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International Journal of Current Research Vol. 8, Issue, 08, pp.36809-36812, August, 2016 INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

DIVERSITY OF TREE SPECIES IN SHARAVATHI WILDLIFE SANCTUARY, SHIVAMOGGA

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ARTICLE INFO

ABSTRACT

Article History: Received 03rd May, 2016 Received in revised form 10th June, 2016 Accepted 29th July, 2016 Published online 31st August, 2016

Key words:

Tree species, Oleaceae, SWLS, NTFP, Diversity.

Sharavathi Wildlife Sanctuary (SWLS) of Karnataka harboring rich floristic diversity and different types of forest. The diversity of tree species of buffer zone of SWLS studied by using six transects of 1.5km distance. A total of 100 species belonging to 75 genera and 40 families were documented in 30 quadrates during the survey. *Olea dioica* emerged as most important tree species in SWLS. Oleaceae emerged as most important family exhibits highest Family Importance Value. Among the 100 trees species, 16 species yield Non Timber Forest Products (NTFP) and 26 species are medicinally important plants. The presence of *Myristica dactyloides, Dipterocarpus indicus, Dysoxylum malabaricum, Diospyros paniculata, Elaeocarpus tuberculatus, Eugenia macrosepala, Litsea floribunda, Mastrixia arborea, Polyalthia fragrance, indicates the evergreen nature of the forest whereas the presence of <i>Terminalia paniculata, Randia dumetorum, Flacourtia montana, Grewia tiliaefolia, Careya arborea, Cedrela toona.* represented the moist deciduous nature of the forest.

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Citation: Adithya Rao, G. S., Padmalatha, H. V. and Kumaraswamy Udupa, E. S. 2016. "Diversity of tree species in Sharavathi wildlife sanctuary, Shivamogga", *International Journal of Current Research*, 8, (08), 36809-36812.

INTRODUCTION

India is considered to be one of the mega-diversity centers of the world containing diverse ecosystem with thick evergreen and many other forest types. Western Ghats of India is considered as one of the 34 biodiversity hotspots in the world (Myers et al., 2000). The Western Ghats harbors more than 5000 species of flowering plants (Nair and Daniels, 1986) out of which 1600 are endemic to the region (Mackinnan and Mackinnan, 1986). The tropical wet evergreen forest that occur in the Western Ghats region of Karnataka represent the most luxuriant type of vegetation seen on the earth. Tropical forests have received much attention in recent years because of their species richness, high standing biomass and greater productivity (Denslow, 1987). Thus only a small portion can be preserved in National Parks, Wildlife Sanctuaries and Biosphere Reserves. These protected areas are critically important for species preservation. Among 500+ Wildlife sanctuaries in India, Sharavathi Wildlife Sanctuary (SWLS) in Western Ghats is well known for its falls (upper catchment) is one of the mega centers of endemism harboring divers kinds of flora and fauna, which are adapted to various kinds of micro

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and macro habitats. Among them, macro habitats have higher richness and endemism and micro habitats such as wet tree trunks, wet rocks etc., have distinctive species. All the habitats in Karnataka harbor economically useful species including medicinal plants vital for human survival (Ganeshaiah *et al.*, 2002). Out of nearly 17,500 flowering plant species found in India, over 1600 are used in traditional medicinal system of Ayurveda (Kumar *et al.*, 2012). Sharavathi river basin is rich in medicinal plants used in ethnobotanical system. Hence, it is a vital necessity to save these habitats for the survival of life saving plants.

MATERIALS AND METHODS

Study Area

SWLS declared from government order No. AFD70/FWL71/ Dated 20.04.1972 with a geographical area 431.23km² located in Shivamogga, Karnataka. One third portion of the sanctuary is occupied by Linganamakki reservoir and rest of the area had divided into core (74.33 km²), buffer (170.67 km²) and tourism zones (57.53km²). Area lies between 13°55 to 14°12 lat., 74°38 to 75°00 long. and altitude varies form 94-1102m (Anon, 2006). The sanctuary has evergreen, semi-evergreen and moist deciduous forest types with a spectacular Jog falls in it.

