International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2019): 7.583

The Salient Features of Floristic Wealth and Diversity of Sacred Groves of Kerala, India

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Abstract: ***Sacred Groves are the tracts of virgin forests; the vestiges of an ancient practice in which people has been protecting forest patches associated with home, temple, agricultural fields or in public places to avoid the perceived wrath of its resident God. In such groves all life forms including microbes are belong to deity and it is believed that, any harm to them invites the displeasure of deity in the form of disease or decease. These terrestrial forest ecosystems are usually in association with fresh water conservatory and this together extent a number of ecological, edaphological and conservational services in the landscape of Kerala. In Kerala the natural forests are extended in the high ranges and highland area (Altitude above 100 m MSL), the sacred groves are distributed in midland or lowland regions (Altitude below 100 m MSL) where the natural forests are not seen. The sacred groves have a comprehensive environmental role in the track of urbanized landscape ecology of the state by protecting flora and fauna. The investigation divulges the unparallel and unique floristic accounts, distinct ecological and conservational values of vegetation, which are extended to the traditional landscape of the state which are succumbed to various anthropogenic pressures.***

Keywords: Conservation, Floristic Wealth and Diversity, Sacred Grove of Kerala, Traditional Landscape

1. Introduction

Traditionally managed Sacred Groves of Kerala (SGK) locally called *Kavu* can be considered as the typical example of Indian ethos for *in situ* conservation and protection of local environment and biodiversity in the socio-religious ground. This traditional worship place and associated practices show the organized organic relation between human and nature, the indigenous people of Kerala lived in accordance with the nature's rule and conserved local bio-treasure in its original habitat. In advancement of civilization, science, technology, industries which spreadout and established the urbanization. The socio-political scenario of state undergoes changes along with the expanded requirement of the basic lifestyle of the people. The associated anthropogenic activities have altered the traditional landscape of state, also sacred groves, which affect the existence of these relic patches of vegetation by and large. The existing grove ecosystems still have been providing many environmental and conservational services including watershed value, biological control, chest of wild genetic resources and with a multidimensional array of social, cultural, religious, and aesthetic values. In the midst of urbanization SGK is protecting indigenous lifeforms in association with the abiotic factors without any external stress, due to the religious and social restrictions. Hence, one of the most conspicuous effects of these ecosystems perturbation is the depletion of biodiversity and habitat losses which initially result in the disappearance of native species due to habitat alteration followed by invasion of exotic species and finally total ecological and edaphic discrepancy. The floristic elements are mostly evergreen and hygrophilous in nature with the resemblance of evergreen forest of Western Ghats. The trees are in three indistinct layers with 50-30 meter height and are rich with woody lianas, parasites and epiphytes. The undergrowth largely consists of herbaceous or woody erect plants including geophytes, saplings and seedlings of trees, shrubs and lianas. A portion of ground vegetation is represented by elements of angiosperms, pteridophytes, bryophytes, and fruiting bodies of fungi. The sacred grove's flora, relic vegetation of Western Ghats, is being considered as the "climatic climax' in the state of equilibrium. The vegetation is tropical and phanero-therophytic with high structural resemblance to the forests of the Western Ghats, mostly with evergreen, semi-evergreen and moist deciduous types and rarely freshwater swamp and mangroves. The floristic diversity indices like Simpson's index and Shannon Weinner's index are equal or almost equal to the Western Ghats' flora. The phyto-sociological data and other salient features are also equated with Western Ghats's vegetation. The values of species richness and tree density also indicate affinity of SGK to Western Ghats. The biological spectrum of SGK is similar to normal spectra of evergreen forests of the world as well as forests of Western Ghats, also supporting the above arguments and in fact, SGK are not only possessing common floristic elements along with species nova but also on the abode of many endemic, rare and threatened plants of conservational significance. The present investigation and analysis have been carriedout based on the exploration trips and field studies conducted in 200 bio-geographically divergent sacred groves categorized into five sites. The exploration results that the SGK are rich in floristic diversity with different array of life forms which are disappearing from other areas due to the developmental activities. Additionally, SGK also have species nova, RET and other eco-economically important genetic resoruces. But now a day groves, are totally susceptible from all type of disturbances due to the erosion of traditional, socio-religious restrictions and developmental activities. This vegetation is nothing but the relic of old vegetation which has been extended in Kerala before civilization is largely being disappearing.

2. Literary Survey

Sacred groves are distributed across the globe and conserve ethnic ethos and natural landscapes keeping the virgin forest

and its bio-wealth. These groves are also widely distributed in all bio-geographical regions of India [1]. The study about sacred groves of India started in 1903 by Gammie in the form of inventory [2]. Then it was extended to various parts of the country by many scientists namely Bor, Raja, Gadgil and Vartak and Vartak and Gadgil [3], [4], [5], [6], [7]. The scientific accounting and evaluation of sacred groves of Western Ghats was initiated with Gadgil and Vartak [8] from Maharashtra state. Gadgil and Mehor-homji [9] attributed the traditional practices by most indigenous communities of necessary protection of natural ecosystems by setting aside of these refugee in socio-religious ground. Chandran and Gadgil [10] and Chandran [11] elaborated various biological, religious, historical, economic and ecological aspects of the sacred groves. In 1998, Chandran *et al* [12] had inventorized the role of this abode of Gods, would have who protected a range of landscape elements with their characteristic biodiversity. In Kerala, the study on *Kavu* is gained impetus with pioneering work of Mohanan and Nair [13] through floristic inventory. The authors were collected new species *Kunstleria keralensis* and rediscovered *Syzygium travancoricum* after the discovery of Bourdillon in 1894 [14]. A tree species *Madhuca diplostemon* also relocated after a long period of 180 years, believed to be extinct, from a grove of Kerala [15]. In 2014, a new species of *Cinnamommum* namely *C. mohananii* has described from SGK by Jagadeesan *et al* [16]. New species, *Biophyttum veldkampii* and *Grewia palodensis* were described from SGK by scientists of JNTBGRI [17], [18]. These all designate the SGK are sanctum sanctorum of flora which are extinct in other ecosystems, including natural forests. Rajendraprasad [19] had documented uniqueness of floristic ecology of selected sacred groves of Kerala along with description of bio-wealth, biodiversity, general ecology and physical edaphology. Balasubrahmanyam and Induchoodan [20] documented the floristic account of 761 selected sacred groves of Kerala. The notable study on ecology and edaphology on groves and its associated aquatic ecosystem shows that it always operates water shed area at local level by minimize the surface runoff and enhancing the infiltrate rate [19], [21].

3. Study Sites

In India, the state Kerala constitutes a natural geographic unit, rising as it were, from Arabian Sea to Western Ghats. The south west corner peninsular state extended from $08^0.2$' to $12^0.8$' N. Latitude and $74^0.8$' $77^0.5$' E. longitude, covering an area of 38864 square kilometers. Phyto-geographically Kerala is divided into three natural physical divisions, the westernmost coastal plain adjoining to Arabian Sea is picturesque lowland, and altitude is > 20 meter below MSL. On moving inland, there is a progressive elevation of topography with rising lateritic hills, undulating clusters of hills and valleys representing midlands, altitude is in between 20 and 100 meter above MSL. Again moving to east the elevation abruptly increase is marking the beginning of the large mountains with rivers in its origin, waterfalls, and virgin tropical vegetation distributed above 100 meter above MSL representing the highlands. The climate of Kerala is tropical, warm humid and monsoonal with annual rainfall of above 2500 mm with rains for nearly 8 to 10 months. The temperature and humidity are moderate throughout the year [Fig1. (a) and (b)].

4. Materials and Methods

i) Data Collection

The botanical survey and inventory was conducted in 200 randomly selected sacred groves covering all phyto-geographical divergent areas (notified as five sites). All species present in each sampled sacred groves were identified and recorded by botanical name and that was latter confirmed from Jawaharlal Nehru Tropical Botanic Garden and Research Institute Herbarium (TBGT). The meteorological data of each site was obtained through government sources located fairly close to study site.

ii) Data Analysis:

The collected species were categorized on family basis and geographical distribution and status were recorded. The habit of each individual based on the morphology and position of apical bud of fully grown member was assessed for the construction of the biological spectrum [22], [23]. The percentage of species belonging to each life forms class was determined by the formula

$$\% \text{ of life form} = \frac{\text{No .of species of any lifeform}}{\text{Total no .of species of all lifeforms}} \times 100$$

The abundance (number of individuals per species), frequency (fraction of sacred grove contains the species), dominance (occupying status) were calculated. The important Value Index (IVI) were calculated by summing up the average relative frequency (rf), relative density (rd) and relative dominance (rD) following Misra & Puri [24]; Misra [25]; Dombois & Ellenberg [26]; Curtis & Mc Intosh [27]; Curtis [28]; Pascal [29].

The floristic similarities between groves of different study sites were calculated using the formula, Dombois & Ellenberg [26].

$$\text{Similarity Index} = \frac{\text{Number of common species}}{\text{Total number of species}} \times 100$$

The distribution pattern and conservation status of each species computed as follow

$$\text{Whiteford Index} = \frac{\text{Abundance}}{\text{Frequency}}$$

$$\text{Abundance} = \frac{\text{Total no .of individual of 'i' species}}{\text{No .of Quadrate in which it occur}}$$

$$\text{Frequency} = \frac{\text{No. of Quadrate with 'i' species}}{\text{No .of Quadrate studied}}$$

The index value of 0.025 to 0.050 indicates that the species is random, while value higher than 0.05 indicates increase in aggregation and values lower than 0.025 shows the tendency towards regularity [30].

The floristic diversity was calculated with following indices:

Simpson Index (D) = $1- \sum (n_i/ N)^2$ [31]
Shannon Wiener's Index (H') = $- \sum[n_i/N] \log_2 [n_i/N]$
$H_{(max)} = \log_2 S$
Equitability (E) = $H'/ H_{(max)}$ [32]

Where,
n_i = Number of individual of the i^{th} species
N = Total number of individuals
S = Number of species.

5. Results and Discussion

The Sacred Groves of Kerala (SGK) are the traditional forms of conservatory, the religious places that has biological, ecological, social, cultural, and religious significance. The area of individual grove varies from a few square meter to many square kilometers and usually it may be attached to temples or traditional heritage homes (locally called *Tharavadu*) as a subsidiary worship place, and are sometime with independently in association with cultivated lands or isolated lands in form of main worship place. This protected virgin forest is immune from all type external disturbances due to religious restriction or social taboos; hence it is possible to conserve wide flora and fauna keeping equilibrium with adjacent ecosystems. The one and most important ecological and conservational functioning of SGK is protection and conservation of biodiversity which are disappearing from other areas of Kerala and creation of positive water regime. The SGK are approved with remarkable occurrence of floristic wealth and diversity including *species nova* and relic vegetation being considered as Sanctum Sanctorum of ancient extended vegetation [Fig. 3 & Fig.4]. Phyto-sociological values and structural data also signify the importance of conservation values. The vegetation is characterized by luxurious growth of different array of flora, which consists of three different tiers, in which the highest often attains a height of 30 to 50 meters, according to the architecture of emergent and keystone species of each grove. Some of the members are buttressed at the base and boles are cylindrical which is branched from two thirds of the height with spreading or umbrella shaped crown at the top. The middle stratum is more or less candle shaped and lower characteristically conical in appearance. The trees are sheltered with several epiphytes such as orchids, arams, pteridophytes, and lichens. The dead or diseased individuals are normally occupied by different types of polyporales and other saprophytes. Trees with smooth barks are common while fissured bark and cauliflory or ramiflory are occasionally noticed. The presence of these wide spectrums of life forms with mutual interaction possesses a biological equilibrium status - the 'Climatic Climax' to the SGK.

The species richness in SGK has ranged from 26 to 55, designate that each and every groves are islands of diverse plants and contribute a key role in biodiversity conservation of Kerala. A total of about 326 angiosperm species belonging to 247 genera and 86 families were identified as core species and 407 species as associates. The dominant families were Rubiaceae, Fabaceae, Asteraceae, Orchidaceae and Lamiaceae. Among the 247 genera 64.60% is rare in occurrence and distribution, 19.60% seldom present and 09.30% is often present in SGK. Among the other group only 05.20% is common and 01.30% is very common in distribution. Regarding the distribution pattern of the species, most of them are distributed in patches, or in clumped aggregation, especially in a very local distance scale. It is of some interest that species which are highly aggregated nevertheless are still present in low numbers, as rare species elsewhere in the grove, there is a random mixing of tree species and almost all of them appear to be having their own individualistic dispersion pattern and are uneven or clumped occurence. The SGK in undisturbed condition have the girth distribution pattern of 'L' shape indicating sustainable self generating nature. The floristic diversity index, Simpson's index (D) in the different SGK at different sites varies from 0.8617 to 0.3719. Similarly, Shannon's Weiner's (H') also shows a range of 2.23 to 3.80. Within the same sacred grove we can observe the different magnitude of diversity indices [Table.1]. The earlier works in sacred groves of states along the Western Ghats are also supporting the present investigation [6], [7], [8], [33], [34]. The similar types of studies conducted by different authors also envisage the role of sacred groves in conserving biodiversity and keeping the ecological balance of the local regions. Some of earlier studies also acceptably point out the importance of sacred groves in conserving the flora and fauna by protecting the ecological conditions of landscape of Kerala state [19], [21], [35]. The element of floristic similarity between different sacred groves of phyto-climatically divergent regions shows that a minimum of 32.00% and a maximum of 68.06%. The minimum was noted between site number 1 and site number 3, groves of coastal - central regions and highland - central regions of the state. The maximum similarity is observed in between S2 and S3, the sites representing central midland and central highland. The variation in the south-north direction is moderate and even. The results indicate that there is a positive co-relation between distribution of flora and to its agro-climatic region. The variation between highland and coastal flora is highest in analysis, with minimum similarity index. The floristic similarity between highland and midland was highest, and of coastal and midland is moderate. This clearly indicates that flora of the state is in a continuous way with longitudinal base [Table.2]. The main criteria for the floristic variation are nothing but topography rather than agro climatic conditions. In addition to this floristic richness, faunal diversity is very significant with representation of vertebrates like mammals, birds, reptiles, amphibians, fishes and non-vertebrates by arthropods, mollusks, insects etc. The structural features may indirectly support the very wealthy distribution of other fauna also. Further that rare, endangered, threatened and endemic species are highly concentrated in these groves highlighting the conservational status of these centuries old traditional way of *in situ* conservation.

