



Floristic composition of the *kaan* forests of Sagar Taluk: sacred landscape in the central Western Ghats, Karnataka, India

Shrikant Gunaga¹, N. Rajeshwari², R. Vasudeva^{1*} and K. N. Ganeshaiah³

¹ Department of Forest Biology, College of Forestry Sirsi, University of Agricultural Sciences, Dharwad – 581 401, India

² Department of Seed Science Technology, Sahyadri Science College, Kuvempu University, Shimoga – 577 451, India

³ School of Ecology and Conservation, Gandhi Krishi Vigyan Kendra, University of Agricultural Sciences, Bengaluru – 560065, India

* Corresponding author. E-mail: vasukoppa@gmail.com

Abstract: In the Malnad region of the central Western Ghats, Karnataka, ethnic people conserve village forests called *kaan* forests as the abode of sylvan deities. Ethnic taboos have kept *kaan* forests in a virgin state over the course of centuries. In recent times, the strong taboo around these *kaan* forests has lessened, and the withdrawal of managing rights of *kaans* has affected valued species. Of 103 *kaan* forests (totalling 5,254 ha) in the region, 24 (= 12 ha) well-managed *kaan* forests were inventoried floristically during 2008 to 2009. The results provided identification of a total of 303 species in 237 genera and 79 diverse families. Of these, 34 species belong to rare, endangered, or threatened categories 116 were endemics, and 150 were evergreen species. *kaan* forests are still essentially of climax character, and are the abode of ecologically sensitive plant species. Affording more powers to the local communities in protecting the local biodiversity would be more effective in conserving them.

Key words: floristic diversity, threatened species, conservation, central Western Ghats, India

INTRODUCTION

kaan forests are patches of forest recognized as sacred and protected on the grounds of religious and cultural beliefs. These forests are often situated near to villages and range in size from a under a hectare to many hectares. The name ‘*kaans*’ literally means ‘thick evergreen forests’. These forests have existed in the central Western Ghats for millennia and are considered to be a relic of the original forest vegetation of the region (Joshi and Gadgil 1991). These *kaan* forests are distributed in landscapes that are more favourable for deciduous formations in the Karnataka plateau (Pascal et al. 1998). *kaan* forests are subjected to traditional systems of conservation practices and management by indigenous and local communities, and their traditional lifestyles are

relevant for the conservation and sustainable harvest of resources such as wild nutmeg, pepper, gums and resins, honey, and tapping toddy to trade in the prehistoric period (Joshi and Gadgil 1991; Gokhale 2004; Chandran et al. 2008). As the cultural diversity of any region is closely linked to its surrounding biodiversity (Negi 2010), the traditional *kaan* forest system or concept is often seen where inhabitants of ethnic *Ediga* communities, formerly toddy tappers and hunter-gatherers, were heavily dependent on the biodiversity of these forests (Chandran 2003; Gunaga et al. 2012). However, these patches were home for toddy palms (*Caryota urens*) and several wild lives in the olden times.

Thus, *kaan* have been referred to as safety forests (Chandran and Gadgil 1991) or reserve forests of local people (Gokhale et al. 2011). These are least disturbed forests of the region harbouring many threatened, endemic and relic tree species like *Dipterocarpus indicus*, *Madhuca bourdillonii*, *Syzygium travancoricum*, and recently discovered *Semecarpus kathlekanensis*, and also supports fauna including Lion Tailed Macaque (*Macaca lupus*), Slender Loris (*Loris tardigradus*), Giant squirrel (*Ratufa indica*) (Chandran et al. 2010). The only natural population of *Vateria indica* and newly discovered populations of *Syzygium travancoricum* and *Madhuca bourdillonii*, which was once believed to be extinct from its type locality, have been discovered recently from relic patches of *kaan* forests in Uttara Kannada district (Chandran 1997; Chandran et al. 2008). Besides serving as a repository of biodiversity, *kaan* forests also provide a myriad of valuable ecosystem services (Wingate 1888). They maintain the underground water table and thereby favour the existence of springs and perennial streams. The shade and rich moisture content provided by *kaan* forest habitat has also favoured the cultivation of various plant spices, especially wild pepper, which has helped to sustain rural people in prehistoric times (Chandran and Gadgil 1993a).

Unique traditional systems developed by indigenous people to conserve forest patches have been passed on to them by preceding generations in this part of the region. However, in more recent times there has been a loosening in the strict taboos developed by the natives of this region due to the influence of modern lifestyles and agriculture. Both increases in human population and declines in the fertility of agricultural land have increased dependence on the *kaan* forests as a source of income, and hence resulted in non-sustainable harvesting of resources (Gunaga et al. 2013). Encroachment of *kaans* land for cultivation and also illegal felling of valuable timber trees have resulted in the depletion of protected biodiversity.

Many studies have been done in the *kaan* forests of surrounding districts of the study area. However, no such studies have been attempted in the Sagar taluk of Shimoga district of Karnataka state in the central Western Ghats with respect to floristic composition. Given this background, we choose to inventory the floristic composition of these *kaan* forests, which formed the prime objective of this study.

MATERIALS AND METHODS

Study area

The focal area of study was located in the Sagar taluk of Shimoga district, Karnataka state, India which is one among seven taluks of Shimoga district (Figure 1). It starts from the crest line of central Western Ghats to the eastern plain, and lies between 13°54' and 14°18' N and between 074°36' and 075°18' E with an average altitude of 579 m.

The climate of study area is characterized by a monsoon regime. The Southwest Monsoon sets in this region around the first week of June and continues up to August or September. After a short lull, the Northwest Monsoon begins around October for a short period. The average rainfall of the taluk ranges from 2,000–2,600 mm per year. The windward side (i.e., the crest line of western Ghats region of the taluk) receives heavy rains (3,500–5,000 mm) from June to September with shorter periods of dry months, whereas there is a rapid decline in rainfall (1,500–2,000 mm) and extended dry weather towards eastern plains within the distance of 30 km from the crestline (Venugopal 2008). The annual mean temperature of Sagar taluk varies from 15–25°C in the coldest season and 30–35°C in the hottest months. For most part of the year the average humidity of the area may be around 70%. The soil type of the taluk is predominantly lateritic. The total geographic area of the study area is 193,999 ha of which 66,125 ha (34%) is under forest cover. Of the total forest area, 5,254 ha (8%) of the land is covered by *kaan* forests. Gokhale (2004) has reported 82 *kaans* from this taluk. After obtaining official permission from the forest department, we

ultimately documented a total of 103 *kaan* forests in Sagar taluk (including official records of *kaan* forests listed by the forest department). Photographs of some of these *kaan* forests are shown in Figure 2. There are four distinct vegetation types in the region, including dry scrub and deciduous vegetation to the east, in contrast to the evergreen and semi-evergreen forests in the hills. *kaan* forests form a unique landscape of this taluk amongst other forest landscapes.

kaan forests in Sagar taluk range from a under a hectare to many hectares in extent. Based on the area of *kaans*, these are broadly categorized into three size classes, namely large (>50 ha), medium (15–50 ha) and small (≤15 ha). Since *kaan* forests are spread over high to low rainfall area, two *kaan* forests from each category were selected for vegetation sampling. Depending on the level of disturbance, the study sites were classified as disturbed and undisturbed forests of both rainfall regimes (Figure 3). Of the 103 *kaan* forests, 24 well-managed *kaan* forests (totalling 12 ha) have been sampled for the floristic study (Table 1 and Figure 1).

Data collection

In order to inventory the floristic composition of *kaan* forests, a transect method was employed. Transect lengths of 1,000 m × 5 m breadth (0.5 ha) were laid in two *kaan* forests of each large, medium and small category of

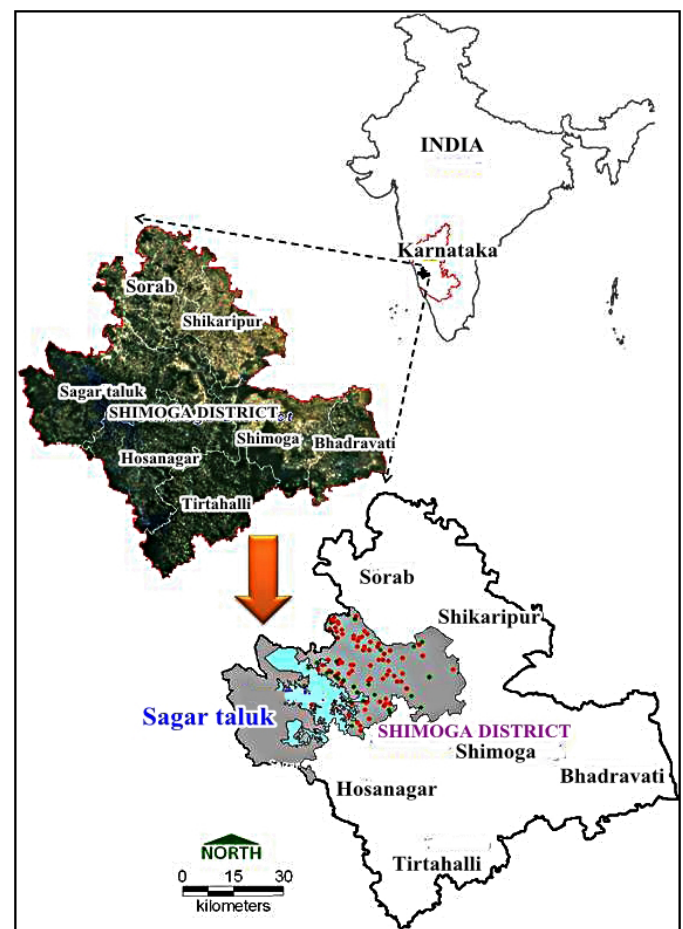


Figure 1. The study area and distribution of sites.

