalia bellerica *(Gaertn.) Roxb.*	I	O	O

CONNARACEAE			
Connarus sclerocarpus *Schellenb.*	L	C	WG
C. wightii *J. Hooker*	L	C	
CORNACEAE			
Mastixia arborea *(Wt.) Bedd.*	I	C	WG R
DATISCACEAE			
Tetrameles nudiflora *R. Br.*	E	O	O
DICHAPETALACEAE			
Dichapetalum gelonioides *(Roxb.) Engler*	IV, S	Vc	
DILLENIACEAE			
Dillenia pentagyna *Roxb.*	II	C	O
DIPTEROCARPACEAE			
Dipterocarpus bourdillonii *Brandis*	I	r	WG
D. indicus *Bedd.*	I+E	Vc	WG
Hopea parviflora *Bedd.*	I	Vc	WG
H. ponga *(Dennst.) Mabberley*	I	C	WG
Vateria indica *L.*	I+E	Vc	WG
EBENACEAE			
Diospyros assimilis *Bedd.*	I	O	WG
D. bourdillonii *Brandis*	I	C	WG
D. buxifolia *(Blume) Hiern*	I	O	
D. crumenata *Thw.*	II	C	
D. paniculata *Dalz.*	I	C	WG
D. pruriens *Dalz.*	II	C	
D. ? stricta *Roxb.*		r	
D. sylvatica *Roxb.*	I	O	
ELAEAGNACEAE			
Elaeagnus conferta *Roxb.*	L	O	O
ELAEOCARPACEAE			
Elaeocarpus serratus *L.*	I	C	
E. tuberculatus *Roxb.*	I+E	Vc	R
EUPHORBIACEAE			
Agrostistachys indica *Dalz.*	III or IV	C	
A. meeboldii *Pax. et Hoffm.*	II, III	r	
Antidesma menasu *Miq. ex Tul.*	III or IV	O	O
Aporosa lindleyana *(Wt.) Baill.*	II et III	C	
Baccaurea courtallensis *Muell.*	II, III	C	WG
Bischofia javanica *Bl.*	I	C	R
Blachia denudata *Benth.*	III et IV	C	WG
B. umbellata *Baill.*	III et IV	O	
Breynea rhamnoides *Muell.*	H	O	
Croton malabaricus *Bedd.*	IV	O	WG
Dimorphocalyx lawianus *Thw.*	III	O	WG
Drypetes elata *(Bedd.) Pax et Hoffm.*	I et II	Vc	WG
D. oblongifolia *(Bedd.) Airy Shaw*	I et II	C	
Fahrenheitia zeylanica *(Thw.) Airy Shaw*	I	C	
Glochidion ellipticum *Wt.*	III	O	WG
Macaranga peltata *(Roxb.) Muell.*	I et II	O	O
Mallotus beddomei *J. Hk.*	III, IV	O	WG
M. philippensis *(Lam.) Muell.*	III	C	O
M. stenanthus *Muell.*	III et IV	O (K)	WG
Symphyllia mallotiformis *Muell.*	I et II	O	WG
Trewia nudiflora *L.*	II	O	O
FABACEAE (Caesalpinioideae)			
Acrocarpus fraxinifolius *Wt.*	I	O	
Bauhinia phoenicea *W. & A.*	L	C	WG O
Caesalpinia sp.	L	C	
Humboldtia brunonis *Wall.*	III	Vc	WG
Kingiodendron pinnatum *(DC.) Harms*	I+E	C	WG
Mezoneuron cucullatum *W. & A.*	L	O (K)	O
(Faboideae)			
Dalbergia sympathetica *Nimmo*	L	O	

Derris sp.	L	C	
Flemingia macrophylla (Willd.) Prain	H	O	O
F. strobilifera (L.) Aiton	H	O	O
Ormosia travancorica Bedd.	I	C (K)	WG
(Mimosoideae)			
Archidendron monadelphum (Roxb.) I. Nielsen	III	C	O
Entada pursaetha DC.	L	C	
FLACOURTIACEAE			
Casearia ovata (Lam.) Willd.	III	C	
Flacourtia montana Graham	III	C	
Hydnocarpus alpina Wt.	II, III	Vc	R
H. laurifolia (Dennst.) Sleumer	I, II	C	WG R
Scolopia crenata (W. & A.) Clos	II, III	r	
GENTIANACEAE			
Canscora wallichii Cl.	H	O	O
HIPPOCRATEACEAE			
Loeseneriella arnottiana (Wt.) A.C. Smith	L	C	
ICACINACEAE			
Gomphandra tetrandra (Wall.) Sleumer	III et IV	C	
Nothapodytes foetida (Wt.) Sleumer	IV	O	
LAURACEAE			
Actinodaphne malabarica Balak.	II	Vc	WG
Beilschmiedia wightii Benth.	I	C	WG
Cinnamomum malabatrum (N. Burman) Kost.	I, II	Vc	WG
C. verum J.S. Presl	II	C	
Cryptocarya bourdillonii Gamble	II	C	
Litsea floribunda (Bl.) Gamble	II	C	WG
L. laevigata (Nees) Gamble	II	O	WG
L. stocksii J. Hooker	II	C	
Persea macrantha Kost.	I	C	
LEEACEAE			
Leea indica (Burm.) Merr.	IV	O	O
LOGANIACEAE			
Fagraea ceilanica Thunb.	Ep	O	
Strychnos dalzellii C.B. Clarke	L	O	WG
S. minor Dennst.	L	O	
LYTHRACEAE			
Lagerstroemia microcarpa Wt.	I	O	O
MALVACEAE			
Urena lobata L.	H	O	O
MELASTOMATACEAE			
Memecylon angustifolium Wight	III, IV	O	
M. depressum Benth.	IV, S	O	WG
M. heyneanum Benth.	IV	O	WG
M. malabaricum (C.B. Clarke) Logn.	III	O	WG
M. talbotianum Brandis	III	C	WG
M. umbellatum N. Burman	III	C	
M. wightii Thw.	IV	C	
MELIACEAE			
Aglaia anamallayana (Bedd.) Kost	II et III	Vc	WG
A. roxburghiana Hiern	I	C	
A. sp.	I	O	
Aphanamixis polystachya (Wall.) Parker	II	C	
Chukrasia tabularis A. Juss.	I	O	
Dysoxylum malabaricum Bedd.	I	O	WG
Toona ciliata Roemer	I	O	
Trichilia connaroides W. & A.	III, II	C	
Walsura trifolia (A. Juss.) Harms	II	O	
MENISPERMACEAE			
Coscinium fenestratum Colebr.	L	C	
Cyclea peltata J. Hk. & Th.	L	Vc	
Diploclisia glaucescens (Bl.) Diels	L	Vc	
Stephania wightii Duthie	L	O	

MORACEAE			
Antiaris toxicaria Lesch.	I+E	O	
Artocarpus gomezianus Wall. ex Trecul ssp. zeylanicus Jarr.	II	O	
A. heterophyllus Lam.	I	O	WG
A. hirsutus Lam.	I	C	WG
Ficus callosa Willd.	I	O	O
F. hispida L.f.	III IV	O	R
F. nervosa Roth	I	C	
MYRISTICACEAE			
Knema attenuata (J. Hk. & Th.) Warb.	I, II	Vc	WG
Myristica dactyloides Gaertner	I et II	Vc	
M. malabarica Lam.	I	C	WG
MYRSINACEAE			
Ardisia solanacea Roxb.	IV, S	O	O
MYRTACEAE			
Eugenia mooniana Wt.	III	O	
Syzygium cumini (L.) Skeels	I	O	
S. gardneri Thw.	I+E	Vc	
S. laetum (Haw.) Gandhi	III	Vc	WG
S. occidentale (Bourd.) Gandhi	III, IV	O	WG
OLACACEAE			
Erythropalum populifolium (Arn.) Masters	L	C	WG
Strombosia ceylanica Gardn.	I	C	
OLEACEAE			
Jasminum sp.	L	C	
Olea dioica Roxb.	II (I)	C	O
PIPERACEAE			
Lepianthes umbellata (L.) Raf.	H	C	O
Piper nigrum L.	L	C	
P. trioicum Roxb.	L	C	
POLYGALACEAE			
Xanthophyllum flavescens Roxb.	IV	C (K)	
RHAMNACEAE			
Ventilago bombaiensis Dalz.	L	O	WG
V. madraspatana Gaertner	L	C	
RHIZOPHORACEAE			
Blepharistemma membranifolia (Miq.) King Hou.	I	r	WG
Carallia brachiata (Lour.) Merr.	II	C	O
RUBIACEAE			
Canthium angustifolium Roxb.	L	C	
Chasalia ophioxyloides (Wall.) Craib.	H	C	
Ixora brachiata Roxb.	III	O	WG
I. elongata Dan.	S	O	WG
I. nigricans W. & A.	IV, S	C	
Lasianthus acuminatus Wt.	S	O	WG
Mycetia acuminata (Wt.) Kuntze	H	O	WG
Neonauclea purpurea (Roxb.) Merrill	III	r	R
Ophiorrhiza hirsutula J. Hk.	H	C	WG
Pavetta thomsonii Bremek.	S	C	WG
Psychotria bisulcata W. & A.	S	O	
P. canarensis Talbot	S	O	WG
P. dalzellii J. Hooker	IV, S	Vc	WG
P. flavida Talbot	S	Vc	WG
P. nigra (Gaert.) Alston	IV, H	Vc	
Tarenna nilagirica (Bedd.) Bremek.	H, S	C	WG
RUTACEAE			
Acronychia pedunculata (L.) Miq.	III	O	
Atalantia wightii Tanaka	IV	C	
Clausena dentata (Willd.) R. & S.	III	O	
Euodia lunu-ankenda (Gaertn.) Merr.	III	O	O
Glycosmis mauritiana (Lam.) Tanaka	S	C	
Luvunga sarmentosa (Bl.) Kurz	L	C	
Murraya koenigii Spr.	IV, S	C	
Toddalia asiatica (L.) Lam. var floribunda Gamb.	L	C	
Vepris bilocularis (W. & A.) Engler	I	O	WG
Zanthoxylum rhetsa (Roxb.) DC.	II	O	

SANTALACEAE			
Scleropyrum wallichianum *Arn.*	III	O	
SAPINDACEAE			
Dimocarpus longan *Lour*	I	C	
Harpullia arborea *(Blanco) Radlk.*	III	O	
Lepisanthes tetraphylla *(Vahl) Radlk.*	II	O	
Otonephelium stipulaceum *(Bedd.) Radlk.*	II	C	WG
Schleichera oleosa *(Lour.) Oken*	I,II	O	O
SAPOTACEAE			
Chrysophyllum lanceolatum *(Bl.) DC.*	I	O	
Isonandra lanceolata *Wt.*	III	O	
Madhuca neriifolia *(Moon) H.J.Lam.*	II	O	R
Mimusops elengi *L.*	I	C	
Palaquium ellipticum *Engl.*	I (E)	Vc	WG
SIMAROUBACEAE			
Ailanthus triphysa *(Dennst.) Alston*	I	O	O
SOLANACEAE			
Lycianthes laevis *(Dunal) Bitter*	H	O	O
STAPHYLEACEAE			
Turpinia malabarica *Gamble*	I	O*	WG
STERCULIACEAE			
Heritiera papilio *Bedd.*	III	O	WG
Leptonychia moacurroides *Bedd.*	III	O	
Pterospermum diversifolium *Heyne*	I	O	
Pterygota alata *R.Br.*	I	Vc	O
SYMPLOCACEAE			
Symplocos cochinchinensis *(Lour.) Moore*	III	O	
S.racemosa *Roxb*	II,III	O	
ULMACEAE			
Gironniera cuspidata *(Bl.) Kurz*	I	O	
URTICACEAE			
Debregeasia longifolia *(Burm.) Wedd.*	IV	O	O
Dendrocnide sinuata *(Bl.) Chew*	IV	C	
Elatostema cuneatum *Wt.*	H	C	R
E.lineolatum *Wt.*	H	C	R
Pellionia heyneana *Mig.*	H	C	R
VERBENACEAE			
Callicarpa tomentosa *(L.) Murray*	III	C	O
Clerodendrum viscosum *Vent*	III,IV	C	O
Vitex altissima *L.f.*	I,II	C	O
VIOLACEAE			
Rinorea benghalensis *(Wall.) Kuntze*	IV, S	r	

MONOCOTYLEDONS

ARACEAE			
Amorphophallus sp.	H	r	
Pothos scandens *L.*	L	Vc	
Rhaphidophora laciniata *(N.Burm.) Merrill*	L	O	
ARECACEAE			
Arenga wightii *Griffith*	III	O	WG R
Calamus pseudotenuis *Becc. & J.Hk.*	L	C	R
C. thwaitesii *Becc. ex Becc. & J.Hk.*	L	C	R
Caryota urens *L.*	II	O	O
Pinanga dicksonii *(Roxb.) Scheffer*	III	O	WG R
LILIACEAE			
Asparagus racemosus *Willd.*	L	O	
Dracaena terniflora *Roxb.*	L	C	
Smilax zeylanica *L.*	L	Vc	
MARANTACEAE			
Schumanianthus virgatus *(Roxb.) Rolfe*	H	C	R
ORCHIDACEAE			
Cymbidium aloifolium *(L.) Swartz*	Ep	r	
PANDANACEAE			
Pandanus thwaitesii *Martelli*	IV	C	R
POACEAE			
Ochlandra scriptoria *(Dennst.) C.Fischer*	IV	O	WG R
O.travancorica *Gamble*	IV	O	WG
ZINGIBERACEAE			
Alpinia nigra *(Gaertn.) Burtt.*	H	O	R
Amomum muricatum *Bedd.*	H	O	WG R
Elettaria cardamomum *(L.) Maton*	H	C	
Globba ophioglossa *Wt.*	H	O	R
Hedychium coronarium *Koenig*	H	C	

GYMNOSPERMS

GNETACEAE			
Gnetum ula *Brong.*	L	Vc	

DIPTEROCARPUS INDICUS _HUMBOLDTIA BRUNONIS_POECILONEURON INDICUM TYPE

DICOTYLEDONS

A= exclusive plateau facies
B = exclusive slope facies

ACANTHACEAE				
Mackenziea caudata *(T.Anderson) Romam.*	H	O		
ANACARDIACEAE				
Holigarna arnottiana *J.Hk.*	I	Vc	WG	
H.grahamii *(Wt.) Kurz*	I	Vc	WG	
Mangifera indica *L.*	I+E	C		
Nothopegia racemosa *(Dalz) Hanam.*	II et III	C		
N.travancorica *J.Hk.*	III	O	WG	
ANCISTROCLADACEAE				
Ancistrocladus heyneanus *Grah*	L	C		
ANNONACEAE				
Goniothalamus cardiopetalus *(Dalz.) J.Hk.*	III, IV	C	WG	
Meiogyne pannosa *(Dalz.) Sinclair*	IV, S	Vc	WG	
M.ramarowii *(Dunn) Gandhi*	III, IV	O	WG	
Polyalthia coffeoides *J.Hk & Th.*	II	O		A
P.fragrans *Bedd.*	I	C	WG	
APOCYNACEAE				
Alstonia scholaris *(L.) R.Br.*	I	O	O	
ARALIACEAE				
Schefflera venulosa *(W.& A.) Harms.*	L	O		
ARISTOLOCHIACEAE				
Apama siliquosa *Lam.*	H	O		
BURSERACEAE				
Canarium strictum *Roxb.*	I	Vc	WG	
CELASTRACEAE				
Euonymus indicus *Heyne ex Wall.*	III	O	WG	
Lophopetalum wightianum *Arn.*	I+E	C	R	
CLUSIACEAE				
Calophyllum apetalum *Willd.*	I	O	WGR	A
C.polyanthum *Wall. ex Choisy*	I+E	Vc		
Garcinia gummi-gutta *(L.) Robson*	II	C		A
G.indica *Choisy*	II	C	WG	
G.morella *Desr.*	II	C		
G.pictorius *(Roxb.) D'Arcy*	II	O		
G.talbotii *Raizada ex Sant.*	II	O	WG	
Mesua ferrea *L.*	I	Vc		
Poeciloneuron indicum *Bedd*	I	Vc	WG	
COMBRETACEAE				
Combretum latifolium *Bl.*	L	C		
Terminalia bellerica *(Gaertn.) Roxb*	I	O	O	
CONNARACEAE				
Connarus wightii *J.Hk.*	L	C		
CORNACEAE				
Mastixia arborea *(Wt.) Bedd*	I	C	WGR	
DICHAPETALACEAE				
Dichapetalum gelonioides *(Roxb.) Engler*	IV	Vc		
DIPTEROCARPACEAE				
Dipterocarpus indicus *Bedd*	I+E	Vc	WG	
Hopea parviflora *Bedd.*	I	C	WG	
H.ponga *(Dennst.) Mabberley*	I	C	WG	
EBENACEAE				
Diospyros assimilis *Bedd*	I	O	WG	
D.buxifolia *(Bl.) Hiern*	I	O		A
D.candolleana *Wt.*	II	O		A
D.crumenata *Thw.*	I	O		A
D.montana *Roxb.*	II, III		O	A
D.paniculata *Dalz.*	I	C	WG	
D.pruriens *Dalz.*	II	C		A
D.saldanhae *Kost.*	II	O	WG	A
ELAEOCARPACEAE				
Elaeocarpus serratus *L.*	I	C		
E.tuberculatus *Roxb.*	I+E	Vc	R	
EUPHORBIACEAE				
Agrostistachys indica *Dalz*	III, IV	C		B
Aporosa lindleyana *(Wt.) Baill.*	II, III	O	O	
Bischofia javanica *Bl.*	I	O	R	
Blachia denudata *Benth.*	III, IV	C	WG	B
Breynea sp.	S	O	O	
Cleistanthus malabaricus *Muell.*	III	Vc	WG	B
Croton gibsonianus *Nimmo*	S	C		B
Dimorphocalyx lawianus *J.Hooker*	III	O	WG	B
Drypetes elata *(Bedd.) Pax et Hoffm.*	I et II	O	WG	
D.oblongifolia *(Bedd.) Airy Shaw*	I et II	O		
Fahrenheitia zeylanica *(Thw.) Airy Shaw*	I	C		
Macaranga peltata *(Roxb.) Muell.*	I et II	O	O	
Mallotus philippensis *(Lam.) Muell.*	III	C	O	A
M.stenanthus *Muell.*	III, IV	r	WG	B
FABACEAE (Caesalpinioideae)				
Acrocarpus fraxinifolius *Wt.*	I	O	O	A
Bauhinia phoenicea *W.& A.*	L	O	WG	A
Humboldtia brunonis *Wall.*	II et III	Vc	WG	
(Mimosoideae)				
Archidendron monadelphum *(Roxb.) L.Nielsen*	III	O	O	
Entada pursaetha *DC.*	L	C		A
FLACOURTIACEAE				
Casearia ovata *(Lam.) Willd.*	III			
Hydnocarpus alpina *Wt.*	II, III	Vc	R	A
H.laurifolia *(Dennst.) Sleumer*	I, II	C	WGR	
HIPPOCRATEACEAE				
Loeseneriella arnottiana *(Wt.) A.C.Smith*	L	O		
ICACIANACEAE				
Gomphandra tetrandra *(Wall.) Sleumer*	III, IV	O		B
LAURACEAE				
Actinodaphne malabarica *Bolot.*	II	C	WG	A
Beilschmiedia wightii *Benth.*	I	O	WG	
Cinnamomum malabatrum *(N.Burman) Kost.*	I	Vc	WG	
C.sp.	II	O		
Litsea floribunda *(Bl.) Gamble*	II	Vc	WG	
L.stocksii *J.Hooker*	II	C	WG	
Neolitsea sp.	I	O		B
Persea macrantha *(Nees) Kost.*	I	C		
LEEACEAE				
Leea indica *(Burm.) Merr.*	III, IV	O	O	
LOGANIACEAE				
Strychnos minor *Dennst.*	L	O		B
LORANTHACEAE				
Loranthus sp.	P	O		A
LYTHRACEAE				
Lagerstroemia microcarpa *Wt.*	I	O	O	