There is a wide variation in the floristic composition, structure and vegetational dynamism. The number of species varies from 26 to 216.The vegetation is predominated with tree spices. The tallest tree reaches to over 60 meters and always a stratified structure is recognizable. The highest storey consists of a relatively small number of giant with openings in canopy. The discontinuous is always well above the denser middle and lower strata. The vegetation is evergreen and hygrophilous since the climate is warm and moist throughout the year and there is no seasonally limited growing. The individual trees shed their leaves seasonally or extending throughout the year. Litter formation and decomposition are in rapid manner utilizing conducive microclimate and soil conditions. The faunal activities including the microbial decomposition also accelerate the

processes of mineralization. Hence the soil becomes acidic and nutrient rich for supporting plant wealth and diversity. SGK also provide ecosystem services like controlling local climate, progressive water regime by maintaining water table, as a buffer for agricultural land from desertification by accelerating nutrient recycling and preventing soil erosion. These ecosystems also maintained the consistency of local food web and regulating the biological control of harmful pest and made way to cross pollination.

The sacred groves are protected around the world for a variety of reasons with different cultural dimensions such as religious or social practices with some rituals [36], [37], [38], [39], [40]. In Kerala, sacred groves are also functioning according to the traditional ecological, social cultural/ religious background [19]. In India the sacred groves are distributed North West states to North East and states along the Western Ghats. It is also common in central India with high density sates along the Western Ghats. Recently the villagers of Kumaon Himalayas realized that Gods were the best guards for their forest, so they have declared their forest as sacred in order to protect them from destruction [41]. In Tamil Nadu the sacred groves are an important traditional method of both *in situ* and *ex situ* conservation of ecologically, economically and spiritually valuable tree species (MSSRF, 1997).

The SGK has provided many ecological and environmental services along with a multidimensional array of social, cultural, religious, aesthetic and conservational values. Once largely forested Kerala are now the forest distribution is delimited and restricted to highland regions only. Paradoxically the sacred groves are mainly distributed in lowland and midland regions of Kerala have succumb to conservational existence due to lack of natural forest. All these factors indicate that the conservation of sacred groves attained the utmost importance in Kerala for maintaining traditional ecological equilibrium in traditional landscape and protecting biodiversity. The desertion of these relics of forest ecosystems, remnants of past natural refugee of regional flora and fauna, results the changes in the local environment, ecology, edaphology, climate and bio wealth and ultimately balance between biotic and abiotic elements of life supporting system in traditional landscape of Kerala.

6. Future Scope

Protection of environment and life supporting systems are interwoven with the conservation and protection of nature and natural resources. The Sacred Groves of Kerala represent this embracing concept and practice of traditional way of *in-situ* conservation of natural landscape. The Sacred Groves of Kerala is considered to be self generating and self sustaining ecosystem in the midst of modern urban environment communities. Hence, these ecosystems are also being influence the local climate by creating the conducive microclimate and protecting biotic and abiotic equilibrium. So the study enlightens the importance of the future events of conservation and management, traditional way of nature protection.

Table 1: Floristic composition, geographical distribution conservation status and life forms of SGK representing five agro climatically divergent regions of Kerala

Name and Family	GD	LF	CS	S_1	S_2	S_3	S_4	S_5
DILLENIACEAE								
Dillenia pentagyna Roxb.	India, China, Nepal, Bhutan, Thailand, Myanmar, Indonesia, Malaysia, Vietnam	Ph	R					
Tetracera akara (Bum.f.) Merr.	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Malay Archipelago	La	SP	+			+	+
MAGNOLIACEAE								
Michelia champaca L	India, Sri Lanka, Bhutan, Nepal, Bangladesh, China, South East Asia	Ph	SP					
Michelia nilagirica Zenker	India, SL							
ANNONACEAE								
Annona glabra L	Tropical America, West Tropical Africa	Ph	SP					
Artabotrys zeylanicus Hook.f. & Th.	India, Sri Lanka	La	R	+	+	+		
Polyalthia korinti (Dunn) Hook.f. &Th.	India, Sri Lanka	Ph	R					
Polyalthia rufescens Hook.f. &Th.	India, including Andaman and Nicobar Islands	Ph	R					
Polyalthia fragrans (Dalz.) Bedd.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R		+			
Meiogyne pannosa (Dalz.) Sin	India: Endemic Western Ghats: Karnataka Kerala	Ph	R	+	+		+	
Uvaria narum (Dunal) Wallich *ex* W.&A.	India, Sri Lanka	La	SP	+	+	+		
Uvaria zeylanica L.	India, Sri Lanka	La	R				+	
MENISPERMACEAE								
Anamirta cocculus (L.) W.&A.	India, Sri Lanka, Bangladesh, South East Asia	La	SP	+	+		+	
Cissampelos pareira var. *hirsuta* (Buch-ham ex.DC) Forman	India, Sri Lanka, Bhutan, Nepal, Bangladesh, Pakistan, Yunnan, Thailand, Malesia, Singapore	La	R					
Cyclea peltata (Poir) Hook.f. & Th.	India, Sri Lanka, Malesia	La	SP	+	+	+	+	+
Diploclisia glaucescens (Bl.) Diesl.	Indonesia, Sri Lanka, China, Laos, Cambodia, Vietnam, Myanmar, Thailand, Malesia.	La	SP	+				
Stephania japonica (Thunb.) Miers.	India, Sri Lanka, Nepal, Bangladesh, China, Japan, Korea, Taiwan, Malesia, Singapore, Australia, Africa	La	R	+		+		
Tinospora cordifolia (Wild.) Miers. ex	India, Sri Lanka, Bangladesh, Myanmar	La	R					

Hook.f. & Th.								
CAPPARACEAE								
Capparis moonii Wt.	India, Sri Lanka	La	R				+	
Capparis zeylanica L.	India, Sri Lanka, Nepal, Bangladesh, China, Myanmar, Laos, Cambodia, Vietnam, Java, Philippines Malaysia	La	R					
FLACOURTIACEAE								
Flacourtia montana Grah.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R					
Hydnocarpus pentandra (Ham.) Oken.	India: Endemic Western Ghats: Karnataka Kerala	Ph	C	+	+	+		
Hydnocarpus alpina Wt.	India, Sri Lanka	Ph	R					
XANTHOPHYLLACEAE								
Xanthophyllum arnottianum Wt.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R	+	+			
CLUSIACEAE								
Calophyllum apetalum Willd.	India: Endemic Western Ghats: Karnataka Kerala	Ph	SP			+		
Calophyllum inophyllum L.	India, Sri Lanka, Old and New World Tropics	Ph	SP	+		+	+	
Garcinia gummi-gutta (L.) Roxb.	India: Endemic Western Ghats: Karnataka Kerala	Ph	SP	+	+	+		
Garcinia indica (Thouars) Choisy.	India Endemic	Ph	R				+	
Garcinia spicata (Wt.&Ar.).	India, Sri Lanka	Ph	R					
Mesua ferrea L.	India, Sri Lanka, Bangladesh, Nepal, Myanmar, Thailand, Cambodia, Vietnam, Indonesia, Singapore, Malaysia	Ph	SP	+				
DIPTEROCARPACEAE								
Hopea parviflora Bedd.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R	+	+			
Hopea ponga (Dennst) Mabb.	India: Endemic Western Ghats: Karnataka Kerala	Ph	SP	+	+			+
Vateria indica L.	India: Endemic Western Ghats: Karnataka Kerala	Ph	VC	+	+	+	+	+
Vatica chinensis L.	India, Sri Lanka	Ph	R					+
BOMBACACEAE								
Bombax ceiba L.	India, Sri Lanka, Myanmar, Java, Sumatra, New Guinea	Ph	R					
MALVACEAE								
Hibiscus hirtus L.	India, Malesia	Ph	SP					
Sida acuta Burm.f.	Pan tropics, India, Sri Lanka	Ph	SP					
Sida cordifolia L.	Pan tropics, India, Sri Lanka	Ph	SP			+		
Sida rhombifolia L.	Pan tropics, India, Sri Lanka	Ph	SP	+		+	+	
STERCULIACEAE								
Sterculia balanghas L.	India, Sri Lanka	Ph	SP					
Sterculia foetida L.	India, Sri Lanka, Bangladesh, Pakistan, Myanmar, Malesia, Australia, Tropical Africa.	Ph	SP				+	
SYMPLOCACEAE								
Symplocos cochinchinensis (Lour.) Moore	Japan, Vietnam, India, China, Laos, Cambodia, Vietnam, Myanmar, Thailand, Japan, Malaysia, Philippines, Sumatra, Java, New Guinea, Borneo	Ph	R		+			
Symplocos racemosa Roxb.	India, China, Laos, Cambodia, Vietnam, Myanmar, Thailand	Ph			+	+		
TILIACEAE								
Grewia serrulata DC.	India, Bhutan, Nepal,Myanmar. Pakistan. Laos. Combodia, Vietnam, Malysia, Australia, Africa	Ph	R	+				
LINACEAE								
Hugonia mystax L.	India, Sri Lanka	La	SP	+		+	+	
OXALIDACEAE								
Biophytum sensitivum(L.) DC.	India, Sri Lanka, Tropical Asia, Africa, America	Th	SP	+			+	
Oxalis corniculata L.	India, Sri Lanka, Pan tropics	Th	SP	+				
RUTACEAE								
Acronychia pedunculata (L.) Miq.	India, Sri Lanka, Laos, Cambodia, Vietnam, Taiwan, Sumatra, Borneo, Philippines, Java.	Ph	R			+	+	
Aegle marmelos (L.) Corr. Serr.	India, Myanmar, PAK, Cambodia,Vietnam,Java	Ph	R					
Atalantia monophylla (L.) Corr. Serr.	India, Pakistan, Laos, , Cambodia, Vietnam, Myanmar	Ph	R				+	
Atalantia racemosa W.& A.	India, Sri Lanka	Ph	R					
Glycosmis pentaphylla (Retz.) DC	India, Sri Lanka, China., Myanmar, Malay Archipelago, Australia							
Glycosmis mauritiana (Lam.) Tanaka.	India, Sri Lanka, South East Asia							
Murraya paniculata (L.) Jack	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Myanmar, Malesia, Pacific Islands, Australia	Ph	SP			+		

Murraya koeinigii Spreng	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Myanmar	Ph	R					
Toddalia asiatica (L.) Lam.	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Thailand, Malesia, Tropical Africa.							
Zanthoxylum rhetsa (Roxb.)DC.	India, Sri Lanka, Myanmar, Thailand, Malay Archipelago	Ph	R	+			+	
SIMAROUBACEAE								
Ailanthus triphysa (Den.) Alston	India, Sri Lanka, China Myanmar, Thailand, Cambodia, Vietnam, Malyasia, Indonesia, Australia	Ph	R		+			
Quassia indica (Gaertn.) Nootch.	India, Sri Lanka,Tropical Asia	Ph	R			+		
MELIACEAE								
Aglaia elaeagnoidea (Juss.) Benth.	India, Sri Lanka, Myanmar, Malaysia, Singapore, Indonesia	Ph	SP	+	+		+	
Azadirachta indica A. Juss.	India, Sri Lanka, Myanmar, Pakistan, China, Malesia	Ph	R					
Cipadessa baccifera (Roth.) Miq.	India, Sri Lanka, Malaysia, Java	Ph	R					
Naregamia alata W.&A.	India, Angola	Ph	SP	+	+			
Swietenia mahagoni (L.) Jacq.	Central America, West Indies	Ph	R					
DICHAPETALACEAE								
Dichapetalum gelonioides (Roxb.) Engl.	India, Sri Lanka, Bangladesh, Sumatra	Ph	R					
OLACACEAE								
Anacolosa densiflora Bedd.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R	+	+	+		
ICACINACEAE								
Sarcostigma kleinii W.&A.	India, Malaysia	La	R	+	+	+	+	+
HIPPOCRATEACEAE								
Salacia fruticosa Heyne ex Lawson	India: Endemic Western Ghats: Karnataka Kerala	La	R	+				
RHAMNACEAE								
Ziziphus oenopolia (L.) Mill.	India, Sri Lanka, Pan tropics	La	SP	+	+	+	+	+
Ziziphus rugosa Lam.	India, Sri Lanka, Myanmar, Bangladesh, Pakistan, Thailand, Vietnam, Laos	La	SP	+	+	+	+	+
VITACEAE								
Ampelocissus indica (L.) Planch.	India, Sri Lanka	La	R	+	+			
Cissus arnottiana Shetty & P. Singh	India, Sri Lanka, Africa	La	OP	+	+	+	+	+
LEEACEAE								
Leea indica (Burm.) Merr.	India, Sri Lanka, Nepal, Bangladesh, China, Myanmar, Malaysia, Austr.							
SAPINDACEAE								
Cardiospermum halicacabum L.	India, Sri Lanka, Pakistan, Malaysia, Tropical Africa, America	Th	R	+		+		
ANACARDIACEAE								
Anacardium occidentale L.	South America	Ph	R			+	+	
Buchanania lanceolata Wt.	India, Myanmar	Ph	R					
Holigarna arnottiana Hook.f.	India: Endemic Western Ghats: Karnataka Kerala	Ph	C	+	+	+	+	+
Holigarna beddomei Hook.f.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R					
Mangifera indica L.	India, Sri Lanka, Myanmar, Laos, Cambodia, Vietnam, Thailand, Malesia	Ph	SP	+	+	+	+	+
Nothopegia racemosa (Dalz.) Ram.	Endemic India	Ph	R	+	+			
Lannea coromandelica (Houtt.) Merr.	India, Sri Lanka, Nepal, Bangladesh, Pakistan, Myanmar, China, Bhutan, Laos, Cambodia, Vietnam, Thailand	Ph	R			+	+	
Spondias Pinnata (L.f.) Kurz.	India, Sri Lanka, China, Tropical Asia	Ph	OP					
CONNARACEAE								
Connarus monocarpus L	India, Sri Lanka	La	OP	+	+	+	+	+
Connarus paniculatus Roxb.	India: Endemic Western Ghats: Karnataka Kerala	La	R					
FABACEAE								
Caesalpinniaceae								
Caesalpinia bonduc (L.) Roxb.	India, Sri Lanka, Nepal, Bangladesh, Myanmar, Malay Archipelago	La	OP	+	+	+	+	+
Cassia fistula L.	India, Sri Lanka, Myanmar, Nepal, Bangladesh, Malesia	Ph	R	+	+	+	+	+
Cassia kleinii W. & A.	India, Sri Lanka	Th	R			+		
Cassia tora L.	India, Sri Lanka, Nepal, Pakistan,Myanmar, Laos, Cambodia, Vietnam	Ph	R					
Tamarindus indica L.	Tropical Africa	Ph	R	+	+	+	+	+
Saraca asoca (Roxb.) de Wilde.	India, Sri Lanka, Bangladesh, Bhutan, Nepal, Myanmar, Malaysia	Ph	R	+	+	+	+	+