Table 1. Demographic details of study sites

Name of the <i>kaan</i>	Area (ha)	Latitude (N)	Longitude (E)	Altitude (m)	Category
Low-rainfall disturbed <i>kaan</i> forests					
Hagulpura <i>kaan</i>	3.2	14°15'40"	075°00'05"	602	Small
Shridharapura <i>kaan</i>	15	14°16'13"	075°01'32"	586	Small
Maneghatta <i>kaan</i>	45	14°15'49"	075°00'37"	593	Medium
Sullur <i>kaan</i>	40	14°17'05"	074°55'18"	574	Medium
Hirenalluru <i>kaan</i>	219	14°15'58"	074°59'12"	593	Large
Chikkanalluru <i>kaan</i>	327	14°16'47"	075°00'56"	583	Large
Low-rainfall undisturbed <i>kaan</i> forests					
Adarante <i>kaan</i>	4.9	14°14'15"	074°59'46"	590	Small
Yelkundli <i>kaan</i>	2.56	14°18'38"	074°59'26"	579	Small
Kagodu <i>kaan</i>	46	14°15'29"	074°59'14"	549	Medium
Jambani <i>kaan</i>	50	14°14'09"	075°09'14"	739	Medium
Huttadimba <i>kaan</i>	102	14°09'05"	075°11'46"	549	Large
Baruru <i>kaan</i>	206	14°14'55"	075°10'33"	687	Large
High-rainfall disturbed <i>kaan</i> forests					
Heruru <i>kaan</i>	4	14°09'22"	074°56'10"	566	Small
Siganduru <i>kaan</i>	12	14°04'31'	074°52'18"	615	Small
Yelgalale <i>kaan</i>	48	14°08'32"	075°01'45"	610	Medium
Athvadi <i>kaan</i>	50	14°05'01"	075°03'34"	661	Medium
kaanle-Shirur <i>kaan</i>	63	14°11'20"	074°56'48"	584	Large
Kugwe <i>kaan</i>	162	14°10'10"	074°58'58"	603	Large
High-rainfall undisturbed <i>kaan</i> forests					
Heggodu <i>kaan</i>	15	14°06'16"	075°02'44"	593	Small
Pandavara kodlu <i>kaan</i>	5	14°08'48"	074°56'42"	644	Small
Hunsur <i>kaan</i>	49	14°11'39"	074°56'25"	598	Medium
Hosalli <i>kaan</i>	42	14°09'47"	074°54'51"	704	Medium
Hosgunda <i>kaan</i>	260	14°06'01"	075°08'48"	624	Large
Sasaravalli <i>kaan</i>	52	14°09'08"	074°56'28"	697	Large

**Figure 2.** *kaan* forests in Sagar taluk, Shimoga district, Karnataka, India. (a) Yelkundli *kaan*; (b) Hosgunda *kaan*; (c) Maneghatta *kaan*; (d) Jambani *kaan*; (e) Huttadimba *kaan*; (f) Sasaravalli *kaan* (Photo by Shrikant Gunaga).

low and high rainfall area of disturbed and undisturbed regimes. All the species encountered in the sampling units were documented. To document the shrub species, two nested quadrates of 25 m² were laid in each 1,000 m transect, one at the beginning of the transect (i.e., after 100 m of the starting point), and another at the end of transect. For enumerating herb diversity, two 1 m² nested quadrates were laid in each of the shrub quadrate. Because the *kaan* forests are sacred, the taboos which underlay their protection also limited the collection of specimens. Only specimens of unidentified species were collected (with the permission of village head man) and deposited in the newly established Western Ghats Plant Resource herbarium at the College of Forestry Sirsi, Karnataka. These specimens were identified by referring to standard floras such as Gamble and Fischer (1935), Talbot (1909), Cook (1903), and floristic keys (Pascal and Ramesh 1987) of the study area. Lists of threatened plants in the *kaan* forests were prepared with the help of published list of IUCN (2011) (International Union for Conservation of Nature), Ravikumar and Ved (2000), Summy et al. (2000), with reference to Nayar (1996) and Chandran (2003) for the identification of endemic and evergreen species occurring in the *kaan* forests.

RESULTS

The assessment of floristic composition across different rainfall regimes, disturbance gradients and size class of *kaan* forests of entire study area revealed 303 species of 237 genera belonging to 79 diverse families. A detailed checklist of plant species, their families, status, and endemism of each species and also the photographs of the selected species are provided in Table 2 and Figures 3–7 respectively. The number of species recorded in the *kaan* forests of different regimes varied from 49 to 80 species. Among individual *kaan* forests, the undisturbed Hunsur *kaan* accounted for a great diversity of plants with 80 species; the highest of all *kaans* in Sagar taluk. The Sullur *kaan*, which is a disturbed *kaan* in a low-rainfall area, also possessed a good diversity with 76 species followed by Hirenallur and kaanle-Shirur *kaans* with 73 and 72 species respectively. Heggodu and Siganduru *kaans*, which are small *kaans* of undisturbed nature, registered the lowest species composition at 49 species.

Among different variables, low-rainfall *kaans* were more speciose (219 species) than high-rainfall area *kaans* (119 species). Further, it was found that undisturbed *kaans* comprised of 232 species in contrast to 218 species found in disturbed *kaans*. In addition, considering the different size class of *kaan* forests, there was an increase in species composition with increase in the size of the *kaan*.

Pooled over all *kaan* forests localities, trees were the major life forms with 148 species, followed by shrubs (80 species), herbs (30 species), climbers (23 species),

lianas (20), and palms with two species. Families such as Rubiaceae, Euphorbiaceae, Moraceae, Apocynaceae, and Lauraceae contributed most of the diversity with 26% of total number of species.

Species with special categories (such as rare, endangered and threatened (RET), endemic, and evergreen species) were enumerated as 11% RET, 38% endemic,

and 50% evergreen species.

Among the plant species documented, *Actinodaphne hookeri*, *Artocarpus hirsutus*, *Beilschmiedia wightii*, *Cinnamomum malabathrum*, *Diospyros candolleana*, *Diospyros crumenata*, *Diospyros sylvatica*, *Holigarna arnottiana*, *Holigarna grahamii*, *Hydnocarpus pentandra* were recorded in most of the *kaans* forests of both rainfall and disturbance



Figure 3. Disturbance parameters in *kaan* forests. (a) Encroachment; (b) Grazing; (c) Fuelwood collection; (d) Dry manure collection; (e) Minor produces collection; (f) Timber cutting; (g) Weed invasion; (h) Soil removal; (i) Fire; (j) Water diversion; (k) Roads/foot paths; (l) Lopping (Photo by Shrikant Gunaga).

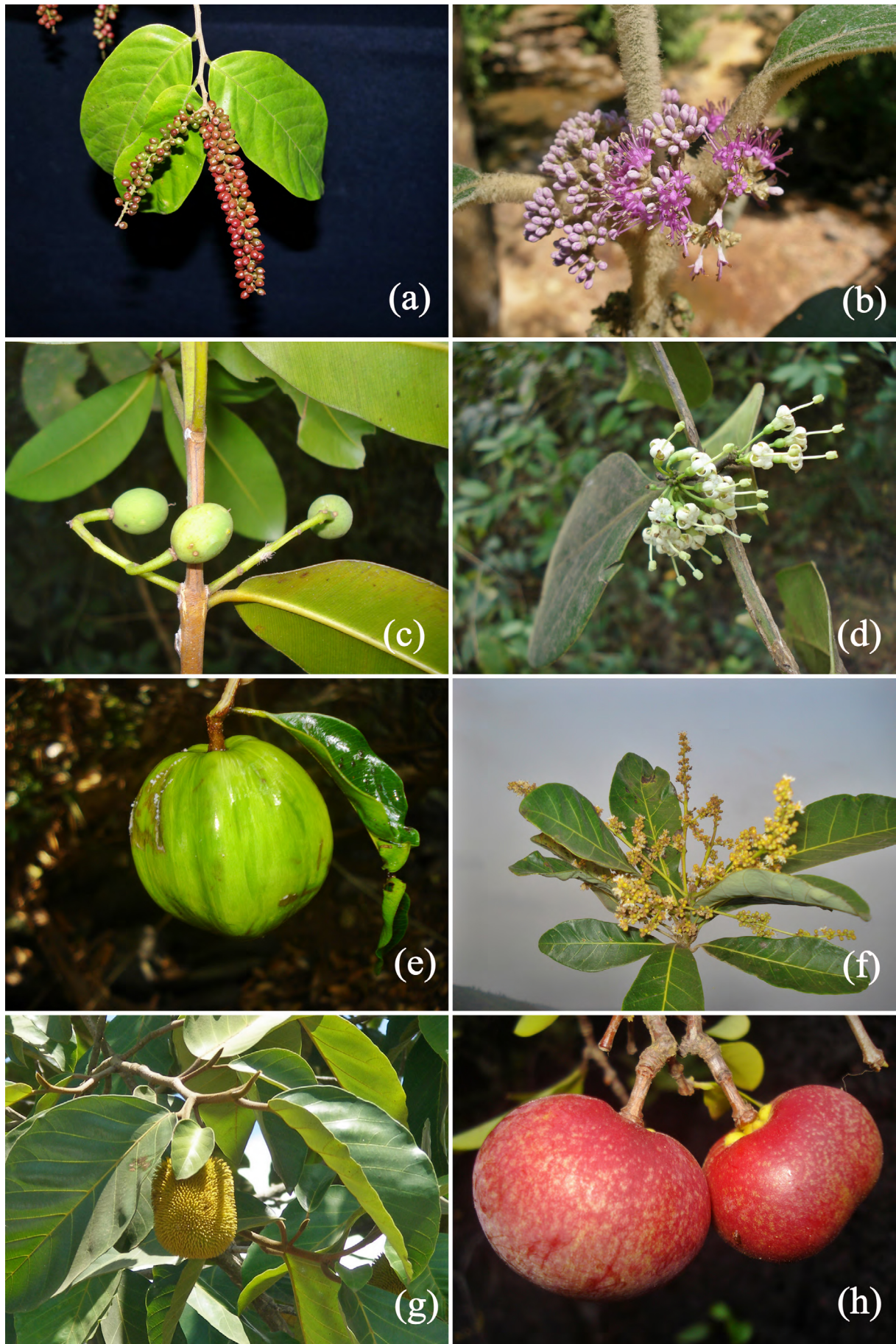


Figure 4. Some of the important plant species of *kaan* forests of Sagar taluk. (a) *Antidesma menasu* (Euphorbiaceae); (b) *Callicarpa tomentosa* (Verbenaceae); (c) *Calophyllum apetalum* (Clusiaceae); (d) *Canthium dicoccum* (Rubiaceae); (e) *Chrysophyllum lanceolatum* (Sapotaceae); (f) *Holigarna ferruginea* (Anacardiaceae); (g) *Artocarpus hirsutus* (Moraceae); (h) *Garcinia indica* (Clusiaceae) (Photo by Shrikant Gunaga and R. Vasudeva).

gradients, as well as in different size classes exhibiting wider distribution across the study area. At the generic level, *Ficus* represented by nine species followed by *Diospyros* (eight species), *Garcinia* and *Glochidion* were represented by four species each, whereas 65% of each genera is represented by a single species.