MELASTOMATACEAE				
Memecylon heyneanum *Benth.*	IV	O	WG	
M. malabaricum *(C.B.Clarke) Logn.*	III,IV	O	WG	A
M. talbotianum *Brandis*	III	C	WG	A
M. umbellatum *N.Burman*	III	C		A
M. wightii *Thw.*	IV	C		A
Osbeckia octandra *DC.*	H	O		A
MELIACEAE				
Aglaia anamallayana *(Bedd.) Kost.*	II,III	Vc	WG	
A. barberi *Gamb.*	I	C		
A. roxburghiana *Hiern.*	I	C		A
Amoora canarana *Hiern.*	I	O	WG	A
Aphanamixis polystachya *(Wall.) Parker*	II	C		B
Dysoxylum malabaricum *Bedd.*	I	O	WG	
Toona ciliata *Roemer*	I	O	R	A
Walsura trifolia *(A. Juss.) Harms*	II	O		
MENISPERMACEAE				
Cyclea peltata *J.Hk. & Th.*	L	C		
Diploclisia glaucescens *(Bl.) Diels*	L	Vc		B
Stephania wightii *Dunn*	L	O		
MORACEAE				
Artocarpus gomezianus *Wall. ex Trecul ssp. zeylanicus Jarr.*	II	O		A
A. heterophyllus *Lam.*	I	O	WG	A
A. hirsutus *Lam.*	I	C	WG	A
Ficus nervosa *Roth*	I	C		
F. sp.	I	O		
MYRISTICACEAE				
Knema attenuata *(J.Hk. & Th.) Warb.*	I	Vc	WG	
Myristica dactyloides *Gaertn.*	I,II	Vc		
M. malabarica *Lam.*	I	C	WG	A
MYRSINACEAE				
Ardisia missionis *Wall.*	S	O	O	
A. solanacea *Roxb.*	IV,S	O	O	
MYRTACEAE				
Syzygium cumini *(L.) Skeels*	I	C		A
S. gardneri *Thw.*	I+E	Vc		
S. laetum *(How.) Gandhi*	III	Vc	WG	
S. sp.	III	O		
OLACACEAE				
Strombosia ceylanica *Gardn.*	I	O		
OLEACEAE				
Jasminum sp.	L	C		
Olea dioica *Roxb.*	I,II	C	O	
PIPERACEAE				
Lepianthes umbellata *(L.) Raf.*	S	O	O	B
Piper nigrum *L.*	L	C		B
P. trioicum *Roxb.*	L	C		
RHAMNACEAE				
Ventilago bombaiensis *Dalz.*	L	C	WG	
V. madraspatana *Gaertner*	L	O		
RHIZOPHORACEAE				
Carallia brachiata *(Lour.) Merr.*	II	O	O	A
RUBIACEAE				
Canthium angustifolium *Roxb.*	L	C		B
C. dicoccum *(Gaert.) T & B*	III,IV	O		A
Chasalia ophioxyloides *(Wall.) Craib*	H	O		B
Ixora brachiata *Roxb.*	III	O	WG	A
I. elongata *Heyne*	S	O	WG	A
I. lanceolaria *Colebr.*	S	O	WG	B
I. nigricans *Br.*	IV, S	C		
Lasianthus acuminatus *Wt.*	S	C	WG	B
Mussaenda laxa *(J. Hooker) Hutch. ex Gamble*	L	O	WG O	A
Mycetia acuminata *(Wt.) Kuntze*	H	O	WG	B
Pavetta thomsonii *Bremek.*	S	O		
Psychotria dalzellii *J. Hooker*	IV, S	Vc	WG	
P. nigra *(Gaertn.) Alston*	IV, S	Vc		B
P. truncata *Wall.*	IV, S	C	WG	A
Saprosma corymbosum *Bedd.*	S	O	WG	
Tricalysia apiocarpa *Gamble*	II,III	O	WG	B
RUTACEAE				
Clausena dentata *(Willd.) R.& S.*	III	O		B
Glycosmis mauritiana *(Lam.) Tanaka*	S	C		
Luvunga sarmentosa *(Bl.) Kurz*	L	O		
Toddalia asiatica *(L.) Lam. var floribunda Gamble*	L	C		B
Vepris bilocularis *(W.& A.) Engl.*	I	O	WG	
Zanthoxylum ovalifolium *Wt.*	III,IV	O		B
SAPINDACEAE				
Dimocarpus longan *Lour.*	I	C		
Schleichera oleosa *(Lour.) Oken*	I,II	O	O	
SAPOTACEAE				
Chrysophyllum lanceolatum *(Bl.) DC.*	I	O		
Madhuca neriifolia *(Moon) H.J. Lam.*	II	O	R	A
Mimusops elengi *L.*	I	C		
Palaquium ellipticum *Engl.*	I	Vc	WG	
STAPHYLEACEAE				
Turpinia malabarica *Gamble*	I	O	WG	B
STERCULIACEAE				
Heritiera papilio *Bedd.*	III	O	WG	
Pterospermum diversifolium *Bl.*	I,II	O	O	
SYMPLOCACEAE				
Symplocos cochinchinensis *(Lour.) Moore*	III	O		
S. racemosa *Roxb.*	II,III	O		A
URTICACEAE				
Dendrocnide sinuata *(Bl.) Chew.*	IV, S	O		A
Elatostema cuneatum *Wt.*	H	C	R	
E. lineolatum *Wt.*	H	C	R	
VERBENACEAE				
Callicarpa tomentosa *(L.) Murray*	III	O	O	
Clerodendrum viscosum *Vent.*	III,IV	O		A
Vitex altissima *L.f.*	I,II	O	O	A
VIOLACEAE				
Rinorea bengalensis *(Wall.) Kuntze*	IV, S	r		B
VITACEAE				
Tetrastigma sp.	L	O		

MONOCOTYLEDONS

ARACEAE				
Amorphophallus sp.	H	r		A
Arisaema sp.	H	r		B
Pothos scandens *L.*	L	Vc		
ARECACEAE				
Arenga wightii *Griffith*	III	O	WG R	A
Calamus pseudotenuis *Becc. & J.Hk.*	L	C	R	
C. thwaitesii *Becc. ex Becc. & J.Hk.*	L	C	R	
Caryota urens *L.*	II	O	O	
Pinanga dicksonii *(Roxb.) Scheffer*	III	O	WG R	A
LILIACEAE				
Asparagus racemosus *Willd.*	L	O		
Dracaena terniflora *Roxb.*	L	C		
Smilax zeylanica *L.*	L	Vc		
PANDANACEAE				
Pandanus thwaitesii *Mart.*	IV	C	R	A
POACEAE				
Oxytenanthera sp.	IV	O		

ZINGIBERACEAE					
Alpinia nigra *(Gaertn.) Burtt*	H	O	R		
Elettaria cardamomum *(L.) Maton*	H	O			
Globba ophioglossa *Wt.*	H	O	R		
GYMNOSPERMS					
GNETACEAE					
Gnetum ula *Brong.*	L	Vc			

DIPTEROCARPUS INDICUS_DIOSPYROS CANDOLLEANA_DIOSPYROS OOCARPA TYPE

+ POECILONEURON facies

DICOTYLEDONS

A = normal type
B = Poeciloneuron facies

ACANTHACEAE				
Ecbolium linneanum *(Kurz) Alston var. laetevirens Cl.*	H	O		
Justicia montana *Wall.*	H	O		
Pseuderanthemum malabaricum *Gamble*	H	O		
Thunbergia mysorensis *(Wt.) Anders.*	L	O	WG	A
ANACARDIACEAE				
Holigarna arnottiana *J.Hooker*	I	Vc	WG	
H. grahamii *(Wt.) Kurz*	I	Vc	WG	
Mangifera indica *L.*	I	Vc		
Nothopegia racemosa *(Dalz.) Ramam.*	III	Vc		
N. travancorica *J. Hooker*	III, IV	C	WG	
ANCISTROCLADACEAE				
Ancistrocladus heyneanus *Grah.*	L	C		
ANNONACEAE				
Artabotrys zeylanicus *J.Hk. & Th.*	L	C		
Goniothalamus cardiopetalus *(Dalz.) J.Hk.*	III, IV	C	WG	
Meiogyne pannosa *(Dalz.) Sinclair*	III, IV	Vc	WG	
M. ramarowii *(Dunn) Gandhi*	III, IV	O	WG	
Polyalthia cerasoides *(Roxb.) Bedd.*	II, III	O		
P. fragrans *(Dalz.) Bedd.*	I	Vc	WG	
Sageraea laurifolia *(Grah.) Blatt. & Mc Cann.*	II	O	WG	A
APOCYNACEAE				
Alstonia scholaris *(L.) R.Br.*	I	O	O	
ARALIACEAE				
Schefflera venulosa *Harms*	L	O		
ARISTOLOCHIACEAE				
Apama siliquosa *Lam.*	H	O		
ASCLEPIADACEAE				
Tylophora indica *(Burm.) Merrill*	L	O		
BURSERACEAE				
Canarium strictum *Roxb.*	I	Vc	WG	
CELASTRACEAE				
Euonymus indicus *Heyne ex Wall.*	III	C	WG	
Lophopetalum wightianum *Arn.*	I + E	C	R	
Maytenus rothiana *(Walp) Ramam.*	IV	O		
CLUSIACEAE				
Calophyllum apetalum *Willd.*	I	O	WG R	
C. polyanthum *Wall.*	I + E	Vc		
Garcinia gummi-gutta *(L.) Robson*	II	C		
G. indica *Choisy*	II	C	WG	
G. morella *Desr.*	II	Vc		
G. pictorius *(Roxb.) D'Arcy*	II	O		
G. talbotii *Raizada ex Sant.*	II	O	WG	
Mesua ferrea *L.*	I	C		
Poeciloneuron indicum *Bedd.*	I	Vc	WG	
COMBRETACEAE				
Combretum latifolium *Bl.*	L	C		
CONNARACEAE				
Connarus wightii *J.Hk.*	L	C		
CORNACEAE				
Mastixia arborea *(Wight) Bedd.*	I	O	WG R	
DICHAPETALACEAE				
Dichapetalum gelonioides *(Roxb.) Engler*	IV, S	Vc		

DIPTEROCARPACEAE				
Dipterocarpus indicus *Bedd.*	I + E	Vc	WG	
Hopea parviflora *Bedd.*	I	C		
H. ponga *(Dennst.) Mabberley*	I	C	WG	
EBENACEAE				
Diospyros assimilis *Bedd.*	I	O	WG	
D. buxifolia *(Bl.) Hiern*	I	O		
D. candolleana *Wt.*	II	C		
D. crumenata *Thw.*	II	O		
D. montana *Roxb.*	II, III	O	O	
D. oocarpa *Thw.*	I	C		
D. paniculata *Dalz.*	I	C	WG	
D. pruriens *Dalz.*	II, III	C		
D. saldanhae *Kost.*	II, III	O	WG	
D. sylvatica *Roxb.*	I	C		
ELAEAGNACEAE				
Elaeagnus conferta *Roxb.*	L	O		A
ELAEOCARPACEAE				
Elaeocarpus serratus *L.*	I	C		
E. tuberculatus *Roxb.*	I+E	Vc	R	
EUPHORBIACEAE				
Agrostistachys indica *Dalz.*	III, IV	C		
Antidesma menasu *Miq. ex Tul.*	III, IV	O	O	
Aporosa lindleyana *(Wt.) Baill.*	II, III	O	O	
Bischofia javanica *Bl.*	I	C		
Blachia denudata *Benth.*	III, IV	Vc	WG	
Croton gibsonianus *Nimmo*	S	C		
Dimorphocalyx lawianus *J.Hk.*	III	C	WG	
Drypetes confertiflorus *(J.Hk.) Pax et Hoffm.*	I	O	WG	
D. elata *(Bedd.) Pax et Hoffm.*	I, II	C	WG	
D. oblongifolia *(Bedd.) Airy Shaw*	I, II	C		
Fahrenheitia zeylanica *(Thw.) Airy Shaw*	I	C		
Macaranga peltata *(Roxb.) Muell.*	I, II	O	O	
Mallotus beddomei *J.Hk.*	II, III	O	WG	A
M. philippensis *(Lam.) Muell.*	III	C	O	
FABACEAE (Caesalpinioideae)				
Bauhinia phoeniceа *W. & A.*	L	C	WC	
Cynometra iripa *Kostel*	III	O		B
Saraca asoca *(Roxb.) de Wilde*	III	O	R	
(Faboideae)				
Derris sp.	L	O		
(Mimosoideae)				
Archidendron monadelphum *(Roxb.) Niel.*	II, III	O	O	
Entada pursaetha *DC.*	L	O		
FLACOURTIACEAE				
Casearia ovata *(Lam.) Willd.*	III	C		
Flacourtia montana *Graham*	III	C		A
Homalium zeylanicum *Benth.*	II, III	O		A
Hydnocarpus alpina *Wt.*	II, III	C	R	
H. laurifolia *(Dennst.) Sleumer*	I, II	C	WG R	
HIPPOCRATEACEAE				
Loeseneriella arnottiana *(Wt.) A.C. Smith*	L	C		
ICACINACEAE				
Gomphandra tetrandra *(Wall.) Sleumer*	III, IV	C		
Miquelia dentata *Bedd.*	L	r		
Nothapodytes foetida *(Wt.) Sleumer*	IV	O		
LAURACEAE				
Actinodaphne angustifolia *Nees*	II	O	WG	
A. malabarica *Balak.*	II	C	WG	
Beilschmiedia wightii *Benth.*	I	C	WG	
Cinnamomum malabatrum *(N.Burman.) Kost.*	I, II	Vc	WG	
C. sulphuratum *Nees*	II	O	WG	

Cryptocarya bourdillonii *Gamble*	II	C	WG	A
Litsea deccanensis *Gamble*	II	O		
L. laevigata *(Nees) Gamble*	II	O	WG	
L. stocksii *J.Hk.*	II	C	WG	
Neolitsea zeylanica *Merr.*	I	O		
Persea macrantha *(Nees) Kost.*	I	Vc		
LEEACEAE				
Leea indica *(Burr.) Merr.*	III, IV	O	O	
LOGANIACEAE				
Fagraea ceilanica *Thunb.*	II, Ep	O		
Strychnos minor *Dennst.*	L	O		
LYTHRACEAE				
Lagerstroemia microcarpa *Wt.*	I	O	O	
MELASTOMATACEAE				
Memecylon heyneanum *Benth.*	IV	O	WG	
M. talbotianum *Brandis*	IV	C	WG	
M. terminale *Dalz*	IV, S	O	WG	
M. umbellatum *N.Burman*	III	C		
M. wightii *Thw.*	IV	C		
MELIACEAE				
Aglaia anamallayana *(Bedd.) Kost.*	II, III	Vc	WG	
A. roxburghiana *Hiern.*	I	C		
Aphanamixis polystachya *(Wall.) Parker*	II	C		
Cipadessa baccifera *(Roth.) Miq.*	III	O		
Dysoxylum malabaricum *Bedd.*	I	C	WG	
Melia dubia *Cav.*	I	O	O	
Toona ciliata *Roemer*	I	O	R	
Trichilia connaroides *(W.&A.) Bent.*	II, III	O		
Walsura trifolia *(A. Juss.) Harms*	II	O		
MENISPERMACEAE				
Coscinium fenestratum *Colebr.*	L	O		
Cyclea peltata *J.Hk.&Th.*	L	Vc		
Diploclisia glaucescens *(Bl.) Diels*	L	Vc		
Stephania wightii *Duthie*	L	C		A
MORACEAE				
Antiaris toxicaria *Lesch*	I	O		B
Artocarpus gomezianus *Wall ex Trecul*	II	O		
A. heterophyllus *Lam.* ssp. zeylanicus *Jork.*	I	O	WG	
A. hirsutus *Lam.*	I	Vc	WG	
Ficus callosa *Willd.*	I	C	O	
F. hispida *L.f.*	III, IV	O	R	
F. nervosa *Roth*	I	C		
MYRISTICACEAE				
Knema attenuata *(J.Hk.&Th.) Warb.*	I	Vc	WG	
Myristica dactyloides *Gaertn.*	I	Vc		
M. malabarica *Lam.*	I	C	WG	
MYRSINACEAE				
Ardisia missionis *Wall.*	S	O	O	
A. solanacea *Roxb.*	IV, S	O	O	
MYRTACEAE				
Eugenia macrosepala *Duthie*	III	Vc		
E. mooniana *Wt.*	III	C	WG	
Syzygium cumini *(L.) Skeels*	I	C		
S. gardneri *Thw.*	I+E	C		
S. laetum *(Ham.) Gandhi*	III	Vc	WG	
S. occidentale *(Bourd.) Gandhi*	III, IV	O	WG R	
OLACACEAE				
Strombosia ceylanica *Gardn.*	I	C		
OLEACEAE				
Jasminum sp.	L	C		
Linociera malabarica *Wall.ex Dan.*	III	O		
Olea dioica *Roxb.*	I, II	C	O	
PIPERACEAE				
Lepianthes umbellata *(L.) Raf.*	S	O	O	
Piper nigrum *L.*	L	C		
P. trioicum *Roxb.*	L	C		