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Fig.1. Map showing the study sites of SWLS

MATERIALS AND METHODS

In the present study, transect method is used for vegetation survey. It is carried out by laying six transects of length 1.5 km at random in the buffer zone of the forest during the year of January 2013 to March 2014. This line transect is divided into five quadrates of size $20m \times 20m$ alternatively on both side by leaving 350m gap (Fig.1). The tree species (10cm GBH) found in the quadrates were recorded and identified by using available manuals and flora (Saldanha and Nicolson, 1976; Yoganarasimhan and Razi, 1981; Gamble, 1998; Ramaswamy *et al.* 2001; Bhat, 2003; Gowda, 2004) and photographed.



Fig.2. Graphical representation of the transect plotted in the study area

Species composition and diversity indices such as Shannon's (H) and Simpson's (D) values are calculated (Shannon *et al.* 1949, Simpson 1949, Magurran 1988).

| Frequency | Number of quadrate in which species occur |
|-----------|---|
| | Total number of quadrates studied |
| Density | Total number of individuals of a species |
| | Total number of quadrates studied |
| | Total number of individuals of a species in all the quadrates |
| Abundance | Total number of quadrates in which the species as occurred |

Basal area : (GBH)²/4π

| Relative dominance : | Basal area of a species | 100 |
|----------------------|-------------------------------------|---------|
| | Total basal area of all the species | - X 100 |

SIV/FIV- Relative frequency + Relative density + Relative dominance

Shannon's diversity Index: H = - pi ln pi

Where, pi = (ni/N)

Simpson's value, $\mathbf{D} = \frac{ni(ni-1)}{N(N-1)}$

RESULTS

A total of 100 species belonging to 75 genera and 40 families were documented in 30 quadrants during the survey which includes two monocotyledons i.e., Caryota urens and Bambusa bambos. The study reveals that Olea dioica is more frequently distributed and having highest density (0.77 & 2.87 respectively) and is followed by frequency Ixora brachiata (0.63) and density Terminalia paniculata (2.67). The most abundant species of trees is Myristica dactyloides (7.4) and is followed by T. paniculata (6.67) (Table 1). Olea dioica exhibit highest basal area (23682.45 m²) followed by Terminalia paniculata (14163.61 m²) whereas O. dioica emerged as most important tree species in SWLS having SIV of 30.85 which is followed by T. paniculata (20.16) The documented tree species showed Shannon's diversity value of 3.95 and Simpson's species richness value 0.03. Among the 100 trees species, 16 species yield Non Timber Forest Products (NTFP) and 26 species are medicinally important plants (Table 1).

Table 1. Diversity of trees of Sharavathi Wildlife Sanctuary

| S.No. | Name of Species | F | D | А | SIV |
|-------|--------------------------|------|------|------|-------|
| 1 | Acacia auriculiformis | 0.10 | 0.37 | 3.67 | 1.79 |
| 2 | Acronychia pedunculata | 0.10 | 0.17 | 1.67 | 1.01 |
| 3 | Actinodaphne hookeri | 0.30 | 0.70 | 2.33 | 4.42 |
| 4 | Aegle marmelos *# | 0.03 | 0.03 | 1.00 | 0.28 |
| 5 | Aglaia roxburghiana | 0.27 | 0.83 | 3.13 | 6.10 |
| 6 | Albizia odoratissima | 0.03 | 0.07 | 2.00 | 0.35 |
| 7 | Aporosa lindleyana | 0.53 | 2.10 | 3.94 | 11.34 |
| 8 | Archidendron monodelphum | 0.03 | 0.03 | 1.00 | 0.29 |
| 9 | Artocarpus hirsutus | 0.10 | 0.17 | 1.67 | 1.04 |
| 10 | Artocarpus lacucha *# | 0.03 | 0.03 | 1.00 | 0.28 |
| 11 | Atalantia wightii | 0.17 | 0.93 | 5.60 | 3.63 |
| 12 | Bambusa bambos * | 0.03 | 0.10 | 3.00 | 0.42 |
| 13 | Bauhinia malabarica | 0.03 | 0.03 | 1.00 | 0.28 |
| 14 | Buchanania lanzan | 0.10 | 0.33 | 3.33 | 1.42 |
| 15 | Canarium strictum *# | 0.03 | 0.07 | 2.00 | 0.43 |
| 16 | Canthium dicoccum | 0.30 | 0.60 | 2.00 | 3.44 |
| 17 | Careya arborea | 0.37 | 0.97 | 2.64 | 5.34 |
| 18 | Caryota urens * | 0.03 | 0.03 | 1.00 | 0.28 |
| 19 | Casuarina equisetifolia | 0.07 | 0.20 | 3.00 | 0.90 |
| 20 | Cedrela toona | 0.03 | 0.07 | 2.00 | 0.35 |
| 21 | Chukrasia tabularis | 0.03 | 0.03 | 1.00 | 0.27 |
| 22 | Cinnamomum malabatrum *# | 0.27 | 0.53 | 2.00 | 3.39 |
| 23 | Dalbergia latifolia | 0.07 | 0.07 | 1.00 | 0.56 |
| 24 | Dillenia pentagyna | 0.13 | 0.20 | 1.50 | 1.39 |
| 25 | Dimocarpus longan | 0.47 | 2.47 | 5.29 | 19.34 |
| 26 | Diospyros buxifolia | 0.10 | 0.13 | 1.33 | 0.99 |
| 27 | Diospyros candolleana | 0.27 | 0.57 | 2.13 | 3.07 |
| 28 | Diospyros montana | 0.13 | 0.40 | 3.00 | 1.77 |
| | | | | | |