Fabaceae								
Abrus precatorius L.	India,Pan tropics	La	C	+	+	+	+	+
Clitoria ternatea L.	East Africa	La	R				+	
Crotalaria juncea L	India, Sri Lanka, Myanmar, Bangladesh, Bhutan, Nepal, Pakistan,Malaysia, Thailand, Russia, Australia	Th	R			+		
Dalbergia volubilis Roxb.	India, Sri Lanka, Bangladesh, Nepal, Myanmar, Laos, Vietnam	La	OP	+	+			
Derris scandens (Roxb.) Benth.	India, Sri Lanka, Bangladesh, Pakistan, China, Nepal, Myanmar, Thailand, Malesia							
Desmodium triflorum (L.) DC.	India, Sri Lanka, Bhutan, Pakistan, Bangladesh, China, Myanmar, Hong Kong, Laos, Cambodia, Vietnam, Thailand, Malesia, Pacific Islands, Polynesia, Australia, Africa, America	Ph	R	+				
Kunstleria keralensis C.N. Moh. et Nair	India: Endemic Western Ghats: Karnataka Kerala	La	R	+				
Pongamia pinnata (L.) Pierre	India, Sri Lanka, Bangladesh, Pakistan, Myanmar, China, Malesia, Vietnam, Thailand, Australia, Polynesia	Ph	SP			+		
Butea monosperma (Lam.) Taubert.	India, Nepal, Pakistan, Myanmar, Laos, Cambodia, Vietnam, Thailand, Malesia	La	R					
Tephrosia purpurea (L.) Pers..	India, Sri Lanka, Old World Tropics	Th	R			+		
Mimosaceae								
Acacia caesia (L.) Willd.	India, Sri Lanka, Pakistan, Myanmar, China, Laos, Cambodia, Vietnam, Thailand	La	SP	+				
Acacia Pennata (L.) Willd.	India, Sri Lanka, Bhutan, Nepal, Bangladesh, Myanmar,Thailand	Ph	R			+		
Adenanthera pavonina L.	India, Sri Lanka, Myanmar, Thailand, Timor, China, Malaysia	Ph	OP	+	+	+	+	+
Albizia lebbeck (L.) Benth.	India, Sri Lanka, Malay Archipelago, China, North Australia, Tropical Africa	Ph	R			+		
Mimosa pudica L.	Tropical America	Th	R			+		
RHIZOPORACEAE								
Carallia brachiata (Lour) Merr.	India, Sri Lanka, China, Malay Archipelago, Australia	Ph	R			+		+
Blepharistemma serratum (Dennst.) Suresh	India: Endemic Western Ghats: Karnataka Kerala	Ph	R			+		
COMBRETACEAE								
Calycopteris floribunda (Roxb.) Poiret	India, Bangladesh, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malesia,Singapore	La	OP	+	+	+	+	+
Combretum latifolium Bl.	India including Andaman Islands,Sri Lanka, Bangladesh, Myanmar, Laos, Cambodia, Vietnam, Thailand, Malesia	La	OP	+	+	+		
Quisqualis indica L.	India, Sri Lanka, Old World Tropics	La	R					
Terminalia bellirica (Gaert.) Roxb.	India, Sri Lanka, Nepal, Bangladesh, Myanmar, China, Laos, Cambodia, Malaysia, Vietnam	Ph	R	+	+			+
Terminalia paniculata Roth.	India: Endemic Western Ghats: Karnataka Kerala							
MYRTACEAE								
Syzygium gardneri Thw.	India, Sri Lanka	Ph	R			+		
Syzygium cumini (L.) Skeels	India, Sri Lanka, Nepal, China, Malay Archipelago, Australia	Ph	R	+	+	+	+	+
Syzygium claviflorum (Roxb.) Wall. ex A.M. Cowan & Cowan	India, Sri Lanka	Ph	R				+	
Syzygium mundagam (Bourd.) Chitra	India: Endemic Western Ghats: Karnataka Kerala	Ph	R					
BARRINGTONIACEAE								
Barringtonia racemosa (L.) Sprengel	India, Sri Lanka, Malaysia, Polynesia	Ph	R					
MELASTOMATACEAE								
Melastoma malabathricum L.	India, Sri Lanka, South China, Taiwan, Australia	Ph	R					
MEMECYLACEAE								
Memecylon randerianum S.M. Almeida & M.R. Almeida	Endemic India	Ph	R	+	+			
Memecylon wightianum Triana	Endemic India	Ph	R	+	+			
Memecylon umbellatum Burm. f.	India, Sri Lanka	Ph	R		+			
LYTHRACEAE								
L*agerstroemia hirsuta* (Lam.) Willd	India, Sri Lanka, Pakistan, Myanmar, China, Malaysia, Indonesia, New Guinea	Ph	R	+	+			
ONAGRACEAE								
Ludwigia perennis L.	India, Sri Lanka, Afghanistan, Japan, China, Iran, Malesia, New Caledonia, Australia, Tropical Africa,	Ph	R			+		

	Madagascar							
SAMYDACEAE								
Casearia championii Thw.	India, Sri Lanka,Malaysia	Ph	R					
PASSIFLORACEAE								
Passiflora foetida L.	Tropical America	Th	R					
CUCURBITACEAE								
Coccinia grandis (L.) J. Voigt	India, Sri Lanka,China, Myanmar, Japan, Malaysia, Tropical Australia, Tropical Africa	La	R					
Solena amplexicaulis (Lam.) Gandhi	Endemic India	La	C	+	+	+		+
Momordica dioica Roxb. ex Willd.	India, Sri Lanka, China, Myanmar, Nepal, Pakistan, Bangladesh	La	R	+				
BEGONIACEAE								
Begonia malabarica Lam.	Endemic India	Th	R			+		
CACTACEAE								
Opuntia vulgaris Miller	Brazil	Ch	R			+		
APIACEAE								
Centella asiatica (L.) Urban.	India, Sri Lanka,Tropical and subtropical Asia, Africa	Th	R			+		
ALANGIACEAE								
Alangium salviifolium (L.f.) Wang.ssp *salvifolium*	India, Sri Lanka, Myanmar,Thailand, Vietnam, Malaysia, Philippines, Africa	Ph	OP	+	+		+	
Alangium salvifolium (Miq.) Bloemb ssp. *sundanum* (Miq.) Bloemb.	India, Malay Archipelago	La	OP		+	+	+	
RUBIACEAE								
Neolamarckia cadamba (Roxb.) Bosser.	India, Sri Lanka, Myanmar, Malaysia, Sumatra, Borneo	Ph	R					
Canthium dicoccum (Gaertn.) Teigs & Binn.	India, Sri Lanka, Nepal China, Laos , Cambodia, Vietnam, Malay Archipelago	Ph	SP	+	+	+	+	
Chassalia ophioxyloides (Wall.) Craib.	India, Sri Lanka	Ph	VC	+	+	+	+	+
Tarenna asiatica (L.) Kuntze ex Schum.	India, Sri Lanka, Malaysia	Ph	R					
Psilanthus travancorensis (W.& A.) Leroy	India, Sri Lanka	Ch	R	+	+			
Coffea arabica L.	Ethiopia	Ph	R					
Geophila repens (L.) Johnston	India, Sri Lanka, China, Myanmar, Malay Archipelago, Tropical Africa, Polynesia, America	Th	R	+	+			
Ixora coccinea L.	India, Sri Lanka, Bangladesh, Myanmar	Ph	OP			+		
Ixora brachiata Roxb. *ex* DC.	India: Endemic Western Ghats: Goa, Karnataka,Tamil Nadu Kerala	Ph	SP	+	+		+	
Ixora alba L.	India including Andaman &Nicobar Islands	Ph	SP	+	+			
Ixora nigricans R.Br. *ex* W. & A.	India, Myanmar, Malay Archipelago	Ph	SP	+	+	+		
Ixora polyantha Wt.	India: Endemic Western Ghats: Maharashtra, Karnataka, Kerala	Ph	R					
Knoxia sumatrensis (Retz.) DC	India, Sri Lanka, Nepal, Bhutan, China, Malay Archipelago, Tropical Australia	He	R	+	+			
Mitragyna tubulosa (A.) Hav.	India, Sri Lanka	Ph	R					
Morinda pubescens Sm.	India, Sri Lanka, Malay, Malay Archipelago	Ph	SP	+	+	+		
Morinda umbellata L.	India, Sri Lanka, Japan, China, Malay Archipelago,North Australia	La	OP		+	+	+	
Mussaenda bellila Buch-Ham.	India: Endemic Western Ghats: Goa, Maharashtra,Karnataka Kerala	La	SP		+	+	+	
Hedyotis biflora (L.) R.Br. ex W.& A.	India, Sri Lanka, Maldives, Lakshadweep Islands	Ph	R			+		
Hedyotis brachypoda (DC.) Siva & Biju	India, Sri Lanka, China, Japan, Malaysia, Indonesia, Philippines, America	Ph	R			+		
Ophiorrhiza pectinata Arn.	India, Sri Lanka	He	R			+		
Pavetta indica L.	India, Sri Lanka, Bhutan, China, Myanmar, Malay Archipelago, Australia	Ph	SP	+		+	+	
Psychotria flavida Talbot.	India: Endemic Western Ghats: Maharashtra, Karnataka, Tamil Nadu, Kerala	Ph	R					
Randia gardneri (Thw.) Hook. f.	India, Sri Lanka	Ph	SP			+	+	+
Randia rugulosa(Thw.)Bedd.	India, Sri Lanka, Bangladesh	Ph	SP	+		+	+	
Randia malabarica Lamk.	India, Sri Lanka	Ph	R			+		
Spermacoce mauritiana Osca Gideon ex Verdcourt.	India, Sri Lanka, Bhutan, Malesia, West Indies, Tropical America, Africa	Ph	R			+		
Spermacoce articularis L.f.	India, Sri Lanka,China, Laos, Cambodia, Vietnam, Malay Archipelago, Tropical Africa	Ph	R					
ASTERACEAE								
Ageratum conyzoides L.	America	Th	R			+		
Eclipta prostrata (L.) L.	India, Sri Lanka, Pan tropics	Th	R			+		

Emilia sonchifolia (L.) DC.	India, Sri Lanka, Asia, Africa	Th	R			+	+	
Chromolaena odorata (L.) King & Rob.	America	Th	OP		+	+	+	
Mikania cordata (Burm.f.) Rob.	India,Sri Lanka, Myanmar, Thailand,Malaysia, Singapore, Philippines	La	OP	+	+	+	+	+
Spilanthes calva DC.	India, Sri Lanka, Nepal, China,Myanmar, Malesia	He	R			+		
Tridax procumbens L.	Central America	Th	OP			+	+	+
Vernonia albicans DC	India, Tropical Asia, Australia,Africa	Th	OP			+	+	+
PLUMBAGINACEAE								
Plumbago indica L.	India, South East Asia	He	R				+	
SAPOTACEAE								
Chrysophyllum roxburghii G.Don.	India, Sri Lanka, Myanmar, Thailand, Malay Archipelago, Hong Kong	Ph	R					
Isonandra lanceolata Wt.	India, Sri Lanka	Ph	R					
Madhuca neriifolia (Moon) Lam.	India, Sri Lanka	Ph	OP			+	+	+
Mimusops elengi L.	India, Sri Lanka,Malaysia, Australia, New Caledonia, Hawaii	Ph	C	+	+	+	+	+
EBENACEAE								
Diospyros ebenum Koenig ex Retz.	India, Sri Lanka, Bangladesh, Myanmar,Japan, Malesia, Australia, Central America	Ph	R				+	
Diospyros buxifolia (Bl.) Hiern	India, Myanmar, Malaysia, Singapore, Indonesia, Laos, Cambodia, Vietnam, Maluku Islands, Philippines, Madagascar, New Guinea	Ph	R		+	+		
Diospyros malabarica (Des.) Koster	India, Sri Lanka, Nepal, Myanmar, Thailand, Malaysia, Sumatra, Java, Timor, Celebes	Ph	OP			+	+	+
Diospyros ovalifolia Wt.	India, Sri Lanka, Malaysia	Ph	R			+		
OLEACEAE								
Jasminum multiflorum (Burm. f.) An.	India, Nepal, Myanmar, China, Malaysia, Indonesia	La	R			+	+	
Jasminum cordifolium Wall. *ex.* Don.	Endemic India	La	R					
Jasminum azoricum L.	Madeira Island	La	R			+	+	
Myxopyrum smilacifolium Bl.	India, China, Bangladesh, Myanmar, Thailand, Cambodia, Laos	La	OP	+	+	+	+	+
Olea dioica Roxb.	India, Nepal, Myanmar, Bangladesh	Ph	OP	+	+	+	+	+
APOCYNACEAE								
Alstonia scholaris (L.) R. Br.	India, Sri Lanka, Nepal, China, Myanmar, South East Asia, Australia	Ph	C	+	+	+	+	+
Allamanda cathartica L.	Tropical America	La	R		+	+		
Carissa spinarum L.	India, Sri Lanka, Myanmar, South East Asia	Ch	C	+	+	+	+	+
Cerbera odollam Gaertner	India, Sri Lanka, Bangladesh, Myanmar, Thailand, Vietnam, Malaysia, Indonesia, Philippines, Pacific Islands	Ph	R	+		+		
Tabernaemontan heyneana Wall.	Endemic India	Ph	C	+	+	+	+	+
Quirivelia frutescens (L.) MR &Sm.	India, Sri Lanka, Bhutan, Nepal, Bangladesh, Pakistan, China, Laos, Cambodia, Vietnam, Myanmar, Malesia, Indonesia, Thailand, Australia	La	C	+	+	+	+	+
Nerium oleander L.	India, Sri Lanka, Nepal Afghanistan, Iran, Japan, Cyprus, Europe	Ph	R					
Parsonsia inodora (Lour.) M.R. Almedia & S.M. Almedia.	India, Sri Lanka, China, Myanmar, Japan, Malaysia, Indonesia, Philippines	La	SP			+		+
Plumeria alba L.	Tropical America	Ph	R				+	+
Rauvolfia micrantha Hook. f.	India, Thailand, Vietnam	Ph	R	+	+			
Rauvolfia serpentina (L.) Benth. *ex* Kurz	India, Sri Lanka, Nepal, Myanmar, China, Thailand, Malaysia, Indonesia, Taiwan, Laos, Cambodia, Vietnam	Ph	R	+	+			
ASCLEPIADACEAE								
Calotropis gigantea (L.) R. Br.	India, Sri Lanka, Nepal, Pakistan, , China, Myanmar, Malaysia, Thailand,Vietnam Indonesia, Tropical Africa, Iran	Ph	R			+		
Hemidesmus indicus (L.) R.Br.	India, Sri Lanka, Pakistan, Iran	La	R			+		
Hoya wightii Hook. f.	Endemic India	Ep	R					+
Tylophora indica (Burm.) Merril	India, Sri Lanka, Myanmar, Thailand, Malesia	La	SP	+	+	+	+	
LOGANIACEAE								
Fagraea ceilanica Thunb.	India, Sri Lanka, Malaysia	Ep	R					
Strychnos minor Dennst.	India, Sri Lanka, Malaysia, Australia	La	C	+	+	+	+	+
Strychnos nux-vomica L.	India, Sri Lanka, Laos, Cambodia, Vietnam, Myanmar, Thailand, Malesia	Ph	OP	+	+	+	+	+
CONVOLVULACEAE								
Cuscuta chinensis Lam.	India, Sri Lanka, Afghanistan, China, Iran, Ethiopia, Australia, Russia, Indonesia, Japan, Thailand							
Ipomoea mauritiana Jacq.	India, Sri Lanka, Pan tropics	La	R			+		
Evolvulus alsinoides (L.) L.	India, Sri Lanka, Tropics and Subtropics	Th	R	+	+	+	+	+

