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LISTS OF SPECIES

Angiosperms, tree species in tropical forests of southern Eastern Ghats, Tamil Nadu, India

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Abstract
We provide a list of tree species enumerated from a total of 60 ha area sampled in the tropical forests of southern Eastern Ghats, Tamil Nadu, India. A total of 272 tree species (Ā 30 cm girth at breast height) representing 181 genera and 62 families were recorded. Euphorbiaceae with 25 species was the most speciose family, followed by Moraceae (17 species), Rubiaceae (17), Rutaceae (14) and Lauraceae (12). At the generic level, *Ficus* dominated with 12 species, followed by *Diospyros* (9), *Acacia* (6), *Terminalia* (6) and *Grewia* (5). Anthropogenic activities such as hill cultivation, construction of dams, roads, buildings, etc. affect the already fragmented southern Eastern Ghats, and underline the need for effective conservation measures.

Introduction

Tropical forests cover 7 % of the earth's land surface, but harbour more than half of the world's species (Wilson 1988), and are currently disappearing at an overall rate of 0.8 to 2 % per year (May and Stumpf 2000; Sagar et al. 2003). In developing countries like India, dependence on forests is inevitable. Therefore, the pressure on forests by the ever-increasing population is logarithmic (Jayakumar et al. 2002). The Indian subcontinent, with its rich biodiversity, is one of the 12 mega-diversity countries in the world. The Eastern Ghats, Western Ghats, Himalayas, north-eastern hills and Andamans constitute important biodiversity areas of India. Rapidly shrinking biodiversity levels have raised the concern that species loss could eventually lead to ecosystem collapse (Naeem 2002) and ecologists are intensely studying the relationship between biodiversity and ecosystem function (Potvin and Gotelli 2008); a decade of research has highlighted generally a positive relationship (Hooper et al. 2005; Balvanera et al. 2006).

The disappearance of tropical forests comes at a time when our knowledge on their structure and dynamics is woefully inadequate (Hubbell and Foster 1992). Understanding of forest processes is necessary for assessment of potential impacts, the amelioration of effects of disturbance, optimization of productivity and rehabilitation of ecosystem (Congdon and Herbohn 1993). Hence, the conservation of biological diversity has become a major concern, for much of society and for many government agencies at all levels (Kaya and Raynal 2001). Documenting basic patterns of biodiversity is fundamental for priotizing areas for conservation and management action (Villasenor et al. 2007). Tropical trees are especially interesting subjects, as there is much species diversity (Condit et al. 1996, Chittibabu and Parthasarathy 2000). The Eastern Ghats of India is a broken chain of hills that runs almost parallel to east coast of India covering four states viz. Orissa, Andhra Pradesh, Tamil Nadu and Karnataka. We provide a check list of tree species inventoried from the under-studied tropical forests of southern Eastern Ghats.

Materials and methods

Study area

Inventory of tree species was carried out in six major hill complexes of southern Eastern Ghats namely, Bodamalai (BM), Chitteri (CH), Kalrayan (KA), Kolli hills (KO), Pachaimalai (PM) and Shervarayan hills (SH) (Figure 1). These hill complexes fall in the districts of Villupuram, Salem, Namakkal, Trichy, Perambalur, Erode, Dharmapuri and Thiruvannamalai in the state of Tamil Nadu, India. They are composed of masses of charnockite associated with gneisses and varied metamorphic rocks (Chittibabu and Parthasarathy 2000). The southern Eastern Ghats harbour five major forest types - tropical wet evergreen, semi-evergreen, mixed deciduous, dry deciduous and

thorn forests (Figure 2). Tribal settlements are common in all these hills. The tribal people of southern Eastern Ghats are called '*Malayalees'*. The hilly terrain and the surrounding plains of southern Eastern Ghats are densely populated. The climate data of Salem, the nearest station to the study sites for 20 years (1988-2007) obtained from India Meteorological Department, Government of India, reveals that the mean annual temperature is 28.3 ºC and the mean annual rainfall is 1058 mm. The mean annual rainy days for the same period are 61 days. In southern Eastern Ghats, the ever-increasing human population and settlements, fuel wood extraction, herding of cattle/ goats inside the forests, quarrying, location of factories near by forests, construction of buildings, roads, dams, etc. and hill cultivation lead to degradation of forest landscape and ultimately some portions of forest habitat are threatened (Figure 3).

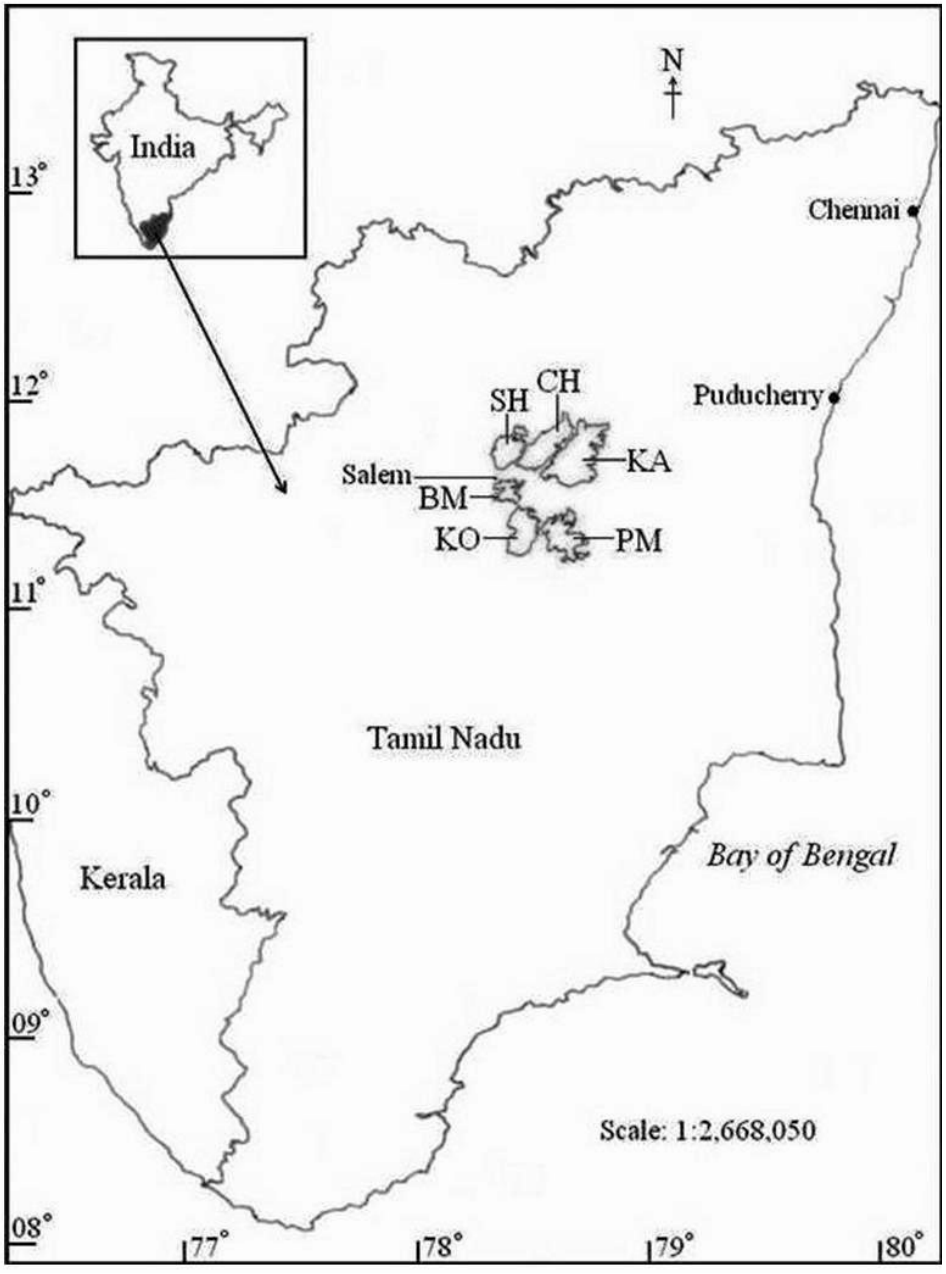

Figure 1. Map showing the study area- the six major hill complexes of southern Eastern Ghats: Bodamalai (BM), Chitteri (CH), Kalrayan (KA), Kolli hills (KO), Pachaimalai (PM) and Shervarayan hills (SH)

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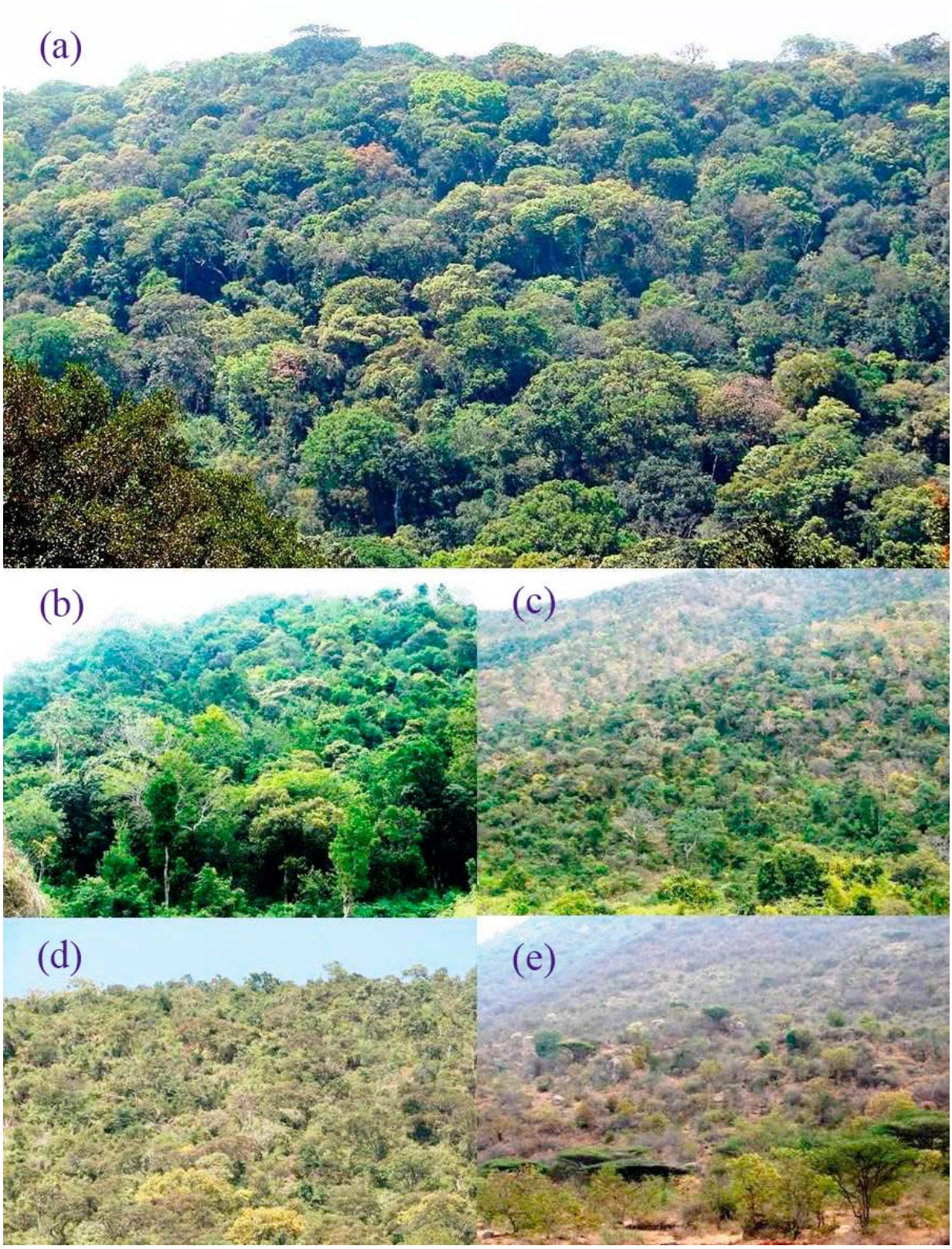