DISCUSSION

The majority of *kaan* forests in Sagar taluk harbour evergreen to semi-evergreen type vegetation. Despite receiving low annual rainfall in the eastern plains, most *kaan* forests are semi-evergreen, dominated by luxuriant growth of climax evergreen species. However, forests other than *kaan* forests may also be dry and

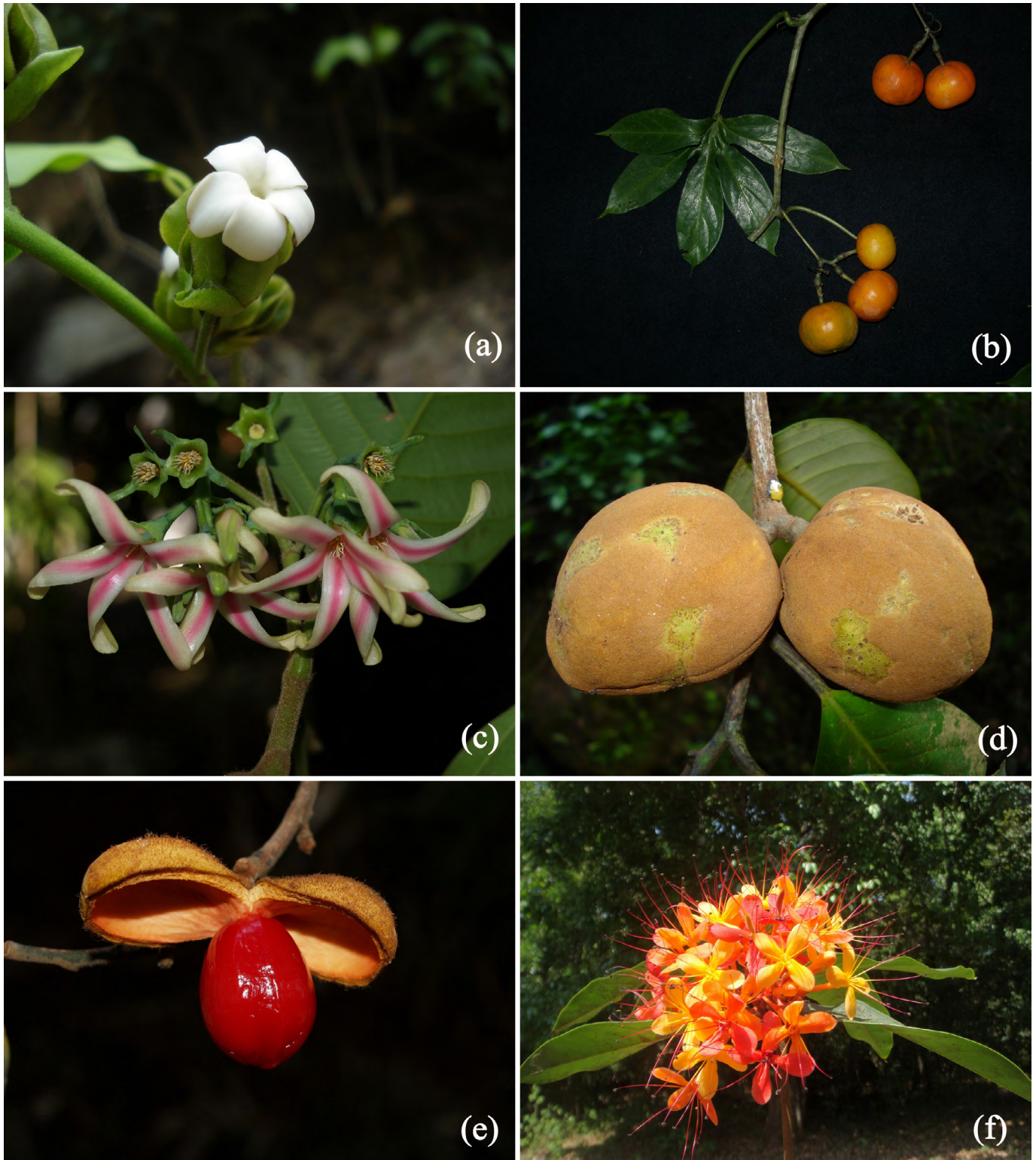


Figure 5. Some rare, endangered and threatened plant species of *kaan* forests of Sagar taluk. (a) *Diospyros paniculata* (Ebenaceae); (b) *Adenia hondala* (Passifloraceae); (c) *Myristica dactyloides* (Myristicaceae); (d) *Knema attenuata* (Myristicaceae); (e) *Saraca asoca* (Caesalpiniaceae) (Photo by Shrikant Gunaga and R. Vasudeva).

moist deciduous, and dominated by secondary and pioneer species (Chandran and Hudges 2000). This is primarily due to the prudent manner of protection and management of *kaans* by the communities in the past, which may have lead to the closed canopy of the forest and resulted in the formation of climax vegetation by succession (Jegan et al. 2008).

The *kaan* forests of Sagar taluk, with over 300 species, can be considered as highly diverse in comparison to other sacred groves and undisturbed forest vegetation of the northern and southern Western Ghats (Garcia 2003;

Chandrashekhara 2007; Sukumaran 2008; Chandran et al. 2010). This is perhaps due to the strong protection measures and also favorable microclimatic conditions which help to sustain rich plant diversity in the *kaan* forests. The number of species in the sampled area (0.5 ha) of individual *kaans* varied from 49 to 80 species (0.5 ha) which is more or less similar to the other study sites of Western Ghats. However, the highest number of species in the evergreen forests was comparable to 64 to 82 species/ha reported by Parthasarathy (2001). Similarly, Bhat (2000) recorded 31 to 63 species/ha in

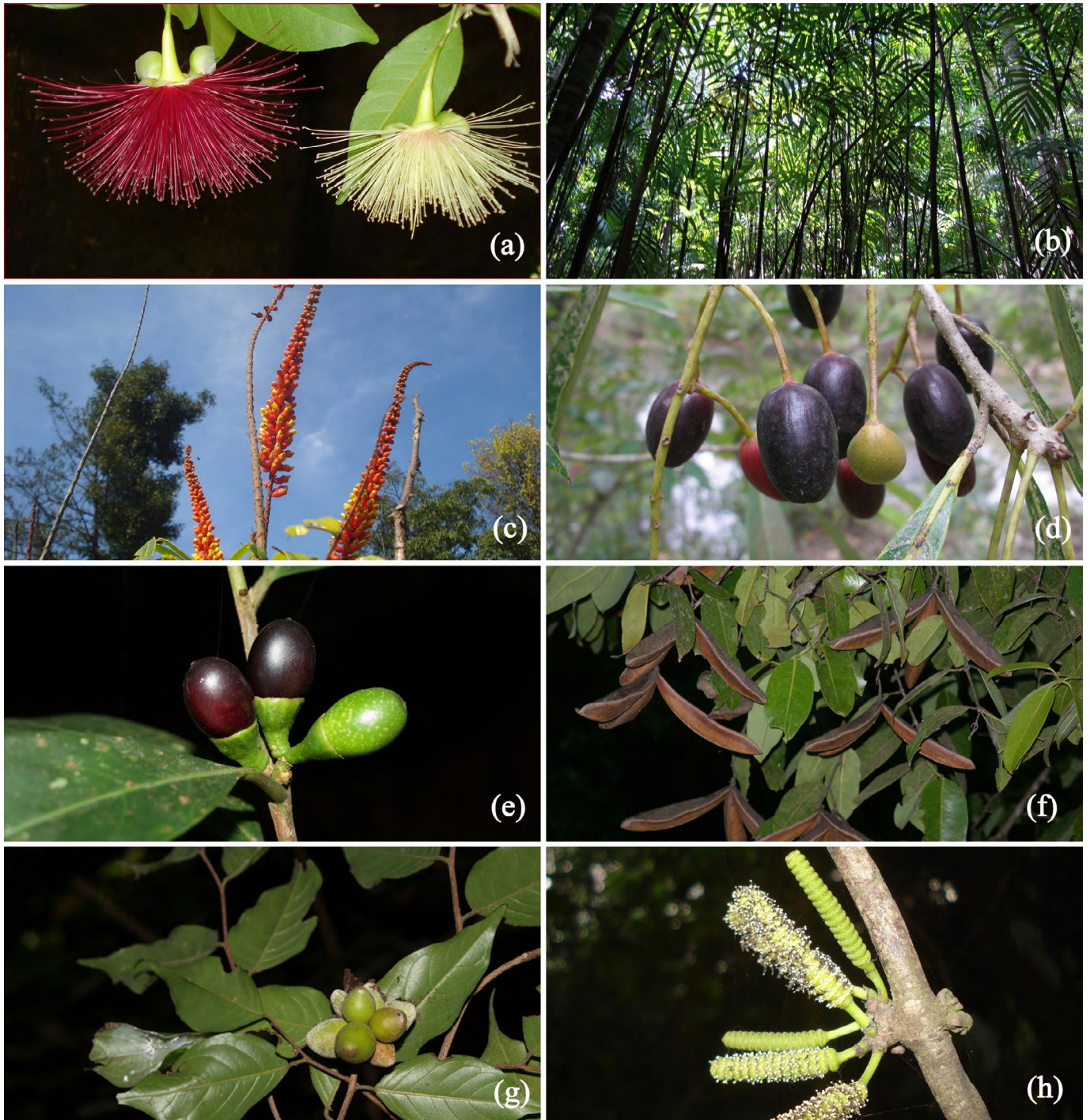


Figure 6. Some endemic plant species of *kaan* forests of Sagar taluk. (a) *Syzygium laetum* (Myrtaceae); (b) *Pinnanga dicksonii* (Arecaceae); (c) *Moulava spicata* (Caesalpiniaceae); (d) *Holigarna arnottiana* (Anacardiaceae); (e) *Litsea laevigata* (Lauraceae); (f) *Lophopetalum wightianum* (Celastraceae); (g) *Meilogyne pannosa* (Anonaceae); (h) *Gnetum ula* (Gnetaceae) (Photo by Shrikant Gunaga and R. Vasudeva).

the permanent plots of evergreen forests of neighbouring Uttara Kannada district.

kaans are centres of plant endemism in the Western Ghats region (Chandran and Hughes 2000). However, endemism and evergreens were more predominant in undisturbed and high rainfall areas of *kaan*, suggesting the strong protection afforded by communities over the centuries alongside rainfall patterns have influenced the quality of species composition (Chandran 1983).