SOLANACEAE								
Solanum giganteum Jacq.	India, Sri Lanka, Africa							
Solanum wightii Nees	South America	Th	R			+		
SCROPHULARIACEAE								
Scoparia dulcis L.	Tropical America	Th	R	+		+		
Torenia travancorica Gamble	India, Sri Lanka	Th	R	+				
Torenia bicolor Daiz.	Endemic India	Th	R					+
PEDALIACEAE								
Sesamum orientale L.	India, Old World	Th	R			+		
ACANTHACEAE								
Andrographis paniculata (Burm.f.) Wall. *ex*Nees.	India, Sri Lanka	Th	R	+	+			
Asystasia gangetica (L.) T. And.	India, Sri Lanka, South West Asia,Malaysia, Africa	Th	R				+	
Ecbolium ligustrinum (Vahl) Vollescn	India, Sri Lanka, Malaysia	Th	R				+	
Elytraria acaulis (L.f.)Lindau	India, Sri Lanka, Tropical and South America, Western and Eastern Tropical Africa	Th	R					
Gymnostachyum febrifugum Benth.	India: Endemic	Th	R					
Thunbergia alata Boj. ex Sins	Tropical Africa	La	R					
Phaulopsis imbricata (Forssk.) Sweet	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Tropical Africa, Madagascar	Th	OP	+	+			
VERBENACEAE								
Clerodendrum infortunatum L.	India, Sri Lanka, Malaysia, Singapore, Thailand	Ch	OP	+		+	+	+
Clerodendrum paniculatum L.	South East Asia,	Ch	R	+				
Gmelina arborea Roxb.	India, Sri Lanka, Nepal, Bangladesh, Pakistan, China, Bhutan, Myanmar, Vietnam, Cambodia, Thailand, Philippines, Malaysia, Greater Sunda Islands, Tanzania	Ph	R					
Lantana camara L	Tropical America	Ph	SP	+	+	+	+	
Tectona grandis L.f.	India, Sri Lanka, Myanmar Malaysia	Ph	R	+			+	
Vitex pinnata L.	India, Sri Lanka, Myanmar, Bangladesh, Laos, Cambodia, Vietnam, Celebes, Thailand, Malaysia, Guyana	Ph	R					
LAMIACEAE								
Anisomeles indica (L.) O. Kuntze	India, Sri Lanka, Nepal, China, Malay Archipelago, Singapore	Th	R			+		
Hyptis suaveolens (L.) Poit.	Tropical America	Th	R			+		
Leucas aspera (Willd) Link.	India, Nepal, Myanmar, Bangladesh, Laos, Cambodia, Vietnam,Malesia, Mauritius	Th	R			+		+
Ocimum americanum L.	India, Old world tropics	Th	R			+	+	
Ocimum gratissimum L.	India, Sri Lanka, Nepal, Thailand, Malesia, Tropical Africa,Tropical America	Th	R			+		
Plectranthus mollis (Aiton) Spr.	India, Nepal, Myanmar	Th	R			+		
NYCTAGINACEAE								
Boerhavia repens L.	India, Sri Lanka, Pakistan, China, West Asia, Arabian Peninsula, Africa, Pacific Islands	Th	SP			+	+	
AMARNATHACEAE								
Achyranthes aspera L.	India, Sri Lanka, Pan tropics	Th	OP	+	+	+	+	+
Aerva lanata (L.) Juss. ex Schultes	India, Sri Lanka,Tropics and Subtropics	Th	R			+		
Amaranthus spinosus L.	America	Th	OP			+	+	+
ARISTOLOCHIACEAE								
Aristolochia indica L.	India, Sri Lanka, Nepal, Bangladesh	La	OP	+	+		+	
PIPERACEAE								
Piper longum L.	India, Sri Lanka, Malesia	La	OP	+	+	+	+	+
Piper nigrum L.	India, Sri Lanka	La	OP	+	+	+	+	+
Piper trioicum Roxb.	India, Myanmar, Bhutan, Bangladesh, Java	La	OP	+	+	+	+	+
Piper argyrophyllum Miq.	India, Sri Lanka	La	R		+			
MYRISTICACEAE								
Gymnacranthera canarica (King.) Warb.	Endemic India Western Ghats: Karnataka Kerala	Ph	R	+	+			
Knema attenuata (Hook.f. *et* Thoms.) Warb.	Endemic India Western Ghats: Karnataka Kerala	Ph	OP	+	+		+	+
Myristica malabarica Lam.	Endemic India Western Ghats: Karnataka Kerala	Ph	OP	+	+		+	+
Myristica magnifica (Bedd.) Sin.	Endemic India Western Ghats: Karnataka Kerala	Ph	R	+				+
LAURACEAE								
Cassytha filiformis L.	India, Sri Lanka, Old World Tropics	La	R					
Cinnamomum malabatrum (Burm.f.) Berchthold *et* Presl	Endemic India Western Ghats: Karnataka Kerala	Ph	C	+	+	+	+	+

Cinnamomum verum J. S. Presl	India, Sri Lanka, Myanmar, Bangladesh, Malysia	Ph	C	+	+	+	+	+
Litsea coriacea (Heyne *ex* Meisser) Hook. f.	Endemic India Western Ghats: Karnataka Kerala	Ph	R	+	+			+
Neolitsea fischeri Gamble	Endemic India	Ph	R				+	
ELAEAGNACEAE								
Elaeagnus indica Servettaz	India, Malesia	La	R	+			+	
LORANTHACEAE								
Dendrophthoe falcata var. *pubescens* (Hook. f.) Chandras.	India, Sri Lanka	Pr	C	+	+	+	+	+
Dendrophthoe elastica (Denser) Danser	Endemic India	Pr	C	+	+	+	+	+
SANTALACEAE								
Santalum album L.	Endemic India Western Ghats: Karnataka Kerala	Ph	C	+	+	+	+	+
EUPHORBIACEAE								
Antidesma montanum Blume.	India, Bhutan, Bangladesh, Myanmar, China, Thailand, Laos, Cambodia, Vietnam, Malaysia, Indonesia, Philippines	Ph	OP	+	+	+	+	
Aporusa lindleyana (Wt.) Baill.	India, Sri Lanka	Ph	C	+	+	+	+	+
Breynia retusa (Dennst.) Alston	India, Sri Lanka, Nepal, Bangladesh, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia,	La	R				+	
Croton caudatus Geisler	India, Sri Lanka, China, South East Asia	Ph	R				+	
Euphorbia hirta L.	India, Sri Lanka, Pan tropics	Th	R			+		
Glochidion zeylanicum (Gaertner) A. Juss.	India, Sri Lanka, Bangladesh, Myanmar, Malesia, Australia	Ph	R					
Drypetes sepiaria (W. & A.)Pax. &Hottim.	India, Sri Lanka	Ph	R				+	
Macaranga peltata (Roxb.) Muell.-Arg.	India, Sri Lanka, Myanmar, Thailand	Ph	OP	+	+	+	+	+
Mallotus philippensis (Lam.)Muell.-Arg.	India, Sri Lanka, Myanmar, Bhutan, Bangladesh, China, Japan, Taiwan, Malaysia, Philippines, Australia	Ph	SP	+	+	+	+	+
Mallotus repandus (Wild) Muell.-Arg.	India, Sri Lanka, Bhutan, China, Bangladesh, Nepal, Myanmar, Laos, Cambodia, Vietnam, Thailand, Indonesia, Malaysia, Philippines, Australia, New Caledonia	Ph	SP	+	+	+	+	+
Phyllanthus amarus Sech. & Thon.	America	Th	R	+	+	+	+	+
Phyllanthus urinaria L.	India, Sri Lanka, Pan tropics	Th	R	+	+	+	+	+
Phyllanthus fraternus Webster	India, Pakistan	Th	R	+	+	+	+	+
Suregada angustifolia (Muell.-Arg.)Airy Shaw	India, Sri Lanka	Th	R					
ULMACEAE								
Trema orientalis (L.) Bl.	India, Sri Lanka, Nepal, Bhutan,Myanmar, China, Japan, Arabia, Taiwan,Thailand,Vietnam, Polynesia, Malaysia,Indonesia, Philippines, Australia, Tropical Africa	Ph	R			+	+	
MORACEAE								
Artocarpus heterophyllus Lam.	India, Sri Lanka, South East Asia	Ph	R	+	+	+	+	+
Artocarpus hirsutus Lam.	Endemic India Western Ghats: Karnataka Kerala	Ph	VC	+	+	+	+	+
Antiaris toxicaria (Pers) Leschem.	India, Sri Lanka, China, Myanmar, Thailand, Laos, Cambodia, Vietnam, Indonesia, Malaysia, Philippines, Australia, Africa	Ph	R	+	+			+
Ficus mollis Vahl.	India, Sri Lanka	Ph	SP	+	+	+	+	+
Ficus rigida var. *bracheata* (Corner) Bennet	India, Philippines, Borneo, New Guinea	Ph	R					
Ficus religiosa L.	India, Sri Lanka, Pakistan, China, Vietnam, Thailand	Ph	SP	+	+	+	+	+
Ficus benghalensis L.	India, Sri Lanka, Pakistan	Ph	SP	+	+	+	+	+
Ficus callosa Willd	India, Sri Lanka, China, Myanmar, Vietnam, Thailand, Indonesia, Malaysia,Philippines							
Streblus asper Lour.	India, Sri Lanka, Myanmar China Laos, Cambodia, Vietnam, Thailand, Malesia	Ph	SP	+	+	+	+	+
ORCHIDACEAE								
Acampe praemorsa (Roxb.) Blater et Mc Cann.	India, Sri Lanka, Myanmar, Seychelles	EP	C	+	+	+	+	+
Bulbophyllum kaitiense Reichb	Endemic India	EP	OP	+	+	+	+	+
Bulbophyllum sterile (Lam) Suresh	India, Bangladesh, Myanmar	EP	R	+	+	+	+	+
Cymbidium aloifolium (L.) Sw.	India, Sri Lanka, China, Myanmar, Bangladesh, Laos, Cambodia, Vietnam, Malaysia, Indonesia	EP	R	+	+			
Dendrobium heterocarpum Wall. ex Lindley	India, Sri Lanka, Nepal, Myanmar, Thailand, Malaysia, Philippines,Indonesia	EP	SP	+	+	+	+	+