RHAMNACEAE				
Ventilago bombaiensis *Balz.*	L	C	WG	
V. madraspatana *Gaertner*	L	O		
RHIZOPHORACEAE				
Carallia brachiata *(Lour.) Merr.*	II	O	O	
RUBIACEAE				
Canthium angustifolium *Roxb.*	L	C		
C. dicoccum *(Gaert.) T.&B.*	II, IV	O		A
Chasalia ophioxyloides *(Wall.) Craib.*	H	O		
Ixora brachiata *Roxb.*	III	O	WG	
I. nigricans *Br.*	IV, S	C		
I. polyantha *Wt.*	S	C	WG	
Lasianthus sp.	IV, S	C		
Mussaenda laxa *(J.Hk.) Hutch. ex Gamble*	L	O	O	
Mycetia acuminata *(Wt.) Kuntze*	H	O	WG	B
Neonauclea purpurea *(Roxb.) Merill*	III	r		
Pavetta thomsonii *Bremek.*	S	C		
Psychotria canarensis *Talbot*	S	C	WG	
P. dalzellii *J.Hk.*	IV, S	Vc	WG	
P. flavida *Talbot*	S	Vc	WG	
Tricalysia apiocarpa *Gamble*	II, III	O	WG	
RUTACEAE				
Atalantia wightii *Tanaka*	IV	C		
Clausena dentata *(Willd.) R.&S.*	III	O		
Euodia lunu-ankenda *(Gaertn.) Merr.*	III	O	O	
Glycosmis mauritiana *(Lam.) Tanaka*	S	C		
Luvunga sarmentosa *(Bl.) Kurz*	L	C		
Murraya koenigii *Spr.*	IV	C		
Toddalia asiatica *(L.) Lam. var floribunda Gamble*	L	C		
Vepris bilocularis *(W.&A.) Engl.*	I	O	WG	
Zanthoxylum ovalifolium *Wt.*	III, IV	O		
Z. rhetsa *(Roxb.) DC.*	II	O		
SAPINDACEAE				
Dimocarpus longan *Lour.*	I, II	Vc		
Harpullia arborea *(Blanco) Radlk.*	III	O		
Schleichera oleosa *(Lour.) Oken.*	II	O	O	
SAPOTACEAE				
Chrysophyllum lanceolatum *(Bl.) DC.*	I	O		
Madhuca longifolia *(Koenig) Mcbride var latifolia (Roxb.) Chev.*	I	O		
M. neriifolia *(Moon) H.J.Lam.*	II	O	R	
Mimusops elengi *L.*	I	Vc		
Palaquium ellipticum *Engl.*	I	C	WG	
Xantolis tomentosa *(Roxb.) Raf.*	II	O		A
STAPHYLEACEAE				
Turpinia malabarica *Gamble*	I	O	WG	
STERCULIACEAE				
Heritiera papilio *Bedd.*	III	O	WG	
Pterospermum diversifolium *Bl.*	I, II	O	O	
Pterygota alata *R.Br.*	I	r		B
SYMPLOCACEAE				
Symplocos cochinchinensis *(Lour.) Moore*	III	O		
S. racemosa *Roxb.*	II, III	O		
ULMACEAE				
Celtis timorensis *Span.*	II	O	O	
Gironniera cuspidata *(Bl.) Kurz*	I	O		
URTICACEAE				
Elatostema cuneatum *Wt.*	H	C	R	
E. lineolatum *Wt.*	H	C	R	
VERBENACEAE				
Callicarpa tomentosa *(L.) Murray*	III	C	O	
Clerodendrum viscosum *Vent.*	III, IV	C	O	
Vitex altissima *L.f.*	II	C	O	
VIOLACEAE				
Rinorea benghalensis *(Wall.) Kuntze*	IV, S	r		B

MONOCOTYLEDONS

ARACEAE					
Pothos scandens *L.*	L	Vc			
Rhaphidophora laciniata *(N.Burm.)Merr.*	L	O			
ARECACEAE					
Arenga wightii *Griff.*	III	C	WG	R	
Calamus pseudotenuis *Becc.*	L	C		R	
C. thwaitesii *Becc. ex Becc.& J.Hk.*	L	C		R	
Caryota urens *L.*	II	O		O	
Pinanga diksonii *(Roxb.) Schef.*	III	O	WG	R	
LILIACEAE					
Asparagus racemosus *Willd.*	L	O			
Dracaena terniflora *Roxb.*	S	C			
Smilax zeylanica *L.*	L	Vc			
PANDANACEAE					
Pandanus thwaitessii *Mart.*	IV	C		R	
POACEAE					
Ochlandra scriptoria *(Dennst.)C.Fischer*	IV	O	WG		
ZINGIBERACEAE					
Globba bulbifera *Roxb.*	H	O		R	

GYMNOSPERMS

GNETACEAE					
Gnetum ula *Brong.*	L	C			

PERSEA MACRANTHA_DIOSPYROS spp._HOLIGARNA spp. TYPE

DICOTYLEDONS

ACANTHACEAE				
Ecbolium linneanum *Kurz var. koetaivirense C.I.*	H	O		
Strobilanthus sp.	H	O		
ANACARDIACEAE				
Holigarna arnottiana *J. Hk.*	I	Vc	WG	
H. grahamii *(Wt.) Kurz*	I	Vc	WG	
Mangifera indica *L.*	I	Vc		
Nothopegia racemosa *(Dalz.) Ramam.*	III	O		
N. travancorica *J. Hk.*	II, III	O	WG	
Solenocarpus indica *W. & A.*	III	O	WG R	D
Spondias pinnata *(L. f.) Kurz*	II	O	O	D
ANCISTROCLADACEAE				
Ancistrocladus heyneanus *Grah.*	L	C		
ANNONACEAE				
Artabotrys zeylanicus *J. Hk. & Th.*	L	C		
Goniothalamus cardiopetalus *(Dalz.) J. Hk.*	III, IV	C	WG	
Polyalathia cerasoides *(Roxb.) Bedd.*	II, III	O		
P. fragrans *(Dalz.) Bedd.*	I	Vc	WG	
Sageraea laurifolia *(Grah.) Blatt. & McCann.*	I, II	O	WG	
APOCYNACEAE				
Alstonia scholaris *(L.) R.Br.*	I	O	O	
Carissa inermis *Vahl*	L	C		
Ervatamia heyneana *(Wall.) Cooke*	II, III	O	WG O	
ARISTOLOCHIACEAE				
Apama siliquosa *Lam.*	H	O		
ARALIACEAE				
Schefflera venulosa *(W. & A.) Harms*	L	O		
ASCLEPIADACEAE				
Tylophora indica *(Burm.) Merr.*	L	O		
BIGNONIACEAE				
Stereospermum personatum *(Hassk.) Chatt.*	I	O	O	D
BOMBACACEAE				
Bombax ceiba *L.*	I	O	O	D
BURSERACEAE				
Canarium strictum *Roxb.*	I	Vc	WG	
CAPPARACEAE				
Capparis te nera *Dalz.*	L	O	O	
CELASTRACEAE				
Euonymus indicus *Wall.*	III	C	WG	
Lophopetalum wightianum *Arn.*	I	C	R	
Maytenus rothiana *(Wight.) Ramam.*	IV	O	WG	
CLUSIACEAE				
Calophyllum apetalum *Willd.*	I	C	WG R	
C. polyanthum *Wall. ex Choisy*	I	Vc		
Garcinia gummi-gutta *(L.) Robson*	II	Vc		
G. indica *Choisy*	II	Vc	WG	
G. morella *Desr.*	II	Vc		
G. pictorius *(Roxb.) D'Arcy*	II	O		
G. talbotii *Raizada ex Sant.*	II	O		
Mammea suriga *(Buch.-Ham. ex Roxb.) Kost.*	I	O	WG	
COMBRETACEAE				
Combretum latifolium *Bl.*	L	O		
Terminalia alata *Heyne ex Roth*	I	O	O	D
T. bellerica *(Gaertn.) Roxb.*	I	O	O	D
T. paniculata *Roth*	I	O	WG O	D

CONNARACEAE				
Connarus ritchiei *J. Hk.*	L	O	WG	
C. wightii *J. Hk.*	L	C		
CORNACEAE				
Mastixia arborea *(Wt.) Bedd.*	I	O	WG R	
DATISCACEAE				
Tetrameles nudiflora *R.Br.*	E	O	O	D
DICHAPETALACEAE				
Dichapetalum gelonioides *(Roxb.) Engler*	IV, S	Vc		
DILLENIACEAE				
Dillenia pentagyna *Roxb.*	I, II	C	O	D
DIPTEROCARPACEAE				
Hopea ponga *(Dennst.) Mabberley*	I	C	WG	
EBENACEAE				
Diospyros assimilis *Bedd.*	I	O	WG	
D. buxifolia *(Blume) Hiern*	I	Vc		
D. candolleana *Wt.*	II	Vc		
D. montana *Roxb.*	II, III	C	O	
D. nigrescens *(Dalz.) Saldanha*	II	C	WG O	
D. oocarpa *Thw.*	I	Vc		
D. paniculata *Dalz.*	I	C	WG	
D. saldanhae *Kost.*	II, III	C	WG	
D. sylvatica *Thw.*	I	Vc		
ELAEAGNACEAE				
Elaeagnus conferta *Roxb.*	L	O		
ELAEOCARPACEAE				
Elaeocarpus serratus *L.*	I	C		
E. tuberculatus *Roxb.*	I	Vc	R	
EUPHORBIACEAE				
Aporosa lindleyana *(Wt.) Baill.*	II, III	O	O	
Bischofia javanica *Bl.*	I	O	R	
Blachia denudata *Benth.*	III, IV	Vc	WG	
Breynia sp.	S	C		
Cleidion spiciflorum *(Burm. f.) Merr.*	II	C		
Dimorphocalyx lawianus *J. Hk.*	III	C	WG	
Drypetes confertiflorus *(J. Hk.) Pax et Hoffm.*	I	O	WG	
Glochidion johnstonei *J. Hk.*	III	O	WG O	
Macaranga peltata *(Roxb.) Muell.*	I, II	O	O	
Mallotus philippensis *(Lam.) Muell.*	III	C	O	
FABACEAE (Caesalpinioideae)				
Bauhinia phoenicea *W. & A.*	L	O	WG	
Moullava spicata *(Dalz.) Nicolson*	L	C	WG	
Saraca asoca *(Roxb.) de Wilde*	III	O	R	
(Faboideae)				
Abrus pulchellus *Wall. ex Thw.*	L	O	O	
Butea parviflora *Roxb.*	L	O	O	
Dalbergia rubiginosa *Roxb.*	L	O		
D. sympathetica *Nimmo*	L	O		
Dunbaria heynei *W. & A.*	L	O	O	
Mucuna monosperma *DC.*	L	O	O	
(Mimosoideae)				
Archidendron monadelphum *(Roxb.) Nielsen*	II, III	C	O	
Entada pursaetha *DC.*	L	O		
FLACOURTIACEAE				
Casearia ovata *(Lam.) Willd.*	III	C		
Flacourtia montana *Graham*	III	C		
F. sp.	III	O		
Homalium zeylanicum *Benth.*	II, III	O		
Hydnocarpus laurifolia *(Dennst.) Sleumer*	I, II	C	WG R	

HIPPOCRATEACEAE					
Loeseneriella obtusifolia *(Roxb.) A.C.Smith*	L	O			
ICACINACEAE					
Gomphandra tetrandra *(Wall.) Sleumer*	III, IV	C			
Nothapodytes foetida *(Wt.) Sleumer*	IV	O			
LAURACEAE					
Actinodaphne angustifolia *Nees*	II	C	WG		
Beilschmiedia wightii *Benth.*	I	C	WG		
Cinnamomum malabatrum *M.Burman) Kost*	I, II	Vc	WG		
Cryptocarya bourdillonii *Gamble*	II	Vc	WG		
Litsea deccanensis *Gamble*	II, III	O			
L. laevigata *Gamble*	II, III	O	WG		
L. stocksii *J.Hk.*	II, III	C	WG		
Neolitsea zeylanica *Merr.*	II, III	O			
Persea macrantha *(Nees) Kost.*	I	Vc			
LEEACEAE					
Leea indica *(Burm.) Merr.*	III, IV	O	O	R	
LYTHRACEAE					
Lagerstroemia microcarpa *Wt.*	I	O	O	D	
L. reginae *Roxb.*	I	O	R		
MALVACEAE					
Hibiscus furcatus *Willd.*	H	O	O		
MELASTOMATACEAE					
Memecylon malabaricum *(C.B.Clarke) Cogn.*	IV	O	WG		
M. talbotianum *Brandis*	IV	Vc	WG		
M. terminale *Dalz.*	IV, H	O	WG		
M. umbellatum *N.Burm.*	III	C			
M. wightii *Thw.*	IV	C			
MELIACEAE					
Aglaia anamallayana *(Bedd.) Kost.*	II, III	O	WG		
A. barberi *Gamble*	II	O	WG		
A. roxburghiana *Hiern.*	I	C			
Amoora canarana *Hiern.*	I, II	C	WG		
A. lawii *Bedd.*	II	C	WG		
Aphanamixis polystachya *(Wall.) Parker*	II	C			
Dysoxylum malabaricum *Bedd.*	I	Vc	WG		
Toona ciliata *Roemer*	I	C	R		
Trichilia connaroides *W.& A.*	II, III	O			
Walsura trifolia *(A.Juss.) Harms.*	II	O			
MENISPERMACEAE					
Coscinium fenestratum *Colebr.*	L	O			
Cyclea peltata *J.Hk.& Th.*	L	C			
Diploclisia glaucescens *(Bl.) Diels*	L	C			
MORACEAE					
Artocarpus gomezianus *Wall.ex Trecul ssp. zeylanicus Jarr.*	II	O			
A. heterophyllus *Lam.*	I	O	WG		
A. hirsutus *Lam.*	I	Vc	WG		
Ficus nervosa *Roth*	I	C			
F. hispida *L.f.*	III, IV	O	R		
F. sp.	I	O			
MYRISTICACEAE					
Knema attenuata *(J.Hk.& Th.) Warb.*	I	Vc	WG		
Myristica dactyloides *Gaert.*	I	Vc			
M. fatua *Houtt.var.magnifica(Bedd.) J.Sinc.*	I, II	r	WG		
M. malabarica *Lam.*	I	C	WG		
MYRSINACEAE					
Ardisia solanacea *Roxb.*	IV, S	O	O		
MYRTACEAE					
Eugenia macrosepala *Duth.*	III	Vc			
E. mooniana *Wt.*	III	C			
Syzygium cumini *(L.) Skeels*	I	C			
S. gardneri *Thw.*	I+E	C			
S. hemisphericum *(Wight.) Alston*	I	C			
S. laetum *(Haw.) Gandhi*	III	Vc	WG		

OLACACEAE					
Olax wightiana *W.& A.*	L	O			
Strombosia ceylanica *Gardn.*	I	C			
OLEACEAE					
Jasminum rottlerianum *Cl.*	L	C			
Linociera malabarica *Wall. ex G.Don.*	III	O	WG		
Olea dioica *Roxb.*	I, II	C	O		
PIPERACEAE					
Lepianthes umbellata *(L.) Raf.*	H	O	O		
Piper nigrum *L.*	L	C			
P. trioicum *Roxb.*	L	C			
RHAMNACEAE					
Gouania microcarpa *DC.*	L				
Ventilago bombaiensis *Dalz.*	L		WG		
V. madraspatana *Gaertner*	L				
RHIZOPHORACEAE					
Carallia brachiata *(Lour.) Merr.*	II	O	O		
ROSACEAE					
Prunus ceylanica *(Wt.) Miq.*	I	O			
RUBIACEAE					
Canthium angustifolium *Roxb.*	L	C			
C. dicoccum *(Gaert.) T.& B.*	III, IV	C			
Chasalia ophioxyloides *(Wall.) Cralb.*	H	O			
Ixora brachiata *Roxb.*	III	C	WG		
I. nigricans *W.& A.*	IV, S	Vc			
Lasianthus sessilis *Talbot*	IV, S	C	WG		
Neonauclea purpurea *(Roxb.) Merill*	III	r	R		
Pavetta indica *L.*	S	O			
Psychotria canarensis *Talbot*	S	O	WG		
P. dalzellii *J.Hk.*	IV, S	C	WG		
P. flavida *Talbot*	S	C	WG		
P. macrocarpa *J.Hk.*	S	O	WG		
Rubia cordifolia *L.*	L	O			
Tricalysia apiocarpa *Gamble*	II, III	O	WG		
Tricalysia sphaerocarpa	III	O	WG		
Xeromphis uliginosa *(Retz.) Maheshwari*	IV	O	O		
RUTACEAE					
Atalantia wightii *Tanaka*	IV	C			
Euodia lunu-ankenda *(Gaert.) Merr.*	III	O	O		
Glycosmis mauritiana *(Lam.) Tanaka*	S	C			
Luvunga sarmentosa *(Bl.) Kurz*	L	C			
Murraya koenigii *Spr.*	IV	C			
Paramignya monophylla *Wt.*	L	O			
Toddalia asiatica *(L.) Lam.var. floribunda Gamble*	L	Vc			
Vepris bilocularis *(W.& A.) Engler*	I	O	WG		
Zanthoxylum rhetsa *(Roxb.) DC.*	II	O			
SAPINDACEAE					
Dimocarpus longan *Lour.*	I, II	Vc			
Lepisanthes tetraphylla *(Vahl) Radlk.*	II, III	C			
Schleichera oleosa *(Lour.) Oken*	II	C	O		
SAPOTACEAE					
Chrysophyllum lanceolatum *(Bl.) DC.*	I	O			
Madhuca neriifolia *(Moon) H.J.Lam.*	II	O	R		
Mimusops elengi *L.*	I	Vc			
Xantolis tomentosa *(Roxb.) Raf.*	II	C			
STAPHYLEACEAE					
Turpinia malabarica *Gamble*	I	O	WG		
STERCULIACEAE					
Pterospermum diversifolium *Bl.*	I, II	O	O		
Pterygota alata *R.Br.*	I	r			
Sterculia guttata *Roxb.*	II	O	O		
SYMPLOCACEAE					
Symplocos cochinchinensis *(Lour.) Moore*	III	O			
S. racemosa *Roxb.*	II, III	O			