Figure 2. a) Tropical wet evergreen forest (Kolli hills); b) Semi-evergreen forest (Kalrayan hills); c) Mixed deciduous forest (Chitteri hills); d) Dry deciduous forest (Kalrayan hills); e) Thorn forest (Kolli hills). Photo by L. Arul Pragasan & N. Parthasarathy

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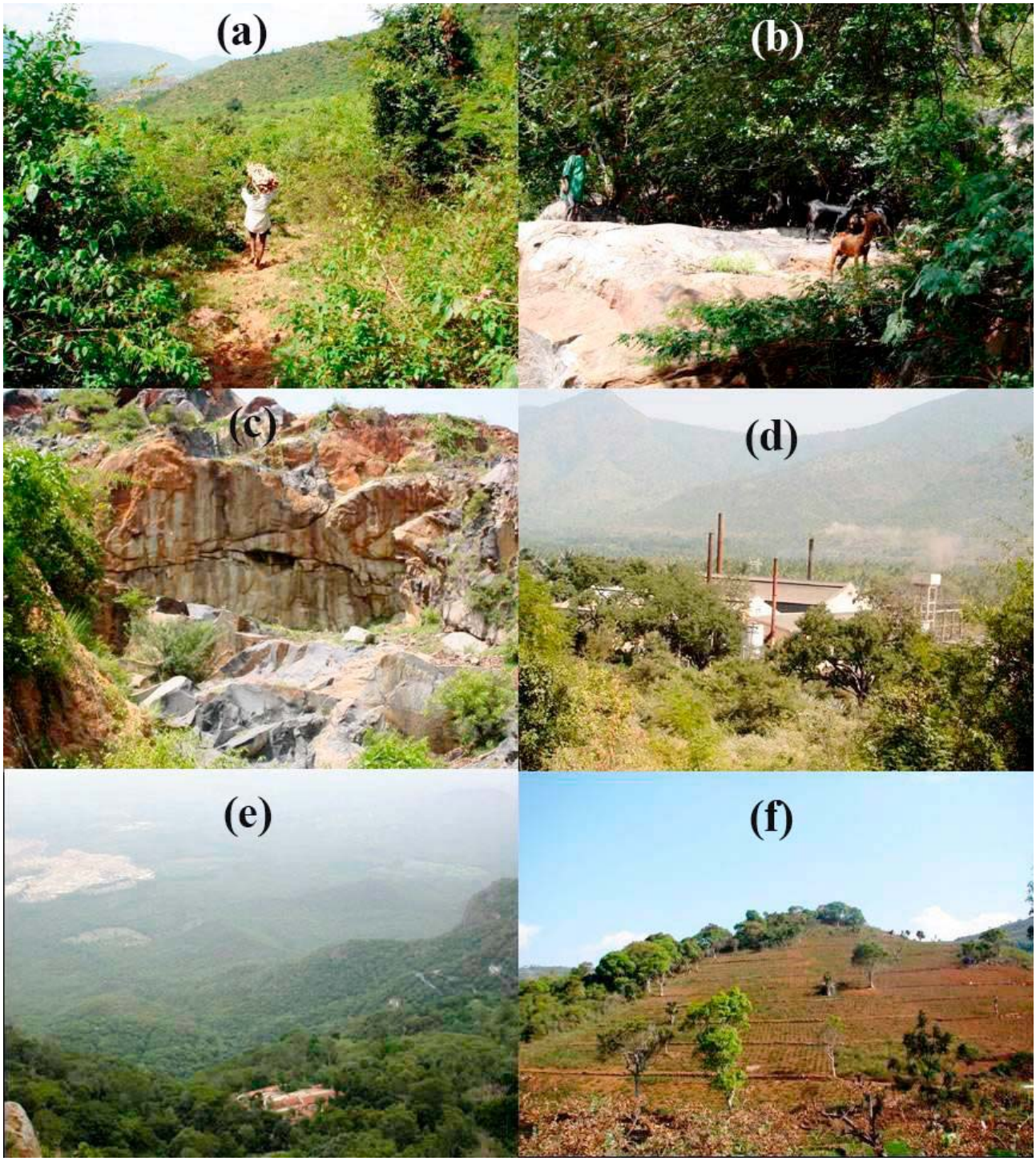

Figure 3. Anthropogenic impacts: a) fuel wood extraction; b) herding goats; c) quarrying; d) factory near forest; e) construction of buildings; f) hill cultivation. Photo by L. Arul Pragasan

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Data collection

The entire stretch of southern Eastern Ghats was divided into 6.25 km Ä 6.25 km grids. A total of 120 grids were obtained from the six hill complexes of southern Eastern Ghats. In each grid, all live trees Ā 30 cm girth at breast height (gbh) were enumerated from a belt transect of 0.5 ha (5 m Ä 1 km) area. To facilitate inventory, each transect was sub-divided into fifty 5 m Ä 20 m quadrats. Floras such as Hooker (1879), Gamble and Fischer (1915-1935), Trimen (1974), Nair and Henry (1983), Henry et al. (1987; 1989) Dassanayake and Fosberg (1987) and Matthew (1991) were used for identification of trees. Voucher specimens were collected and confirmed with the herbarium of our department and French Institute (IFP), Puducherry, and also online herbarium catalogue of Royal Botanic Gardens, Kew. They are deposited in the herbarium of Department of Ecology and Environmental Sciences, Pondicherry University.

Results and Discussion

A total of 272 tree species representing 181 genera and 62 families were recorded from the six hill complexes of southern Eastern Ghats (Table 1). Pictures of selected species are provided in Figures 4 - 17. Forty-two per cent of the family and 73 % of the genera are represented by single species. The most speciose families include Euphorbiaceae with 25 species, followed by Moraceae (17 species), Rubiaceae (17), Rutacee (14) and Lauraceae (12). The most speciose genera include *Ficus* (12 species), followed by *Diospyros* (9), *Acacia* (6), *Terminalia* (6) and *Grewia* (5). Of the 272 species recorded, 59 % are evergreen species, 25 % are deciduous and 16 % are brevi-deciduous. A total of 11 % of species are thorny. In southern Eastern Ghats, the most abundant tree species include *Euphorbia antiquorum* (Euphorbiaceae), *Acacia planifrons* (Mimosaceae) and *Acacia horrida* (Mimosaceae) in tropical thorn forests, *Albizia amara* (Mimosaceae), *Chloroxylon swietenia* (Flindersiaceae) and *Anogeissus latifolia* (Combretaceae) in dry deciduous forests, *Gyrocarpus asiaticus* (Hernandiaceae), *Commiphora caudata* (Burseraceae) and *Givotia rottleriformis* (Euphorbiaceae) in mixed deciduous forests, *Syzygium cumini* (Myrtaceae), *Nothopegia heyneana* (Anacardiaceae) and *Celtis philippensis* (Ulmaceae) in tropical semi-evergreen forests and *Memecylon edule* (Melastomataceae), *Neolitsea scrobiculata* and *Alseodaphne semicarpifolia* var. *semicarpifolia* in tropical wet evergreen forests.

Whereas in the Western Ghats of peninsular India, the most abundant species in a 30 ha plot of tropical wet evergreen forest in Anamalais include, *Drypetes longifolia* (Euphorbiaceae), *Reinwardtiodendron anamallayanum* (Meliaceae), *Poeciloneuron indicum* (Clusiaceae), *Dipterocarpus indicus* (Dipterocarpaceae) and *Dimocarpus longan* (Sapindaceae) (Ayyappan and Parthasarathy 1999), while *Kydia calycina* (Malvaceae), *Lagerstroemia microcarpa* (Lythraceae), *Terminalia crenulata* (Combretaceae), *Anogeissus latifolia* (Combretaceae), *Tectona grandis* (Verbenaceae) and *Cassia fistula* (Caesalpiniaceae) formed the dominant species in the 50 ha plot of tropical deciduous forest in Mudumalai (Sukumar et al. 1992). The enumerated species richness of 272 trees species in 60 ha area of southern Eastern Ghats forests is greater when compared to a few large-scale (contiguous plot) inventories of trees (Ā 30 cm gbh) in other tropical forests: 226 species in 50 ha plot of Barro Colorado Island, Panama; 211 species in 50 ha plot at Huai Kha Khaeng, Thailand; 164 species in 25 ha plot at Sinharaja, Sri Lanka (Condit et al. 2000); 148 species in 30 ha plot at Varagalaiar, Anamalais, India (Ayyappan and Parthasarathy 1999); 103 species in 28 ha plot at Uppangala, central Western Ghats, India (Pascal and Pelissier 1996); 63 species in 50 ha plot at Mudumalai, India (Condit et al. 2000); but lesser than the 996 species encountered in 52 ha plot at Lambir, Peninsular Malaysia and 673 species in 50 ha plot at Pasoh, Malaysia (Condit et al. 2000). Documenting the patterns of species diversity and their distribution creates a good database, useful for implementing better management and conservation of tropical forests, particularly so for the patchy hill complexes of southern Eastern Ghats.