Liparis wightiana Thw.	India, Sri Lanka, Sumatra, Java	Th	R	+	+			
Oberonia ferruginea Parrsh *ex* Hook.f.	India, Nepal, Myanmar, China, Laos, Cambodia, Vietnam,Thailand							
Taprobanea spathulata (L.) Chirst	India, Sri Lanka	EP	R				+	
Vanda tessellata (Roxb.) Hook. ex G.Don	India, Sri Lanka, Myanmar, Nepal, Bangladesh, China	EP	SP	+	+	+	+	+
ZINGIBERACEAE								
Costus speciosus (Koen.) J.E.Sm.	India, Sri Lanka, Myanmar, Nepal, Bhutan, Laos, Cambodia, Vietnam, Malaysia, Taiwan, Philippines,Thailand, Australia	Ge	SP	+	+		+	+
Curcuma zedoaria (Christm) Roscoe	India, Bangladesh, Myanmar, Thailand	Ge	SP	+	+		+	+
Curcuma pseudomontana Grah.	Endemic India	Ge	SP	+	+	+	+	+
Globba ophioglossa Wt.	India, Myanmar, Thailand	Ge	SP	+	+	+	+	+
Zingiber zerumbet (L.) Ros. J.E. Sm	India, Sri Lanka, Myanmar, Malaysia, Thailand, Cambodia, Laos, Vietnam	Ge	SP	+	+	+	+	+
DIOSCOREACEAE								
Dioscorea bulbifera L.	India, Sri Lanka, Tropical and Subtropical Old World	Ge	SP	+	+	+	+	+
Dioscorea oppositifolia L.	India, Sri Lanka, Bangladesh	Ge	SP	+	+	+	+	+
Dioscorea pentaphylla L.	India, China, Laos,Cambodia, Vietnam, Thailand,Myanmar, Malesia, Australia, Tropical Africa	Ge	SP	+	+	+	+	+
Dioscorea spicata Roth.	India, Sri Lanka, Bangladesh	Ge	SP	+	+	+	+	+
Dioscorea tomentosa Koe. ex Spr.	India, Sri Lanka, Bangladesh	Ge	R	+	+			
LILIACEAE								
Asparagus racemosus Willd.	India, Sri Lanka, Bangladesh, Nepal, Bhutan, Pakistan, China, Malesia, Australia, Tropical Africa	Ge	SP	+	+	+	+	+
Dracaena terniflora Roxb.	India, Bangladesh, South East Asia	Ch	OP	+	+	+	+	+
Gloriosa superba L.	India, Sri Lanka, Bangladesh, Laos, Cambodia, Vietnam, Malesia, Africa, Madagascar	Ge	SP	+	+	+	+	+
SMILACACEAE								
Smilax zeylanica L.	India, Sri Lanka, Nepal, Myanmar, Malesia	Ge	SP	+	+	+	+	+
COMMELINACEAE								
Dictyospermum montanum Wt.	India, Sri Lanka, Vietnam	Th	R					
ARECACEAE								
Borassus flabellifer L.	India, Sri Lanka, Myanmar, China, Pakistan , Malaysia, Laos, Cambodia, Vietnam, Java, Sunda Island, New Guinea, Africa, Madagascar, Australia	Ph	R				+	+
Calamus rotang L.	India, Sri Lanka	La	SP	+	+	+	+	+
Calamus travancoricus Bedd. *ex* Becc. et Hook. f.	India, Bangladesh	La	SP	+	+	+	+	+
Calamus gamblei Bedd. *ex* Becc. *et* Hook. f.	Endemic India	La	R			+		
Caryota urens L.	India, Sri Lanka, Nepal, Myanmar, Malaysia, Singapore	Ph	OP	+	+	+	+	+
PANDANACEAE								
Pandanus fascicularis Lam.	India, Sri Lanka, Tropical and Subtropical Asia	Ph	OP	+	+	+	+	+
ARACEAE								
Amorphophallus paeoniifolius (Denst) Sivadasan var. *companulatum*	India, Sri Lanka, Malesia	Ge	OP	+	+	+	+	+
Amorphophallus paeoniifolius (Dennst) Nicolson	India, Sri Lanka, Bhutan, Pacific islands							
Anaphyllum wightii Schott	Endemic India Western Ghats: Karnataka Kerala	Ge	OP	+	+	+	+	+
Pothos scandens L.	India, Sri Lanka, China, Myanmar,Malaysia, Singapore , New Guinea, Madagascar	EP	C	+	+	+	+	+
Lagenandra ovata (L.) Thw.	India, Sri Lanka	Th	R		+	+	+	
CYPERACEAE								
Cyperus compressus L.	India, Sri Lanka, Pan tropics	Th	SP		+	+	+	+
Cyperus rotundus L.	India, Sri Lanka, Cosmopolitan	Th	SP		+	+	+	+
Hypolytrum nemorum (Vahl) Spreng.	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Malaysia, China,Taiwan	Th	SP		+	+	+	+
POACEAE								
Bambusa bambos (L.) Voss	India, Sri Lanka, China, Myanmar, Pakistan, Laos, Cambodia, Vietnam	Ph	OP	+	+	+	+	
Centotheca lappacea (L.) Des.	India, Sri Lanka, Nepal, China, South East Asia, Tropical Africa, Polynesia	Th	OP	+	+	+	+	
Eragrostis tenella (L.) P. Beauv. ex Roem et Scchutt.	India, Old world Tropics	Th	OP	+		+	+	
Ochlandra travancorica (Bedd.) Bent.*ex* Gamble	Endemic India Western Ghats: Karnataka Kerala	Ph	SP	+	+	+	+	
Sacciolepis indica (L.) Chase	India, Sri Lanka, Bhutan, Myanmar, Nepal,	Th	SP	+		+		

	Japan,Thailand,Vietnam, Australia,Africa,Polynesia.							
GYMNOPSERMS								
GNETACEAE								
Gnetum ula Brongn	India	La	C	+	+	+	+	+
CYCADACEAE								
Cycas circinalis L.	India, SL	Ph	R	+	+			
Name and Family	**GD**	**LF**	**CS**	**S_1**	**S_2**	**S_3**	**S_4**	**S_5**
DILLENIACEAE								
Dillenia pentagyna Roxb.	India, China, Nepal, Bhutan, Thailand, Myanmar, Indonesia, Malaysia, Vietnam	Ph	R					
Tetracera akara (Bum.f.) Merr.	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Malay Archipelago	La	SP	+			+	+
MAGNOLIACEAE								
Michelia champaca L	India, Sri Lanka, Bhutan, Nepal, Bangladesh, China, South East Asia	Ph	SP					
Michelia nigrica Zenker	India, SL							
ANNONACEAE								
Anona glabra L	Tropical America, West Tropical Africa	Ph	SP					
Artabotrys zeylanicus Hook.f. & Th.	India, Sri Lanka	La	R	+	+	+		
Polyalthia korinti (Dunn) Hook.f. &Th.	India, Sri Lanka	Ph	R					
Polyalthia rufescens Hook.f. &Th.	India, including Andaman and Nicobar Islands	Ph	R					
Polyaithia fragrans (Dalz.) Bedd.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R		+			
Meiogyne pannosa (Dalz.) Sin	India: Endemic Western Ghats: Karnataka Kerala	Ph	R	+	+		+	
Uvaria narum (Dunal) Wallich *ex* W.&A.	India, Sri Lanka	La	SP	+	+	+		
Uvaria zeylanica L.	India, Sri Lanka	La	R				+	
MENISPERMACEAE								
Anamirta cocculus (L.) W.&A.	India, Sri Lanka, Bangladesh, South East Asia	La	SP	+	+		+	
Cissampelos pareira (Buch-ham ex.DC) Forman	India, Sri Lanka, Bhutan, Nepal, Bangladesh, Pakistan, Yunnan, Thailand, Malesia, Singapore	La	R					
Cyclea peltata (Poir) Hook.f. & Th.	India, Sri Lanka, Malesia	La	SP	+	+	+	+	+
Diploclisia glaucescens (Bl.) Diesl.	Indonesia, Sri Lanka, China, Laos, Cambodia, Vietnam, Myanmar, Thailand, Malesia.	La	SP	+				
Stephania japonica (Thunb.) Miers.	India, Sri Lanka, Nepal, Bangladesh, China, Japan, Korea, Taiwan, Malesia, Singapore, Australia, Africa	La	R	+		+		
Tinospora cordifolia (Wild.) Miers. *ex*Hook.f. & Th.	India, Sri Lanka, Bangladesh, Myanmar	La	R					
CAPPARACEAE								
Capparis moonii Wt.	India, Sri Lanka	La	R				+	
Capparis zeylanica L.	India, Sri Lanka, Nepal, Bangladesh, China, Myanmar, Laos, Cambodia, Vietnam, Java, Philippines Malaysia	La	R					
FLACOURTIACEAE								
Flacourtia montana Grah.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R					
Hydnocarpus pentandra (Ham.) Oken.	India: Endemic Western Ghats: Karnataka Kerala	Ph	C	+	+	+		
Hydnocarpus alpina Wt.	India, Sri Lanka	Ph	R					
XANTHOPHYLLACEAE								
Xanthophyllum arnottianum Wt.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R	+	+			
CLUSIACEAE								
Calophyllum apetalum Willd.	India: Endemic Western Ghats: Karnataka Kerala	Ph	SP			+		
Calophyllum inophyllum L.	India, Sri Lanka, Old and New World Tropics	Ph	SP	+		+	+	
Garcinia gummi-gutta (L.) Rob.	India: Endemic Western Ghats: Karnataka Kerala	Ph	SP	+	+	+		
Garcinia indica (Thouare) Choisy.	India Endemic	Ph	R				+	
Garcinia spicata (Wt.&Ar.).	India, Sri Lanka	Ph	R					
Mesua ferrea L.	India, Sri Lanka, Bangladesh, Nepal, Myanmar, Thailand, Cambodia, Vietnam, Indonesia, Singapore, Malaysia	Ph	SP	+				
DIPTEROCARPACEAE								
Hopea parviflora Bedd.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R	+	+			
Hopea ponga (Dennst) Mabb.	India: Endemic Western Ghats: Karnataka Kerala	Ph	SP	+	+			+
Vateria indica L.	India: Endemic Western Ghats: Karnataka Kerala	Ph	VC	+	+	+	+	+

Vatica chinensis L.	India, Sri Lanka	Ph	R					+
BOMBACACEAE								
Bombax ceiba L.	India, Sri Lanka, Myanmar, Java, Sumatra, New Guinea	Ph	R					
MALVACEAE								
Hibiscus hirsuts L.	India, Malesia	Ph	SP					
Sida acuta Burm.f.	Pan tropics, India, Sri Lanka	Ph	SP					
Sida cordifolia L.	Pan tropics, India, Sri Lanka	Ph	SP			+		
Sida rhombifolia L.	Pan tropics, India, Sri Lanka	Ph	SP	+		+	+	
STERCULIACEAE								
Sterculia balanghas L.	India, Sri Lanka	Ph	SP					
Sterculia foetida L.	India, Sri Lanka, Bangladesh, Pakistan, Myanmar, Malesia, Australia, Tropical Africa.	Ph	SP				+	
SYMPLOCACEAE								
Symplocos cochinchinensis (Lour.) Moore	Japan, Vietnam, India, China, Laos, Cambodia, Vietnam, Myanmar, Thailand, Japan, Malaysia, Philippines, Sumatra, Java, New Guinea, Borneo	Ph	R		+			
Symplocos racemosa Roxb.	India, China, Laos, Cambodia, Vietnam, Myanmar, Thailand	Ph			+	+		
TILIACEAE								
Grewia serrulata DC.	India, Bhutan, Nepal,Myanmar. Pakistan. Laos. Combodia, Vietnam, Malysia, Australia, Africa	Ph	R	+				
LINACEAE								
Hugonia mystax L.	India, Sri Lanka	La	SP	+		+	+	
OXALIDACEAE								
Biophytum sensitivum(L.) DC.	India, Sri Lanka, Tropical Asia, Africa, America	Th	SP	+			+	
Oxalis corniculata L.	India, Sri Lanka, Pan tropics	Th	SP	+				
RUTACEAE								
Acronychia pedunculata(L.) Miq.	India, Sri Lanka, Laos, Cambodia, Vietnam, Taiwan, Sumatra, Borneo, Philippines, Java.	Ph	R			+	+	
Aegle marmelos (L.) Corr. Serr.	India, Myanmar, PAK, Cambodia,Vietnam,Java	Ph	R					
Atalantia monophylla (L.) Corr. Serr.	India, Pakistan, Laos, , Cambodia, Vietnam, Myanmar	Ph	R				+	
Atalantia racemosa W.& A.	India, Sri Lanka	Ph	R					
Glycosmis pentaphylla (Retz.) DC	India, Sri Lanka, China., Myanmar, Malay Archipelago, Australia							
Glycosmis mauritiana (Lam.) Janaka.	India, Sri Lanka, South East Asia							
Murraya paniculata(L.) Jack	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Myanmar, Malesia, Pacific Islands, Australia	Ph	SP			+		
Murraya koinigii Spreng	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Myanmar	Ph	R					
Todalia asiatica (L.) Lam.	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Thailand, Malesia, Tropical Africa.							
Zanthoxylum rhetsa (Roxb.)DC.	India, Sri Lanka, Myanmar, Thailand, Malay Archipelago	Ph	R	+			+	
SIMAROUBACEAE								
Ailanthus triphysa (Den.) Alston	India, Sri Lanka, China Myanmar, Thailand, Cambodia, Vietnam, Malyasia, Indonesia, Australia	Ph	R		+			
Quassia indica (Gaertn.) Nootch.	India, Sri Lanka,Tropical Asia	Ph	R			+		
MELIACEAE								
Aglaia elaeagnoidea(Juss.) Benth.	India, Sri Lanka, Myanmar, Malaysia, Singapore, Indonesia	Ph	SP	+	+		+	
Azadirachta indica A. Juss.	India, Sri Lanka, Myanmar, Pakistan, China, Malesia	Ph	R					
Cipadessa baccifera (Roth.) Miq.	India, Sri Lanka, Malaysia, Java	Ph	R					
Naregamia alata W.&A.	India, Angola	Ph	SP	+	+			
Swietenia mahagoni (L.) Jacq.	Central America, West Indies	Ph	R					
DICHAPETALACEAE								
Dichapetalum gelonioides (Roxb.) Engl.	India, Sri Lanka, Bangladesh, Sumatra	Ph	R					
OLACACEAE								
Anacolosa densiflora Bedd.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R	+	+	+		
ICACINACEAE								
Sarcostigma kleinii W.&A.	India, Malaysia	La	R	+	+	+	+	+
HIPPOCRATEACEAE								
Salacia fruticosa Heyne ex Lawson	India: Endemic Western Ghats: Karnataka Kerala	La	R	+				
RHAMNACEAE								
Ziziphus oenoplia(L.) Mill.	India, Sri Lanka, Pan tropics	La	SP	+	+	+	+	+
Ziziphus rugosa Lam.	India, Sri Lanka, Myanmar, Bangladesh, Pakistan, Thailand, Vietnam, Laos	La	SP	+	+	+	+	+
VITACEAE								