ULMACEAE					
Celtis timorensis *Spon*	II	O			
Gironniera cuspidata *(Bl.) Kurz*	I	C			
URTICACEAE					
Boehmeria malabarica *Wedd.*	IV, S	O			
Elatostema lineolatum *Wt.*	H	C	R		
Pilea microphylla *Liebm.*	H	C	R		
VERBENACEAE					
Callicarpa tomentosa *(L.) Murray*	III	O	O		
Clerodendrum viscosum *Vent.*	III, IV	O	O		
Vitex altissima *L.f.*	II	C	O		
VITACEAE					
Cayratia auriculata *(DC.) Gamble*	L	O			
MONOCOTYLEDONS					
ARACEAE					
Pothos scandens *L.*	L	Vc			
Raphidophora laciniata *(N. Burman) Merr.*	L	O			
ARECACEAE					
Arenga wightii *Griffith*	III	O	WG	R	
Calamus pseudotenuis *Becc. & J. Hk.*	L	O			
C. thwaitesii *Becc. ex Becc. & J. Hk.*	L	O			
Caryota urens *L.*	II	O	O		
Corypha umbraculifera *L.*	II	r			
AMARYLLIDACEAE					
Curculigo orchioides *Gaertner*	H	O			
LILIACEAE					
Asparagus racemosus *Willd.*	L	O			
Dracaena terniflora *Roxb.*	L	C			
Smilax zeylanica *L.*	L	Vc			
ORCHIDACEAE					
Dendrobium sp.	Ep	O			
PANDANACEAE					
Pandanus furcatus *Roxb.*	IV	O	R		
POACEAE					
Oxytenanthera sp.	IV	O			
ZINGIBERACEAE					
Globba bulbifera *Roxb.*	H	O			
Hedychium coronarium *Koenig*	H	O			
GYMNOSPERMS					
GNETACEAE					
Gnetum ula *Brong*	L	C			

DIOSPYROS spp. – DYSOXYLUM MALABARICUM – PERSEA MACRANTHA TYPE

DICOTYLEDONS

ACANTHACEAE			
Strobilanthes sp.	H		
ANACARDIACEAE			
Holigarna arnottiana *J.Hk.*	I	Vc	WG
H.grahamii *(Wt.) Kurz*	I	Vc	WG
Mangifera indica *L.*	I+E	Vc	
Nothopegia racemosa *(Dalz.) Ramam.*	II,III	C	
Spondias pinnata *(L.f.) Kurz*	I	C	O
ANCISTROCLADACEAE			
Ancistrocladus heyneanus *Grah.*	L	O	
ANNONACEAE			
Artabotrys zeylanicus *J.Hk.& Th.*	L	O	
Desmos lawii *(J.Hk.& Th.) Safford*	III,IV	O	WG
Goniothalamus cardiopetalus *(Dalz.) J.Hk.&Th.*	III,IV	O	WG
Meiogyne pannosa *(Dalz.) Sinclair*	III,IV	Vc	WG
M.ramarowii *(Dunn.) Gandhi*	III,IV	O	WG
Polyalthia cerasoides *(Roxb.) Bedd.*	II,III	O	
P.fragrans *(Dalz.) Bedd.*	I	C	WG
Uvaria hookeri *King*	L	C	WG
APOCYNACEAE			
Alstonia scholaris *(L.) R.Br.*	I	O	
Carissa inermis *Vahl*	L	C	
Chonemorpha fragrans *(Moon) Alston*	L	O	
Ervatamia heyneana *(Wall.) Cooke*	II,III	C	WG
ASCLEPIADACEAE			
Hoya retusa *Dalz.*	L	O	
BIGNONIACEAE			
Oroxylum indicum *Vent.*	II,III	O	O
Pajanelia longifolia *(Willd.) K.Schum.*	II,III	O	O
Stereospermum personatum *(Hassk.) Chat.*	I	C	O
CAPPARACEAE			
Capparis tefnera *Dalz.*	L	O	
CLUSIACEAE			
Garcinia indica *Choisy*	II	C	WG
G.morella *Desr.*	II	C	
G.pictorius *(Roxb.) D'Arcy*	II	O	
Mammea suriga *(Buch-Ham.ex Roxb.) Kost.*	I	O	WG
COMBRETACEAE			
Calycopteris floribunda *(Roxb.) Poir*	L	Vc	
Terminalia alata *Roth*	I	Vc	O
T.bellerica *(Gaertn.) Roxb.*	I	C	
T.paniculata *Roth*	I	Vc	WG O
DATISCACEAE			
Tetrameles nudiflora *R.Br.*	I+E	Vc	
DILLENIACEAE			
Dillenia pentagyna *Roxb.*	II	C	O
DIPTEROCARPACEAE			
Hopea ponga *(Dennst.) Mobberley*	I	C	WG
EBENACEAE			
Diospyros buxifolia *(Blume) Hiern*	I+E	Vc	
D.candolleana *Wt.*	II	O	
D.montana *Roxb.*	II,III	C	
D.oocarpa *Thw.*	I	C	
D.sylvatica *Thw.*	I	Vc	
ELAEAGNACEAE			
Elaeagnus conferta *Roxb.*	L	C	
ELAEOCARPACEAE			
Elaeocarpus serratus *L.*	I	O	
EUPHORBIACEAE			
Agrostistachys indica *Dalz.*	IV,S	O	
Aporosa lindleyana *(Wt.) Baill.*	II	Vc	O
Bischofia javanica *Bl.*	I	O	R
Bridelia retusa *Spr.*	II,III	O	
Cleidion spiciflorum *(Burm.f.) Merr.*	II	C	
Drypetes roxburghii *(Wall.) Hurusawa*	II	O	
Glochidion malabaricum *Bedd.*	III	C	WG
Macaranga peltata *(Roxb.) Muell.*	II	C	O
Mallotus philippensis *(Lam.) Muell.*	III	C	
Trewia nudiflora *L.*	II	O	O
FABACEAE (Caesalpinioideae)			
Moullava spicata *(Dalz.) Nicolson*	L	O	WG
Saraca asoca *(Roxb.) de Wilde*	III	C	R
(Mimosoideae)			
Archidendron monadelphum *(Roxb.) Nielsen*	II,III	O	
Xylia xylocarpa *(Roxb.) Taub.*	II	C	O
FLACOURTIACEAE			
Casearia bourdillonii *Mukherjee*	I	C	WG
Flacourtia montana *(N.Burman) Merr.*	II,III	Vc	
Hydnocarpus alpina *Wt.*	II,III	O	R
H.laurifolia *(Dennst.) Sleumer*	III	C	WG R
LAURACEAE			
Actinodaphne angustifolia *Nees*	II	O	WG
A.malabarica *Balak.*	II	C	WG
Alseodaphne semecarpifolia *Nees*	I,II	C	
Beilschmiedia dalzellii *(Meisn.) Kost.*	I	C	WG
Cinnamomum malabatrum *(N.Burman) Kost.*	I	Vc	WG
Litsea chinensis *Lam.*	II	C	
Persea macrantha *(Nees) Kost.*	I	Vc	
LECYTHIDACEAE			
Careya arborea *Roxb.*	II	O	O
LEEACEAE			
Leea indica *(Burm.) Merr.*	IV,S	C	O
LOGANIACEAE			
Strychnos nux-vomica *L.*	II	O	
LYTHRACEAE			
Lagerstroemia microcarpa *Wt.*	I	Vc	O
MELASTOMATACEAE			
Memecylon malabaricum *(C.B.Clarke) Cogn.*	IV,S	C	WG
M.wightii *Thw.*	IV,S	Vc	
M.talbotianum *Brandis*	IV,S	C	WG
MELIACEAE			
Aglaia roxburghiana *Hiern*	I	Vc	
Aphanamixis polystachya *(Wall.) Parker*	II	C	
Dysoxylum malabaricum *Bedd.*	I	C	
Melia dubia *Cav.*	I	O	
Toona ciliata *Roemer*	I	O	R
Trichilia connaroides *W.& A.*	II,III	O	
MENISPERMACEAE			
Cyclea peltata *J.Hk.& Th.*	L	C	
Diploclisia glaucescens *(Bl.) Diels*	L	C	
MORACEAE			
Artocarpus gomezianus *Wall.ex Trecul* ssp. zeylanicus *Jarr.*	I,II	O	
A.hirsutus *Lam.*	I	Vc	WG
Ficus callosa *Willd.*	I+E	C	
F.drupacea *Thunb.var.pubescens (Roth) Corner*	I	O	
F.nervosa *Roth*	I	C	
MYRISTICACEAE			
Knema attenuata *(J.Hk.& Th.) Warb.*	I,II	Vc	WG
Myristica dactyloides *Gaertn.*	I,II	Vc	
M.malabarica *Lam.*	I	O	WG

MYRSINACEAE			
Ardisia solanacea *Roxb.*	IV, S	C	
MYRTACEAE			
Syzygium cumini *(L.) Skeels*	I	C	
S.gardneri *Thw.*	I + E	C	
OLACACEAE			
Olax imbricata *Roxb.*	L	O	
OLEACEAE			
Jasminum roxburghianum *Cl.*	L	C	WG
Linociera malabarica *Wall. ex G. Don*	III	C	WG
Olea dioica *Roxb.*	I, II	Vc	
PIPERACEAE			
Piper trioicum *Roxb.*	L	C	
RHAMNACEAE			
Ventilago bombaiensis *Dalz.*	L	C	WG
ROSACEAE			
Prunus ceylanica *(Wt.) Miq.*	I	O	
RUBIACEAE			
Canthium angustifolium *Roxb.*	L	C	
Chasalia ophioxyloides *(Wall.) Craib*	H	O	
Haldina cordifolia *(Roxb.) Ridsd.*	I	C	O
Ixora brachiata *Roxb.*	III	Vc	WG
I. nigricans *W. & A.*	IV, S	O	
Pavetta tomentosa *Sm.*	S	C	
Psychotria flavida *Talbot*	S	C	WG
P. octosulcata *Talbot*	S	C	WG
Randia brandisii *Gamble*	IV, S	O	
RUTACEAE			
Atalantia racemosa *W. & A.*	IV	Vc	
Glycosmis mauritiana *(Lam.) Tanaka*	S	Vc	
Luvunga sarmentosa *(Bl.) Kurz*	L	O	
Murraya koenigii *Spr.*	IV, S	C	
Toddalia asiatica *(L.) Lam var. floribunda Gamble*	L	Vc	
SAPINDACEAE			
Allophylus cobbe *(L.) Raeusch.*	L	O	
Dimocarpus longan *Lour.*	I, II	C	
Harpullia arborea *(Blanco) Radlk.*	III	O	
SAPOTACEAE			
Chrysophyllum lanceolatum *(Bl.) DC.*	I	C	
Mimusops elengi *L.*	I	Vc	
Xantolis tomentosa *(Roxb.) Raf.*	II	Vc	
STERCULIACEAE			
Pterospermum diversifolium *Bl.*	I, II	C	O
ULMACEAE			
Celtis timorensis *Span.*	II	C	
Gironniera cuspidata *(Bl.) Kurz*	I	Vc	
VERBENACEAE			
Callicarpa tomentosa *(L.) Murray*	III	C	O
Clerodendrum viscosum *Vent.*	III	C	O
Lantana camara *L.*	S	C	O
Vitex altissima *L.f.*	I, II	Vc	
VITACEAE			
Vitis sp.	L	O	

MONOCOTYLEDONS

ARACEAE			
Pothos scandens *L.*	L	Vc	
ARECACEAE			
Calamus pseudotenuis *Becc. ex Becc & J.Hk.*	L	O	R
Caryota urens *L.*	II	C	
LILIACEAE			
Dracaena terniflora *Roxb.*	H	O	
Smilax zeylanica *L.*	L	Vc	

GYMNOSPERMS

GNETACEAE			
Gnetum ula *Brong.*	L	C	

CULLENIA EXARILLATA _ MESUA FERREA _ PALAQUIUM ELLIPTICUM TYPE

DICOTYLEDONS

X = South of Palghat gap only

ACANTHACEAE					
Justicia sp.	H	O			
Strobilanthes sp.	H	C			
Thunbergia mysorensis (Wt.) Anders.	L	O	WG		
AMARANTHACEAE					
Achyranthes bidentata Bl.	H	O			
ANACARDIACEAE					
Gluta travancorica Bedd.	I	C	WG	X	
Holigarna arnottiana J.Hk.	I	Vc	WG		
H.beddomei J.Hk.	I	r			
H.grahamii (Wt.) Kurz	I	Vc	WG		
H.nigra Bourd.	I	C	WG	X	
Mangifera indica L.	I+E	Vc			
Nothopegia travancorica J.Hk.	III, IV	Vc	WG		
Semecarpus travancorica Bedd.	I	C	WG	X	
ANCISTROCLADACEAE					
Ancistrocladus heyneanus Grah.	L	C			
ANNONACEAE					
Artabotrys zeylanicus J.Hk. & Th.	L	O			
Goniothalamus cardiopetalus (Dalz.) J.Hk.& Th.	III, IV	C	WG		
G.wightii J.Hk. & Th.	III, IV	C	WG	X	
Meiogyne pannosa (Dalz.) Sinclair	III, IV	Vc	WG		
M. sp.	III, IV	O			
Miliusa sp.	IV	C			
Orophea erythrocarpa Bedd.	III, IV	O	WG	X	
Polyalthia fragrans (Dalz.) Bedd.	I	Vc	WG		
APIACEAE					
Hydrocotyle sibthorpioides Lam.	H	O	R		
APOCYNACEAE					
Carissa inermis Vahl	L	O			
Ervatamia caudata Gamble	IV, S	r	WG		
ARALIACEAE					
Schefflera venulosa (W. & A.) Harms	L	O			
ARISTOLOCHIACEAE					
Apama siliquosa Lam.	H	C			
ASCLEPIADACEAE					
Hoya sp.	Ep	O			
ASTERACEAE					
Vernonia monosis Cl.	II	O	O		
V.travancorica J.Hk.	II	O	O WG	X	
BALANOPHORACEAE					
Balanophora fungosa J.R.G. Forst. ssp.indica (Arn.) Hansen	H	r			
BEGONIACEAE					
Begonia sp.	H	O	R		
BIGNONIACEAE					
Pajanelia longifolia (Willd.) Schum.	II	O	O		
BOMBACACEAE					
Cullenia exarillata A. Robyns	I+E	Vc			
BURSERACEAE					
Canarium strictum Roxb.	I	Vc	WG		
CELASTRACEAE					
Bhesa indica (Bedd.) Ding Hou	I	Vc		X	
Cassine glauca (Rottb.) Kuntze	I+E	O			
Euonymus angulatus Wight	III	C	WG		
E.crenulatus Roxb.	III	O	WG		
E. dichotomus Heyne	III	O			
Lophopetalum wightianum Arn.	I+E	O	R		
CHLORANTHACEAE					
Chloranthus brachystachys Bl.	H, S	C			
CLUSIACEAE					
Calophyllum polyanthum Wall. ex choisy	I+E	Vc			
Garcinia gummi-gutta (L.) Robson	II	Vc			
G.morella Desr.	II	Vc			
G.pictorius (Roxb.) D'Arcy	II	Vc			
G.rubro-echinata Kost.	II	C	WG	X	
G.travancorica Bedd.	II	C	WG	X	
G.wightii T.Anders.	II	O	WG	X	
Mesua ferrea L.	I	Vc			
Poeciloneuron indicum Bedd.	I	Vc	WG R		
P.pauciflorum Bedd.	I	r	WG R		
COMBRETACEAE					
Terminalia bellerica (Gaertn.) Roxb.	I	O	O		
CONNARACEAE					
Connarus wightii J.Hk.	L	C			
CORNACEAE					
Mastixia arborea (Wt.) Bedd.	I	C	WG R		
DATISCACEAE					
Tetrameles nudiflora R.Br.	E	O	O		
DICHAPETALACEAE					
Dichapetalum gelonioides (Roxb.) Engler	IV, S	Vc			
DILLENIACEAE					
Dillenia pentagyna Roxb.	II	C	O		
DIPTEROCARPACEAE					
Hopea parviflora Bedd.	I	Vc	WG		
H.ponga (Dennst.) Mabberley	I	C	WG		
H.utilis (Bedd.) Bole.	I	C	WG	X	
Vateria indica L.	I+E	Vc	WG R		
EBENACEAE					
Diospyros barberi Romas.	II	r		X	
D.foliolosa Wall. ex DC.	II	r	WG	X	
D. humilis Bourd.	II	O	WG	X	
D.nilagirica Bedd.	II	O	WG		
D.paniculata Dalz.	I	C	WG		
D.pruriens Dalz.	II	C			
D.saldanhae (Dalz.) Kost.	II, III	O	WG		
D. sylvatica Roxb.	I	O			
ELAEOCARPACEAE					
Elaeocarpus munronii Mast.	II, III	O	WG		
E. serratus L.	I	C			
E.tuberculatus Roxb.	I+E	Vc	R		
EUPHORBIACEAE					
Agrostistachys indica Dalz.	IV	r			
A.meeboldii Pax et Hoffm.	II, III	Vc			
Antidesma menasu Miq. ex Tul.	III, IV	O			
Aporosa lindleyana (Wt.) Baill.	II, III	C	O		
Baccaurea courtallensis Mues.	II, III	Vc	WG		
Bischofia javanica Bl.	I	Vc	R		
Blachia umbellata Baill.	III, IV	O			
Croton reticulatus Heyne	IV	O			
Dimorphocalyx lawianus Thw.	III	C			
Drypetes elata (Bedd.) Pax et Hoffm.	I, II	Vc	WG		
D.malabarica (Bedd.) A.Shaw	II	C	WG	X	
Excoecaria crenulata Wt.	IV, S	C		X	
E.robusta J.Hk.	S	r	WG		
Fahrenheitia zeylanica (Thw.) A.Shaw	I	C			
Macaranga peltata (Roxb.) Muell.	I, II	O	O		
Mallotus beddomei J.& K.	III, IV	C	WG		
M.distans Muell.	III, IV	O		X	
M.philippensis (Lam.) Muell.	III	C			