The composition of rare, endangered and threatened species (RET) among different *kaan* forests of Sagar taluk constituted a good proportion (11%). However,

the studies of Boraiah (2002) and Raghavendra (2003) reported 15% and 10.6% RET species in different scared forests of Kodagu district of central Western Ghats respectively. Pooled over all the localities of the present study, the highest RET species was recorded in high-rainfall undisturbed *kaans* (23 species) followed by *kaans* of low-rainfall undisturbed areas (21 species). Clearly, levels of disturbance and the amount of rainfall were the determining factors that shape the diversity of RET species.

In general, the tree layer of *kaan* forests of Sagar taluk was dominated by *Syzygium gardneri*–*Mangifera indica*–*Holigarna arnottiana* type. Pascal (1988) classified the



Figure 7. Some evergreen plant species of *kaan* forests of Sagar taluk. (a) *Antiaris toxicaria* (Moraceae); (b) *Caryota urens* (Arecaceae); (c) *Harpulia arborea* (Sapindaceae); (d) *Mammea suriga* (Clusiaceae); (e) *Mesua ferrea* (Clusiaceae); (f) *Nothopegia racemosa* (Anacardiaceae); (g) *Olea dioica* (Oleaceae); (h) *Litsea floribunda* (Lauraceae); (i) *Goniothalamus cardiopetalus* (Anonaceae) (Photo by Shrikant Gunaga and R. Vasudeva).

kaan forests of neighbouring Sorab taluk under *Persea macrantha*–*Diospyros* spp.–*Holigarna* spp. type based on the criteria of dominance and abundance of species. It is interesting to note that natural population of *Vateria indica* and century-old *Saraca asoca*, a relic population, have been identified in low-rainfall undisturbed *kaans* of Yelkundli and Jambani villages respectively. However, sensitive and endemic species such as *Dipterocarpus indicus*, *Dysoxylum malabaricum* and *Canarium strictum* were more predominant in high-rainfall area *kaans*.

kaan forests of Sagar taluk still essentially possess a climax character, despite their immense use as a biological resource throughout the centuries. Management of *kaan* forests through the inherited traditional systems and sustainable use of resources have created an ideal micro-climatic condition in the long run, which permits healthy regeneration and sustenance of sensitive endemic and threatened species. However, most of the plant species reported inside the *kaans* do not occur outside this habitat, indicating their endemic nature (Kumbhojkar et al. 1996; Ganesan et al. 2009; Nipunage and Kulkarni 2011). Informal institutions are largely ignored (Negi 2010), or this may be overshadowed by formal designs like parks and conservation reserves, which are these days utilised for protecting biodiversity. On the other hand most of the world's biodiversity exists outside protected areas, where informal institutions may play a key role in biodiversity conservation (Gadgil 1998). In the present-day context, *kaans* are more recently exposed to exploitative management, leading to the decline of valuable species. Restoring these climax patches would be difficult if they are perturbed by an external influence (Gadgil et al. 2011). If these forests are not conserved in the near future, we will lose a rich asset of biological diversity in this region. Hence, a proper system of involvement of local communities, or affording more powers to them in protecting and managing the local biodiversity of these relic patches, would be a more effective conserving strategy.

ACKNOWLEDGEMENTS

We are grateful to the Department of Biotechnology, New Delhi for financial support in undertaking the Western Ghats mapping project. The support provided by Mr. Mohan Gongoli, Assistant Conservator of Forests, Karnataka Forest Department, Sagar taluk is greatly acknowledged.

LITERATURE CITED

- Bhat, D.M., M.B. Naik, S.G. Patagar, G.T. Hegde, Y.G. Kanade, G.N. Hegde, C.M. Shastri, D.M. Shetti and R.M. Furtado. 2000. Forest dynamics in tropical rain forests of Uttara Kannada district in Western Ghats, India, *Current Science* 79(7): 975–985. <http://eprints.iisc.ernet.in/id/eprint/1677>
- Boraiah, K.T., R. Vasudeva, Bhagwat, A. Shonil and C.G. Kushalappa. 2002. Regeneration of threatened flora among the sacred groves of Kodagu, Karnataka, South India, *MyForest* 38(2): 123–128.
- Chandran, M.D.S. 1983. Vegetation changes in the evergreen forest tract of Uttara Kannada district of Karnataka state [Ph.D. thesis]. Dharwad: Karnataka University. 223 pp.
- Chandran, M.D.S. 1997. On the ecological history of the Western Ghats, *Current Science* 73: 146–155.
- Chandran, M.D.S. and M. Gadgil. 1991. Sacred groves—safety forests of Uttara Kannada. In: IUFRO Forest History Conference. Freiburg: IUFRO Forest History Group.
- Chandran, M.D.S. and M. Gadgil. 1993a. Kans—safety forests of Uttara Kannada. In: proceedings at Forest History Conference on Peasant Forestry. Freiburg: IUFRO Forest History Group.
- Chandran, M.D.S. and J. Donald Hughes. 2000. Sacred groves and conservation: The comparative history of traditional reserves in the Mediterranean area and in South India. *Environment and History* 6(2): 169–186. doi: [10.3197/096734000129342262](https://doi.org/10.3197/096734000129342262)
- Chandran Subhash, M.D. 2003. Biodiversity strategy and action plan sub-state site: Uttara Kannada, National Biodiversity Strategy and Action Plan (NBSAP). Project Report submitted to Ministry of Environment and Forests. 97 pp.
- Chandran, M.D.S., D.K. Mesta, G.R. Rao, S. Ali, K.V. Gururaja and T.V. Ramachandra. 2008. Discovery of two critically endangered tree species and issues related to relic forests of the Western Ghats, *The Open Conservation Biology Journal* 2: 1–8. doi: [10.2174/1874839200802010001](https://doi.org/10.2174/1874839200802010001)
- Chandran, M.D.S., G.R. Rao, K.V. Gururaja and T.V. Ramachandra. 2010. Ecology of swampy relic forests of Kathlekan from Central Western Ghats, India, *Bioremediation, Biodiversity and Bioavailability*, Global Science Books, 4 (Special Issue 1): 54–68.
- Chandrashekar Reddy, K.M. 2007. Assessment floristic structure and composition of Kan forests in Sirsi division [M.Sc. dissertation]. Dharwad: University of Agricultural Sciences. 156 pp.
- Gadgil, M. 1998. Conservation: Where the people? *Hindu survey of the environment*: 107–137.
- Gadgil, M., R.J. Ranjit, Daniels., K.N. Ganeshaiah, S. Narendra Prasad, M. S.R. Murthy, C.S. Jha, B.R. Ramesh. and K. A. Subramanian. 2011. Mapping ecologically sensitive, significant and salient areas of Western Ghats: proposed protocols and methodology. *Current Science* 100(2): 175–182. <http://www.moef.nic.in/downloads/public-information/Annexure3-7th.pdf>
- Gamble, J.S. and Fischer, C.E.C. 1935. *Flora of the Presidency of Madras* (Vol. 1–3), London: Adlard and Son. 1398 pp. doi: [10.5962/bhl.title.21628](https://doi.org/10.5962/bhl.title.21628)
- Ganesan, S., M. Ponnuchamy, L. Kesavan and A. Selvaraj. 2009. Floristic composition and practices on the selected sacred groves of Pallapatty village (reserved forest), Tamil Nadu, *Indian Journal of Traditional Knowledge* 8(2): 154–162.
- Garcia, C.A. 2003. Sacred forests of Kodagu: ecological value, social role and implication for biodiversity conservation. Lyon: University of Lyon. 209 pp.
- Cooke, T. (1901 – 1908). *Flora of Presidency of Bombay* (Reprinted Vols. I – III, 1958), London.
- Gokhale, Y., A. Pala Nazir, A.K. Negi, Jahangeer, A. Bhat, N.P. Nagendra Todaria. 2011. Sacred landscapes as repositories of biodiversity. A case study from the Hariyali Devi sacred landscape, Uttarakhand, *International Journal of Conservation Science* 2(1): 37– 44. http://www.pbsjournals.com/ajbbs/files/a06_AJBLS_Sep-Dec_79.pdf
- Gunaga, S., N. Rajeshwari and R. Vasudeva. 2012. Documenting angiosperm diversity and assign economic and conservation value of *kaan* forests: Traditionally managed climax sacred landscapes in Sagar taluk of central Western Ghats, India, *Asian Journal of Biological and Life Sciences* 1(3): 164–173. http://www.pbsjournals.com/ajbbs/files/a06_AJBLS_Sep-Dec_79.pdf
- Gunaga, S., N. Rajeshwari and R. Vasudeva. 2013. Tree diversity and disturbance of *kaan* forests: Relics of community protected climax vegetation in the Central Western Ghats, *Tropical Ecology* 54(1): 117–131 <http://www.tropecol.com/volumes/toc/>