| 29 Diospyros paricins 0.10 0.13 1.33 0.90 31 Diospyros paricins 0.10 0.13 1.33 0.93 32 Diprocarpus indicus* 0.03 0.03 1.00 0.32 33 Dysoxylum malabaricum 0.13 0.57 4.25 3.05 34 Elaecoarpus suberculants # 0.03 0.03 1.00 0.30 35 Elaecoarpus suberculants # 0.07 0.07 1.00 0.56 37 Eugenia hemispherica 0.07 0.07 1.00 0.56 38 Eugenia macrosepala 0.13 0.40 3.00 1.88 40 Ficus sp. 0.07 0.07 1.00 0.57 41 Ficacurita indica 0.03 0.03 1.00 0.45 41 Ficacurita indica 0.03 0.03 1.00 0.66 43 Ficacurita indica 0.03 0.03 1.00 0.83 44 Ficacurita indica | | | | | | |
|--|----------|-----------------------------|------|------|------|-------|
| 30 Diospyros paniculata 0.10 0.13 1.33 0.93 31 Diopyros prariens 0.10 0.13 1.33 0.93 32 Dipterocarpus indicus * 0.03 0.03 1.00 0.32 33 Dysoxylum malabaricum 0.13 0.57 1.89 3.51 35 Elaeocarpus struberculaus # 0.03 0.03 1.00 0.36 36 Eugenia hacrosepala 0.13 0.20 1.50 1.26 36 Eugenia macrosepala 0.13 0.03 1.00 0.59 40 Ficus sp. 0.07 0.07 1.00 0.63 41 Ficus sp. 0.07 0.07 1.00 0.63 42 Ficus spin 0.03 0.03 1.00 0.28 44 Flacouria indica ## 0.03 0.03 1.00 0.28 45 Garcinia indica ## 0.17 0.23 1.40 1.62 46 Garcinia indica ## 0.03 | 29 | Diospyros ovalifolia | 0.10 | 0.27 | 2.67 | 1.51 |
| 11 Disperson pruriens 0.10 0.13 1.33 0.93 32 Dipterocarpus indicus * 0.03 0.03 1.00 0.32 34 Elacocarpus sterculatus 0.03 0.057 4.25 3.05 34 Elacocarpus sterculatus * 0.03 0.03 1.00 0.30 36 Eugenia hemispherica 0.07 0.43 6.50 1.42 37 Eugenia macrosepala 0.13 0.20 1.50 1.26 39 Euonymus sp. 0.13 0.40 3.00 1.88 40 Ficus amplissima 0.03 0.03 1.00 0.52 41 Ficourria indica 0.03 0.03 1.00 0.28 42 Ficus spi. 0.07 0.07 1.00 0.83 43 Flacourria indica 0.03 0.03 1.00 0.28 44 Flacourria montana # 0.10 0.10 0.10 0.30 1.03 0.37 1.70 4.41 | 30 | Diospyros paniculata | 0.10 | 0.13 | 1.33 | 0.90 |
| Doby Prosphere Dots Process indicess Dots Process indices Dots Process indices <thdots indices<="" process="" th=""> Dots Process</thdots> | 31 | Diospyros pruriens | 0.10 | 0.13 | 1 33 | 0.93 |
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| 33 Dysoxylum malabaricum 0.13 0.57 1.89 3.51 35 Elaeocarpus suberculatus # 0.03 0.03 1.00 0.30 36 Eucalypus sp.*# 0.07 0.43 6.50 1.42 37 Eugenia hemispherica 0.07 1.00 0.56 38 Eugenia macrosepala 0.13 0.20 1.50 1.26 39 Euorymus sp. 0.01 0.04 0.30 0.03 1.00 0.45 40 Ficus sp. 0.07 0.07 1.00 0.60 41 Ficus sp. 0.07 0.07 1.00 0.83 45 Garcinia indica *# 0.20 0.33 1.67 2.18 46 Garcinia mortiana # 0.10 1.00 0.28 47 Garcinia mortiana # 0.17 0.23 1.40 1.62 47 Garcinia mortiana 0.13 0.37 2.75 2.04 51 Holigara grahamii 0.23 1. | 32 | Dipterocarpus indicus * | 0.03 | 0.03 | 1.00 | 0.32 |