M.stenanthus *Muell.*	III,IV	O	WG	
M. tetracoccus *(Roxb.) Kurz*	II,III	O	O	
Sauropus androgynus *Merr.*	H	C		
FABACEAE (Caesalpinioideae)				
Humboldtia unijuga *Bedd.*	III	O	WG	X
Mezoneuron cucullatum *(Roxb.) W.&A.*	L	O		
(Faboideae)				
Derris sp.	L	C		
Ormosia travancorica *Bedd.*	I	O	WG	
(Mimosoideae)				
Archidendron monadelphum *(Roxb.) Nielsen*	II,III	C	O	
FLACOURTIACEAE				
Casearia ovata *(Lam.) Willd.*	III	C		
Flacourtia montana *Graham*	III	C		
Hydnocarpus alpina *Wt.*	II,III	Vc	R	
H.laurifolia *(Dennst.) Sleumer*	I,II	C	WG R	
Scolopia crenata *(W.&A.) Clos.*	II,III	C		
GESNERIACEAE				
Rhynchotechum permolle *(Nees) Burtt*	H	O		
HIPPOCRATEACEAE				
Loeseneriella sp.	L	C		
ICACINACEAE				
Gomphandra coriacea *Wall.*	III,IV	O		
G.tetrandra *(Wall.) Sleumer.*	III,IV	C		
Nothapodytes foetida *(Wight) Sleumer*	IV	C		
LAURACEAE				
Actinodaphne camponulata *J.Hk.*	II	C	WG	X
A.malabarica *Balak.*	II	Vc	WG	
Apollonias arnottii *Nees*	II	C	WG	
Beilschmiedia wightii *Benth.*	I	C	WG	
Cinnamomum malabatrum *(N.Burm.) Kost.*	I	Vc	WG	
C.sulphuratum *Nees*	II	C		
C. sp.	II	C		
Cryptocarya sp.	I	O		
Litsea bourdillonii *Gamble*	II	O		
L.deccanensis *Gamble*	II	O		
L.floribunda *Gamble*	II	C	WG	
L.insignis *Gamble*	II	O	WG	
L.wightiana *J.Hk.*	II	C	WG	
Neolitsea zeylanica *Merr.*	I	O		
Persea macrantha *(Nees) Kost.*	I	Vc		
Phoebe lanceolata *Nees*	II	O		
LEEACEAE				
Leea indica *(Burm.) Merr.*	III,IV	O	O	
LOGANIACEAE				
Fagraea ceilanica *Thunb.*	Ep	O		
Strychnos wallichiana *Pfeudel ex DC.*	L	C		
LYTHRACEAE				
Lagerstroemia microcarpa *Wt.*	I	O	O	
MALVACEAE				
Urena lobata *L. ssp.sinuata(L.)Borssum.*	H	O	O	
MELASTOMATACEAE				
Memecylon deccanense *C.B.Clarke*	H	O	WG	
M.heyneanum *Benth.*	IV	O	WG	
M.lawsonii *Gamble*	H	O	WG	
Osbeckia sp.	H	O		
MELIACEAE				
Aglaia anamallayana *(Bedd.) Kost.*	II,III	Vc	WG	
A.minutiflora *Bedd.var.travancorica Hiern.*	I	O	WG	X
A.roxburghiana *Hiern.*	I	C		
Amoora sp.	I	O		
Beddomea simplicifolia *Bedd.*	III	C	WG	
Dysoxylum ficiforme *Gamble*	I	r	WG	X
D.malabaricum *Bedd.*	I	C	WG	
Toona ciliata *Roemer*	I	O	R	
Trichilia connaroides *W.&A.*	II,III	C		

MENISPERMACEAE				
Coscinium fenestratum *Colebr.*	L	O		
Cyclea peltata *J.Hk.&Th.*	L	C		
Diploclisia glaucescens *(Bl.)Diels*	L	C		
Stephania wightii *Dunn.*	L	C		
MORACEAE				
Artocarpus heterophyllus *Lam.*	I	O	WG	
A.hirsutus *Lam.*	I	O	WG	
Ficus hispida *L.f.*	III,IV	O	R	
F.microcarpa *L.f.*	II	O		
F. sp.	I+E	C		
MYRISTICACEAE				
Knema attenuata *(J.Hk.&Th.) Warb.*	I,II	Vc	WG	
Myristica dactyloides *Gaertner.*	I,II	Vc		
M.malabarica *Lam.*	I	O	WG	
MYRSINACEAE				
Antistrophe serratifolia *J.Hk.*	H	O	WG	
Ardisia sonchifolia *Mez.*	S	O	WG	
MYRTACEAE				
Jambosa mundagam *Gamble*	II,III	C	WG	
J.munronii *Walp.*	I,II	C		
Syzygium cumini *(L.) Skeels*	I	O		
S.gardneri *Thw.*	I+E	Vc		
S.laetum *(How.) Gandhi*	III	Vc	WG	
OLACACEAE				
Erythropalum populifolium *(Arn.) Mosters*	L	C	WG	
Strombosia ceylanica *Gard.*	I	C		
OLEACEAE				
Jasminum sp.	L	C		
Olea dioica *Roxb.*	I,II	C	O	
PIPERACEAE				
Lepianthes umbellata *(L.) Raf.*	H	C		
Peperomia portulacoides *(Lam.)A.Dietr.*	Ep	O		
Piper nigrum *L.*	L	Vc		
POLYGALACEAE				
Xanthophyllum flavescens *Roxb.*	IV	Vc		
POLYGONACEAE				
Polygonum chinense *L.*	H	C		
RHAMNACEAE				
Rhamnus nepalensis *Laws.*	IV	O		
Ventilago sp.	L	O		
RHIZOPHORACEAE				
Carallia brachiata *(Lour.) Merr.*	II	C	O	
ROSACEAE				
Prunus ceylanica *(Wt.) Miq.*	I	O	O	
RUBIACEAE				
Canthium angustifolium *Roxb.*	L	O		
Chasalia ophioxyloides *(Wall.) Cralb.*	H	C		
Ixora elongata *Heyne*	S	O	WG	
I.nigricans *W.&A.*	IV,S	C		
I.notoniana *Wall.*	IV,S	O		
Lasianthus acuminatus *Wt.*	S	O	WG	
L.jackianus *Wt.*	S	C	WG	
Neonauclea purpurea *(Roxb.) Merr.*	III	r	R	
Neurocalyx calycinus *(Benn.) Robinson*	H	C		
Ophiorrhiza hirsutula *Wt. ex J.Hk.*	H	C	WG	
Pavetta sp.	S	C		
P.thomsonii *Brem. var. puberula Brem.*	S	C		
Psychotria anamallayana *Bedd.*	IV,S	O	WG	
P.flavida *Talbot*	S	O	WG	
P.globicephala *Gamble*	S	O	WG	
P.nigra *(Goertn.) Alston*	IV,S	C		
Randia rugulosa *(Thw.) J.Hk.*	L	O		
Saprosma fragrans *Bedd.*	S	O	WG	
S.glomerata *(Gardn.) Bedd.*	S	O	WG	
Tricalysia apiocarpa *Gamble*	II,III	O	WG	

RUTACEAE				
Acronychia pedunculata *(L.) Miq.*	III	O		
Atalantia wightii *Tanaka*	IV	C		
Clausena heptaphylla *W. & A.*	III	O		
Euodia lunu-ankenda *(Gaertn.) Merr.*	III	O	O	
Glycosmis mauritiana *(Lam.) Tanaka*	S	C		
Luvunga sarmentosa *(Bl.) Kurz*	L	C		
Murraya paniculata *(L.) Jack.*	IV	O		
M. koenigii *Spr.*	IV	O		
Paramignya armata *Oliv.*	L	C		
Toddalia asiatica *(L.) Lam. var. floribunda Gamble*	L	C		
Vepris bilocularis *(W. & A.) Engler*	I	O	WG	
SAPINDACEAE				
Allophylus sp.	L	C	O	
Dimocarpus longan *Lour.*	I	C		
Filicium decipiens *Thw.*	I	O		
Lepisanthes tetraphylla *(Vahl) Radlk.*	II, III	O		
Otonephelium stipulaceum *(Bedd.) Radlk.*	II	Vc		
Schleichera oleosa *(Lour.) Oken*	I, II	O	O	
Thraulococcus erectus *Radlk.*	IV, S	O		
SAPOTACEAE				
Chrysophyllum lanceolatum *(Bl.) DC.*	I	O		
Isonandra lanceolata *Wt.*	III	C		
Palaquium ellipticum *Engl.*	I + E	Vc	WG	
SOLANACEAE				
Solanum verbacifolium *L.*	IV, S	O	O	
STAPHYLEACEAE				
Turpinia malabarica *Gamble*	I	O	WG	
STERCULIACEAE				
Heritiera papilio *Bedd.*	III	O	WG	
Leptonychia moacurroides *Bedd.*	III	O	WG	
SYMPLOCACEAE				
Symplocos cochinchinensis *(Lour.) Moore*	III	O		
S. macrophylla *Wall. ex DC. ssp. rosea (Bedd.) Noot*	IV, S	Vc		
S. racemosa *Roxb.*	II, III	O		
THEACEAE				
Gordonia obtusa *Wall. ex W. & A.*	I	O	WG	
URTICACEAE				
Boehmeria malabarica *Wedd.*	IV, S	C		
Debregeasia longifolia *(Burm.) Wedd.*	IV	O	O	
Dendrocnide sinuata *(Bl.) Chew.*	IV, S	C		
Elatostema lineolatum *Wt.*	H	C	R	
Pellionia heyneana *Miq.*	H	C	R	
Villebrunea integrifolia *Gaud.*	III	O		
VACCINIACEAE				
Vaccinium neilgherrense *Wt.*	IV, S	O	WG R	
VERBENACEAE				
Callicarpa tomentosa *(L.) Murray*	III	C	O	
Clerodendrum viscosum *Vent.*	III, IV	C	O	
VITACEAE				
Parthenocissus neilgherriensis *Planch.*	L	O		

MONOCOTYLEDONS

ARACEAE				
Amorphophallus sp.	H	O		
Arisaema leschenaultii *Bl.*	H	O	WG	
Pothos scandens *L.*	L	Vc		
ARECACEAE				
Arenga wightii *Griffith*	III	O	WG R	
Bentinckia coddapanna *Berry*	II	r	WG O	
Calamus thwaitesii *Becc. ex Becc. & J. Hk.*	L	C	R	
C. sp.	L	C	R	
Caryota urens *L.*	II	O	O	
Pinanga dicksonii *(Roxb.) Scheffer*	III	O	WG R	
LILIACEAE				
Dracaena terniflora *Roxb.*	L	C		
Ophiopogon intermedius *Don*	H	C		
Peliosanthes teta *Andr. ssp. humilis (Andr.) Jess.*	H	O		
Smilax zeylanica *L.*	L	Vc		
MUSACEAE				
Musa sp.	H	O	R	
MARANTACEAE				
Schumannianthus virgatus *(Roxb.) Rolfe*	H	C	R	
ORCHIDACEAE				
Bulbophyllum sp.	Ep	O		
Calanthe masuca *Lindl.*	H	O		
Habenaria sp.	H	O		
PANDANACEAE				
Pandanus thwaitesii *Mart.*	IV	O	R	
POACEAE				
Ochlandra beddomei *Gamble*	IV	C	WG R	
O. scriptoria *Fischer*	IV	O	WG R	
O. travancorica *Gamble*	IV	C	WG	
ZINGIBERACEAE				
Elettaria cardamomum *(L.) Maton*	H	C		

GYMNOSPERMS

GNETACEAE					
Gnetum ula *Brong.*	L	Vc			
PODOCARPACEAE					
Decussocarpus wallichianus *(Pres.) de Laubenf.*	I	r		X	

PTERIDOPHYTES

Cyathea sp.	IV	O	R		
Osmunda regalis *L.*	H	O	R		

MESUA FERREA_PALAQUIUM ELLIPTICUM TYPE (A)
POECILONEURON INDICUM_PALAQUIUM ELLIPTICUM_HOPEA PONGA TYPE(B)
DICOTYLEDONS

ACANTHACEAE				
Justicia andersonii *Ramam.*	H	O	WG	A
Strobilanthes sp.	H	C		
Thunbergia mysorensis *(Wt.) Anders.*	L	O	WG	
ANACARDIACEAE				
Holigarna arnottiana *J.Hk.*	I	C	WG	
H.grahamii *(Wt.) Kurz*	I	C	WG	
Mangifera indica *L.*	I+E	C		A
Nothopegia racemosa *(Dalz.) Ramam*	II,III	C		
ANCISTROCLADACEAE				
Ancistrocladus heyneanus *Grah.*	L	C		A
ANNONACEAE				
Artabotrys zeylanicus *J.Hk.&Th.*	L	O		A
Goniothalamus cardiopetalus *(Dalz.) J.Hk.*	III,IV	C	WG	
Meiogyne pannosa *(Dalz.) Sinclair*	III,IV	Vc	WG	
M ramarowii *(Dunn.) Gandhi*	III,IV	O	WG	A
Polyalthia fragrans *(Dalz.) Bedd.*	I	C	WG	A
APOCYNACEAE				
Alstonia scholaris *(L.) R.Br.*	I	O	O	A
ARALIACEAE				
Schefflera venulosa *(W.& A.) Harms*	L	O		
ARISTOLOCHIACEAE				
Apama siliquosa *Lam.*	H	C		A
ASTERACEAE				
Vernonia monosis *Cl.*	II	O	O	A
BURSERACEAE				
Canarium strictum *Roxb.*	I	Vc	WG	A
CAPRIFOLIACEAE				
Viburnum punctatum *Hamilton ex Don*	II,III	O	O	A
CELASTRACEAE				
Euonymus indicus *Wall.*	III	C	WG	
Lophopetalum wightianum *Arn.*	I+E	C	R	
CLUSIACEAE				
Calophyllum apetalum *Willd.*	I	O	WG R	
C.polyanthum *Wall. ex Choisy*	I+E	C		
Garcinia gummi-gutta *(L.) Robson*	II	C		
G.indica *Choisy*	II	C	WG	
G.morella *Desr.*	II	Vc		
G.pictorius *(Roxb.) D'Arcy*	II	O		
Mesua ferrea *L.*	I	Vc		
Poeciloneuron indicum *Bedd.*	I	Vc	WG	
COMBRETACEAE				
Terminalia bellerica *(Gaertn.) Roxb.*	I	O	O	A
CONNARACEAE				
Connarus wightii *J.Hk.*	L	C		
CORNACEAE				
Mastixia arborea *(Wt.) Bedd.*	I	C	WG R	
DICHAPETALACEAE				
Dichopetalum gelonioides *(Roxb.) Engler*	IV, H	C		
DIPTEROCARPACEAE				
Hopea parviflora *Bedd.*	I	C	WG	A
H. ponga *(Dennst.) Mabberley*	I	Vc	WG	
Vateria indica *L.*	I+E	C	WG	A
EBENACEAE				
Diospyros paniculata *Dalz.*	I	C	WG	
D.pruriens *Dalz.*	II,III	C		
ELAEAGNACEAE				
Elaeagnus conferta *Roxb.*	L	O		
ELAEOCARPACEAE				
Elaeocarpus munronii *(Wt.) Mast.*	II,III	O	WG	A
E.serratus *L.*	I	C		A
E.tectorius *(Lour.) Poiret*	II,III	O		A
E.tuberculatus *Roxb.*	I+E	Vc	R	
EUPHORBIACEAE				
Agrostistachys indica *Dalz.*	III,IV	C		
Antidesma menasu *Miq. ex Tul.*	III,IV	O	O	A
Bischofia javanica *Bl.*	I	O	R	A
Cleistanthus malabaricus *Mant.*	II,III	Vc	WG	B
Croton gibsonianus *Nimmo*	IV,S	C		B
Drypetes elata *(Bedd.) Pax & Hoffm.*	I,II	Vc	WG	
D.oblongifolia *(Bedd.) Airy Shaw*	I,II	C		A
D.sp.	II	O		B
Fahrenheitia zeylanica *(Thw.) Airy Shaw*	I	C		
Glochidion sp.	III	O		
Macaranga peltata *(Roxb.) Muell.*	I,II	O	O	
Mallotus philippensis *(Lam.) Muell.*	III	C		A
M. stenanthus *Muell.*	III,IV	O	WG	
FABACEAE (Caesalpinioideae)				
Humboldtia brunonis *Wall.*	III	C	WG	
(Mimosoideae)				
Archidendron monadelphum *(Roxb.) Nielsen*	III	O	O	
FLACOURTIACEAE				
Flacourtia montana *Graham*	III	C		A
Hydnocarpus laurifolia *(Dennst.) Sleumer*	I,II	C	WG R	A
Scolopia crenata *(W&A.) Clos.*	II,III	O		A
GESNERIACEAE				
Aeschynanthus perrottetii *A.DC.*	H	O		A
ICACINACEAE				
Gomphandra tetrandra *(Wall.) Sleumer*	III,IV	C		
Nothapodytes foetida *(Wight.) Sleumer*	IV	O		A
LAURACEAE				
Actinodaphne malabarica *Balak.*	II	C	WG	
Alseodaphne semecarpifolia *Nees*	I	O		A
Cinnamomum malabatrum *(Burman) Kost.*	I,II	Vc	WG	
C.riparium *Gamble*	III	O	WG R	B
C.sp.	II	O		
Cryptocarya bourdillonii *Gamble*	II	O	WG	A
Litsea deccanensis *Gamble*	II	O		
L.laevigata *(Nees) Gamble*	II	C	WG	
L.stocksii *J.Hk.*	II	C	WG	
L.wightiana *J.Hk.*	II	O		
L.sp.	II	O		B
Neolitsea zeylanica *Merr.*	I,II	O		A
Persea macrantha *(Nees) Kost.*	I	Vc		
Phoebe lanceolata *Nees*	II	O		
LEEACEAE				
Leea indica *(Burm.) Merr.*	III,IV	O	O	
LOGANIACEAE				
Fagraea ceilanica *Thunb.*	II,Ep	O		A
Strychnos sp.	L	C		
LYTHRACEAE				
Lagerstroemia microcarpa *Wt.*	I	O	O	
MELASTOMATACEAE				
Memecylon malabaricum *(C.B.Clarke) Cogn.*	III	O	WG	A
M.umbellatum *N.Burman*	III	O		
M.wightii *Thw.*	IV	O		