- en/toc54-1.htm
- IUCN. 2011. The IUCN Red List of threatened species. Version 2011.1. International Union for Conservation of Nature. Accessed at <http://www.iucnredlist.org/>, 16 June 2011.
- Jegan, G., G. Ramesh and K. Muthuchelian. 2008. Resprouting of pioneer and climax species in the Pachakumachi hills, Cumbum valley, Western Ghats, India. *Ethnobotanical Leaflets* 12: 343–347. <http://opensiuc.lib.siu.edu/eb/vol2008/iss1/41>
- Joshi, N.V. and M. Gadgil. 1991. On the role of refugia in promoting prudent use of biological resources, *Theoretical Population Biology* 40(20): 211–229. <http://www.ces.iisc.ernet.in/biodiversity/sdev/mg/pdfs/mg105.pdf>
- Kumbhojkar, M.S., A.S. Upadhye and D.K. Kulkarni. 1996. Religious forest patches among Mahadeokoli tribal localities-social, cultural and environmental relationship, 349–351, in: S.K. Jain (ed.). *Ethnobiology in Human Welfare*, New Delhi: Deep Publication. <http://www.indiaenvironmentportal.org.in/files/Deo%20Rahati.pdf>
- Nayar, M.P. 1996. Hot spots of endemic plants of India, Nepal and Bhutan. Palode: Tropical Botanic Garden and Research Institute. 252 pp.
- Negi, Chandra Singh. 2010. Traditional knowledge and biodiversity conservation: A preliminary study of the Sacred natural sites in Uttarakhand, Central Himalaya. *Journal of Biodiversity* 1(1): 43–62.
- Nipunage, D.S. and D.K. Kulkarni. 2011. Floristic diversity and status of natural regeneration from sacred groves, Ambegaon Taluka of Pune district, Maharashtra state, India. *Indian Journal of Forestry* 34(4): 457–464. http://www.asianagrihistory.org/vol14/8_dsnipunge.pdf
- Parthasarathy, N. 2001. Changes in forest composition and structure in three sites of tropical evergreen forest around Sengaltheri, Western Ghats. *Current Science* 80(3): 389–391. <http://www.iisc.ernet.in/currsci/feb102001/389.pdf>
- Pascal, J.P., and B.R. Ramesh. 1987. A field key to the trees and lianas of the evergreen forests of the Western Ghats (India). *Institute Français de Pondichéry* 23: 236 pp.
- Pascal, J.P., B.R. Ramesh, and G. Bourgeon. 1998. The Kan forests of the Karnataka plateau (India): structure and floristic composition, trend in the changes due to their exploitation. *Tropical Ecology* 29(2): 9–23.
- Raghavendra, S. 2003. Studies on rare, endangered and threatened (RET) medicinal tree diversity in sacred groves of Kodagu, central Western Ghats [M.Sc. dissertation]. Bangalore: University of Agricultural Sciences. 128 pp.
- Ravikumar, K. and D.K. Ved. 2000. 100 Red-listed medicinal plants of conservation concern. Bangalore: Foundation for Revitalization of Local Health Tradition. 455 pp.
- Sukumaran, S. and S. Jeeva. 2008. A floristic study on miniature sacred forests at Agastheeshwaram, southern peninsular India. *EurAsian Journal of BioSciences* 2: 66–72 <http://www.ejobios.com/pdf/EJOB-8-04-2,8,66-72.pdf>
- Sumy, O., D.K. Ved and R. Krishnan. 2000. Tropical Indian medicinal plants. Bangalore: Foundation for Revitalization of Local Health Traditions. 351 pp.
- Talbot, W.A. 1906–1911. Forest flora of the Bombay presidency and Sind, Vols. I and II. Poona: Government at the Photoduplication Press. 1082 pp.
- Venugopal P. D. 2008. Regional patterns in the floristic composition and structure of forests in the Western Ghats, India. IFP Final report. 139 pp.
- Wingate R.T. 1988. Settlement proposals of 16 villages of Kumta taluk, No. 210. Karwar: Forest settlement office, Karwar. Unpaginated.

Authors' contribution statement: SG collected the data, SG, NR and RV analyzed the data and wrote the text, and KNG made the final corrections.

Received: February 2014

Accepted: March 2015

Editorial responsibility: Paul A. Egan

Table 2. A complete checklist of plants of *kaan* forests of Sagar taluk, Shimoga district, Karnataka, India (D, Deciduous; E, Evergreen; NT, Non-Threatened; Vu, Vulnerable; LrLc, Low-risk Least Concern; LrnT, Low-risk Near-Threatened; End, Endangered; Vul-G, Vulnerable Globally; End-G, Endangered Globally; CR, Critically Endangered).

Plant Species/Family	Habit	Distribution	Type	Status	Voucher
Acanthaceae					
<i>Carvia callosa</i> (Nees.) Bremek	Shrub	Endemic	D	NT	No voucher
<i>Justicia</i> sps.	Herb	Non-Endemic	D	NT	No voucher
<i>Justicia wyanaadensis</i> (Nees) T. And.	Shrub	Non-Endemic	D	NT	No voucher
<i>Rungia pectinata</i> (L.) Nees in DC.	Herb	Non-Endemic	D	NT	No voucher
<i>Strobilanthus ixiocephalus</i> Benth.	Shrub	Non-Endemic	E	NT	No voucher
Alangiaceae					
<i>Alangium salvifolium</i> (L.f.) Wangerin	Shrub	Non-Endemic	D	NT	No voucher
Anacardiaceae					
<i>Buchanania lanzan</i> Spreng.	Tree	Non-Endemic	D	LrLc	No voucher
<i>Holigarna arnottiana</i> J.Hk.	Tree	Endemic	E	NT	No voucher
<i>Holigarna ferruginea</i> March.	Tree	Endemic	E	NT	COF 128
<i>Holigarna grahamii</i> (Wt.) Kurz.	Tree	Endemic	E	NT	No voucher
<i>Lannea coramandelica</i> (Houtt.) Merr.	Tree	Non-Endemic	D	NT	No voucher
<i>Mangifera indica</i> L.	Tree	Non-Endemic	E	NT	No voucher
<i>Nothopegia racemosa</i> (Dalz.) Ramam	Tree	Endemic	E	NT	No voucher
<i>Semecarpus anacardium</i> L.f.	Tree	Non-Endemic	D	NT	No voucher
Anonaceae					
<i>Artabotrys zeylanicus</i> H.f. & T.	Liana	Endemic	E	NT	No voucher

Continued

Table 2. Continued.

Plant Species/Family	Habit	Distribution	Type	Status	Voucher
<i>Desmos lawii</i> (Hook. f. & Thoms.) Safford.	Shrub	Non-Endemic	D	NT	No voucher
<i>Meiogyne pannosa</i> (Dalz.) Sinclair	Shrub	Endemic	E	NT	COF 163
<i>Orophea zeylanica</i> J.Hk.	Shrub	Endemic	E	NT	No voucher
<i>Polyalthia fragrans</i> (Dalz.) Bedd.	Tree	Endemic	E	NT	No voucher
<i>Uvaria hookeri</i> King.	Shrub	Endemic	E	NT	COF 134
<i>Uvaria narum</i> (Duna) Wt. and Arn.	Shrub	Non-Endemic	D	NT	No voucher
Apocynaceae					
<i>Aganosma cymosa</i> (Roxb.) G. Don	Liana	Non	E	NT	No voucher
<i>Alstonia scholaris</i> R. Br.	Tree	Non	D	NT	No voucher
<i>Alstonia venenta</i> Brown	Shrub	Endemic	D	NT	COF 127
<i>Anodendron manubriatum</i> Merr.	Climber	Endemic	E	NT	No voucher
<i>Carissa congesta</i> Wight.	Shrub	Non-Endemic	D	NT	No voucher
<i>Chonemorpha grandiflora</i> (Roth.) M. R. & S. M. Almeida	Liana	Non	D	End	No voucher
<i>Genianthus laurifolius</i> (Roxb.) Hook. f.	Climber	Non	E	NT	No voucher
<i>Gymnema sylvestre</i> (Retz.) R. Br. Schultes	Climber	Non	D	NT	No voucher
<i>Hemidesmus indicus</i> Br.	Climber	Non	D	NT	No voucher
<i>Holarrhena antidysentrica</i> Hook. f. non (L.) Wall.	Shrub	Non	E	NT	No voucher
<i>Ichnocarpus frutescens</i> (L.) R.Br.	Climber	Non	D	NT	No voucher
<i>Quirivelia frutescens</i> (L.) M. R. & S. M. Almeida	Climber	Non	D	NT	No voucher
<i>Rauvolfia serpentina</i> (L.) Bth. ex. Kurz.	Shrub	Non-Endemic	D	End	No voucher
<i>Tabernaemontana heyneana</i> Wall	Shrub	Endemic	E	NT	No voucher
Araceae					
<i>Pothos scandens</i> L.	Climber	Non-Endemic	E	NT	No voucher
<i>Remusatia vivipara</i> Schott & Endl.	Herb	Non-Endemic	E	NT	No voucher
<i>Raphidophora laciniata</i> (N. Burm) Merrill	Climber	Endemic	E	Vu	No voucher
Aralliaceae					
<i>Schefflera venulosa</i> Harms	Shrub	Non-Endemic	E	NT	No voucher
Arecaceae					
<i>Calamus thwaitesii</i> Becc.	Shrub	Endemic	E	NT	No voucher
<i>Caryota urens</i> L.	P	Non-Endemic	E	NT	No voucher
<i>Pinanga dicksonii</i> Bl.	P	Endemic	E	NT	No voucher
Asclepiadaceae					
<i>Cryptolepis buchananii</i> R. & S.	C	Non-Endemic	D	NT	No voucher
Asteraceae					
<i>Ageratum conyzoides</i> L.	Herb	Non-Endemic	D	NT	No voucher
<i>Chromolaena odorata</i> (L.) R. M	Shrub	Non-Endemic	D	NT	No voucher
<i>Elephantopus scaber</i> L.	Herb	Non-Endemic	D	NT	No voucher
<i>Emilia sonchifolia</i> (L.) DC.	Herb	Non-Endemic	D	NT	No voucher
<i>Spilanthes calva</i> L.	Herb	Non-Endemic	D	NT	No voucher
<i>Tridax precombens</i> L.	Herb	Non-Endemic	D	NT	No voucher
Balsaminaceae					
<i>Impatiens talbotii</i>	Herb	Endemic	D	NT	COF 120
Bignoniaceae					
<i>Stereospermum chelenoides</i> (L.f.) DC.	Tree	Non-Endemic	D	NT	No voucher
Bombacaceae					
<i>Bombax ceiba</i> L.	Tree	Non-Endemic	D	NT	No voucher
Boraginaceae					
<i>Cordia myxa</i> L.	Tree	Non-Endemic	D	NT	No voucher
Burseraceae					
<i>Canarium strictum</i> Roxb.	Tree	Endemic	E	Vu	No voucher
Caesalpiniaceae					
<i>Bauhinia racemosa</i> Lam.	Tree	Non-Endemic	D	NT	No voucher
<i>Butea monosperma</i> (Lam.) Taub.	Tree	Non-Endemic	D	NT	No voucher
<i>Butea superba</i> Roxb. ex Willd.	Liana	Non-Endemic	D	NT	No voucher
<i>Caesalpinia bonducella</i> Fleming.	Shrub	Non-Endemic	D	NT	COF 133
<i>Caesalpinia mimosoides</i> Lam.	Shrub	Non-Endemic	D	NT	No voucher
<i>Cassia fistula</i> Linn.	Tree	Non-Endemic	D	NT	No voucher
<i>Erythrina suberosa</i> Roxb.	Tree	Non-Endemic	D	NT	No voucher
<i>Moullava spicata</i> (Dalz.) Nicolson	Liana	Endemic	E	NT	No voucher
<i>Pterocarpus marsupium</i> Roxb.	Tree	Non-Endemic	D	NT	No voucher
<i>Saraca asoca</i> (Roxb.) De Wilde	Tree	Endemic	E	Vu-G	No voucher