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LISTS OF SPECIES

Table 1. Total list of tree species enumerated from 120 belt transects of 0.5 ha area in six hill complexes of southern Eastern Ghats, Tamil Nadu, India. (BD: brevi-deciduous; D: deciduous; E: evergreen; T: thorny; NT: non-thorny).

Species/ Family	Plant type	T/NT	Voucher no.
Alangiaceae			
Alangium salviifolium (L.f.) Wang.	D	T	5128
Anacardiaceae			
Buchanania axillaris (Desr.) Ramam.	D	NT	5013
Buchanania lanzan Spreng.	D	NT	5424
Lannea coromandelica (Houtt.) Merr.	D	NT	5149
Mangifera indica L.	BD	NT	5392
Nothopegia heyneana (Hook.f.) Gamble	E	NT	5282
Nothopegia racemosa (Dalz.) Ramam.	E	NT	5096
Rhus mysorensis G. Don	E	T	5169
Semecarpus anacardium L.f.	BD	NT	5102
Spondias pinnata (L.f.) Kurz	BD	NT	5170
Annonaceae			
Alphonsea sclerocarpa Thw.	E	NT	5488
Annona cherimola Mill.	E	NT	5451
Annona squamosa L.	E	NT	5429
Miliusa eriocarpa Dunn	E	NT	5465
Polyalthia cerasoides (Roxb.) Bedd. Nakulsi	D	NT	5054
Apocynaceae			
Alstonia scholaris (L.) R.Br.	E	NT	5396
Holarrhena pubescens Wall.	E	NT	5517
Plumeria rubra L.	D	NT	5196
Wrightia tinctoria (Roxb.) R.Br.	D	NT	5077
Aquifoliaceae			
Ilex wightiana Wall. ex Wight	E	NT	5168
Araliaceae			
Schefflera stellata (Gaertn.) Harms	D	NT	5244
Arecaceae			
Borassus flabellifer L.	E	NT	5165
Caryota urens L.	E	NT	5321
Asteraceae			
Vernonia arborea Buch.-Ham.	E	NT	5318
Bignoniaceae			
Dolichandrone arcuata (Wight) Clarke	D	NT	5242
Dolichandrone atrovirens (Heyne ex Roth) Spangue	D	NT	5363
Spathodea campanulata Beauv.	E	NT	5468
Stereospermum colais (Buch.-Ham. ex Dillw.) Mabberley	E	NT	5255
Bischofiaceae			
Bischofia javanica Blume	D	NT	5263
Bombacaceae			
Bombax ceiba L.	D	NT	5334
Burseraceae			
Boswellia serrata Roxb. ex Coleb.	D	NT	5173
Canarium strictum Roxb.	D	NT	5264
Commiphora berryi (Arn.) Engler	D	T	5256
Commiphora caudata (Wight & Arn.) Engler	D	T	5020
Garuga pinnata Roxb.	D	NT	5039
Caesalpiniaceae			
Bauhinia purpurea L.	E	NT	5010

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Species/ Family	Plant type	T/NT	Voucher no.
Bauhinia racemosa Lam.	D	NT	5136
Cassia didymobotrya Fresn.	D	NT	5209
Cassia fistula L.	D	NT	5015
Cassia siamea Lam.	E	NT	5233
Delonix regia (Boj. ex Hook.) Rafin.	BD	NT	5251
Hardwickia binata Roxb.	D	NT	5202
Tamarindus indica L.	BD	NT	5108
Capparaceae			
Capparis grandis L.	E	NT	5420
Crateva magna (Lour.) DC.	D	NT	5502
Celastraceae			
Cassine glauca (Rottb.) Kuntze	E	NT	5139
Euonymus indicus Heyne ex Roxb.	E	NT	5120
Maytenus emarginata (Willd.) Ding Hou	E	NT	5398
Pleurostylia opposita (Wall.) Alston	E	NT	5098
Combretaceae			
Anogeissus latifolia (Roxb. ex DC.) Wall. ex Guill. & Perr.	D	NT	5008
Terminalia arjuna (Roxb. ex DC.) Wight & Arn.	BD	NT	5480
Terminalia bellirica (Gaertn.) Roxb.	BD	NT	5069
Terminalia chebula Retz.	BD	NT	5070
Terminalia coriacea (Roxb.) Wight & Arn.	BD	NT	5072
Terminalia crenulata Roth	BD	NT	5408
Terminalia paniculata Roth	BD	NT	5073
Cordiaceae			
Cordia domestica Roth	BD	NT	5142
Cordia macleodii (Griff.) Hook.f. & Thoms.	BD	NT	5496
Cordia obliqua Willd.	BD	NT	5175
Ehretia pubescens Benth.	E	NT	5181
Cupressaceae			
Callitris rhomboidea R. Br. ex Rich.	E	NT	5432
Dipterocarpaceae			
Shorea roxburghii G. Don	E	NT	5105
Ebenaceae			
Diospyros barberi Ramaswami	E	NT	5023
Diospyros ebenum Koen.	E	NT	5024
Diospyros ferrea (Willd.) Bakh. var. *buxifolia* (Rottb.) Bakh.	E	NT	5025
Diospyros humilis Bourd.	E	NT	5382
Diospyros malabarica (Desr.) Kostel.	E	NT	5027
Diospyros melanoxylon Roxb.	E	NT	5030
Diospyros montana Roxb.	D	T	5087
Diospyros neilgerrensis (R.Wight) Kosterm.	E	NT	5304
Diospyros ovalifolia Wight	E	NT	5177
Elaeocarpaceae			
Elaeocarpus serratus L.	E	NT	5267
Erythroxylaceae			
Erythroxylum monogynum Roxb.	BD	NT	5031
Euphorbiaceae			
Agrostistachys borneensis Becc.	E	NT	5346
Aleurites moluccana (L.) Willd.	D	NT	5216
Antidesma menasu Kurz	E	NT	5296
Antidesma zeylanicum Lam.	E	NT	5390
Bridelia crenulata Roxb.	D	T	5319
Cleistanthus collinus Benth. ex Hook.f.	D	NT	5141

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Species/ Family	Plant type	T/NT	Voucher no.
Croton laccifer L.	E	NT	5324
Drypetes roxburghii (Wall.) Hurusawa	E	NT	5220
Drypetes sepiaria (Wight & Arn.) Pax & Hoffm.	E	NT	5088
Epiprinus mallotiformis (Muell.-Arg.) Croizat	E	NT	5269
Euphorbia antiquorum L.	E	T	5236
Euphorbia nivulia Buch.-Ham.	D	T	5032
Excoecaria robusta Hook.f.	E	NT	5370
Givotia rottleriformis Griff.	D	NT	5145
Glochidion ellipticum Wight	E	NT	5455
Glochidion velutinum Wight	E	NT	5460
Macaranga indica Wight	E	NT	5378
Mallotus intermedius (Baill.) Balakr.	E	NT	5439
Mallotus philippensis (Lam.) Muell.-Arg.	E	NT	5245
Mallotus stenanthus Muell.Arg.	E	NT	5158
Manihot glaziovii Muell.Arg.	E	NT	5046
Margaritaria indica (Dalz.) Airy Shaw	E	NT	5150
Phyllanthus emblica L.	BD	NT	5287
Phyllanthus polyphyllus Willd.	D	NT	5426
Sapium insigne (Royle) Benth.	D	NT	5248
Flacourtiaceae			
Casearia elliptica Willd.	E	NT	5137
Casearia rubescens Dalz.	E	NT	5391
Flacourtia indica (Burm.f.) Merr.	E	T	5198
Flacourtia jangomas (Lour.) Raeusch.	E	T	5373
Scolopia crenata (Wight & Arn.) Clos	E	T	5063
Flindersiaceae			
Chloroxylon swietenia DC.	D	NT	5019
Hernandiaceae			
Gyrocarpus asiaticus Willd.	D	NT	5222
Lauraceae			
Alseodaphne semicarpifolia Nees var. *angustifolia* Meissner	E	NT	5259
Alseodaphne semicarpifolia Nees var. *semecarpifolia*	E	NT	5331
Beilschmiedia bourdilloni Brandis	E	NT	5261
Cinnamomum malabatrum (Burm.f.) Blume	E	NT	5301
Litsea deccanensis Gamble	E	NT	5118
Litsea glutinosa (Lour.) C.Robinson	E	NT	5306
Litsea oleoides (Meisner) Hook.f.	E	NT	5224
Litsea stocksii (Meisner) Hook.f.	E	NT	5307
Neolitsea cassia (L.) Kosterm.	E	NT	5051
Neolitsea scrobiculata (Meisner) Gamble	E	NT	5280
Persea macarantha Nees Kosterm.	E	NT	5206
Phoebe lanceolata Nees	E	NT	5358
Lecythidaceae			
Careya arborea Roxb.	D	NT	5155
Leeaceae			
Leea indica (Burm.f.) Merr.	E	NT	5273
Loganiaceae			
Strychnos nux-vomica L.	BD	NT	5153
Strychnos potatorum L.f.	D	NT	5066
Lythraceae			
Lagerstroemia parviflora Roxb.	D	NT	5041
Melastomataceae			
Memecylon edule Roxb.	E	NT	5275