Ampelocissus indica (L.) Planch.	India, Sri Lanka	La	R	+	+			
Cissus arnottiana Shetty & P. Singh	India, Sri Lanka, Africa	La	OP	+	+	+	+	+
LEEACEAE								
Leea indica (Burm.) Merr.	India, Sri Lanka, Nepal, Bangladesh, China, Myanmar, Malaysia, Austr.							
SAPINDACEAE								
Cardiospermum halicacabum L.	India, Sri Lanka, Pakistan, Malaysia, Tropical Africa, America	Th	R	+		+		
ANACARDIACEAE								
Anacardium occidentale L.	South America	Ph	R			+	+	
Buchanania lanceolata Wt.	India, Myanmar	Ph	R					
Holigarna arnottiana Hook.f.	India: Endemic Western Ghats: Karnataka Kerala	Ph	C	+	+	+	+	+
Holigrana beddomei Hook.f.	India: Endemic Western Ghats: Karnataka Kerala	Ph	R					
Mangifera indica L.	India, Sri Lanka, Myanmar, Laos, Cambodia, Vietnam, Thailand, Malesia	Ph	SP	+	+	+	+	+
Nothopegia racemosa (Daiz.) Ram.	Endemic India	Ph	R	+	+			
Lannea coromandelica (Houtt.) Merr.	India, Sri Lanka, Nepal, Bangladesh, Pakistan, Myanmar, China, Bhutan, Laos, Cambodia, Vietnam, Thailand	Ph	R			+	+	
Spondias Pinnata(L.f.) Kurz.	India, Sri Lanka, China, Tropical Asia	Ph	OP					
CONNARACEAE								
Connarus monocarpus L	India, Sri Lanka	La	OP	+	+	+	+	+
Connarus paniculata Roxb.	India: Endemic Western Ghats: Karnataka Kerala	La	R					
FABACEAE								
Caesalpinniaceae								
Caesalpinia bonduc (L.) Roxb.	India, Sri Lanka, Nepal, Bangladesh, Myanmar, Malay Archipelago	La	OP	+	+	+	+	+
Cassia fistula L.	India, Sri Lanka, Myanmar, Nepal, Bangladesh, Malesia	Ph	R	+	+	+	+	+
Cassia kleinii W.&A.	India, Sri Lanka	Th	R			+		
Cassia tora L.	India, Sri Lanka, Nepal, Pakistan,Myanmar, Laos, Cambodia, Vietnam	Ph	R					
Tamarindus indica L.	Tropical Africa	Ph	R	+	+	+	+	+
Saraca asoca (Roxb.) de Wilde.	India, Sri Lanka, Bangladesh, Bhutan, Nepal, Myanmar, Malaysia	Ph	R	+	+	+	+	+
Fabaceae								
Abrus precatorius L.	India,Pan tropics	La	C	+	+	+	+	+
Clitoria ternatea L.	East Africa	La	R				+	
Crotalaria juncea L	India, Sri Lanka, Myanmar, Bangladesh, Bhutan, Nepal, Pakistan,Malaysia, Thailand, Russia, Australia	Th	R			+		
Dalbergia volubilis Roxb.	India, Sri Lanka, Bangladesh, Nepal, Myanmar, Laos, Vietnam	La	OP	+	+			
Deriis scandens (Roxb.) Benth.	India, Sri Lanka, Bangladesh, Pakistan, China, Nepal, Myanmar, Thailand, Malesia							
Desmodium triflorum(L.) DC.	India, Sri Lanka, Bhutan, Pakistan, Bangladesh, China, Myanmar, Hong Kong, Laos, Cambodia, Vietnam, Thailand, Malesia, Pacific Islands, Polynesia, Australia, Africa, America	Ph	R	+				
Kunstleria keralensis C.N. Moh. et Nair	India: Endemic Western Ghats: Karnataka Kerala	La	R	+				
Pongamia pinnata (L.) Pierre	India, Sri Lanka, Bangladesh, Pakistan, Myanmar, China, Malesia, Vietnam, Thailand, Australia, Polynesia	Ph	SP			+		
Butea monospema(Lam.) Taubert.	India, Nepal, Pakistan, Myanmar, Laos, Cambodia, Vietnam, Thailand, Malesia	La	R					
Tephrosia purpurea (L.) Pers..	India, Sri Lanka, Old World Tropics	Th	R			+		
Mimosaceae								
Acacia caesia (L.) Willd.	India, Sri Lanka, Pakistan, Myanmar, China, Laos, Cambodia, Vietnam, Thailand	La	SP	+				
Acacia Pennata (L.) Willd.	India, Sri Lanka, Bhutan, Nepal, Bangladesh, Myanmar,Thailand	Ph	R			+		
Adenanthera pavonina L.	India, Sri Lanka, Myanmar, Thailand, Timor, China, Malaysia	Ph	OP	+	+	+	+	+
Albizia lebbeck (L.) Benth.	India, Sri Lanka, Malay Archipelago, China, North Australia, Tropical Africa	Ph	R			+		
Mimosa pudica L.	Tropical America	Th	R			+		
RHIZOPORACEAE								
Carallia brachiata (Lour) Merr.	India, Sri Lanka, China, Malay Archipelago, Australia	Ph	R			+		+

Blepharistemma serratum (Dennst.) Suresh	India: Endemic Western Ghats: Karnataka Kerala	Ph	R			+		
COMBRETACEAE								
Calycopteris floribunda (Roxb.) Poiret	India, Bangladesh, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malesia,Singapore	La	OP	+	+	+	+	+
Combretum latifolium Bl.	India including Andaman Islands,Sri Lanka, Bangladesh, Myanmar, Laos, Cambodia, Vietnam, Thailand, Malesia	La	OP	+	+	+		
Quisqualis indica L.	India, Sri Lanka, Old World Tropics	La	R					
Terminalia bellirica (Gaert.) Roxb.	India, Sri Lanka, Nepal, Bangladesh, Myanmar, China, Laos, Cambodia, Malaysia, Vietnam	Ph	R	+	+			+
Terminalia paniculata Roth.	India: Endemic Western Ghats: Karnataka Kerala							
MYRTACEAE								
Syzygium gardneri Thw.	India, Sri Lanka	Ph	R			+		
Syzygium cumini(L.) Skeels	India, Sri Lanka, Nepal, China, Malay Archipelago, Australia	Ph	R	+	+	+	+	+
Syzygium claviflorum (Roxb.) Wall. ex A.M. Cowan & Cowan	India, Sri Lanka	Ph	R				+	
Syzygium mundagam (Bourd.) Chitra	India: Endemic Western Ghats: Karnataka Kerala	Ph	R					
BARRINGTONIACEAE								
Barringtonia racemosa (L.) Sprengel	India, Sri Lanka, Malaysia, Polynesia	Ph	R					
MELASTOMATACEAE								
Melastoma malabathricum L.	India, Sri Lanka, South China, Taiwan, Australia	Ph	R					
MEMECYLACEAE								
Memecylon randerianum S.M. Almeida & M.R. Almeida	Endemic India	Ph	R	+	+			
Memecylon wightianum Triana	Endemic India	Ph	R	+	+			
Memecylon umbellatum Burm. f.	India, Sri Lanka	Ph	R		+			
LYTHRACEAE								
L*agerstroemia hirsuta* (Lam.) Willd	India, Sri Lanka, Pakistan, Myanmar, China, Malaysia, Indonesia, New Guinea	Ph	R	+	+			
ONAGRACEAE								
Ludwigia perennis L.	India, Sri Lanka, Afghanistan, Japan, China, Iran, Malesia, New Caledonia, Australia, Tropical Africa, Madagascar	Ph	R			+		
SAMYDACEAE								
Casearia championii Thw.	India, Sri Lanka,Malaysia	Ph	R					
PASSIFLORACEAE								
Passiflora foetida L.	Tropical America	Th	R					
CUCURBITACEAE								
Coccinia grandis (L.) J. Voigt	India, Sri Lanka,China, Myanmar, Japan, Malaysia, Tropical Australia, Tropical Africa	La	R					
Solena amplexicaulis (Lam.) Gandhi	Endemic India	La	C	+	+	+		+
Momordica dioica Roxb. ex Willd.	India, Sri Lanka, China, Myanmar, Nepal, Pakistan, Bangladesh	La	R	+				
BEGONIACEAE								
Begonia malabarica Lam.	Endemic India	Th	R			+		
CACTACEAE								
Opuntia vulgaris Niller	Brazil	Ch	R			+		
APIACEAE								
Centella asiatica (L.) Urban.	India, Sri Lanka,Tropical and subtropical Asia, Africa	Th	R			+		
ALANGIACEAE								
Alangium salvifolium (L.f.) Wang.ssp *salvifolium*	India, Sri Lanka, Myanmar,Thailand, Vietnam, Malaysia, Philippines, Africa	Ph	OP	+	+		+	
Alangium salvifolium (Miq.) Bloemb ssp.sundanam	India, Malay Archipelago	La	OP		+	+	+	
RUBIACEAE								
Neolamarckia cadamba (Roxb.) Bosser.	India, Sri Lanka, Myanmar, Malaysia, Sumatra, Borneo	Ph	R					
Canthium dicoccum (Gaertn.) Teigs & Binn.	India, Sri Lanka, Nepal China, Laos , Cambodia, Vietnam, Malay Archipelago	Ph	SP	+	+	+	+	
Chassalia ophioxyloides (Wall.) Craib.	India, Sri Lanka	Ph	VC	+	+	+	+	+
Tarenna asiatica (L.) Kuntze ex Schum.	India, Sri Lanka, Malaysia	Ph	R					
Psilanthus travancorensis W.& A.	India, Sri Lanka	Ch	R	+	+			
Coffea arabica L.	Ethiopia	Ph	R					
Geophila repens (L.) Johnston	India, Sri Lanka, China, Myanmar, Malay Archipelago, Tropical Africa, Polynesia, America	Th	R	+	+			
Ixora coccinea L.	India, Sri Lanka, Bangladesh, Myanmar	Ph	OP			+		

Ixora brachiata Roxb. *ex* DC.	India: Endemic Western Ghats: Goa, Karnataka,Tamil Nadu Kerala	Ph	SP	+	+		+	
Ixora alba L.	India including Andaman &Nicobar Islands	Ph	SP	+	+			
Ixora nigricans R.Br. *ex* W. & A.	India, Myanmar, Malay Archipelago	Ph	SP	+	+	+		
Ixora polyantha Wt.	India: Endemic Western Ghats: Maharashtra, Karnataka, Kerala	Ph	R					
Knoxia sumatrensis (Retz.) DC	India, Sri Lanka, Nepal, Bhutan, China, Malay Archipelago, Tropical Australia	He	R	+	+			
Mitragyna tubulosa (A.) Hav.	India, Sri Lanka	Ph	R					
Morinda pubescens Sm.	India, Sri Lanka, Malay, Malay Archipelago	Ph	SP	+	+	+		
Morinda umbellata L.	India, Sri Lanka, Japan, China, Malay Archipelago,North Australia	La	OP		+	+	+	
Mussaenda belilla Buch-Ham.	India: Endemic Western Ghats: Goa, Maharashtra,Karnataka Kerala	La	SP		+	+	+	
Hedyotis biflora R.Br. *ex* W.& A.	India, Sri Lanka, Maldives, Lakshadweep Islands	Ph	R			+		
Hedyotis brachypoda (DC.) Siva & Biju	India, Sri Lanka, China, Japan, Malaysia, Indonesia, Philippines, America	Ph	R			+		
Ophiorrhiza pectinata Arn.	India, Sri Lanka	He	R			+		
Pavetta indica L.	India, Sri Lanka, Bhutan, China, Myanmar, Malay Archipelago, Australia	Ph	SP	+		+	+	
Psychotria flavida Talbot.	India: Endemic Western Ghats: Maharashtra, Karnataka, Tamil Nadu, Kerala	Ph	R					
Randia gardneri (Thw.) Hook. f.	India, Sri Lanka	Ph	SP			+	+	+
Randia rugulosa(Thw.)Bedd.	India, Sri Lanka, Bangladesh	Ph	SP	+		+	+	
Randia malabarica Lamk.	India, Sri Lanka	Ph	R			+		
Spermacoce mauritiana Osca Gideon *ex* Verdcourt.	India, Sri Lanka, Bhutan, Malesia, West Indies, Tropical America, Africa	Ph	R			+		
Spermacoce articularis L.f.	India, Sri Lanka,China, Laos, Cambodia, Vietnam, Malay Archipelago, Tropical Africa	Ph	R					
ASTERACEAE								
Ageratum conyzoides L.	America	Th	R			+		
Eclipta prostrata (L.) L.	India, Sri Lanka, Pan tropics	Th	R			+		
Emilia sonchifolia (L.) DC.	India, Sri Lanka, Asia, Africa	Th	R			+	+	
Chromolaena odorata (L.) King & Rob.	America	Th	OP		+	+	+	
Mikania cordata (Burm.f.) Rob.	India,Sri Lanka, Myanmar, Thailand,Malaysia, Singapore, Philippines	La	OP	+	+	+	+	+
Spilanthes calva DC.	India, Sri Lanka, Nepal, China,Myanmar, Malesia	He	R			+		
Tridax procumbens L.	Central America	Th	OP			+	+	+
Vernonia albicans DC	India, Tropical Asia, Australia,Africa	Th	OP			+	+	+
PLUMBAGINACEAE								
Plumbago indica L.	India, South East Asia	He	R				+	
SAPOTACEAE								
Chrysophyllam roxburghii G.Don.	India, Sri Lanka, Myanmar, Thailand, Malay Archipelago, Hong Kong	Ph	R					
Isonandra lanceolata Wt.	India, Sri Lanka	Ph	R					
Madhuca nerifolia (Moon) Lam.	India, Sri Lanka	Ph	OP			+	+	+
Mimusops elengi L.	India, Sri Lanka,Malaysia, Australia, New Caledonia, Hawaii	Ph	C	+	+	+	+	+
EBENACEAE								
Diospyros ebenum Koenig	India, Sri Lanka, Bangladesh, Myanmar,Japan, Malesia, Australia, Central America	Ph	R				+	
Diospyros buxifolia (Bl.) Hiern	India, Myanmar, Malaysia, Singapore, Indonesia, Laos, Cambodia, Vietnam, Maluku Islands, Philippines, Madagascar, New Guinea	Ph	R		+	+		
Diospyros malabarica (Des.) Koster	India, Sri Lanka, Nepal, Myanmar, Thailand, Malaysia, Sumatra, Java, Timor, Celebes	Ph	OP			+	+	+
Diospyros ovalifolia Wt.	India, Sri Lanka, Malaysia	Ph	R			+		
OLEACEAE								
Jasminum multiflorum (Burm. f.) An.	India, Nepal, Myanmar, China, Malaysia, Indonesia	La	R			+	+	
Jasminum cordifolium Wall. *ex*Don.	Endemic India	La	R					
Jasminum azoricum L.	Madeira Island	La	R			+	+	
Myxopyrum smilacifolium Bl.	India, China, Bangladesh, Myanmar, Thailand, Cambodia, Laos	La	OP	+	+	+	+	+
Olea dioica Roxb.	India, Nepal, Myanmar, Bangladesh	Ph	OP	+	+	+	+	+
APOCYNACEAE								