Continued

Table 2. Continued.

Plant Species/Family	Habit	Distribution	Type	Status	Voucher
Celastraceae					
<i>Cassine glauca</i> (Rottb.) Kuntze	Tree	Non-Endemic	E	NT	No voucher
<i>Celastrus paniculatus</i> Willd.	Shrub	Non-Endemic	D	LrnT	No voucher
<i>Euonymus indicus</i> Heyne ex. Wall	Tree	Endemic	E	NT	No voucher
<i>Lophopetalum wightianum</i> Arn.	Tree	Endemic	E	NT	No voucher
<i>Maytenus rothiana</i> (Walp.) Ramam.	Shrub	Endemic	E	NT	No voucher
Clusiaceae					
<i>Calophyllum polyanthum</i> Wall. ex Choisy	Tree	Endemic	E	NT	No voucher
<i>Garcinia gummi-gutta</i> (L.) Robson	Tree	Endemic	E	LrnT	No voucher
<i>Garcinia indica</i> (Thouras) Choisy	Tree	Endemic	E	Vu-G	No voucher
<i>Garcinia morella</i> (Gaertn.) Desr.	Tree	Endemic	E	Vu	No voucher
<i>Garcinia talbotii</i> Raiz. & Sant.	Tree	Endemic	E	NT	No voucher
<i>Gardenia gummifera</i> Linn.	Shrub	Non-Endemic	D	Vu-G	No voucher
<i>Mammea suriga</i> (Buc. – Ham. ex Roxb.) Kosterm	Tree	Endemic	E	NT	No voucher
<i>Mesua ferrea</i> L.	Tree	Endemic	E	NT	No voucher
Combretaceae					
<i>Calycotris floribunda</i> Lam.	Liana	Non-Endemic	D	NT	No voucher
<i>Combretum latifolium</i> Bl.	Liana	Non-Endemic	D	NT	No voucher
<i>Terminalia bellirica</i> Roxb.	Tree	Non-Endemic	D	NT	No voucher
<i>Terminalia chebula</i> Retz.	Tree	Non-Endemic	D	NT	No voucher
<i>Terminalia elliptica</i> Willd.	Tree	Non-Endemic	D	NT	No voucher
<i>Terminalia paniculata</i> Roth	Tree	Non-Endemic	D	NT	No voucher
Commelinaceae					
<i>Murdannia edulis</i> Faden	Herb	Non-Endemic	D	NT	COF 142
Connaraceae					
<i>Connarus monocarpus</i> L.	Shrub	Endemic	D	NT	No voucher
Convolvulaceae					
<i>Merremia tridentata</i> (L.) Hallier. f.	Climber	Non-Endemic	D	NT	No voucher
Costaceae					
<i>Costus speciosus</i> (koen.) Sm.	Shrub	Non-Endemic	E	NT	No voucher
Datistaceae					
<i>Tetrameles nudiflora</i> R.Br.	Tree	Non-Endemic	D	NT	No voucher
Dichapetalaceae					
<i>Dichapetalum gelonioides</i> Engl.	Shrub	Endemic	E	NT	No voucher
Dillineaceae					
<i>Dioscorea bulbifera</i> L.	Climber	Non-Endemic	D	NT	No voucher
Dipterocarpaceae					
<i>Dipterocarpus indicus</i> Bedd.	Tree	Endemic	E	CR	No voucher
<i>Hopea ponga</i> (Dennst.) Mabblerly.	Tree	Endemic	E	End	No voucher
<i>Vateria indica</i> L.	Tree	Endemic	E	Vu-G	No voucher
Ebenaceae					
<i>Diospyros assimilis</i> Bedd.	Tree	Endemic	E	NT	COF 137
<i>Diospyros buxifolia</i> (Bl.) Hiern	Tree	Non-Endemic	E	NT	No voucher
<i>Diospyros candolleana</i> Wt.	Tree	Endemic	E	Vu-G	No voucher
<i>Diospyros crumenata</i> Thw.	Tree	Endemic	E	NT	No voucher
<i>Diospyros montana</i> Roxb.	Tree	Non-Endemic	D	NT	No voucher
<i>Diospyros oocarpa</i> Thw.	Tree	Endemic	E	NT	No voucher
<i>Diospyros paniculata</i> Dalz.	Tree	Endemic	E	Vu-G	No voucher
<i>Diospyros sylvatica</i> Roxb.	Tree	Endemic	E	NT	No voucher
Elaeagnaceae					
<i>Elaeagnus conferta</i> Roxb.	Shrub	Non-Endemic	D	LrLc	No voucher
Euphorbiaceae					
<i>Antidesma menasu</i> Miq. ex Tul.	Shrub	Endemic	E	NT	No voucher
<i>Aporosa lindleyana</i> Bail.	Tree	Non-Endemic	E	NT	No voucher
<i>Bischopia javanica</i> Bl.	Tree	Non-Endemic	E	NT	No voucher
<i>Breynia retusa</i> (Dennst.) Alston	Shrub	Non-Endemic	D	NT	No voucher
<i>Bridelia hamiltonia</i> na Wall. ex Meull.-Arg.	Shrub	Non-Endemic	D	NT	No voucher
<i>Croton zeylanicus</i> M. Arg.	Shrub	Endemic	E	NT	No voucher
<i>Dimorphocalyx lawianus</i> J.Hk.	Tree	Endemic	E	NT	No voucher
<i>Drypetes roxburghii</i> (Wall.) Hurusawa	Tree	Non-Endemic	D	NT	No voucher
<i>Emblia officinalis</i> Gaertn.	Tree	Non-Endemic	D	NT	No voucher

Continued

Table 2. Continued.