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Species/ Family	Plant type	T/NT	Voucher no.
Memecylon grande Retz.	E	NT	5049
Memecylon lushingtonii Gamble	E	NT	5277
Memecylon parvifolium Thwaites	E	NT	5205
Meliaceae			
Aglaia elaeagnoidea (Juss.) Benth. var. *courtallensis* (Gamble) K.K.N. Nair	E	NT	5294
Aglaia jainii M.V.Viswan. & K.Ramach.	E	NT	5330
Azadirachta indica A.Juss.	BD	NT	5133
Chukrasia tabularis A.Juss.	E	NT	5239
Cipadessa baccifera Miq.	E	NT	5084
Melia azedarach L.	BD	NT	5423
Melia dubia Cav.	BD	NT	5469
Soymida febrifuga (Roxb.) A.Juss.	E	NT	5208
Toona ciliata M.Roem.	E	NT	5328
Trichilia connaroides (Wight & Arn.) Bentvelzen	E	NT	5162
Walsura trifolia (A.Juss.) Harms	E	NT	5172
Meliosmaceae			
Meliosma pinnata (Roxb.) Maxim. subsp. *arnottiana* (Wight) Beus.	E	NT	5315
Meliosma simplicifolia (Roxb.) Walp. subsp. *pungens* (Wight & Arn.) Beus.	E	NT	5440
Meliosma simplicifolia (Roxb.) Walp. subsp. *simplicifolia*	E	NT	5316
Mimosaceae			
Acacia chundra (Roxb. ex Rottl.) Willd.	D	T	5226
Acacia farnesiana (L.) Willd.	D	T	5411
Acacia ferruginea DC.	D	T	5003
Acacia horrida (L.f.) Willd.	D	T	5228
Acacia leucophloea (Roxb.) Willd.	D	T	5113
Acacia planifrons Wight & Arn.	D	T	5230
Albizia amara (Roxb.) Boivin	BD	NT	5005
Albizia chinensis (Osbeck) Merr.	D	NT	5427
Albizia lebbeck (L.) Benth.	BD	NT	5007
Albizia odoratissima (L.f.) Benth.	D	NT	5215
Dichrostachys cinerea (L.) Wight & Arn.	D	T	5422
Moraceae			
Antiaris toxicaria (Pers.) Lesch.	D	NT	5333
Artocarpus heterophyllus Lam.	E	NT	5298
Artocarpus hirsutus Lam.	E	NT	5498
Ficus amplissima J.E. Smith	BD	NT	5034
Ficus beddomei King	BD	NT	5178
Ficus benghalensis L.	BD	NT	5037
Ficus drupacea Thunb. var. *pubescens* (Roth) Corner	BD	NT	5375
Ficus exasperata Vahl	BD	NT	5584
Ficus hispida L.f.	BD	NT	5365
Ficus microcarpa L.f.	BD	NT	5091
Ficus mollis Vahl	BD	NT	5144
Ficus nervosa Heyne ex Roth	BD	NT	5116
Ficus racemosa L.	BD	NT	5476
Ficus religiosa L.	BD	NT	5504
Ficus virens Ait.	BD	NT	5325
Streblus asper Lour.	E	NT	5225
Streblus taxoides (Heyne ex Roth) Kurz	E	T	5342
Moringaceae			
Moringa concanensis Nimmo ex Gibs.	E	NT	5151

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Species/ Family	Plant type	T/NT	Voucher no.
Myristicaceae			
Myristica dactyloides Gaertn.	E	NT	5210
Myrsinaceae			
Ardisia solanacea Roxb.	E	NT	5431
Maesa indica (Roxb.) DC.	E	NT	5045
Rapanea wightiana (Wall. ex DC.) Mez	E	NT	5389
Myrtaceae			
Eugenia thwaitesii Duthie	E	NT	5353
Psidium guajava L.	E	NT	5380
Syzygium cumini (L.) Skeels	E	NT	5067
Ochnaceae			
Ochna obtusata DC.	D	NT	5286
Oleaceae			
Chionanthus mala-elengi (Dennst.) P.S.Green	E	NT	5082
Chionanthus ramiflora Roxb.	E	NT	5433
Chionanthus zeylanica L.	E	NT	5018
Ligustrum perrottetii DC.	E	NT	5044
Papilionaceae			
Butea monosperma (Lam.) Taub.	D	NT	5484
Dalbergia latifolia Roxb.	BD	NT	5197
Dalbergia paniculata Roxb.	BD	NT	5021
Erythrina stricta Roxb.	D	T	5182
Erythrina suberosa Roxb.	D	T	5485
Erythrina variegata L.	D	NT	5487
Pongamia pinnata (L.) Pierre	BD	NT	5058
Pterocarpus marsupium Roxb.	BD	NT	5123
Pittosporaceae			
Pittosporum napaulense (DC.) Rehder & Wilson	E	NT	5053
Pittosporum neelgherrense Wight & Arn.	E	NT	5441
Poaceae			
Bambusa arundinacea (Retz.) Roxb.	E	NT	5081
Proteaceae			
Grevillea robusta A.Cunn.	E	NT	5270
Rhamnaceae			
Maesopsis eminii Engler	E	NT	5311
Ziziphus mauritiana Lam.	BD	T	5188
Ziziphus xylopyrus (Retz.) Willd.	BD	T	5112
Rosaceae			
Eriobotrya japonica (Thunb.) Lindl.	E	NT	5454
Prunus ceylanica (Wight) Miq.	E	NT	5288
Rubiaceae			
Benkara malabarica (Lam.) Tirvengadum	E	NT	5254
Canthium dicoccum (Gaertn.) Teijsm. & Binn. var. *dicoccum*	E	NT	5014
Canthium dicoccum (Gaertn.) Teijsm. & Binn. var. *umbellata* (Wight) Sant. & Merch.	E	NT	5265
Catunaregam spinosa (Thumb.) Tiruvengadum	D	T	5190
Coffea arabica L.	E	NT	5438
Gardenia resinifera Roth	E	NT	5038
Haldina cordifolia (Roxb.) Ridsdale	E	NT	5167
Hymenodictyon orixense (Roxb.) Mabberly	D	NT	5185
Ixora pavetta Andr.	E	NT	5464
Lasianthus truncatus Beddome	E	NT	5043
Mitragyna parvifolia (Roxb.) Korth.	D	NT	5050

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Species/ Family	Plant type	T/NT	Voucher no.
Morinda pubescens J.E. Smith	E	NT	5194
Psychotria elongata (Wight) Hook.f.	E	NT	5444
Psychotria flavida Talbot	E	NT	5371
Randia candolleana Wight & Arn.	E	NT	5193
Tarenna asiatica (L.) Kuntze	E	NT	5343
Wendlandia thyrsoidea (Schultes) Steud.	E	NT	5448
Rutaceae			
Aegle marmelos (L.) Correa	D	T	5126
Atalantia monophylla (L.) Correa	E	T	5079
Atalantia racemosa Wight & Arn.	E	T	5132
Citrus medica L.	E	T	5086
Clausena dentata (Willd.) M.Roem.	D	NT	5114
Euodia lunu-ankenda (Gaertn.) Merr.	E	NT	5397
Glycosmis mauritiana (Lam.) Tanaka	E	NT	5494
Glycosmis pentaphylla (Retz.) DC.	E	NT	5092
Limonia acidissima L.	D	NT	5117
Murraya koenigii (L.) Spreng.	D	NT	5381
Murraya paniculata (L.) Jack	E	NT	5409
Naringi crenulata (Roxb.) Nicolson	D	T	5279
Pamburus missionis (Wight) Swingle	E	T	5407
Pleiospermium alatum (Wall. ex Wight & Arn.) Swingle	E	T	5442
Salicaceae			
Salix tetrasperma Roxb.	E	NT	5445
Santalaceae			
Santalum album L.	E	NT	5100
Sapindaceae			
Allophylus serratus (Roxb.) Kurz	E	NT	5130
Dimocarpus longan Lour.	E	NT	5499
Filicium decipiens (Wight & Arn.) Thw.	E	NT	5156
Lepisanthes senegalensis (Juss. Ex Poir.) Leenh.	E	NT	5463
Lepisanthes tetraphylla (Vahl.) Radlk.	E	NT	5336
Sapindus emarginatus Vahl.	BD	NT	5101
Schleichera oleosa (Lour.) Oken	D	NT	5061
Sapotaceae			
Chrysophyllum roxburghii G.Don	E	NT	5300
Madhuca longifolia (Koen.) Macbr. var. *longifolia*	E	NT	5357
Manilkara hexandra (Roxb.) Dubard	E	NT	5479
Mimusops elengi L.	E	NT	5121
Simaroubaceae			
Ailanthus excelsa Roxb.	D	NT	5127
Solanaceae			
Solanum erianthum D.Don	E	NT	5361
Sterculiaceae			
Firmiana colorata (Roxb.) R.Br.	D	NT	5257
Helicteres isora L.	E	NT	5095
Hildegardia populifolia (Roxb.) Schott & Endl.	D	NT	5507
Pterospermum canascens Roxb.	BD	NT	5509
Pterospermum reticulatum Wight & Arn.	D	NT	5212
Pterospermum xylocarpum (Gaertn.) Sant. & Wagh	BD	NT	5338
Sterculia foetida L.	BD	NT	5249
Sterculia urens Roxb.	D	NT	5180
Sterculia villosa Roxb. ex DC.	E	NT	5107

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Species/ Family	Plant type	T/NT	Voucher no.
Symplocaceae			
Symplocos cochinchinensis (Lour.) Moore	E	NT	5291
Tiliaceae			
Grewia laevigata Vahl.	E	NT	5369
Grewia orbiculata Rottl.	E	NT	5505
Grewia tenax (Forssk.) Fiori	E	NT	5520
Grewia tiliaefolia Vahl.	E	NT	5201
Grewia villosa Willd.	E	NT	5462
Ulmaceae			
Celtis philippensis Blanco	E	NT	5237
Celtis tetrandra Roxb.	E	NT	5219
Celtis timorensis Spanoghe	E	NT	5232
Holoptelea integrifolia (Roxb.) Planch.	D	NT	5253
Trema orientalis (L.) Blume	E	NT	5483
Vacciniaceae			
Vaccinium neilgherrense Wight	E	NT	5446
Verbenaceae			
Callicarpa tomentosa (L.) Murr.	E	NT	5352
Gmelina arborea Roxb.	D	NT	5040
Premna latifolia Roxb. var. *mollissima* (Roth) Clarke	E	NT	5060
Premna tomentosa Roxb.	E	NT	5160
Tectona grandis L.f.	D	NT	5161
Vitex altissima L.f.	E	NT	5075
Vitex negundo L.	E	NT	5495

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Figure 4. a) *Acacia chundra* (Mimosaceae); b) *Acacia horrida* (Mimosaceae); c) *Acacia leucophloea* (Mimosaceae); d) *Aglaia elaeagnoidea* var. *courtallensis* (Meliaceae); e) *Aglaia jainii* (Meliaceae); f) *Agrostistachys borneensis* (Euphorbiaceae). Photo by L. Arul Pragasan & N. Parthasarathy.