MELIACEAE				
Aglaia anomalkayana *Bedd.*	II, III	Vc	WG	
A.roxburghiana *Hiern.*	I	C		
Beddomea simplicifolia	III	O	WG	
Dysoxylum malabaricum *Bedd.*	I	O	WG	
Toona ciliata *Roemer*	I	O	R	A
Trichilia connaroides *W.&A.*	II, III	C		A
Walsura trifolia *(A.Juss.) Harms*	II	O		A
MENISPERMACEAE				
Cyclea peltata *J.Hk.& Th.*	L	O		A
Diploclisia glaucescens *(Bl.) Diels*	L	O		A
Stephania wightii *Dunn.*	L	O		A
MORACEAE				
Artocarpus heterophyllus *Lam.*	I	O	WG	
A.hirsutus *Lam.*	I	C	WG	
Ficus callosa *Willd.*	I	O	O	A
F. sp.	I+E	O		
MYRISTICACEAE				
Knema attenuata *(J.Hk.& Th.) Warb.*	I, II	Vc	WG	
Myristica doctyloides *Gaertner*	I, II	C		
M.malabarica *Lam.*	I	O	WG	
MYRSINACEAE				
Ardisia pauciflora *Heyne*	IV	O		B
Maesa indica *(Roxb.) DC*	IV, S	O	O	
MYRTACEAE				
Jambosa munronii *Wolp.*	I, II	C		A
Syzygium cumini *(L.) Skeels*	I	O		A
S.gardneri *Thw.*	I+E	C		A
S.hemisphericum *(Wallsp.) Alston*	I	O		A
S.laetum *(Haw.) Gandhi*	III	C	WG	A
S. sp.	I	O		
OLACACEAE				
Erythropalum populifolium *(Arn.) Masters*	L	C	WG	A
Strombosia ceylanica *Gardn.*	I	C		A
OLEACEAE				
Jasminum sp.	L	O		
Olea dioica *Roxb.*	I, II	O	O	
PIPERACEAE				
Piper nigrum *L.*	L	C		
RHAMNACEAE				
Ventilago madraspatana *Gaertner*	L	C		
RHIZOPHORACEAE				
Carallia brachiata *(Lour.) Merr.*	II	O	O	A
RUBIACEAE				
Canthium angustifolium *Roxb.*	L	O		
C.dicoccum *(Gaert.) T.&B.*	III, IV	O		
Chasalia ophioxyloides *(Wall.) Craib*	H	C		
Ixora elongata *Dalz*	S	O		A
I.lanceolaria *Colebr.*	S	O	WG	B
I.nigricans *W.&A.*	IV, S	C		A
Lasianthus acuminatus *Wt.*	S	C	WG	
Neurocalyx calycinus *(Benn.) Robinson*	H	O		
Psychotria dalzelli *J.Hk.*	IV, S	Vc	WG	
P.nigra *(Gaert.) Alston*	IV, S	Vc		
Saprosma corymbosum *Bedd.*	S	O	WG	B
S.fragrans *Bedd.*	S	C	WG	
S.glomerata *(Gardner) Bedd.*	S	C	WG	A
Tricalysia apiocarpa *Gamble*	II, III	O	WG	
RUTACEAE				
Acronychia pedunculata *(L.) Miq.*	III	O		A
Atalantia wightii *Tanaka*	IV	C		A
Clausena dentata *(Willd.) R.&S.*	III	O		
Euodia lunu-ankenda *(Gaertn.) Merr.*	III	O	O	A
Glycosmis mauritiana *(Lam.) Tanaka*	H	C		
Toddalia asiatica *(L.) Lam. var. floribunda Gamble*	L	C		
Vepris bilocularis *(W.&A.) Engler.*	I	O	WG	
SABIACEAE				
Meliosma pinnata *(Roxb.) Walp. ssp. arnottiana (Wt.) Beusekom*	I	O	O	A
SAPINDACEAE				
Dimocarpus longan *(Blanco) Radlk.*	I	C		
Otonephelium stipulaceum *(Bedd.) Radlk.*	II	O	WG	A
Schleichera oleosa *(Lour.) Oken*	I, II	O	O	
SAPOTACEAE				
Chrysophyllum lanceolatum *(Bl.) DC.*	I	O		
Mimusops elengi *L.*	I	C		A
Palaquium ellipticum *Engl.*	I+E	Vc		
STAPHYLEACEAE				
Turpinia malabarica *Gamble.*	I	O	WG	
STERCULIACEAE				
Heritiera papilio *Bedd.*	III	O	WG	
SYMPLOCACEAE				
Symplocos cochinchinensis *(Lour.) J.Moore*	III	O		A
S.macrophylla *Wall.ex DC. ssp. roseo (Bedd.) Noot.*	IV, S	C	WG	
S.racemosa *Roxb.*	II, III	O		
THEACEAE				
Eurya japonica *Thunberg*	IV, S	O		
Gordonia obtusa *Wall.ex W.&A.*	I	O	WG	
ULMACEAE				
Celtis timorensis *Span.*	II	O		A
URTICACEAE				
Debregeasia longifolia *(Burm.) Wedd.*	IV	O	O	
Dendrocnide sinuata *(Bl.) Chew.*	IV	O		
Elatostema cuneatum *Wt.*	H	C	R	
Pellionia heyneana *Miq.*	H	C	R	
Pilea microphylla *Liebm.*	H	C	R	A
VERBENACEAE				
Callicarpa tomentosa *(L.) Murray.*	III	C	O	
Clerodendrum viscosum *Vent.*	III, IV	C	O	
MONOCOTYLEDONS				
ARACEAE				
Arisaema sp.	H	O		
Lagenandra meeboldii *(Engl.) Fischer*	H	O	WG	B
ARECACEAE				
Calamus thwaitesii *Becc. ex Becc. B.J.Hk.*	L	C		
Caryota urens *L.*	II	O	O	
Pinanga dicksonii *(Roxb.) Scheffer*	III	C	WGR	
LILIACEAE				
Dracaena terniflora *Roxb.*	L	C		
Smilax zeylanica *L.*	L	C		
ORCHIDACEAE				
Calanthe masuca *Lindl.*	H	O		B
PANDANACEAE				
Pandanus thwaitesii *Martelli*	IV	O	R	
POACEAE				
Ochlandra sp.	IV	O	R	A
Oxytenanthera sp.	IV	O		A
ZINGIBERACEAE				
Amomum sp.	H	O	R	B
Globba sp	H	O		B
GYMNOSPERMS				
GNETACEAE				
Gnetum ula *Brong.*	L	Vc		A

MEMECYLON UMBELLATUM_SYZYGIUM CUMINI_ACTINODAPHNE ANGUSTIFOLIA TYPE

A= North of 16° N exclusively

DICOTYLEDONS

ACANTHACEAE				
Strobilanthes sp.	H	C		
ANACARDIACEAE				
Holigarna grahamii *J.Hk.*	I+E	C	WG	
Mangifera indica *L.*	I+E	C		
Nothopegia racemosa *(Dalz.) Ramam.*	I, II	C		
ANNONACEAE				
Polyalthia fragrans *(Dalz.) Bedd.*	I	O	WG	
Uvaria hookeri *King*	L	O	WG	
APOCYNACEAE				
Carissa inermis *Vahl*	L	C		
Ervatamia heyneana *(Wall.) Cooke*	I, II	O	WG	
ARALIACEAE				
Schefflera venulosa *(W.&A.) Harms*	I, Ep	C		
BIGNONIACEAE				
Stereospermum personatum *(Hassk.) Chatt.*	I	O	O	
BORAGINACEAE				
Ehretia canarensis *Mig.*	III	O	WG	
CELASTRACEAE				
Euonymus indicus *Wall.*	II	O	WG	
Maytenus emarginata *(Willd.) Ding Hou*	III	O		
M. rothiana *(Walp.) Ramam.*	III	C		
CLUSIACEAE				
Calophyllum apetalum *Willd.*	I	O	WG R	
C. polyanthum *Wall. ex Choisy*	I+E	O		
Garcinia gummi-gutta *(L.) Robson*	I	O		
G. indica *Choisy*	I	O	WG	
G. morella *Desr.*	I	O		
G. talbotii *Raizada ex Sant.*	I	O	WG	
COMBRETACEAE				
Combretum latifolium *Bl.*	L	O		
Terminalia alata *Heyne ex Roth*	I+E	O	O	
T. bellerica *(Gaertn.) Roxb.*	I+E	O	O	
T. chebula *(Gaertn.) Retz.*	I, II	C		
T. paniculata *Roth*	I+E	O	WG O	
CONNARACEAE				
Connarus ritchiei *J.Hk.*	L	C	WG	
C. wightii *J.Hk.*	L	C		
DICHAPETALACEAE				
Dichapetalum gelonioides *(Roxb.) Engler*	III, IV			
EBENACEAE				
Diospyros candolleana *Wt.*	I	Vc		
D. montana *Roxb.*	I	C		
D. nigrescens *(Dalz.) Saldanha*	II	C	WG	
D. paniculata *Dalz.*	I	O	WG	
D. saldanhae *Kost.*	II, III	C	WG	
ELAEAGNACEAE				
Elaeagnus conferta *Roxb.*	L	C		
EUPHORBIACEAE				
Bischofia javanica *Bl.*	I+E	C	R	
Bridelia crenulata *Roxb.*	II	C		
Glochidion ellipticum *Wt.*	II, III	O	WG	
G. hohenackeri *Bedd.*	I	C	WG	A
Macaranga peltata *(Roxb.) Muell.*	I, II	O	O	
Mallotus philippensis *Sm.*	II	O		
M. stenanthus *Muell.*	III	O	WG	
FABACEAE (Caesalpinioideae)				
Moullava spicata *(Dalz.) Nicolson*	L	C	WG	
(Faboideae)				
Desmodium pulchellum *(L.) Benth.*	H	O	O	
FLACOURTIACEAE				
Casearia elliptica *Willd.*	IV	O		
Flacourtia montana *Grah.*	I	C		
F. ramontchi *L'Herit.*	I, II	O		
Homalium zeylanicum *(Gard.) Benth.*	I+E	O		
HIPPOCRATEACEAE				
Salacia sp.	L	C		
ICACINACEAE				
Nothapodytes foetida *(Wt.) Sleumer*	I, II	C		
LAMIACEAE				
Colebrookea oppositifolia *Sm.*	IV, S	O	O	
LAURACEAE				
Actinodaphne angustifolia *Nees*	I	C	WG	
Beilschmiedia wightii *Benth.*	I	O	WG	
Cinnamomum sp.	I+E	C		
Cryptocarya wightiana *Thw.*	I	O		
Litsea deccanensis *Gamble*	I, II	O		
Persea macrantha *(Nees) Kost.*	I+E	O		
LYTHRACEAE				
Lagerstroemia microcarpa *Wt.*	I+E	O	O	
MELASTOMATACEAE				
Memecylon talbotianum *Brandis*	II	C	WG	
M. umbellatum *Burm*	I	Vc		
MELIACEAE				
Aglaia roxburghiana *Hiern.*	I	O		
Aphanamixis polystachya *(Wall.) Parker*	I	O		
Dysoxylum binectariferum *(Roxb.) J.Hk.& Bedd.*	I+E	C		
Trichilia connaroides *(W.&A.) Benth.*	I	O		
MENISPERMACEAE				
Cyclea peltata *J.Hk.& Th.*	I	O		
Diploclisia glaucescens *(Bl.) Diels*	L	O		
MORACEAE				
Artocarpus heterophyllus *Lam.*	I	O	WG	
Ficus amplissima *Sm.*	I+E	C		
F. racemosa *L.*	I	O		A
MYRISTICACEAE				
Myristica dactyloides *Gaertn.*	I	O		
MYRSINACEAE				
Ardisia solanacea *Roxb.*	IV, S	O		
MYRTACEAE				
Eugenia macrocepala *Duthie*	II	C		
Syzygium cumini *(L.) Skeels*	I+E	Vc		
S. hemisphericum *(Walp.) Alston*	I+E	C		
S. heyneanum *(Duthie) Wall.*	I	C		A
OLEACEAE				
Jasminum malabaricum *Wt.*	L	C	WG	
J. sp.	L	C		
Ligustrum perrottetii *DC. var. obovatum Gamble*	III	C	WG	A
Olea dioica *Roxb.*	I	C		
PIPERACEAE				
Piper trioicum *Roxb.*	L	C		
RHAMNACEAE				
Scutia myrtina *(Burm.) Kurz*	L	Vc		
Ziziphus xylopyrus *Willd.*	III, IV	C		

RHIZOPHORACEAE				
Carallia brachiata *(Lour.) Merr.*	I+E	Vc		
ROSACEAE				
Prunus ceylanica *(Wt.) Miq.*	I	O		
RUBIACEAE				
Canthium angustifolium *Roxb.*	L	C		
C.dicoccum *(Goert.) T.&B.*	I	C		
Ixora brachiata *Roxb.*	II, III	C	WG	
I.nigricans *Br.*	III, IV	C		
Meyna laxiflora *Robyns*	III, IV	O		A
Pavetta indica *L.*	S	Vc		A
P.thomsonii *Bremek.*	S	O		
Psychotria truncata *Wall.*	III, IV	C	WG	
Randia rugulosa *(Thw.) J.Hk.*	L	O		
Saprosma glomerata *(Gardner) Bedd.*	S	C	WG	
Tricalysia apiocarpa *Gamble*	I, II	O	WG	
RUTACEAE				
Atalantia racemosa *W.& A.*	III	C		
Euodia lunu-ankenda *(Goertn.) Merr.*	I	O		
Glycosmis mauritiana *(Lam.) Tanaka*	S	C		
Luvunga sarmentosa *(Bl.) Kurz*	L	O		
Murraya paniculata *(L.) Jack.*	II	O		
M.koenigii *Spr.*	II	O		
Toddalia asiatica *(L.) Lam.*	L	C		
SANTALACEAE				
Osyris quadripartita *Salz. ex Decne*	IV, S	O		A
SAPINDACEAE				
Allophylus cobbe *Bl.*	L	C		
Dimocarpus longan *Lour.*	I+E	C		
SAPOTACEAE				
Mimusops elengi *L.*	I+E	O		
Xantolis tomentosa *(Roxb.) Raf.*	I	Vc		
STAPHYLEACEAE				
Turpinia malabarica *Gamble*	I	O	WG	
STERCULIACEAE				
Pterospermum diversifolium *Bl.*	I	O	O	
Sterculia guttata *Roxb.*	I	O	O	
SYMPLOCACEAE				
Symplocos cochinchinensis *(Lour.) S.Moore*	II	C		
S.racemosa *Roxb.*	I, II	C		
THYMELAEACEAE				
Gnidia glauca *(Fresen.) Gilg*	III	O	O	
TILIACEAE				
Grewia umbellifera *Bedd.*	IV, S	O		
VERBENACEAE				
Callicarpa tomentosa *(L.) Murray*	III	O	O	
Clerodendrum viscosum *Vent.*	III	O	O	

MONOCOTYLEDONS

ARACEAE				
Pothos scandens *L.*	L	Vc		
ARECACEAE				
Calamus thwaitesii *Becc.& Hk.*	L	O		
Caryota urens *L.*	I	O	O	
LILIACEAE				
Asparagus racemosa *Willd.*	L	O		
Dracaena terniflora *Roxb.*	H	O		
Ophiopogon intermedius *D.Don*	H	O		
Smilax zeylanica *L.*	L	C		