Plant Species/Family	Habit	Distribution	Type	Status	Voucher
<i>Glochidion ellipticum</i> Wight	Tree	Non-Endemic	D	NT	No voucher
<i>Glochidion malabaricum</i> Bedd.	Tree	Endemic	E	NT	No voucher
<i>Glochidion velutinum</i> Wt.	Tree	Non-Endemic	D	NT	No voucher
<i>Glochidion zeylanicum</i> A. Jus.	Tree	Non-Endemic	D	NT	No voucher
<i>Macaranga peltata</i> (Roxb.) Mueller	Tree	Non-Endemic	D	NT	No voucher
<i>Mallotus philippensis</i> (Lam.) Mueller	Tree	Non-Endemic	E	NT	No voucher
<i>Mallotus tetracoccus</i> (Roxb.) Kurz	Tree	Non-Endemic	E	NT	No voucher
<i>Margaritaria indica</i> (Dalzell) Airy Shaw.	Tree	Non-Endemic	D	NT	No voucher
Flacourtiaceae					
<i>Casearia rubescens</i> Dalz.	Tree	Non-Endemic	E	NT	No voucher
<i>Flacourtia montana</i> Graham	Tree	Endemic	E	NT	No voucher
<i>Homalium zeylanicum</i> (Gardener) Benth.	Tree	Endemic	E	NT	COF 118
<i>Hydnocarpus pentandra</i> (Buch-Ham.) Oken	Tree	Endemic	E	Vu-G	No voucher
Gnetaceae					
<i>Gnetum ula</i> Brogn.	Liana	Endemic	E	NT	No voucher
Hippocrateae					
<i>Salacia oblonga</i> Wall.	Liana	Endemic	E	Vu	No voucher
<i>Hippocratea grahami</i> Wight.	Liana	Endemic	E	NT	COF 127
Hypoxidaceae					
<i>Curculigo orchoides</i> Gaertn.	Herb	Non-Endemic	D	NT	No voucher
Icacinaceae					
<i>Cansjera rheedii</i> Gmel.	Shrub	Non-Endemic	D	NT	No voucher
<i>Gomphandra tetrandra</i> (Wall.) Sleumer	Shrub	Endemic	E	NT	COF 135
<i>Nothapodytes nimmoniana</i> (Grahm.) Mabb.	Shrub	Endemic	D	End	No voucher
<i>Sarcostigma kleinii</i> Wt. & Arn.	Shrub	Non-Endemic	D	NT	COF 121
Lamiaceae					
<i>Leucas aspera</i> L.	Herb	Non-Endemic	D	NT	No voucher
Lauraceae					
<i>Actinodaphne hookeri</i> Meissn.	Tree	Endemic	E	NT	No voucher
<i>Actinodaphne malabarica</i> Balak.	Tree	Endemic	E	NT	COF 146
<i>Alseodaphne semicarpifolia</i> Nees.	Tree	Non-Endemic	E	NT	No voucher
<i>Beilschmiedia wightii</i> Benth. ex J. Hk.	Tree	Endemic	E	NT	No voucher
<i>Cinnamomum malabathrum</i> (Burm. f.) Bl.	Tree	Endemic	E	NT	No voucher
<i>Litsea floribunda</i> (Bl.) Gamble.	Tree	Endemic	E	NT	No voucher
<i>Litsea laevigata</i> (Nees) Gamble.	Tree	Endemic	E	NT	No voucher
<i>Litsea mysorensis</i> Gamble	Tree	Endemic	E	NT	No voucher
<i>Litsea stocksii</i> J.Hk.	Tree	Endemic	E	NT	COF 109
<i>Litsea tomentosa</i> Herb.	Shrub	Non-Endemic	D	NT	COF 151
<i>Persea macrantha</i> (Nees) Kosterm.	Tree	Endemic	E	End	No voucher
Leeaceae					
<i>Leea indica</i> (Burm. f.) Merr.	Shrub	Endemic	E	NT	No voucher
<i>Leea talboti</i> King.	Shrub	Endemic	D	NT	COF 111
Liliaceae					
<i>Asparagus racemosus</i> Willd.	Climber	Non-Endemic	E	NT	No voucher
<i>Dracaena terniflora</i> Roxb.	Herb	Endemic	E	NT	No voucher
Loganiaceae					
<i>Fagraea ceilanica</i> Thunb.	Liana	Non-Endemic	D	NT	No voucher
<i>Gnidia glauca</i> (Fresen.) Gilg	Shrub	Non-Endemic	D	NT	No voucher
<i>Strychnos nux-vomica</i> L.	Tree	Non-Endemic	D	NT	No voucher
<i>Strychnos wallichiana</i> Steud. ex. DC.	Shrub	Non-Endemic	E	NT	No voucher
Lythraceae					
<i>Lagerstroemia microcarpa</i> Wgt.	Tree	Non-Endemic	D	NT	No voucher
<i>Lagerstroemia parviflora</i> Roxb.	Shrub	Non-Endemic	D	NT	No voucher
Malvaceae					
<i>Hibiscus tetraphyllus</i> (Roxb. Ex Horn.) Borss.	Shrub	Non-Endemic	D	NT	No voucher
<i>Sida rhombifolia</i> L.	Shrub	Non-Endemic	D	NT	No voucher
Melastomaceae					
<i>Careya arborea</i> Roxb.	Tree	Non-Endemic	D	NT	No voucher
<i>Melastoma malabathricum</i> L.	Shrub	Non-Endemic	D	NT	No voucher
<i>Memecylon malabaricum</i> (Cl.) Cogn.	Shrub	Endemic	E	NT	No voucher
<i>Memecylon umbellatum</i> N. Burman.	Tree	Endemic	E	NT	No voucher

Continued

Table 2. Continued.

Plant Species/Family	Habit	Distribution	Type	Status	Voucher
Meliaceae					
<i>Aglaia elaeagnoidea</i> var. <i>courtallensis</i> (Gamble) K.K.N. Nair	Tree	Endemic	E	NT	No voucher
<i>Aglaia lawii</i> (Wt.) Saldh.	Tree	Endemic	E	NT	No voucher
<i>Aphanamyxis polystachya</i> (Wall.) Parker	Tree	Non-Endemic	E	NT	No voucher
<i>Chukrasia tabularis</i> A. Juss.	Tree	Non-Endemic	E	NT	No voucher
<i>Dysoxylum binectariferum</i> J.Hk.	Tree	Non-Endemic	E	NT	COF 974
<i>Dysoxylum malabaricum</i> Bedd.	Tree	Endemic	E	End-G	No voucher
<i>Reinwardtiodendron anaimalaiense</i> (Bedd.) Mabb.	Tree	Endemic	E	NT	No voucher
<i>Toona ciliata</i> Roemer Trecul ssp. <i>zeylanicus</i> Jerrettee var. <i>philippensis</i>	Tree	Non-Endemic	E	NT	No voucher
<i>Trichilia connaroides</i> (Wight & Arn.) Brntv.	Tree	Endemic	E	NT	No voucher
<i>Turraea villosa</i> Benn.	Shrub	Non-Endemic	D	NT	COF 117
Menispermaceae					
<i>Anamirta cocculus</i> Wt. & Arn.	Liana	Non-Endemic	E	NT	No voucher
<i>Cyclea peltata</i> (Lam.) (Poir). Hook. f. & Thom	Climber	Non-Endemic	D	NT	No voucher
<i>Diplocisia glaucescens</i> (Bl.) Diels.	Liana	Endemic	E	NT	No voucher
Mimoseae					
<i>Acacia caesia</i> auct.	Shrub	Non-Endemic	D	NT	No voucher
<i>Acacia concinna</i> (Willd.) DC.	Liana	Non-Endemic	D	NT	No voucher
<i>Acacia leucophloea</i> (Roxb.) Willd.	Shrub	Non-Endemic	D	NT	No voucher
<i>Albizia chinensis</i> (Osbeck) Merr.	Tree	Non-Endemic	D	NT	No voucher
<i>Albizia lebbeck</i> (L.) Willd	Tree	Non-Endemic	D	NT	No voucher
<i>Entada pursaetha</i> DC.	Liana	Non-Endemic	D	NT	No voucher
<i>Mimosa pudica</i> L.	Herb	Non-Endemic	D	NT	No voucher
<i>Mimusops elengi</i> L.	Tree	Non-Endemic	E	NT	No voucher
<i>Xylia xylocarpa</i> (Roxb.) Taub.	Tree	Non-Endemic	D	NT	No voucher
Moraceae					
<i>Antiaris toxicaria</i> Lesch.	Tree	Non-Endemic	E	NT	COF 119
<i>Artocarpus gomezianus</i> Wall ex. Trecul.	Tree	Non-Endemic	D	NT	No voucher
<i>Artocarpus heterophyllus</i> Lam.	Tree	Endemic	E	NT	No voucher
<i>Artocarpus hirsutus</i> Lam.	Tree	Endemic	E	Vu-G	No voucher
<i>Ficus asperrima</i> Roxb.	Tree	Non-Endemic	D	NT	No voucher
<i>Ficus callosa</i> Willd.	Tree	Non-Endemic	E	NT	No voucher
<i>Ficus drupacea</i> var. <i>pubescens</i> ((Roth.) Corner	Tree	Non-Endemic	D	NT	No voucher
<i>Ficus hispida</i> L.f.	Shrub	Non-Endemic	D	NT	No voucher
<i>Ficus nervosa</i> Roth	Tree	Non-Endemic	E	NT	No voucher
<i>Ficus racemosa</i> L.	Tree	Non-Endemic	D	NT	No voucher
<i>Ficus talbotii</i> King	Tree	Non-Endemic	D	NT	No voucher
<i>Ficus tsjahela</i> Rheede. ex Burm. f.	Tree	Non-Endemic	D	NT	No voucher
<i>Ficus virens</i> Aiton.	Tree	Non-Endemic	D	NT	No voucher
<i>Streblus asper</i> Lour.	Tree	Non-Endemic	D	NT	No voucher
Myristicaceae					
<i>Knema attenuata</i> (J.Hk. & Thw.) Warb	Tree	Endemic	E	LrnT	No voucher
<i>Myristica dactyloides</i> Gaertn.	Tree	Non-Endemic	E	Vu	No voucher
Myrsinaceae					
<i>Embelia tsjeriam-cottam</i> Roem. & Schult. DC.	Shrub	Non-Endemic	D	LrnT	No voucher
Myrtaceae					
<i>Eugenia macrosepala</i> Duthie	Shrub	Endemic	E	NT	No voucher
<i>Syzygium caryophyllatum</i> (L.) Alst.	Tree	Non-Endemic	E	NT	No voucher
<i>Syzygium cumini</i> (L.) Skeels.	Tree	Non-Endemic	E	NT	No voucher
<i>Syzygium gardneri</i> Thw.	Tree	Endemic	E	NT	No voucher
<i>Syzygium hemisphericum</i> (Walp.) Alston	Tree	Endemic	E	NT	No voucher
<i>Syzygium laetum</i> (Buch.- Ham.) Gandhi	Tree	Endemic	E	NT	No voucher
<i>Syzygium lanceolatum</i> (Lam.) Wt. & Arn.	Tree	Non-Endemic	E	NT	No voucher
Olacaceae					
<i>Strombosia ceylanica</i> Gardn.	Tree	Endemic	E	NT	No voucher
Oleaceae					
<i>Chionanthus malabaricus</i> (Wall. ex G. Don) Bedd.	Tree	Endemic	E	NT	No voucher
<i>Jasminum malabaricum</i> Wgt.	Climber	Non-Endemic	D	NT	No voucher
<i>Jasminum ritchiei</i> C.B. Cl.	Climber	Non-Endemic	D	NT	No voucher
<i>Olea dioica</i> Roxb.	Tree	Endemic	E	NT	No voucher

Continued

Table 2. Continued.