LISTS OF SPECIES

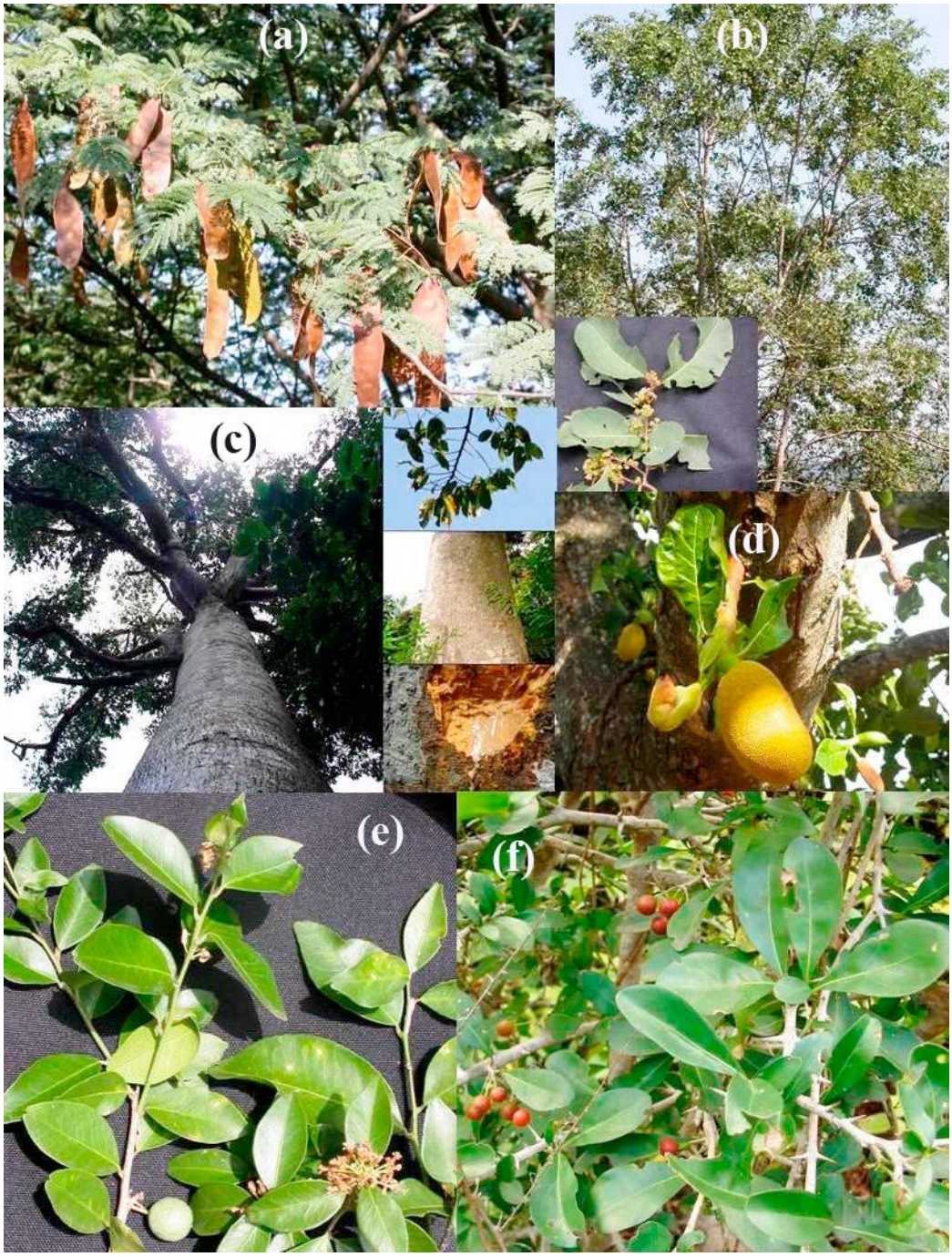

Figure 5. a) *Albizia amara* (Mimosaceae); b) *Anogeissus latifolia* (Combretaceae); c) *Antiaris toxicaria* (Moraceae); d) *Artocarpus heterophyllus* (Moraceae); e) *Atalantia monophylla* (Rutaceae); f) *Benkara malabarica* (Rubiaceae). Photo by L. Arul Pragasan.

LISTS OF SPECIES

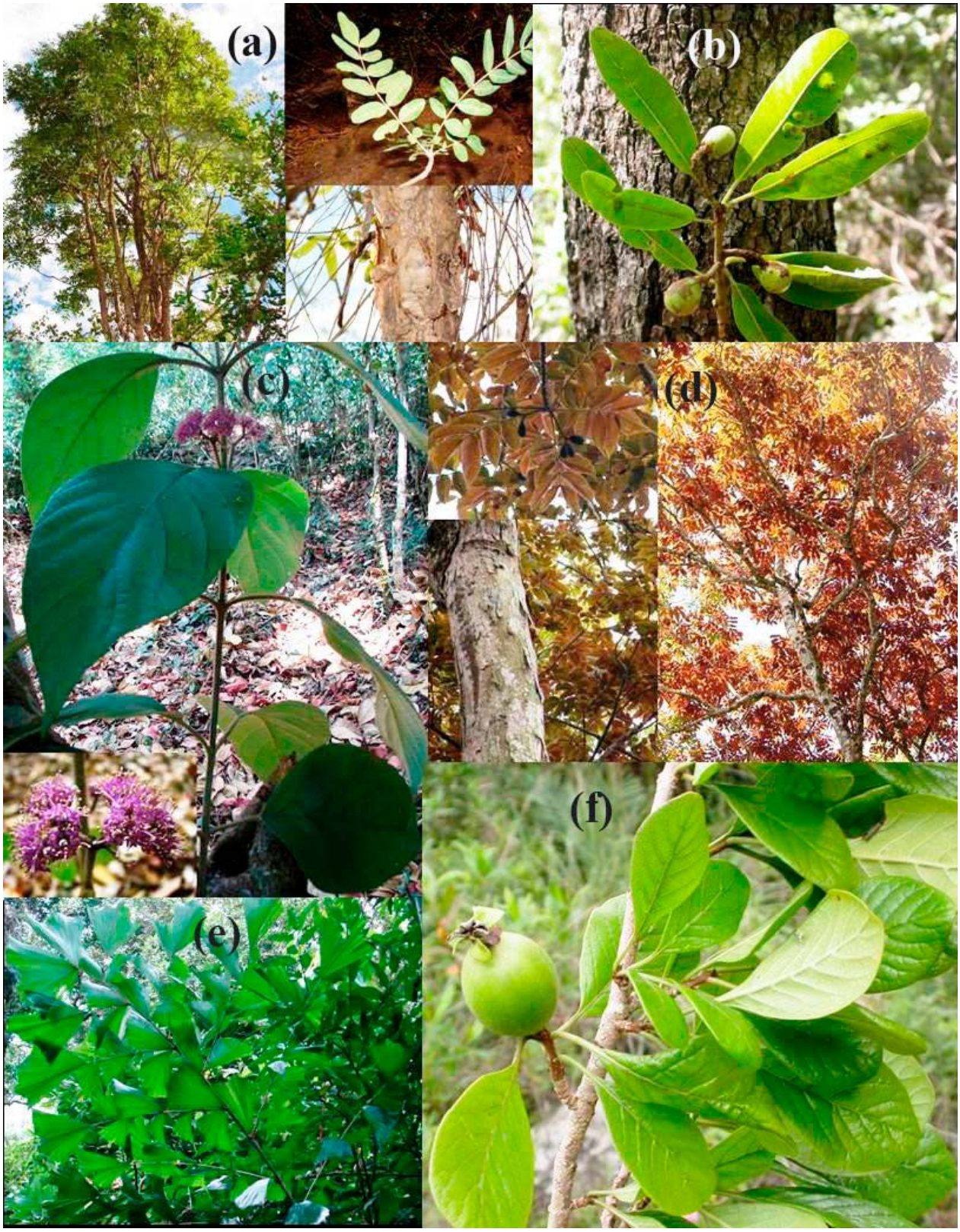

Figure 6. a) *Boswellia serrata* (Burseraceae); b) *Buchanania axillaris* (Anacardiaceae); c) *Callicarpa tomentosa* (Verbenaceae); d) *Canarium strictum* (Burseraceae); e) *Caryota urens* (Arecaceae); f) *Catunaregam spinosa* (Rubiaceae). Photo by L. Arul Pragasan.