GYMNOSPERMS

GNETACEAE				
Gnetum ula *Brong.*	L	C		

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

DICOTYLEDONS		
ACANTHACEAE		
Nilgirianthus sp.	H	
ANACARDIACEAE		
Holigarna arnottiana *Hk.f.*	I	
Mangifera indica *L.*	I	
ARALIACEAE		
Schefflera capitata *Harms*	I	
S. micrantha *Gamb.*	I	
S. racemosa *Harms*	I	
S. venulosa *Harms*	L	
S. wallichiana *Harms*	L	
ARISTOLOCHIACEAE		
Apama siliquosa *Lam.*	S	
ASTERACEAE		
Vernonia arborea *Ham.*	I	
BALSAMINACEAE		
Impatiens *sp.*	H	
BURSERACEAE		
Canarium strictum *Roxb.*	I	
CAPRIFOLIACEAE		
Viburnum punctatum *Don*	I	
CELASTRACEAE		
Bhesa indica *(Bedd.) Ding Hou*	I	
Celastrus paniculatus *Willd.*	L	
Euonymus crenulatus *Wall.*	II	
E. dichotomus Heyne	II	
CLUSIACEAE		
Garcinia gummi-gutta *(L.) Robson*	I	
G. pictorius *(Roxb.) D'Arey*	I	
CONVOLVULACEAE		
Argyreia *sp.*	L	
DILLENIACEAE		
Dillenia pentagyna *Roxb.*	I	
ELAEAGNACEAE		
Elaeagnus kologa *Schlecht.*	L	
ELAEOCARPACEAE		
Elaeocarpus munronii *(Wt.) Mast.*	I	
E. serratus *L.*	I	
E. tuberculatus *Roxb.*	I	
EUPHORBIACEAE		
Agrostistachys indica *Dalz.*	II	
A. meeboldii *Pax & Hoffm.*	I,II	
Antidesma menasu *Miq.*	III	
Aporosa *sp.*	II	
Daphniphyllum neilgherrense *Ros.*	II	M
Dimorphocalyx lawianus *Hk.f.*	III	
Glochidion ellipticum *Wt.*	II,III	M
G. fagifolium *Hk.f.*	II,III	
G. neilgherrense *Wt.*	II,III	
G. zeylanicum *A.Juss.*	II,III	M
Macaranga peltata *(Roxb.) Muell.*	II	
Mallotus philippensis *(Lam.) Muell.*	I,II	
M. tetracoccus *(Roxb.) Kurz*	II	
Sauropus androgynus *Merr.*	S	
FABACEAE (Faboideae)		
Derris *sp.*	L	
FABACEAE (Mimosoideae)		
Archidendron monadelphum *(Roxb.) Nielsen*	II	
FLACOURTIACEAE		
Casearia coriacea *Thw.*	II,III	
C. rubescens *Dalz.*	II,III	
Flacourtia montana Graham	II	
Hydnocarpus alpina *Wt.*	I	
Scolopia crenata *Clos.*	II	
ICACINACEAE		
Apodytes benthamiana *Wt.*	II	
Gomphandra coriacea *Wt.*	II,III	
LAURACEAE		
Actinodaphne malabarica *Balak.*	I	
Alseodaphne semecarpifolia Nees *var.* angustifolia Meisner	I	
Apollonias arnottii Nees	II	
Beilschmiedia wightii *Benth.*	I	
Cinnamomum sulphuratum Nees	II,I	
C. verum *Presl.*	I	
C. wightii *Meisn.*	I	
Cryptocarya lawsonii *Gamb.*		
C. neilgherrensis *Meisn.*		

Litsea bourdillonii *Gamb.*	I,II	
L. floribunda *Gamb.*	I,II	
L. oleoides *Hk.f.*	II	
L. stocksii *Hk.f.*	I	
Neolitsea zeylanica *Merr.*	II	
Persea macrantha *(Nees) Kosterm.*	I	
Phoebe wightii *Meisn.*	II	
LEEACEAE		
Leea indica *(Burm.) Merr.*	III,S	
LOGANIACEAE		
Fagraea ceilanica *Thunb.*	II	
LYTHRACEAE		
Lagerstroemia microcarpa *Wt.*	I	
MAGNOLIACEAE		
Michelia champaca *L.*	I	
MELASTOMATACEAE		
Memecylon gracile *Bedd.*	III	
M. malabaricum *(Cl.) Cogn.*	III	
MELIACEAE		
Toona ciliata Roemer	I	
Trichilia connaroides *(W. & A.) Bent.*	I	
MYRISTICACEAE		
Myristica dactyloides *Gaertn.*	I	
MYRSINACEAE		
Ardisia rhomboidea *Wt.*	III,S	
A. solanacea *Roxb.*	III,S	
A. sonchifolia *Mez.*	III,S	
Rapanea *sp.*	S	
MYRTACEAE		
Eugenia mooniana *Wt.*	II	
Rhodomyrtus tomentosa *Wt.*	II,III	
Syzygium arnottianum *Walp.*	II	
S. caryophyllatum *(L.) Alston*	I	
S. cumini *(L.) Skeels*	I	
S. hemisphericum *(Walp.) Alston*	II	
S. rubicundum *W. & A.*	II	
OLEACEAE		
Jasminum *sp.*	L	
Ligustrum gamblei *Ramam.*	II,III	M
Olea dioica *Roxb.*	II	
PIPERACEAE		
Piper *sp.*	L	
PITTOSPORACEAE		
Pittosporum neelgherrense *W. & A.*	III	
P. tetraspermum *W. & A.*	III	
RANUNCULACEAE		
Clematis gouriana *Roxb.*	L	
RHAMNACEAE		
Scutia myrtina *(Burm.) Kurz*	L	
RUBIACEAE		
Canthium neilgherrense *Wt.*	III,S	
Hedyotis stylosa *Br.*	H	
Ixora nigricans *W. & A.*	III,S	
I. notoniana *Wall.*	S	
Lasianthus rostratus *Wt.*	S	
Psychotria elongata *Hk.f.*	S	
P. globicephala *Gamb.*	S	
P. truncata *Wall.*	S	
Randia *sp.*	S	
Saprosma *sp.*	II	
Tarenna asiatica *(L.) Schumam*	S	
Tricalysia apiocarpa *Gamb.*	II	
Wendlandia thyrsoidea *(R. & S.) Steudel*	III	M
RUTACEAE		
Acronychia pedunculata *(L.) Miq.*	II	
Euodia lunu-akenda *(Gaertn.) Merr.*	I,II	
Toddalia asiatica *(L.) Lam.*	L	
Zanthoxylum rhetsa *(Roxb.) DC.*	I	
SABIACEAE		
Meliosma pinnata *(Roxb.) Walp. ssp.* arnottiana *(Wt.) Beuse.*	I	
M. simplicifolia *(Roxb.) Walp.*	I	
SAPINDACEAE		
Dimocarpus longan *Lour.*	I	
SAPOTACEAE		
Isonandra montana *Gamb.*	II	
SCROPHULARIACEAE		
Sopubia delphinifolia *(L.) Don*	H	
STAPHYLEACEAE		
Turpinia cochinchinensis *(Lour.) Merr.*	I	
T. malabarica Gamble	I	
SYMPLOCACEAE		
Symplocos cochinchinensis *(Lour.) Moore* ssp. lauriana *(Retz.) Noot.*	II	
S. macrophylla *Wall. ex DC.*	II	
S. racemosa *Roxb.*	III	M
THEACEAE		
Gordonia obtusa *W. & A.*	I,II	
URTICACEAE		
Debregeasia longifolia *(Burm.) Wedd.*	S.	
Elatostema lineolatum *Wt.*	H	

VERBENACEAE		ARECACEAE	
Callicarpa tomentosa *(L.) Murr.*	II,III	Calamus huegelianus *Mart.*	L
VITACEAE		Caryota urens *L.*	I,II
Cayratia *sp.*	L	PANDANACEAE	
MONOCOTYLEDONS		Pandanus *sp.*	S
ARACEAE		SMILACACEAE	
Arisaema leschenaultii *Bl.*	H	Smilax *sp.*	L

SECONDARY MOIST DECIDUOUS FOREST

DICOTYLEDONS			
ACANTHACEAE			
Bremekampia neilgherryensis *(Wt.) Sreem.*	H	O	
Dicliptera zeylanica Nees	H	O	
Nilgirianthus *sp.*	H,III	O	
AMARANTHACEAE			
Pupalia *sp.*	H	O(K)	
ANACARDIACEAE			
Buchanania lanzan Spreng.	I,II	C	D
Holigarna arnottiana *Hk.f.*	I	C	Ev
Lannea coromandelica *(Houtt.) Merr.*	I	vc	D
Mangifera indica *L.*	I	O	Ev
Spondias pinnata *(L.f.) Kurz*	I	vc	D
ANNONACEAE			
Uvaria narum *(Dunal) W. & A.*	L	C	
APOCYNACEAE			
Alstonia scholaris *(L.) R.Br.*	I	C	Ev
Carissa congesta *Wt.*	III	C	
Ervatamia heyneana *(Wall.) Cooke*	II	vc	D
Holarrhena antidysenterica *(Roth) DC*	III	vc	
ASCLEPIADACEAE			
Hemidesmus indicus *(L.) R.Br.*	L	vc	
ASTERACEAE			
Ageratum conyzoides *L.*	H	vc	
Chromolaena odorata *(L.) King*	S	vc	
Conyza *sp.*	H	C	
Senecio grahamii *J.Hk.*	H	O	
BARRINGTONIACEAE			
Careya arborea *Roxb.*	II	vc	D
BIGNONIACEAE			
Oroxylum indicum *Vent.*	I	C	D
Radermachera xylocarpa *(Roxb.) Schum.*	III	C	D
Stereospermum personatum *(Hassk.) Chatt.*	I	Vc	D
BOMBACACEAE			
Bombax ceiba *L.*	I	vc	D
BURSERACEAE			
Garuga pinnata *Roxb.*	I	vc	D
CELASTRACEAE			
Maytenus emarginata *(Willd.) D.Hou*	S,III	C	
CLUSIACEAE			
Garcinia indica *Chois.*	II	O	Ev
COMBRETACEAE			
Anogeissus latifolia *(DC.) Bedd.*	I	O	D
Calycopteris floribunda *(Roxb.) Poir.*	L	vc	
Combretum *sp.*	L	C	
Terminalia alata Roth	I	vc	D
T. bellirica *(Gaertn.) Roxb.*	I	vc	D
T. chebula *(Gaertn.) Retz.*	II	C	D
T. paniculata *Roth*	I	vc	D
CONVOLVULACEAE			
Argyreia *sp.*	L	C	
DILLENIACEAE			
Dillenia pentagyna *Roxb.*	I,II	vc	D
EBENACEAE			
Diospyros montana *Roxb.*	III,II	C	Ev
EUPHORBIACEAE			
Aporosa lindleyana *(Wt.) Baill.*	II	C	Ev
Breynia vitis-idaea *(Burm.f.) C.E.C.Fischer*	H,S	C	
Bridelia crenulata *Roxb.*	II	vc	D
Emblica officinalis *Gaertn.*	II	vc	D
Mallotus philippensis *(Lam.) Muell.*	II	C	Ev
Sapium insigne *Benth.*	III,II	O	D
FABACEAE (Caesalpinioideae)			
Bauhinia foveolata Dalzell	II	C	D
B. racemosa *Lam.*	II	vc	D
Cassia fistula *L.*	II	vc	D
Moullava spicata *(Dalz.) Nicolson*	L	C	
(Faboideae)			
Butea monosperma *(Lam.) Taub.*	I	O	D
Dalbergia paniculata *Roxb.*	I	vc	D
Mundulea sericea *(Willd.) Cheval*	III	O	
Pterocarpus marsupium *Roxb.*	I	C	D
Spatholobus parviflorus *(Roxb.) Kuntze*	L	C	
(Mimosoideae)			
Acacia *sp.*	L	vc	
Albizia lebbek *(L.) Willd.*	I	C	D

A. odoratissima *(L.) Benth.*	I	vc	D
Xylia xylocarpa *(Roxb.) Taub.*	I	vc	D
FLACOURTIACEAE			
Flacourtia montana Graham	II	I	Ev
HIPPOCRATEACEAE			
Salacia fruticosa *Laws.*	L	C	
LAMIACEAE			
Colebrookia oppositifolia *Sm.*	S	O	Ev
Pogostemon purpurascens *Dalz.*	H	O	
LAURACEAE			
Persea macrantha *(Nees) Kosterm.*	I	O	Ev
LEEACEAE			
Leea indica *(Burm.) Merr.*	III	C	Ev
LINACEAE			
Hugonia mystax *L.*	L	C	
LOGANIACEAE			
Strychnos nux-vomica *L.*	II	tc	D
LYTHRACEAE			
Lagerstroemia microcarpa *Wt.*	I	vc	D
L. parviflora *Roxb.*	I	O	D
MALVACEAE			
Hibiscus furcatus *Willd.*	H	C	
Kydia calycina *Roxb.*	II	C	D
Pavonia *sp.*	H	C	
MELASTOMATACEAE			
Melastoma malabathricum *L.*	H	C	
Memecylon wightii *Thw.*	III,S	C	
Osbeckia *sp.*	H	C	
MENISPERMACEAE			
Cyclea peltata *Hk. & Th.*	L	C	
Tinospora cordifolia *(Willd.) Hook. & Thoms.*	L	O	
MORACEAE			
Artocarpus heterophyllus *Lam.*	I	O	Ev
Ficus exasperata *Vahl*	III	O	D
F. sp.	I	C	D
MYRSINACEAE			
Ardisia solanacea *Roxb.*	S,III	C	
Maesa indica *(Roxb.) DC.*	S	C	
MYRTACEAE			
Syzygium caryophyllatum *(L.) Alston*	II	O	Ev
S. cumini *(L.) Skeels*	I	O	Ev
OCHNACEAE			
Gomphia serrata *(Gaertn.) Kanis*	S	C	
OLEACEAE			
Jasminum *sp.*	L	C	
Olea dioica *Roxb.*	I,II	C	E
PIPERACEAE			
Piper nigrum *L.*	L	O	
RANUNCULACEAE			
Clematis *sp.*	L	O	
RHAMNACEAE			
Scutia myrtina *(Burm.) Kurz*	L	O	
Ventilago *sp.*	L	C	
Ziziphus oenoplia Miller	SL	vc	
Z. rugosa *Lam.*	III	vc	
RHIZOPHORACEAE			
Carallia brachiata *(Lour.) Merr.*	I	O	Ev
RUBIACEAE			
Anthocephalus chinensis *(Lam.) A.Rich.*	I	O	
Canthium *sp.*			
Ceriscoides turgida *(Roxb.) Ridsd.*	III	O	D
Gardenia gummifera *L.f.*	III	C	
Haldina cordifolia *(Roxb.) Ridsd.*	I	vc	
Hymenodictyon excelsum *Wall.*	I	C	D
Ixora brachiata *Roxb.*	III	C	Ev
I. coccinea *L.*	S	C	
Mitragyna parviflora *(Roxb.) Korth.*	I	vc	D
Psychotria *sp.*	III	C	
Xeromphis spinosa *(Thunb.) Keay*	III	C	D
RUTACEAE			
Atalantia wightii *Tan.*	S,III	C	Ev
Euodia lunu-akenda *(Gaertn.) Merr.*	I,II	O	
Glycosmis mauritiana *(Lam.) Tanaka*	S,III	C	
Naringi crenulata *(Roxb.) Nicols.*	III	vc	Ev
Toddalia asiatica *(L.) Lam.*	L	C	
SAPINDACEAE			
Allophylus cobbe *(L.) Raeusch.*	L	vc	
Schleichera oleosa *(Lour.) Oken*	I	vc	D
SOLANACEAE			
Solanum *sp.*	H,S	C	
STERCULIACEAE			
Helicteres isora *L.*	S	vc	
Pterospermum *sp.*	I	C	D
Sterculia guttata *Roxb.*	I	C	D

TILIACEAE				**DIOSCOREACEAE**			
Grewia microcos *L.*	S			Dioscorea *sp.*	L	C	
G. tiliifolia Vahl	I,II	vc	D	**LILIACEAE**			
G. sp.	H	C		Asparagus gonoclados Baker	L	C	
Triumfetta rhomboidea *Jacq.*	H	C		**ORCHIDACEAE**			
ULMACEAE				Habenaria diphylla *Dalz.*	H	C	
Trema orientalis *(L.) Bl.*	III	O	Ev	**POACEAE**			
VERBENACEAE				Bambusa arundinacea *(Retz.) Roxb.*	II	C	D
Callicarpa tomentosa *(L.) Murr.*	III	C	Ev	Dendrocalamus strictus *(Roxb.) Nees*	III	O	D
Clerodendrum viscosum *Vent.*	III	C	Ev	**SMILACACEAE**			
Gmelina arborea *Roxb.*	II	C	D	Smilax zeylanica *L.*	L	C	
Lantana camara *L.*	S	vc		**ZINGIBERACEAE**			
Stachytarpheta indica *(L.) Vahl*	H	vc		Curcuma *sp.*	H	O	
Vitex altissima *L.f.*	I	C	D				
MONOCOTYLEDONS				**GYMNOSPERMS**			
ARACEAE				**GNETACEAE**			
Arisaema tortuosum *(Wall.) Sch.*	H	O		Gnetum ula *Brong.*	L	O	
ARECACEAE							
Phoenix humilis Royle	III,S	C					

CLIMAX MOIST DECIDUOUS FOREST
LAGERSTROEMIA MICROCARPA – TECTONA GRANDIS – DILLENIA PENTAGYNA TYPE

DICOTYLEDONS		
ANACARDIACEAE		
Buchanania lanzan *Spreng.*	II,I	vc
Lannea coromandelica *(Houtt.) Merr.*	I	C
Mangifera indica *L.*	I	O R
Semecarpus anacardium *L.f.*	III	O
Spondias pinnata *(L.f.) Kurz*	I	vc
APOCYNACEAE		
Alstonia scholaris *(L.) R.Br.*	I	O R
Carissa congesta *Wt.*	II,S	C
Ervatamia heyneana *(Wall.) Cooke*	II	vc
Holarrhena antidysenterica *(Roth) DC.*	II,S	vc
Wrightia tinctoria *R.Br.*	II	vc
W. arborea *(Dennst.) Mabberley*	II	O
ASTERACEAE		
Chromolaena odorata *(L.) King*	H,S	C
BARRINGTONIACEAE		
Barringtonia acutangula *(L.) Gaertn.*	III,II	O R
Careya arborea *Roxb.*	II	vc
BIGNONIACEAE		
Radermachera xylocarpa *(Roxb.) Schum.*	II	C
Stereospermum personatum *(Hassk.) Chatt.*	I	vc
BOMBACACEAE		
Bombax ceiba *L.*	I	vc
BORAGINACEAE		
Cordia wallichii *Don*	III	O
Heliotropium *sp.*	H	O
BURSERACEAE		
Garuga pinnata *Roxb.*	I	C
CELASTRACEAE		
Celastrus paniculatus *Willd.*	L	O
Maytenus emarginata *(Willd.) D. Hou*	III	C
COMBRETACEAE		
Anogeissus latifolia *(DC.) Bedd.*	I	OO
Calycopteris floribunda *(Roxb.) Poir.*	L	C
Terminalia alata *Roth*	I	vc
T. bellirica *(Gaertn.) Roxb.*	I	C
T. chebula *(Gaertn.) Retz.*	II	O
T. paniculata *Roth*	I	vc
CONVOLVULACEAE		
Argyreia *sp.*	L	O
DILLENIACEAE		
Dillenia pentagyna *Roxb.*	I,II	C
DIPTEROCARPACEAE		
Hopea ponga *(Dennst.) Mabberley*	I	rR
Shorea roxburghii *Don*	I	OO
EBENACEAE		
Diospyros melanoxylon *Roxb.*	III,II	C
D. montana *Roxb.*	III,II	C
EUPHORBIACEAE		
Antidesma diandrum *Roth*	III	O
A. ghaesembilla *Gaertn.*	III	O
Breynia retusa *(Dennst.) Alst.*	H,S	C
Bridelia crenulata *Roxb.*	III	C
Emblica officinalis *Gaertn.*	II	vc
Glochidion johnstonei *J.Hk.*	III	C
G. sp.	III	O,C
Mallotus philippensis *(Lam.) Muell.*	II	O R
M. tetracoccus *(Roxb.) Kurz*	II	r R
Margaritaria indica *(Dalz.) A. Shaw*	I,II	O
FABACEAE (Caesalpinioideae)		
Bauhinia foveolata *Dalz.*	I	C
B. racemosa *Lam.*	II	vc
B. malabarica *Roxb.*	II	O
Cassia fistula *L.*	II	vc
Cassia tora *L.*	H	O
Saraca asoca *(Roxb.) de Wilde*	II	C R
Moullava spicata *(Dalz.) Nicols.*	L	C
(Faboideae)		
Butea monosperma *(Lam.) Taub.*	II	C
Crotalaria sericea *Retz.*	H,S	O
Dalbergia latifolia *Roxb.*	I	vc
D. paniculata *Roxb.*	I	C
Desmodium pulchellum *(L.) Benth.*	H,S	C