Plant Species/Family	Habit	Distribution	Type	Status	Voucher
Orchidaceae					
<i>Malaxis rheedii</i> Swartz	Herb	Non-Endemic	D	NT	No voucher
<i>Nervilia infundibulifolia</i> Blatt. & McCann	Herb	Endemic	D	NT	No voucher
Pandanaceae					
<i>Pandanus furcatus</i> Roxb.	Shrub	Non-Endemic	E	NT	No voucher
Papilionaceae					
<i>Dalbergia symphathetica</i> Nimmo.	Liana	Non-Endemic	D	NT	No voucher
<i>Dalbergia latifolia</i> Roxb.	Tree	Non-Endemic	D	Vu	No voucher
<i>Derris heyneana</i> (Wight. & Arn.) Bth.	Liana	Non-Endemic	E	NT	No voucher
<i>Canavalia</i> sps.	Climber	Non-Endemic	D	NT	No voucher
<i>Desmodium gangeticum</i> (L.) DC.	Shrub	Non-Endemic	D	NT	No voucher
<i>Desmodium triflorum</i> (L.) DC.	Herb	Non-Endemic	D	NT	No voucher
<i>Pongamia pinnata</i> (L.) Pierre.	Tree	Non-Endemic	E	NT	No voucher
<i>Pseuderthia viscida</i> (L.) Wight. & Arn.	Shrub	Non-Endemic	D	Vu	No voucher
Passifloraceae					
<i>Adenia hondala</i> (Gaertn.) de Wilde	Climber	Endemic	E	Vu	No voucher
Piperaceae					
<i>Piper hookeri</i> Miq.	Climber	Endemic	E	NT	No voucher
Pittosporaceae					
<i>Pittosporum dasycaulon</i> Miq.	Tree	Endemic	E	NT	COF 137
Poaceae					
<i>Bambusa arundinacea</i> Willd.	Herb	Non-Endemic	D	NT	No voucher
<i>Dendrocalamus strictus</i> Nees.	Herb	Non-Endemic	D	NT	No voucher
<i>Ochlandra rheedii</i> Gamble.	Shrub	Endemic	E	NT	No voucher
<i>Oplismenus</i> sps.	Herb	Non-Endemic	D	NT	No voucher
Ranunculaceae					
<i>Naravelia zeylanica</i> (L.) DC.	Climber	Non-Endemic	D	NT	No voucher
Rhamnaceae					
<i>Gouania microcarpa</i> DC.	Liana	Endemic	D	NT	No voucher
<i>Ventilago madraspatana</i> Gaertn.	Liana	Endemic	E	NT	No voucher
<i>Ziziphus mauritiana</i> Lam.	Shrub	Non-Endemic	D	NT	No voucher
<i>Ziziphus oenoplia</i> (L.) Mill.	Shrub	Non-Endemic	D	NT	No voucher
Rhizophoraceae					
<i>Carallia brachiata</i> (Lour.) Merr.	Tree	Endemic	E	NT	No voucher
Rubiaceae					
<i>Canscora perfoliata</i> Lam.	Herb	Non-Endemic	D	NT	COF 168
<i>Canthium angustifolium</i> Roxb.	Shrub	Non-Endemic	E	NT	No voucher
<i>Canthium dicoccum</i> (Gaertn.) Merr.	Tree	Endemic	E	NT	No voucher
<i>Chassalia curviflora</i> (Wall.) Thwaites var. <i>ophioxiloides</i>	Shrub	Endemic	E	NT	COF 169
<i>Geophila repens</i> (L.) I.M.Jhonst.	Herb	Non-Endemic	E	NT	No voucher
<i>Haldina cordifolia</i> (Roxb.) Ridsd	Tree	Non-Endemic	D	NT	No voucher
<i>Hymenodictyon obovatum</i> Wall.	Tree	Non-Endemic	D	NT	No voucher
<i>Ixora brachiata</i> Roxb.	Tree	Endemic	E	NT	No voucher
<i>Ixora coccinea</i> Linn.	Shrub	Non-Endemic	D	NT	No voucher
<i>Ixora nigricans</i> Wt. & Aarn.	Shrub	Endemic	E	NT	No voucher
<i>Meyna laxiflora</i> Roxb.	Shrub	Non-Endemic	D	NT	No voucher
<i>Mitragyna parvifolia</i> (Roxb.) Korth.	Tree	Non-Endemic	D	NT	No voucher
<i>Mussaenda bellila</i> Buch. –Ham.	Shrub	Non-Endemic	D	NT	No voucher
<i>Oldenlandia corymbosa</i>	Herb	Non-Endemic	D	NT	No voucher
<i>Psychotria dalzellii</i> Hook.f.	Shrub	Endemic	E	NT	No voucher
<i>Psychotria flavida</i> Talb.	Shrub	Endemic	E	NT	No voucher
<i>Psychotria nigra</i> (Gaertn.) Alston	Shrub	Endemic	E	NT	COF 164
<i>Psychotria</i> sps.	Shrub	Non-Endemic	E	NT	No voucher
<i>Randia uliginosa</i> DC	Shrub	Non-Endemic	D	NT	No voucher
<i>Spermacoce pusilla</i> Wall.	Herb	Non-Endemic	D	NT	No voucher
<i>Volvulopsis nummularia</i> (L.) Roberty	Herb	Non-Endemic	D	NT	No voucher
<i>Wendlandia thyrsoides</i> (R. & S.) Steud	Shrub	Non-Endemic	D	NT	No voucher
<i>Xeromphis spinosa</i> (Thunb.) Keay	Shrub	Non-Endemic	D	NT	No voucher

Continued

Table 2. Continued.

Plant Species/Family	Habit	Distribution	Type	Status	Voucher
Rutaceae					
<i>Achronychia pedunculata</i> (L.) Miq.	Tree	Endemic	E	NT	No voucher
<i>Glycosmis mauritiana</i> (Lam.) Tanaka	Shrub	Endemic	E	NT	No voucher
<i>Luvunga sarmmtosa</i> (Bl.) kurz.	Shrub	Endemic	E	NT	No voucher
<i>Murraya paniculata</i> (L.) Jacq.	Shrub	Non-Endemic	D	NT	No voucher
<i>Paramignya monophylla</i> Wt.	Shrub	Endemic	E	NT	No voucher
<i>Toddalia asiatica</i> (L.) Lam	Shrub	Non-Endemic	D	NT	No voucher
<i>Vepris bilocularis</i> (Wt. & Arn.) Engler	Tree	Endemic	E	NT	No voucher
<i>Zanthoxylum ovalifolium</i> Wt.	Shrub	Non-Endemic	D	NT	No voucher
<i>Zanthoxylum rhetsa</i> (Roxb.) DC.	Tree	Non-Endemic	D	NT	No voucher
Santalaceae					
<i>Osyris arborea</i> Wall.	Shrub	Non-Endemic	D	NT	No voucher
<i>Santalum album</i> Linn.	Tree	Endemic	D	Vu	No voucher
<i>Scleropyrum pentandrum</i> (Denn.) Mabb.	Shrub	Endemic	D	NT	No voucher
Sapindaceae					
<i>Allophyllus cobbe</i> (L.) Raeusch.	Shrub	Non-Endemic	E	NT	No voucher
<i>Cipadessa baccifera</i> (roth.) Miq.	Shrub	Non-Endemic	E	NT	No voucher
<i>Dimocarpus longan</i> Lour.	Tree	Endemic	E	NT	No voucher
<i>Harpullia arborea</i> (Blanco) Radlk.	Tree	Endemic	E	NT	No voucher
<i>Sapindus laurifolius</i> Vahl.	Tree	Non-Endemic	D	NT	No voucher
<i>Schleichera oleosa</i> (Lour.) Oken	Tree	Non-Endemic	D	NT	No voucher
Sapotaceae					
<i>Chrysophyllum lanceolatum</i> (Bl.) DC.	Tree	Endemic	E	NT	No voucher
<i>Madhuca latifolia</i> (Roxb.) Macbride.	Tree	Non-Endemic	D	NT	No voucher
<i>Manilkara hexandra</i> (Roxb.) Dub.	Tree	Non-Endemic	E	NT	No voucher
<i>Xantolis tomentosa</i> (Roxb.) Raf.	Tree	Endemic	E	NT	No voucher
Simaroubaceae					
<i>Ailanthus triphysa</i> (Dent.) Alston	Tree	Non-Endemic	D	NT	No voucher
Smilacaceae					
<i>Smilax zeylanica</i> L.	Climber	Non-Endemic	E	NT	No voucher
Sterculiaceae					
<i>Elaeocarpus serratus</i> L.	Tree	NE	E	NT	No voucher
<i>Pterospermum diversifolium</i> Bl.	Tree	NE	E	NT	No voucher
<i>Pterospermum reticulatum</i> Wt. & Arn.	Tree	Endemic	E	End	No voucher
<i>Sterculia guttata</i> Roxb.	Tree	NE	D	NT	No voucher
Symplocaceae					
<i>Symplocos cochinchinensis</i> (Lour.) Moore	Shrub	Endemic	E	NT	No voucher
<i>Symplocos racemosa</i> Roxb.	Tree	Endemic	E	Vu	No voucher
Thunbergiaceae					
<i>Thunbergia fragrans</i> Roxb.	Climber	Non-Endemic	D	NT	No voucher
Tiliaceae					
<i>Grewia salvifolia</i> Heyne.	Shrub	Non-Endemic	D	NT	No voucher
<i>Grewia tilaefolia</i> Vahl.	Tree	Non-Endemic	D	NT	No voucher
Ulmaceae					
<i>Celtis philippensis</i> Decne. var. <i>philippensis</i>	Tree	Non-Endemic	D	NT	No voucher
<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Tree	Non-Endemic	D	NT	No voucher
Urticaceae					
<i>Aphananthe cuspidata</i> (Bl.) Planch.	Tree	Non-Endemic	E	Vu	No voucher
<i>Trema orientalis</i> Blume.	Tree	Non-Endemic	D	NT	No voucher
Verbenaceae					
<i>Callicarpa tomentosa</i> (L.) Murray	Shrub	Endemic	E	NT	No voucher
<i>Clerodendron serratum</i> (L.) Moon	Shrub	Non-Endemic	D	NT	No voucher
<i>Clerodendrum viscosum</i> Vent	Shrub	Non-Endemic	D	NT	No voucher
<i>Gmelina arborea</i> Roxb.	Tree	Non-Endemic	D	NT	No voucher
<i>Lantana camara</i> auct.	Shrub	Non-Endemic	D	NT	No voucher
<i>Vitex altissima</i> Linn.	Tree	Non-Endemic	D	NT	No voucher
Vitaceae					
<i>Cissus discolor</i> Blume.	Climber	Non-Endemic	D	NT	No voucher
Zingiberaceae					
<i>Curcuma pseudomontana</i> J. Graham.	Herb	Endemic	E	Vu-G	No voucher