LISTS OF SPECIES

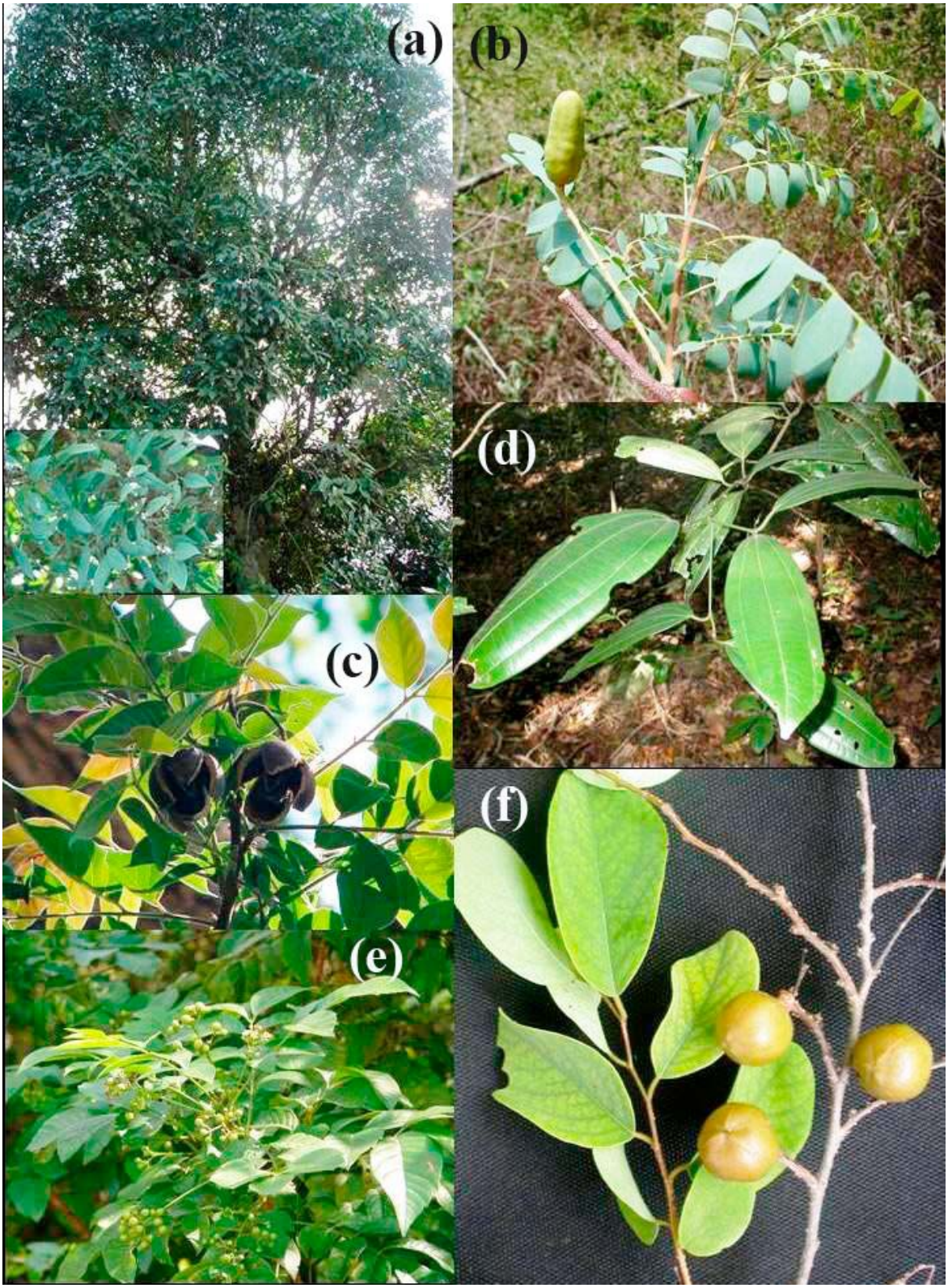

Figure 7. a) *Celtis philippensis* (Ulmaceae); b) *Chloroxylon swietenia* (Flindersiaceae); c) *Chukrasia tabularis* (Meliaceae); d) *Cinnamomum malabatrum* (Lauraceae); e) *Cipadessa baccifera* (Meliaceae); f) *Cleistanthus collinus* (Euphorbiaceae). Photo by L. Arul Pragasan.

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Figure 8. a) *Commiphora berryi* (Burseraceae); b) *Commiphora caudata* (Burseraceae); c) *Cordia obliqua* (Cordiaceae); d) *Dimocarpus longan* (Sapindaceae); e) *Diospyros melanoxylon* (Ebenaceae); f) *Diospyros ovalifolia* (Ebenaceae). Photo by L. Arul Pragasan.

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Figure 9. a) *Dolichandrone arcuata* (Bignoniaceae); b) *Drypetes roxburghii* (Euphorbiaceae); c) *Ehretia pubescens* (Cordiaceae); d) *Erythrina stricta* (Papilionaceae); e) *Erythroxylum monogynum* (Erythroxylaceae); f) *Eugenia thwaitesii* (Myrtaceae). Photo by L. Arul Pragasan.

LISTS OF SPECIES

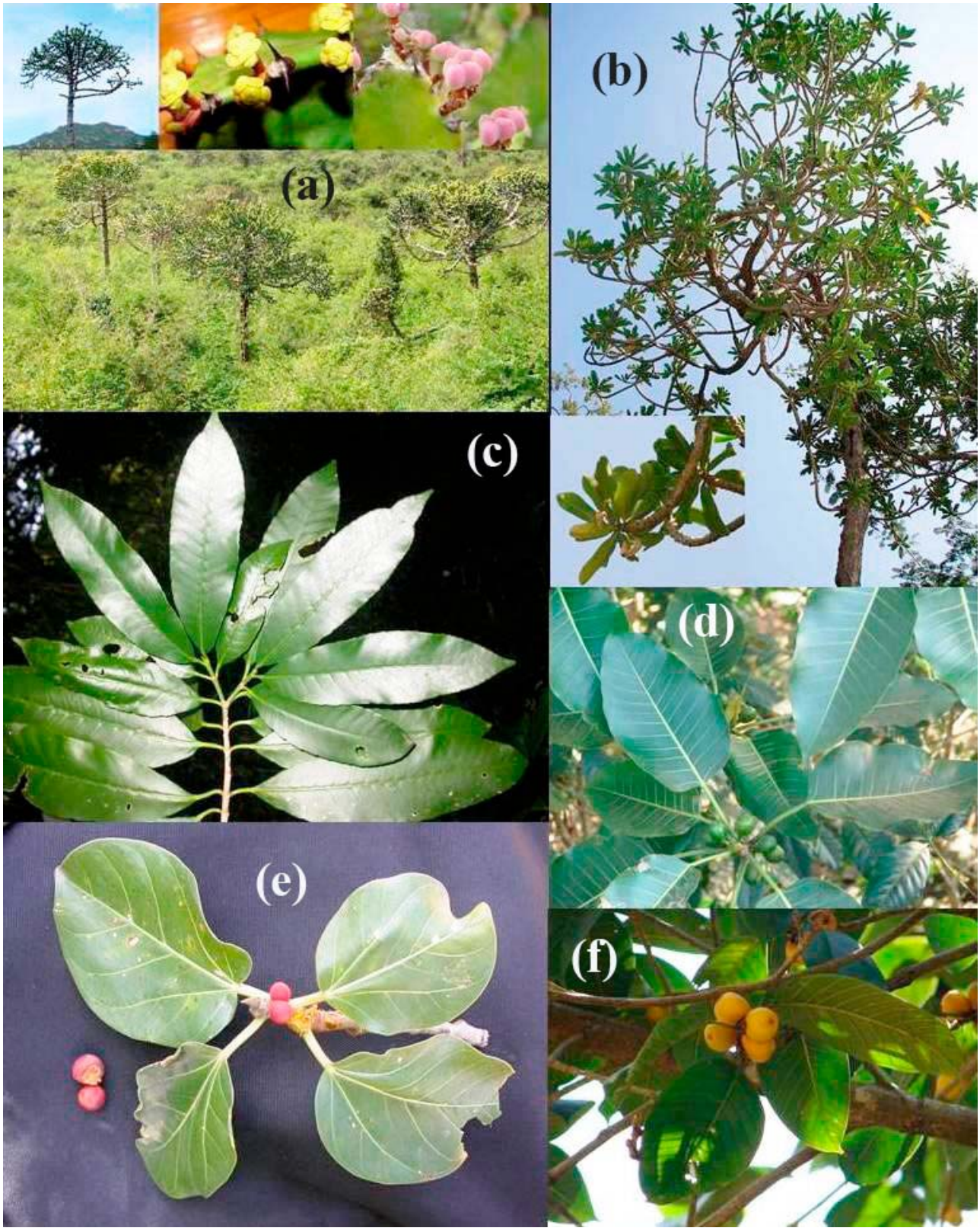

Figure 10. a) *Euphorbia antiquorum* (Euphorbiaceae); b) *Euphorbia nivulia* (Euphorbiaceae); c) *Excoecaria robusta* (Euphorbiaceae); d) *Ficus beddomei* (Moraceae); e) *Ficus benghalensis* (Moraceae); f) *Ficus drupacea* var. *pubescens* (Moraceae). Photo by L. Arul Pragasan.

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Figure 11. a) *Ficus hispida* (Moraceae); b) *Ficus microcarpa* (Moraceae); c) *Ficus nervosa* (Moraceae); d) *Filicium decipiens* (Sapindaceae); e) *Gardenia resinifera* (Rubiaceae). Photo by L. Arul Pragasan.

LISTS OF SPECIES

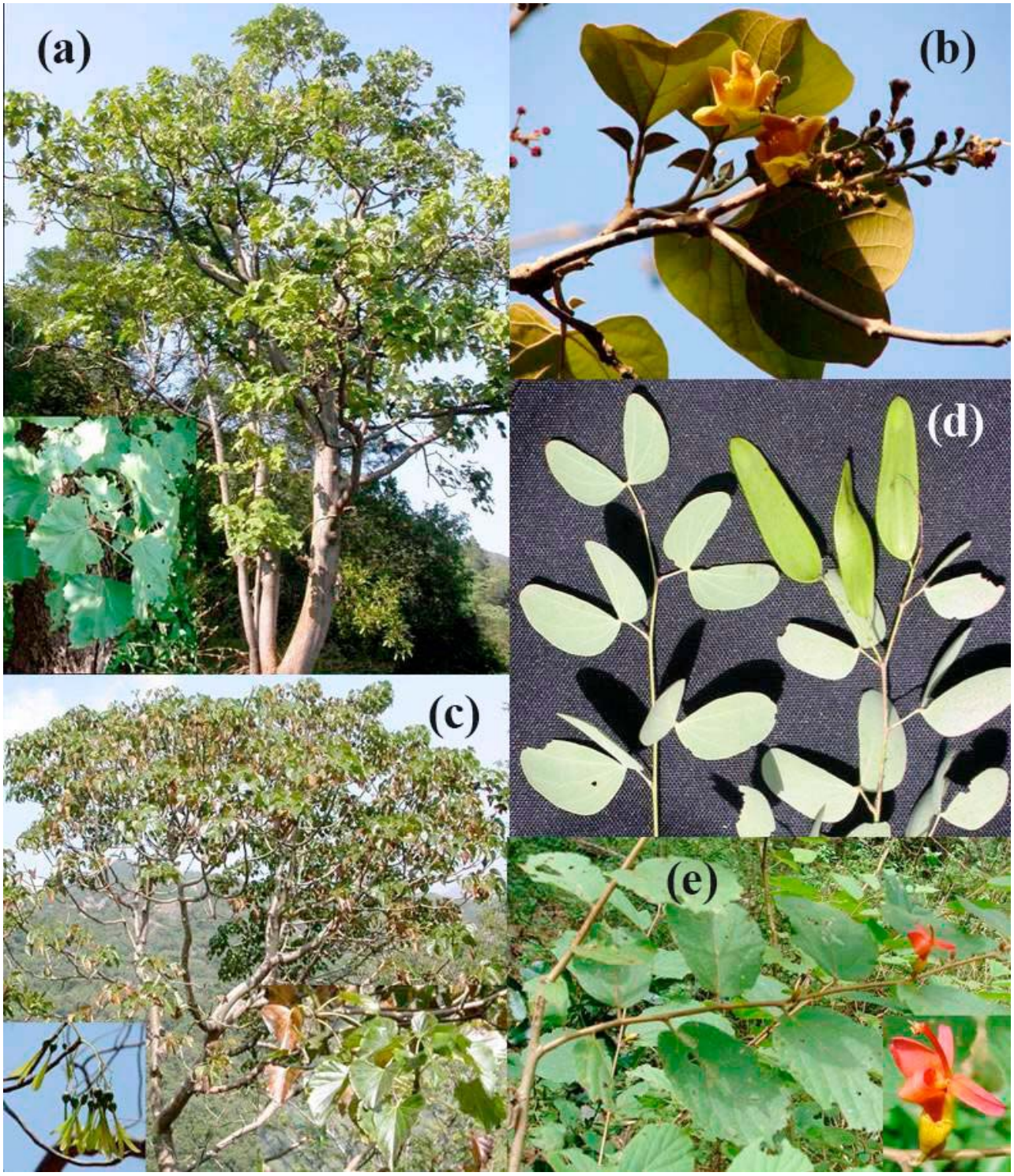

Figure 12. a) *Givotia rottleriformis* (Euphorbiaceae); b) *Gmelina arborea* (Verbenaceae); c) *Gyrocarpus asiaticus* (Hernandiaceae); d) *Hardwickia binata* (Caesalpiniaceae); e) *Helicteres isora* (Sterculiaceae). Photo by L. Arul Pragasan.