Erythrina stricta *Roxb.*	I	OO
Flemingia grahamiana *W. & A.*	H,S	vc
Indigofera *sp.*	H	C
Ougeinia oojeinensis *(Roxb.) Hochr.*	II	O
Pongamia pinnata *(L.) Pierre*	II,I	OR
Pterocarpus marsupium *Roxb.*	I	vc
Spatholobus parviflorus *(Roxb.) O Kun.*	L	C
(Mimosoideae)		
Acacia torta *(Roxb.) Craib.*	L	vc
Albizia lebbeck *(L.) Willd.*	I	vc
A. odoratissima *(L.f.) Benth.*	I	vc
A. procera *Benth.*	I	C
Mimosa pudica L.	H	vc
Xylia xylocarpa *(Roxb.) Taub.*	I	O(N.K.)
FLACOURTIACEAE		
Casearia elliptica *Willd.*	III	C
Flacourtia montana *Graham*	II,III	C
LEEACEAE		
Leea asiatica *(L.) Ridsdale*	H,S	O
LORANTHACEAE		
Taxillu stomentosus *(Roth.) VanTiegh*	P	O
LYTHRACEAE		
Lagerstroemia microcarpa *Wt.*	I	vc
L. parviflora *Roxb.*	I	O
L. reginae *Roxb.*	I	OR
MALVACEAE		
Hibiscus furcatus *Willd.*	H	C
Kydia calycina *Roxb.*	II	C
MELASTOMATACEAE		
Memecylon *sp.*	III	OR
M. umbellatum *Burm.*	II,III	C
MELIACEAE		
Chukrasia tabularis *A. Juss.*	I	O
Melia dubia *Cav.*	I	O
Toona ciliata *Roemer*	I	rR
MENISPERMACEAE		
Cissampelos pareira *L.*	L	C
Cyclea peltata *Hk. & Th.*	L	C
MORACEAE		
Ficus exasperata *Vahl*	III,II	C
F. microcarpa *L.f.*	II	O
F. mollis *Vahl*	II	OR
F. racemosa *L.*	II	CR
F. tsjahela *Burm.*	I	C
MYRSINACEAE		
Embelia tsjeriam-cottam *A.DC.*	L	C
Maesa indica *(Roxb.) DC.*	S	O
MYRTACEAE		
Jambosa *sp.*	II,III	R
Syzygium cumini *(L.) Skeels*	I	O
OLEACEAE		
Jasminum *sp.*	L	C
Olea dioica *Roxb.*	I,II	r
RHAMNACEAE		
Ventilago calyculata *Tul.*	L	C
V. maderaspatana *Gaertn.*	L	C
Ziziphus gablerrima *Sant.*	III	C
Z. oenoplia *Miller*	III	C
Z. rugosa *Lam.*	III	vc
RUBIACEAE		
Anthocephalus chinensis *(Lam.) A.Rich. ex Walp.*	I	OR
Canthium dicoccum *(Gaert.) T. & B.*	III,II	C
Gardenia gummifera *L.f.*	III	C
Haldina cordifolia *(Roxb.) Ridsd.*	I	vc
Hymenodictyon excelsum *Wall.*	I	C
Ixora *sp.*	III	C
Mitragyna parviflora *(Roxb.) Korth.*	I	vc
Pavetta tomentosa *Sm.*	III,S	C
Xeromphis spinosa *(Thunb.) Keay*	III,S	C
X. uliginosa *(Retz.) Mahes.*	III	C
RUTACEAE		
Atlantia recemosa *W. & A.*	IV,III	O
Euodia lunu-akenda *(Gaertn.) Merr.*	II,I	C
Glycosmis mauritiana *(Lam.) Tanaka*	III,S	C
SAPINDACEAE		
Schleichera oleosa *(Lour.) Oken*	I	O
SAPOTACEAE		
Madhuca longifolia *(L.) Macbride* var. latifolia *(Roxb.) Chev.*	I	OR
SOLANACEAE		
Solanum *sp.*	H,S	O
STERCULIACEAE		
Helicteres isora *L.*	III,S	vc
Sterculia guttata *Roxb.*	I	C
S. villosa *Roxb.*	II,I	O
THYMELAEACEAE		
Gnidia glauca *(Fres.) Gilg.*	III,S	O
TILIACEAE		
Erinocarpus nimmonii *Grah.*	I	C
Grewia microcos *L.*	IV,H	C
G. tiliifolia *Vahl*	I,II	vc

G. umbellifera *Bedd.*	IV,III	O
G. *sp.*	S	vc
ULMACEAE		
Trema orientalis *(L.) Bl.*	II	C
VERBENACEAE		
Callicarpa tomentosa *(L.) Murr.*	III	rR
Clerodendrum serratum *(L.) Moon*	S	OR
C. viscosum *Vent.*	III	rR
Gmelina arborea *Roxb.*	I,II	vc
Lantana camara *L.*	S	vc
Stachytarpheta indica *(L.) Vahl*	H	C
Tectona grandis *L.f.*	I	vc
Vitex altissima *L.f.*	I	rR
V. leucoxylon *L.f.*	II,III	OR
VITACEAE		
Ampelocissus tomentosa *(Roth.) Planch.*	L	C
MONOCOTYLEDONS		
ARACEAE		
Amorphophallus *sp.*	H	O
DIOSCOREACEAE		
Dioscorea *sp.*	L	C
LILIACEAE		
Asparagus gonoclados *Baker*	L	C
Curculigo orchioides *Gaertn.*	H	C
POACEAE		
Aristida hystrix *L.f.*	H	C
Bambusa arundinacea *(Retz.) Roxb.*	II,I	vc
Cymbopogon confertiflorus *Stapf.*	H	C
C. martini *Wats.*	H	C
Dendrocalamus strictus *(Roxb.) Nees*	III	vc
ORCHIDACEAE		
Nervilia *sp.*	H	C
SMILACACEAE		
Smilax *sp.*	L	OR
ZINGIBERACEAE		
Curcuma neilgherrensis *Wt.*	H	C
Globba *sp.*	H	C

CLIMAX DRY DECIDUOUS FOREST
ANOGEISSUS LATIFOLIA – TECTONA GRANDIS – TERMINALIA ALATA TYPE

DICOTYLEDONS

ACANTHACEAE		
Dyschoriste vagans *(Wt.) Kuntze*	H	C
Justicia simplex *D.Don*	H	vc
Phaulopsis dorsiflora *(Retz.) Sant.*	H	C
Rungia latior *Nees*	H	O
AMARANTHACEAE		
Achyranthes aspera *L.*	H	C
ANACARDIACEAE		
Buchanania lanzan *Spreng.*	II,I	vc
Lannea coromandelica *(Houtt.) Merr.*	I	vc
Mangifera indica *L.*	I	OR
Semecarpus anacardium *L.f.*	I	C
APOCYNACEAE		
Carissa congesta *Wt.*	III,H	vc
Holarrhena antidysenterica *(Roth.) DC.*	III,S	vc
Wrightia tinctoria *R.Br.*	II	vc
ASCLEPIADACEAE		
Hemidesmus indicus *(L.) R.Br.*	L	C
ASTERACEAE		
Ageratum conyzoides *L.*	H	
Bidens biternata *(Lour.) Sherff.*	H	C
Blumea lacera *(Burm.) DC.*	H	
Chromolaena odorata *(L.) King & Rob.*	H	C
Elephantopus scaber *L.*	H	C
Spilanthes paniculata *DC.*	H	
Synedrella nodiflora *(L.) Gaertn.*	H	
Vicoa indica *(L.) DC.*	H	
BARRINGTONIACEAE		
Careya arborea *Roxb.*	II	vc
BIGNONIACEAE		
Radermachera xylocarpa *(Roxb.) Schum.*	II	O
Stereospermum personatum *(Hassk.) Chatt.*	I	vc
BIXACEAE		
Cochlospermum religiosum *(L.) Alston*	II	cT
BOMBACACEAE		
Bombax ceiba *L.*	I	C
BORAGINACEAE		
Carmona retusa *(Vahl) Masu.*	II,III	cT
Cordia gharaf *(Forsk.) Ehrenb. & Asch.*	III	O
C. macleodii *Hk.f.*	II	O
BURSERACEAE		
Commiphora caudata *Engl.*	I	cT
Garuga pinnata *Roxb.*	I	C
CAMPANULACEAE		
Wahlenbergia erecta *(R. & S.) Tuyn*	H	O
W. hookeri *(Cl.) Tuyn*	H	O
CAPPARIDACEAE		
Caparis *sp.*	III	O
CELASTRACEAE		
Celastrus paniculatus *Will d.*	L	
Maytenus emarginata *(Will d.) D. Hou*	III	C
COMBRETACEAE		
Anogeissus latifolia *(DC.) Bedd.*	I	vc
Calycopteris floribunda *(Roxb.) Poir.*	L	vc
Terminalia alata *Roxb.*	I	vc
T. bellirica *(Gaertn.) Roxb.*	I	O
T. chebula *(Gaertn.) Retz.*	II	C
T. paniculata *Roth.*	I	O
CUCURBITACEAE		
Diplocyclos palmatus *(L.) Jeff.*	C	O
Mukia maderaspatana *(L.) Roem.*	C	O
DIPTEROCARPACEAE		
Shorea roburghii *G. Don*	I	O
EBENACEAE		
Diospyros melanoxylon *Roxb.*	II	C
D. montana *Roxb.*	II,III	C
EUPHORBIACEAE		
Bridelia crenulata *Roxb.*	II	vc
B. scandens *(Roxb.) Willd.*	L	C
Eblica officinalis *Gaerth.*	II	vc
Givotia rottleriformis *Griff.*	I	T
Glochidion *sp.*	III	O
Tragia involucrata *L.*	H	O

FABACEAE *(Caesalpinioideae)*		
Bauhinia racemosa *L.*	II	vc
Cassia fistula *L.*	II	vc
C. tora *L.*	H	O
(Faboideae)		
Butea monosperma *(Lam.) Taub.*	II	C
Crotalaria calycina *Schrank*	H	O
C. hirsuta *Willd.*	H	C
C. sericea *Retz.*	H,S	C
Dalbergia latifolia *Roxb.*	I	vc
D. paniculata *Roxb.*	I	C
Desmodium pulchellum *(L.) Benth.*	S	
D. triangulare *(Retz.) Merill var. congestum (W. & A.) Sant.*	S	
D. velutinum *(Willd.) DC.*	S	
Flemingia *sp.*	H	C
Indigofera cassioides *DC.*	S	
I. wightii *W. & A.*	H	C
Mundulea sericea *(Willd.) Cheval*	III	C
Ougeinia oojeinensis *(Roxb.) Hoch.*	II	O
Pterocarus marsupium *Roxb.*	I	vc
Pueraria tuberosa *(Roxb.) DC.*	L	C
Spatholobus parviflorus *(Roxb.) O. Kun.*	L	C
(Mimosoideae)		
Acacia chundra *(Rottl.) Willd.*	III	C
A. *sp.*	L	C
Albizia amara *(Roxb.) Boiv.*	II	T
A. lebbeck *(L.) Willd.*	I	C
A. odoratissima *(L.f.) Benth.*	I	vc
Xylia xylocarpa *(Roxb.) Taub.*	I,II	r
FLACOURTIACEAE		
Casearia elliptica *Willd.*	III	C
Flacourtia indica *(Burm.) Merr.*	II,III	C
GENTIANACEAE		
Canscora decussata *Sch. & Sch.*	H	O
HERNANDIACEAE		
Gyrocarpus americanus *Jacq.*	II	cT
LABIACEAE		
Leucas *sp.*	H	vc
LAMIACEAE		
Acrocephalus hispidus *(L.) Nicolson & Sivadasan*	H	C
Gomphostemma heyneanum *Wall. ex Benth.*	H	C
Leucas marrubioides *Desf.*	H	C
L. suffruticosa *Benth.*	H	C
LECYTHIDACEAE		
Careya arborea *Roxb.*	II	
LEEACEAE		
Leea asiatica *(L.) Ridsdale*	III,S	C
LORANTHACEAE		
Taxillus tomentosus *(Roth) van Tiegh.*	P	C
LYTHRACEAE		
Lagerstroemia microcarpa *Wt.*	I	O
L. parviflora *Roxb.*	I	C
MALVACEAE		
Decaschistia crotonifolia *W. & A.*	H,S	C
Hibiscus furcatus *Willd.*	H	C
H. ovalifolius *(Forsk.) Vahl*		
Kydia calycina *Roxb.*	II	O
Sida acuta *Burm.*	H	C
Thespesia lampas *(Cav.) Dalz. & Gibs.*	S	O
MELIACEAE		
Soymida febrifuga *A. Juss.*	II	O
MENISPERMACEAE		
Cissampelos pareira *L.*	L	C
Cyclea peltata *Hk. & Th.*		
MORACEAE		
Ficus benghalensis *L.*	I	O
F. tinctoria *Forst.* ssp. parasitica *(Willd.) Corner*		
F. *sp.*	I	C
OLEACEAE		
Jasminum *sp.*	L	C
Schrebera swietenioides *Roxb.*	I,II	C
OXALIDACEAE		
Biophytum reinwardtii *Edgw. & Hk.*	H	C
RANUNCULACEAE		
Clematis gouriana *Roxb.*	L	O
RHAMNACEAE		
Ventilago calyculata *Tul.*	L	vc
Ziziphus nummularia *W. & A.*	S	O
Z. oenoplia *Miller*	S,L	vc
Z. rugosa *Lam.*	III	vc
RUBIACEAE		
Canthium dicoccum *(Gaertn.) T. & B.*	III	C
C. parviflorum *Lam.*	S	C
Gardenia latifolia *Aiton*	III	C
Haldina cordifolia *(Roxb.) Ridsd.*	I	C
Hymenodictyon excelsum *Wall.*	I	O
Ixora *sp.*	S	O
Oldenlandia *sp.*	H	C
Pavetta tomentosa *Sm.*	S	O
Xeromphis spinosa *(Thunb.) Keay*	III	C
RUTACEAE		
Atalantia monophylla *Corr.*	III	T

Chloroxylon swietenia *DC.*	II	T
SANTALACEAE		
Santalum album *L.*	III,II	O
SAPINDACEAE		
Sapindus laurifolia *Vahl*	II	T
Schleichera oleosa *(Lour.) Oken*		
SAPOTACEAE		
Madhuca asiatica *(L.) Macbride* var. latifolia *(Roxb.) Chev.*	I	CR
SCROPHULARIACEAE		
Striga asiatica *(L.) Kuntze* var. coccinea *(Benth.) Bennet*	H	O
STERCULIACEAE		
Eriolaena hookeriana *W. & A.*	S,III	O
Helicteres isora *L.*	S	vc
TILIACEAE		
Grewia abutifolia *Vent. ex A.L. Juss.*		
G. hirsuta *Vahl*	H	vc
G. tiliifolia *Vahl*	I,II	vc
Triumfetta rhomboidea *Jacq.*	H	C
ULMACEAE		
Holoptelea integrifolia *(Roxb.) Planch.*	I	O
VERBENACEAE		
Clerodendrum serratum *(L.) Moon*	S	O
Gmelina arborea *Roxb.*	I,II	C
Lantana camara *L.*	S	vc
Premna tomentosa *Willd.*	II	T
Tectona grandis *L.f.*	I	vc
MONOCOTYLEDONS		
ARECACEAE		
Phoenix humilis *Royle*	III	O
CYPERACEAE		
Scleria lithosperma *(L.) Sw.*	H	O
DIOSCOREACEAE		
Dioscorea belophylla *Voigt*	L	C
LILIACEAE		
Ophiopogon intermedius *D. Don*	H	vc
POACEAE		
Apluda mutica *L.* var. aristata *(L.) Hackel*	H	C
Aristida hystrix *L.f.*	H	C
Cymbopogon coloratus *Stapf*	H	C
C. confertiflorus *Stapf*	H	C
C. martini *Wats.*	H	vc
Dendrocalamus strictus *(Roxb.) Nees*	II	vc
Heteropogon contortus *(L.) Beauv.*	H	C
Imperata cylindrica *(L.) Beauv.*	H	C
Oplismenus compositus *(L.) Beauv.* Themeda triandra *Forsk.*	H	vc
ZINGIBERACEAE		
Curcuma neilgherrensis *Wt.*	H	vc