Alstonia scholaris (L.) R. Br.	India, Sri Lanka, Nepal, China, Myanmar, South East Asia, Australia	Ph	C	+	+	+	+	+
Allamanda cathartica L.	Tropical America	La	R		+	+		
Carissa spinarum L.	India, Sri Lanka, Myanmar, South East Asia	Ch	C	+	+	+	+	+
Cerbera odollam L.	India, Sri Lanka, Bangladesh, Myanmar, Thailand, Vietnam, Malaysia, Indonesia, Philippines, Pacific Islands	Ph	R	+		+		
*Tabernaemontan heyneana*Wall.	Endemic India	Ph	C	+	+	+	+	+
Quirivelia frutescens (L.) MR &Sm.	India, Sri Lanka, Bhutan, Nepal, Bangladesh, Pakistan, China, Laos, Cambodia, Vietnam, Myanmar, Malesia, Indonesia, Thailand, Australia	La	C	+	+	+	+	+
Nerium oleander L.	India, Sri Lanka, Nepal Afghanistan, Iran, Japan, Cyprus, Europe	Ph	R					
Parsonsia inodora (Lour.) M.R. Almedia & S.M. Almedia.	India, Sri Lanka, China, Myanmar, Japan, Malaysia, Indonesia, Philippines	La	SP			+		+
Plumeria alba L.	Tropical America	Ph	R				+	+
Rauvolfia micrantha Hook. f.	India, Thailand, Vietnam	Ph	R	+	+			
Rauvolfia serpentina (L.) Benth. *ex* Kurz	India, Sri Lanka, Nepal, Myanmar, China, Thailand, Malaysia, Indonesia, Taiwan, Laos, Cambodia, Vietnam	Ph	R	+	+			
ASCLEPIADACEAE								
Calotropis gigantia (L.) R. Br.	India, Sri Lanka, Nepal, Pakistan, , China, Myanmar, Malaysia, Thailand,Vietnam Indonesia, Tropical Africa, Iran	Ph	R			+		
Hemidesmus indicus (L.) R.Br.	India, Sri Lanka, Pakistan, Iran	La	R			+		
Hoya wightii Hook. f.	Endemic India	Ep	R					+
Tylophora indica (Burm.) Merril	India, Sri Lanka, Myanmar, Thailand, Malesia	La	SP	+	+	+	+	
LOGANIACEAE								
Fagraea ceilanica Thurb.	India, Sri Lanka, Malaysia	Ep	R					
Strychnos minor Dennst.	India, Sri Lanka, Malaysia, Australia	La	C	+	+	+	+	+
Strychnos nux-vomica L.	India, Sri Lanka, Laos, Cambodia, Vietnam, Myanmar, Thailand, Malesia	Ph	OP	+	+	+	+	+
CONVOLVULACEAE								
Cuscuta chinensis Lam.	India, Sri Lanka, Afghanistan, China, Iran, Ethiopia, Australia, Russia, Indonesia, Japan, Thailand							
Ipomoea maurtiana Jacq.	India, Sri Lanka, Pan tropics	La	R			+		
Evolvulas alsinoides (L.) L.	India, Sri Lanka, Tropics and Subtropics	Th	R	+	+	+	+	+
SOLANACEAE								
Solanum giganteum Jacq.	India, Sri Lanka, Africa							
Solanum wightii Nees	South America	Th	R			+		
SCROPHULARIACEAE								
Scoparia dulcis L.	Tropical America	Th	R	+		+		
Torenia travancorica Gamble	India, Sri Lanka	Th	R	+				
Toerina bicolor Daiz.	Endemic India	Th	R					+
PEDALIACEAE								
Sesamum orientale L.	India, Old World	Th	R			+		
ACANTHACEAE								
Andrographis paniculata (Burm.f.) Wall. *ex*Nees.	India, Sri Lanka	Th	R	+	+			
Asystasia gangetica (L.) T. And.	India, Sri Lanka, South West Asia,Malaysia, Africa	Th	R				+	
Ecbolium ligustrinum (Vahl) Vollescn	India, Sri Lanka, Malaysia	Th	R				+	
Elytraria acaulis (L.f.)Lindau	India, Sri Lanka, Tropical and South America, Western and Eastern Tropical Africa	Th	R					
Gymnostachyum febrifugum Benth.	India: Endemic	Th	R					
Thunbergia alata Boj. ex Sins	Tropical Africa	La	R					
Phaulopsis imbricata (Forssk.) Sweet	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Tropical Africa, Madagascar	Th	OP	+	+			
VERBENACEAE								
Clerodendrum infortunatum L.	India, Sri Lanka, Malaysia, Singapore, Thailand	Ch	OP	+		+	+	+
Clerodendrum paniculata L.	South East Asia,	Ch	R	+				
Gmelina arborea Roxb.	India, Sri Lanka, Nepal, Bangladesh, Pakistan, China, Bhutan, Myanmar, Vietnam, Cambodia, Thailand, Philippines, Malaysia, Greater Sunda Islands, Tanzania	Ph	R					
Lantana camara L	Tropical America	Ph	SP	+	+	+	+	
Tectona grandis L.f.	India, Sri Lanka, Myanmar Malaysia	Ph	R	+			+	
Vitex pinnata L.	India, Sri Lanka, Myanmar, Bangladesh, Laos, Cambodia, Vietnam, Celebes, Thailand, Malaysia, Guyana	Ph	R					
LAMIACEAE								
Anisomeles indica (L.) O. Kuntze	India, Sri Lanka, Nepal, China, Malay Archipelago,	Th	R			+		

	Singapore							
Hyptis suaveolens (L.) Poit.	Tropical America	Th	R			+		
Leucas aspera (Willd) Link.	India, Nepal, Myanmar, Bangladesh, Laos, Cambodia, Vietnam,Malesia, Mauritius	Th	R			+		+
Ocimum amercanum L.	India, Old world tropics	Th	R			+	+	
Ocimum gratissimum L.	India, Sri Lanka, Nepal, Thailand, Malesia, Tropical Africa,Tropical America	Th	R			+		
Plectranthus mollis (Aiton) Spr.	India, Nepal, Myanmar	Th	R			+		
NYCTAGINACEAE								
Boerhavia repens L.	India, Sri Lanka, Pakistan, China, West Asia, Arabian Peninsula, Africa, Pacific Islands	Th	SP			+	+	
AMARNATHACEAE								
Achyranthes aspera L.	India, Sri Lanka, Pan tropics	Th	OP	+	+	+	+	+
Aerva lanata (L.) Juss. ex Schultes	India, Sri Lanka,Tropics and Subtropics	Th	R			+		
Amaranthus spinosus L.	America	Th	OP			+	+	+
ARISTOLOCHIACEAE								
Aristolochia indica L.	India, Sri Lanka, Nepal, Bangladesh	La	OP	+	+		+	
PIPERACEAE								
Piper longum L.	India, Sri Lanka, Malesia	La	OP	+	+	+	+	+
Piper nigrum L.	India, Sri Lanka	La	OP	+	+	+	+	+
Piper trioicum Roxb.	India, Myanmar, Bhutan, Bangladesh, Java	La	OP	+	+	+	+	+
Piper argyrophyllum Miq.	India, Sri Lanka	La	R		+			
MYRISTICACEAE								
Gymnacranthera canarica (King.) Warb.	Endemic India Western Ghats: Karnataka Kerala	Ph	R	+	+			
Knema attenuata (Hook.f. *et* Thoms.) Warb.	Endemic India Western Ghats: Karnataka Kerala	Ph	OP	+	+		+	+
Myristica malabarica Lam.	Endemic India Western Ghats: Karnataka Kerala	Ph	OP	+	+		+	+
Myristica fatua var. *magnifica* (Bedd.) Sin.	Endemic India Western Ghats: Karnataka Kerala	Ph	R	+				+
LAURACEAE								
Cassytha filiformis L.	India, Sri Lanka, Old World Tropics	La	R					
Cinnamommum malabatarum (Burm.f.) Berchthold *et* Presl	Endemic India Western Ghats: Karnataka Kerala	Ph	C	+	+	+	+	+
Cinnamomum verum J. S. Presl	India, Sri Lanka, Myanmar, Bangladesh, Malysia	Ph	C	+	+	+	+	+
Litsea coriacea (Heyne *ex* Meisser) Hook. f.	Endemic India Western Ghats: Karnataka Kerala	Ph	R	+	+			+
Neolitsea fischeri Gamble	Endemic India	Ph	R				+	
ELAEAGNACEAE								
Elaeagnus indica Servettaz	India, Malesia	La	R	+			+	
LORANTHACEAE								
Dendrophthoe falcata var. *pubescens* (Hook. f.) Chandran	India, Sri Lanka	Pr	C	+	+	+	+	+
Dendrophthoe falcate(L.f.) Ettingsh var. *falcata*	India, Sri Lanka, Laos, Cambodia, Vietnam, Malaysia, Australia							
Dentrophthoe elasticus (Denser) Danser	Endemic India	Pr	C	+	+	+	+	+
SANTALACEAE								
Santalum album L.	Endemic India Western Ghats: Karnataka Kerala	Ph	C	+	+	+	+	+
EUPHORBIACEAE								
Antidesma montanum Blume.	India, Bhutan, Bangladesh, Myanmar, China, Thailand, Laos, Cambodia, Vietnam, Malaysia, Indonesia, Philippines	Ph	OP	+	+	+	+	
Aporusa lindleyana (Wt.) Baill.	India, Sri Lanka	Ph	C	+	+	+	+	+
Breynia retusa (Dennst.) Alston	India, Sri Lanka, Nepal, Bangladesh, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia,	La	R				+	
Croton caudatus Geisler	India, Sri Lanka, China, South East Asia	Ph	R				+	
Euphorbia hirta L.	India, Sri Lanka, Pan tropics	Th	R			+		
Glochidion zeylanicum (Gaertner) A. Juss.	India, Sri Lanka, Bangladesh, Myanmar, Malesia, Australia	Ph	R					
Dryptes sepiaria (W. & A.)Pax. &Hottim.	India, Sri Lanka	Ph	R				+	
Macaranga peltata (Roxb.) Muell.-Arg.	India, Sri Lanka, Myanmar, Thailand	Ph	OP	+	+	+	+	+
Mallotus philippensis (Lam.)Muell.-Arg.	India, Sri Lanka, Myanmar, Bhutan, Bangladesh, China, Japan, Taiwan, Malaysia, Philippines, Australia	Ph	SP	+	+	+	+	+
Mallotus repandus (Wild) Muell.-Arg.	India, Sri Lanka, Bhutan, China, Bangladesh, Nepal, Myanmar, Laos, Cambodia, Vietnam, Thailand,	Ph	SP	+	+	+	+	+

	Indonesia, Malaysia, Philippines, Australia, New Caledonia							
Phyllanthus amarus Sech. & Thon.	America	Th	R	+	+	+	+	+
Phyllanthus urinaria L.	India, Sri Lanka, Pan tropics	Th	R	+	+	+	+	+
Phyllanthus fraternus Webster	India, Pakistan	Th	R	+	+	+	+	+
Suregada angustifolia (Muell.-Arg.)Airy Shaw	India, Sri Lanka	Th	R					
ULMACEAE								
Trema orientalis (L.) Bl.	India, Sri Lanka, Nepal, Bhutan,Myanmar, China, Japan, Arabia, Taiwan,Thailand,Vietnam, Polynesia, Malaysia,Indonesia, Philippines, Australia, Tropical Africa	Ph	R			+	+	
MORACEAE								
Artocarpus heterophyllus Lam.	India, Sri Lanka, South East Asia	Ph	R	+	+	+	+	+
Artocarpus hirsutus Lam.	Endemic India Western Ghats: Karnataka Kerala	Ph	VC	+	+	+	+	+
Antiaris toxicaria (Pers) Leschem.	India, Sri Lanka, China, Myanmar, Thailand, Laos, Cambodia, Vietnam, Indonesia, Malaysia, Philippines, Australia, Africa	Ph	R	+	+			+
Ficus tomentosa Roxb.	India, Sri Lanka	Ph	SP	+	+	+	+	+
Ficus rigida var. *bracheata* (Corner) Bennet	India, Philippines, Borneo, New Guinea	Ph	R					
Ficus religiosa L.	India, Sri Lanka, Pakistan, China, Vietnam, Thailand	Ph	SP	+	+	+	+	+
Ficus benghalensis L.	India, Sri Lanka, Pakistan	Ph	SP	+	+	+	+	+
Ficus callosa Willd	India, Sri Lanka, China, Myanmar, Vietnam, Thailand, Indonesia, Malaysia,Philippines							
Strebulas asper Lour.	India, Sri Lanka, Myanmar China Laos, Cambodia, Vietnam, Thailand, Malesia	Ph	SP	+	+	+	+	+
ORCHIDACEAE								
Acampe praemorsa (Roxb.) Blater et Mc Cann.	India, Sri Lanka, Myanmar, Seychelles	EP	C	+	+	+	+	+
Bulbophyllum kaitense Reichb	Endemic India	EP	OP	+	+	+	+	+
Bulbophyllum sterile (Lam) Suresh	India, Bangladesh, Myanmar	EP	R	+	+	+	+	+
Cymbidium aloifolium (L.) Sw.	India, Sri Lanka, China, Myanmar, Bangladesh, Laos, Cambodia, Vietnam, Malaysia, Indonesia	EP	R	+	+			
Dendrobium heterocarpum Wall. ex Lindley	India, Sri Lanka, Nepal, Myanmar, Thailand, Malaysia, Philippines,Indonesia	EP	SP	+	+	+	+	+
Liparis wghitiana Thw.	India, Sri Lanka, Sumatra, Java	Th	R	+	+			
Oberonia ferruginea Parrsh *ex* Hook.f.	India, Nepal, Myanmar, China, Laos, Cambodia, Vietnam,Thailand							
Taperobanea spathulata (L.) Chirst	India, Sri Lanka	EP	R				+	
Vanda tessellata Hook.	India, Sri Lanka, Myanmar, Nepal, Bangladesh, China	EP	SP	+	+	+	+	+
ZINGIBERACEAE								
Costus speciosus (Koen.)J.E.Sm.	India, Sri Lanka, Myanmar, Nepal, Bhutan, Laos, Cambodia, Vietnam, Malaysia, Taiwan, Philippines,Thailand, Australia	Ge	SP	+	+		+	+
Curcuma zeodrai (Christm) Roscoe	India, Bangladesh, Myanmar, Thailand	Ge	SP	+	+		+	+
Curcuma pseudomontana Grah.	Endemic India	Ge	SP	+	+	+	+	+
Globba ophioglossa Wt.	India, Myanmar, Thailand	Ge	SP	+	+	+	+	+
Zingiber zerumbet (L.)Ros. J.E. Sm	India, Sri Lanka, Myanmar, Malaysia, Thailand, Cambodia, Laos, Vietnam	Ge	SP	+	+	+	+	+
DIOSCOREACEAE								
Dioscorea bulbifera L.	India, Sri Lanka, Tropical and Subtropical Old World	Ge	SP	+	+	+	+	+
Dioscorea oppositifolia L.	India, Sri Lanka, Bangladesh	Ge	SP	+	+	+	+	+
Dioscorea pentaphylla L.	India, China, Laos,Cambodia, Vietnam, Thailand,Myanmar, Malesia, Australia, Tropical Africa	Ge	SP	+	+	+	+	+
Dioscorea spicata Roth.	India, Sri Lanka, Bangladesh	Ge	SP	+	+	+	+	+
Dioscorea tomentosa Koe. ex Spr.	India, Sri Lanka, Bangladesh	Ge	R	+	+			
LILIACEAE								
Asparagus racemosus Willd.	India, Sri Lanka, Bangladesh, Nepal, Bhutan, Pakistan, China, Malesia, Australia, Tropical Africa	Ge	SP	+	+	+	+	+
Dracaena terniflora Roxb.	India, Bangladesh, South East Asia	Ch	OP	+	+	+	+	+
Gloriosa superb L.	India, Sri Lanka, Bangladesh, Laos, Cambodia, Vietnam, Malesia, Africa, Madagascar	Ge	SP	+	+	+	+	+
SMILACACEAE								
Smilax zeylanica L.	India, Sri Lanka, Nepal, Myanmar, Malesia	Ge	SP	+	+	+	+	+
COMMELINACEAE								
Dictyospermum montanum Wt.	India, Sri Lanka, Vietnam	Th	R					