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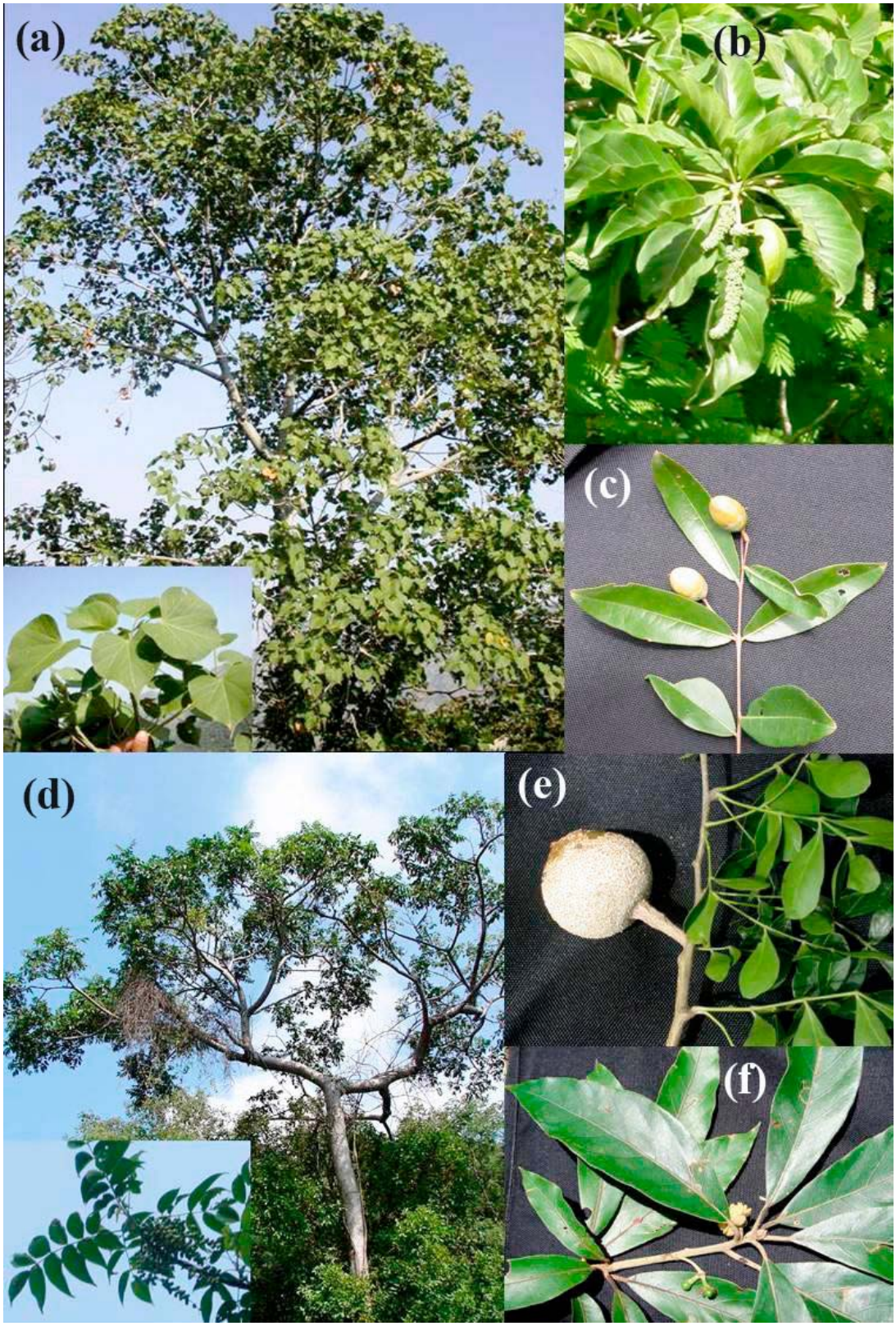

Figure 13. a) *Hildegardia populifolia* (Sterculiaceae); b) *Hymenodictyon orixense* (Rubiaceae); c) *Lagerstroemia parviflora* (Lythraceae); d) *Lannea coromandelica* (Anacardiaceae); e) *Limonia acidissima* (Rutaceae); f) *Litsea deccanensis* (Lauraceae). Photo by L. Arul Pragasan.

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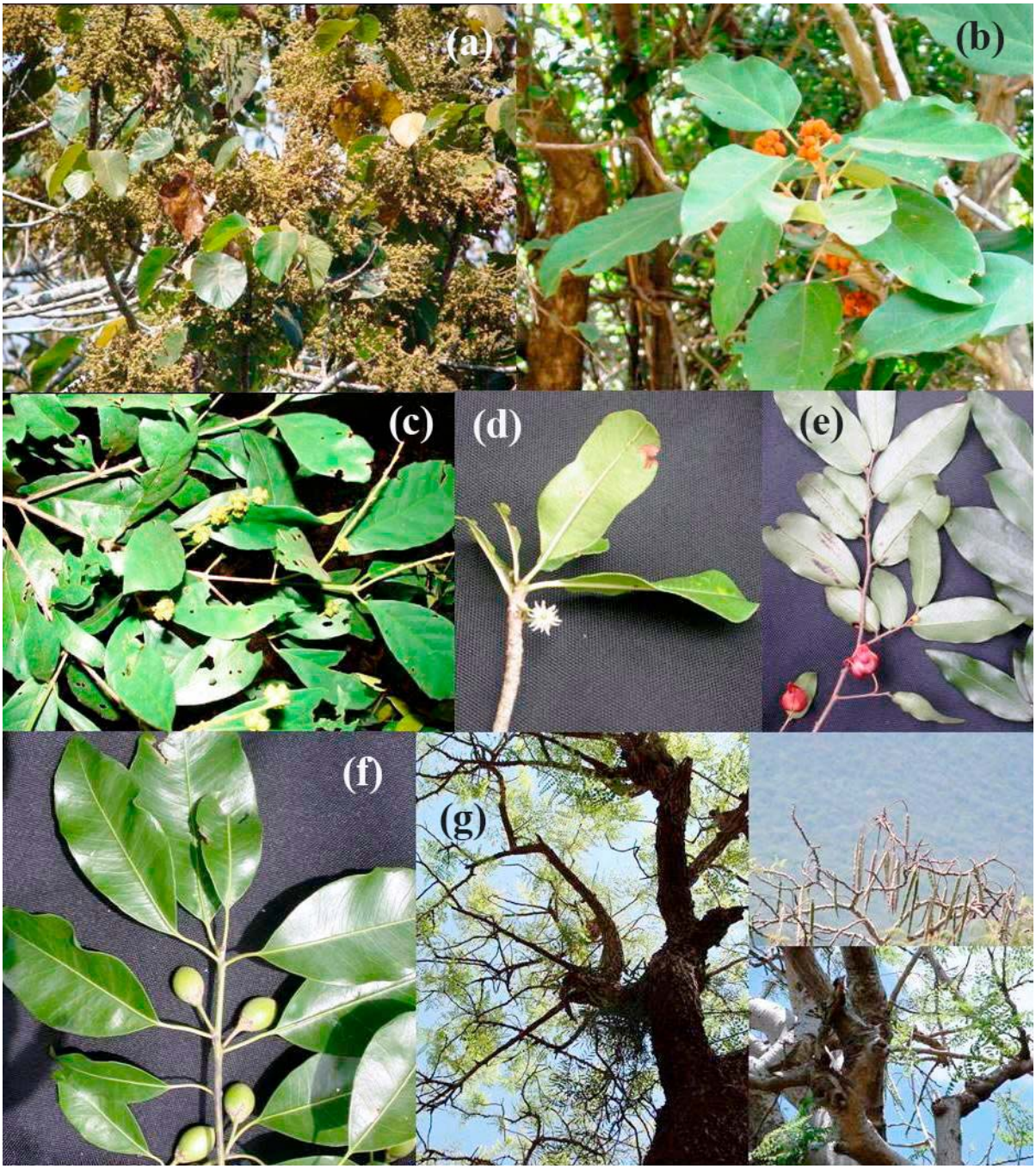

Figure 14. a) *Macaranga indica* (Euphorbiaceae); b) *Mallotus philippensis* (Euphorbiaceae); c) *Mallotus stenanthus* (Euphorbiaceae); d) *Manilkara hexandra* (Sapotaceae); e) *Miliusa eriocarpa* (Annonaceae); f) *Mimusops elengi* (Sapotaceae); g) *Moringa concanensis* (Moringaceae). Photo by L. Arul Pragasan.