ARECACEAE								
Borassus flabellifera L.	India, Sri Lanka, Myanmar, China, Pakistan , Malaysia, Laos, Cambodia, Vietnam, Java, Sunda Island, New Guinea, Africa, Madagascar, Australia	Ph	R				+	+
Calamus rotang L.	India, Sri Lanka	La	SP	+	+	+	+	+
Calamus travancoricus Bedd. *ex*Becc. et Hook. f.	India, Bangladesh	La	SP	+	+	+	+	+
Calamus gamblei Bedd. *ex* Becc. *et* Hook. f.	Endemic India	La	R			+		
Caryota urens L.	India, Sri Lanka, Nepal, Myanmar, Malaysia, Singapore	Ph	OP	+	+	+	+	+
PANDANACEAE								
Pandanus fascicularis Lam.	India, Sri Lanka, Tropical and Subtropical Asia	Ph	OP	+	+	+	+	+
ARACEAE								
Amoprphophallus paeonifolius (Deenst) Sivadasan var. *companulatum*	India, Sri Lanka, Malesia	Ge	OP	+	+	+	+	+
Amoprphophallus paeonifolius (Dennst) Nicolson	India, Sri Lanka, Bhutan, Pacific islands							
Anaphyllum wightii Schott	Endemic India Western Ghats: Karnataka Kerala	Ge	OP	+	+	+	+	+
Pothos scandens L.	India, Sri Lanka, China, Myanmar,Malaysia, Singapore , New Guinea, Madagascar	EP	C	+	+	+	+	+
Lagenandra ovate (L.) Thw.	India, Sri Lanka	Th	R		+	+	+	
CYPERACEAE								
Cyperus compressus L.	India, Sri Lanka, Pan tropics	Th	SP		+	+	+	+
Cyperus rotundus L.	India, Sri Lanka, Cosmopolitan	Th	SP		+	+	+	+
Hypulytrum nemorum (Vahl) Spreng.	India, Sri Lanka, China, Laos, Cambodia, Vietnam, Malaysia, China,Taiwan	Th	SP		+	+	+	+
POACEAE								
Bambusa bambos (L.) Voss	India, Sri Lanka, China, Myanmar, Pakistan, Laos, Cambodia, Vietnam	Ph	OP	+	+	+	+	
Centotheca lappacea (L.) Des.	India, Sri Lanka, Nepal, China, South East Asia, Tropical Africa, Polynesia	Th	OP	+	+	+	+	
Ergrostis tenella (L.) P. Beauv. *ex* Roem et Scchutt.	India, Old world Tropics	Th	OP	+		+	+	
Ochlandra travancorica (Bedd.) Bent.*ex* Gamble	Endemic India Western Ghats: Karnataka Kerala	Ph	SP	+	+	+	+	
Sacciolepis indica (L.) Chase	India, Sri Lanka, Bhutan, Myanmar, Nepal, Japan,Thailand,Vietnam, Australia,Africa,Polynesia.	Th	SP	+		+		
GYMNOPSERMS								
GNETACEAE								
Gnetum ula Brongn	India	La	C	+	+	+	+	+
CYCADACEAE								
Cycas circinalis L.	India, SL	Ph	R	+	+			

Legends
S_1-Low land (Central Kerala), S_2- Mid land (Central Kerala), S_3- Highland (Central Kerala), S_4 Mid land (South Kerala), S_5- Mid land (North Kerala), LF- Life Forms, CS- Conservation Status, GD- Geographical Distribution, VC- Very Common, C-Common, SP- Seldom Present, OP- Often Present, R- Rare, + - Presence of taxa, - Absence of taxa

Table 2 Comparative account of floristic similarity of agro-climaticlly divergent Sacred Groves of Kerala

Sl. No.	Code of sacred groves (Community)	Agro-climatic regions	Similarity index (%)
1	.S_1-S_2	Low land and Mid land of Central Kerala	51.79
2	S_1-S_3	Low land and Highland of Central Kerala	32.00
3	S_1-S_4	Low land (Central Kerala) and Mid land (South Kerala)	42.60
4	S_1-S_5	Low land (Central Kerala) and Mid land (North Kerala)	36.99
5	S_2-S_3	Mid land (Central Kerala) and Highland (Central Kerala)	68.06
6	S_2-S_4	Mid land (Central Kerala) and Mid land (South Kerala)	51.19
7	S_2-S_5	Mid land (Central Kerala) and Mid land (North Kerala)	39.59
8	S_3-S_4	Highland (Central Kerala) and Mid land (South Kerala)	47.06
9	S_3-S_5	Highland (Central Kerala) and Mid land (North Kerala)	36.56
10	S_4-S_5	Mid land (South Kerala) and Mid land (North Kerala)	41.12

Legends
S_1-Low land (Central Kerala), S_2- Mid land (Central Kerala), S_3- Highland (Central Kerala), S_4 Mid land (South Kerala), S_5- Mid land (North Kerala)

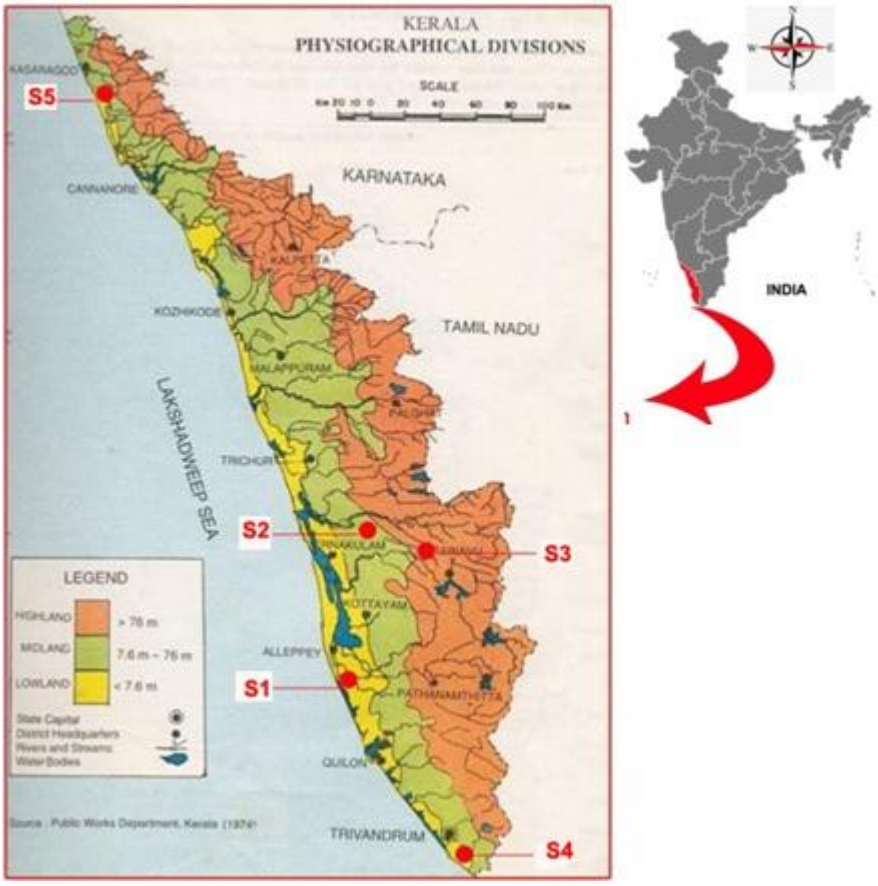

Figure 1(a): Phytogeographical Locations of Study sites

Legends

S_1-Low land (Central Kerala), S_2- Mid land (Central Kerala), S_3- Highland (Central Kerala), S_4 Mid land (South Kerala), S_5- Mid land (North Kerala)

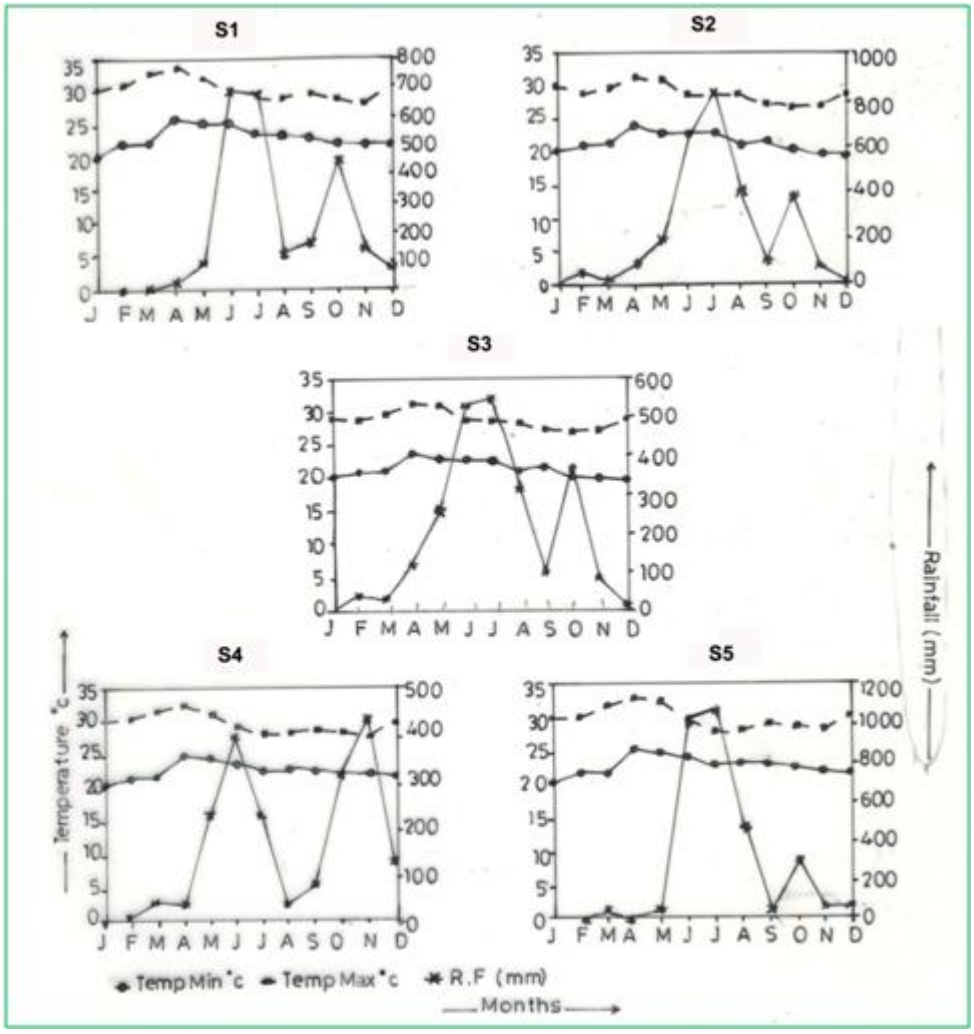

Figure 1: (b). Ombro-thermic diagrams of study sites

Legends

S_1-Low land (Central Kerala), S_2- Mid land (Central Kerala), S_3- Highland (Central Kerala), S_4 Mid land (South Kerala), S_5- Mid land (North Kerala)

A. Sacred grove and inside temple. B. Vegetation and diety C. Kunstleria keralensis D. Grewia palodensis
E. Cinnamomum mohananii F. Biophytum veldkampii G. Madhuca diplostemon H. Syzygium travancoricum

Figure 2: Typical Sacred Grove, Species Nova and Rediscovered Taxa

Figure 3: Common Indian Endemic Taxa Distributed in Sacred Groves of Kerala

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