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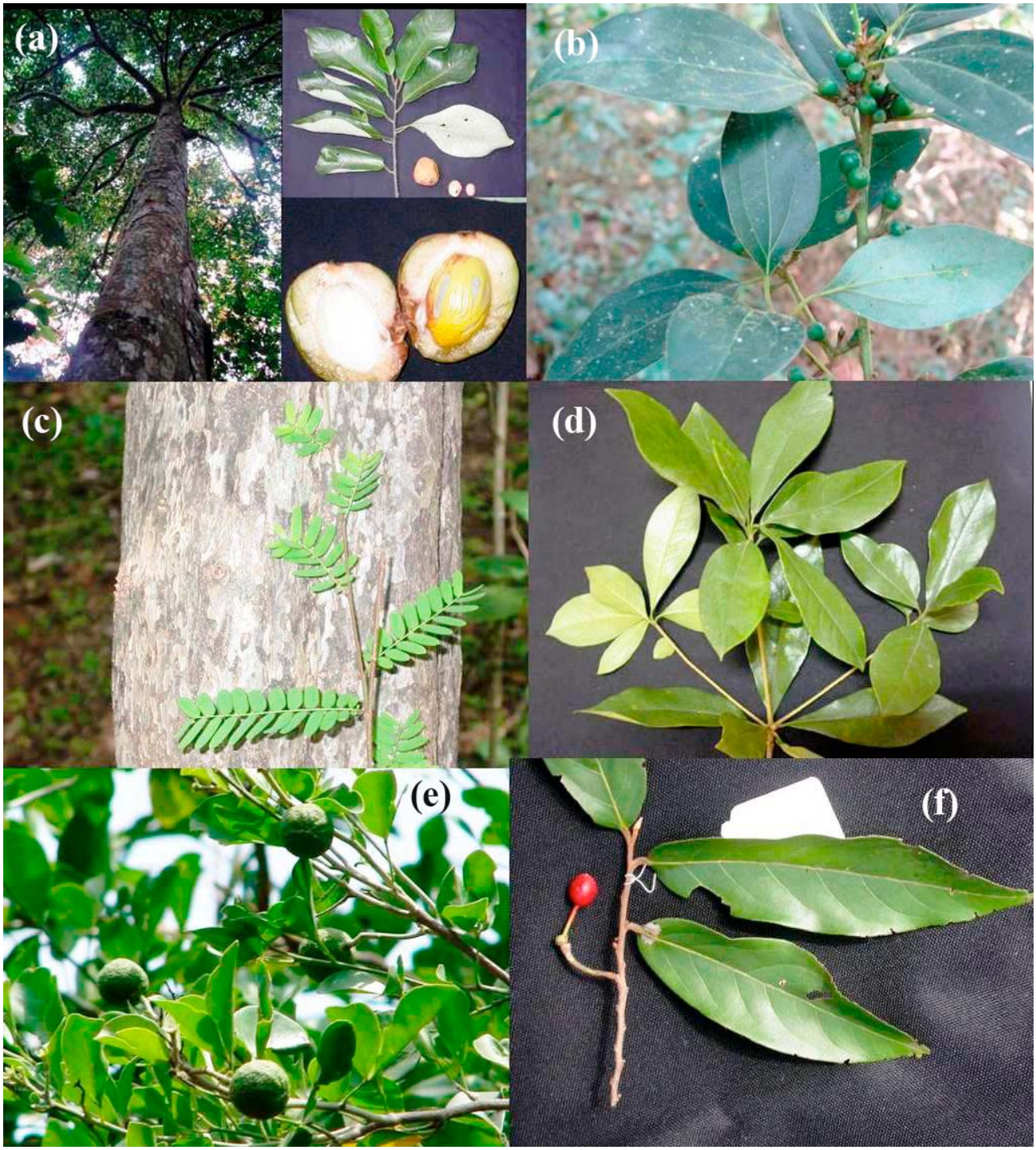

Figure 15. a) *Myristica dactyloides* (Myristicaceae); b) *Neolitsea scrobiculata* (Lauraceae); c) *Phyllanthus polyphyllus* (Euphorbiaceae); d) *Pittosporum neelgherrense* (Pittosporaceae); e) *Pleiospermium alatum* (Rutaceae); f) *Polyalthia cerasoides* (Annonaceae). Photo by L. Arul Pragasan & N. Parthasarathy.

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Figure 16. a) *Premna tomentosa* (Verbenaceae); b) *Prunus ceylanica* (Rosaceae); c) *Pterocarpus marsupium* (Papilionaceae); d) *Rhus mysorensis* (Anacardiaceae); e) *Santalum album* (Santalaceae); f) *Sapindus emarginatus* (Sapindaceae). Photo by L. Arul Pragasan.

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Figure 17. a) *Sapium insigne* (Euphorbiaceae); b) *Schefflera stellata* (Araliaceae); c) *Solanum erianthum* (Solanaceae); d) *Streblus taxoides* (Moraceae); e) *Strychnos potatorum* (Loganiaceae); f) *Symplocos cochinchinensis* (Symplocaceae). Photo by L. Arul Pragasan.

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Acknowledgements

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Literature cited

Ayyappan, N. and N. Parthasarathy. 1999. Biodiversity inventory of trees in a large-scale permanent plot of tropical evergreen forest at Varagalaiar, Anamalais, Western Ghats, India. Biodiversity and Conservation 8: 1533-1554.

Balvanera, P., Pfister, A. B., Buchman, N., He, J. S. and T. Nakashizuka. 2006. Quantifying the evidence for biodiversity effects ecosystem functioning and services. Ecology Letters 9: 1-11.

Chittibabu, C. V. and N. Parthasarathy. 2000. Attenuated tree species diversity in human-impacted tropical evergreen forest sites at Kolli hills, Eastern Ghats, India. Biodiversity and Conservation 9: 1493-1519.

Condit, R., Ashton, P. S., Baker, P., Bunyavejchewin, S., Gunatilleke, S., Gunatilleke, N., Hubbell, S. P., Foster, R. B., Itoh, A., LaFrankie, J. V., Lee, H. S., Losos, E., Manokaran, N., Sukumar, R. and T. Yamakura. 2000. Spatial patterns in the distribution of tropical tree species. Science 288: 1414-1417.

Condit, R., Hubbell, S. P., LaFrankie, J. V., Sukumar, R., Manokaran, N., Foster, R. B. and P. S. Ashton. 1996. Species-area and species-individual relationships for tropical trees: a comparison of three 50-ha plots. Journal of Ecology 84: 549-562.

Congdon, R. A and J. L. Herbohn. 1993. Ecosystem dynamics of disturbed and undisturbed sites in north Queensland wet tropical rain forest I Floristic composition, climate and soil chemistry. Journal of Tropical Ecology 9: 349-363.

Dassanayake, M. D. and F. R. Fosberg. 1987. A revised hand-book to the Flora of Ceylon. New Delhi: Oxford and IBH Publ. Co. Pvt. Ltd. vol. VI. 232-233 p.

Henry, A. N., Chithra, V. and N. P. Balakrishnan. 1989. Flora of Tamil Nadu, India. Coimbatore: Botanical Survey of India. vol. III. 171 p.

Henry, A. N., Kumari, G. R. and V. Chithra. 1987. Flora of Tamil Nadu, India. Coimbatore: Botanical Survey of India. vol. II. 258 p.

Hooker, J. D. 1872-1879. Flora of British India. London: L. Reeve & Co. part 1-7.

Gamble, J. S. and C. E. C. Fischer. 1915-1935. Flora of the Presidency of Madras. London: Adlard & Son. vols. I to III. 2017 p.

Hooper, D. U., Chapin, F. S., Ewell, J. J., Hector, A., Inchausti, P., Lavorel, S., Lawton, J. H., Lodge, D. M., Loreau, M., Naeem, S., Schmid, B., Setala, H., Symstad, A. J., Vandermeer, J. and D. A. Wardle. 2005. Effects of biodiversity on ecosystem functioning: a consensus of current knowledge. Ecological Monograph 75: 3-35.

Hubbell, S. P. and R. B. Foster. 1992. Short-term dynamics of a Neotropical forest: change within limits. Bioscience 42: 822-828.

Jayakumar, S., Arockiasamy, D. I. and S. J. Britto. 2002. Conservation forests in the Eastern Ghats through remote sensing and GIS – a case study in Kolli hills. Current Science 82: 1259-1267.

Jha, C. S., Dutt, C. B. S. and K. S. Bawa. 2000. Deforestation and land use changes in Western Ghats, India. Current Science 79: 231-238.

Kaya, Z. and D. J. Raynal. 2001. Biodiversity and conservation of Turkish forests. Biological Conservation 97: 131-141.

Matthew, K. M. 1991. An Excursion Flora of Central Tamil Nadu, India. New Delhi: Oxford and IBH Publ. Co. Pvt. Ltd. 647 p.

May, R. M. and M. P. H. Stumpf. 2000. Species-area relationships in tropical forests. *Science 290: 2084-2086*.

Naeem, S. 2002. Ecosystem consequences of biodiversity loss: the evolution of a paradigm. Ecology 83: 1537-1552.

Nair, N. C. and A. N. Henry. 1983. Flora of Tamil Nadu, India. Coimbatore: Botanical Survey of India. vol. I. 184 p.

Pascal, J. P. and R. Pelissier. 1996. Structure and floristic composition of a tropical evergreen forest in southwest India. Journal of Tropical Ecology 12: 191-214.

Potvin, C. and N. J. Gotelli. 2008. Biodiversity enhances individual performance but does not affect survivorship in tropical trees. Ecology Letters 11: 217-223.

Sagar, R, Raghubanshi, A. S. and J. S. Singh. 2003. Tree species composition, dispersion and diversity along a disturbance gradient in a dry tropical forest region of India. Forest Ecology and Management 186: 61-71.

Sukumar, R., Dattaraja, H. S., Suresh, H. S., Radhakrishnan, J., Vasudeva, R., Nirmala, S. and N. V. Joshi. 1992. Long-term monitoring of vegetation in a tropical deciduous forest in Mudumalai, southern India. Current Science 62: 608-616.

LISTS OF SPECIES

Trimen, H. 1974. A hand-book to the Flora of Ceylon. Dehra Dun: Bishen Singh Mahendra Pal Singh, Publ. 392 p.

Villasenor, J. L., Maeda, P., Rosell, J. A. and E. Ortiz. 2007. Plant families as predictors of plant biodiversity in Mexico. Diversity and Distribution. 13: 871-876.

Wills, C., Harms, K. E., Condit, R., et al. 2006. Nonrandom processes maintain diversity in tropical forests. Science 311: 527-531.

Wilson, E. O. 1988. The current state of biological diversity; p. 3-18 *In* E. O. Wilson (ed.). Biodiversity. Washington: National Academy Press.

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