| 34 Elaeocarpus serratus 0.30 0.57 1.89 3.51 35 Elaeocarpus tuberculatus # 0.03 0.03 1.00 0.50 36 Eucalypus sp. *# 0.07 0.07 1.00 0.56 38 Eugenia macrosepala 0.13 0.40 3.00 1.88 40 Ficus sp. 0.07 0.07 1.00 0.59 41 Ficus sp. 0.07 0.07 1.00 0.59 42 Ficus siela 0.07 0.07 1.00 0.28 44 Flacourtia motica ## 0.00 0.33 1.00 0.28 44 Flacourtia indica 0.33 0.00 1.28 0.07 0.07 1.00 0.28 45 Garcinia indica ## 0.10 0.10 0.02 8.35 7 1.89 3.51 1.62 46 Garcinia indica ## 0.17 0.23 1.40 1.62 1.62 1.61 1.61 1.62 1.61 <td>33</td> <td>Dysoxylum malabaricum</td> <td>0.13</td> <td>0.57</td> <td>4.25</td> <td>3.05</td> | 33 | Dysoxylum malabaricum | 0.13 | 0.57 | 4.25 | 3.05 |
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| 36 Eucalypus sp. ** 0.07 0.43 6.50 1.42 37 Eugenia hemispherica 0.07 1.00 0.56 38 Eugenia macrosepala 0.13 0.40 3.00 1.88 40 Ficus sp. 0.03 0.03 1.00 0.56 41 Ficus sp. 0.07 0.07 1.00 0.69 43 Flacourria indica 0.03 0.03 1.00 0.68 44 Flacourria montana # 0.10 0.10 0.10 0.10 0.00 45 Garcinia gumini-gutta *# 0.03 0.03 1.00 0.28 47 Garcinia morella 0.43 1.70 3.92 9.16 48 Glochidion zeylanicum 0.33 0.60 1.80 3.67 48 Glochidian arghamii 0.23 0.47 2.00 4.10 51 tholigarna arghamii 0.23 0.37 1.70 4.64 1.80 54 Lora a trachiata <t< td=""><td>35</td><td>Elaeocarpus luberculatus #</td><td>0.05</td><td>0.05</td><td>1.00</td><td>0.30</td></t<> | 35 | Elaeocarpus luberculatus # | 0.05 | 0.05 | 1.00 | 0.30 |
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| 12 Filesouria indica 0.03 0.03 1.00 0.28 44 Flacourita montana # 0.10 0.10 1.00 0.28 44 Flacourita indica *# 0.03 0.03 1.00 0.28 45 Garcinia indica *# 0.03 0.03 1.00 0.28 46 Garcinia morella 0.43 1.70 3.92 9.16 48 Glochidion zeytanicum 0.33 0.60 1.80 3.67 49 Grewia tiliaefolia # 0.17 0.23 1.40 1.62 50 Holigarna bedomei 0.07 0.07 1.00 0.56 51 Holigarna bedomei 0.03 0.03 1.00 0.28 54 kora brachiata 0.63 0.03 1.00 0.28 55 kora nigricans 0.03 0.03 1.00 0.27 54 kora angeristoemi alanceolata 0.23 0.27 1.14 2.30 56 keanideuiaa 0.07 | 12 | Ficus tsiela | 0.07 | 0.07 | 1.00 | 0.60 |
| 43 Flacourtia indica 0.03 0.03 1.00 0.28 44 Flacourtia montama # 0.10 0.10 1.00 0.83 45 Garcinia gummi-gutta *# 0.03 0.03 1.00 0.28 47 Garcinia indica *# 0.03 0.03 1.00 0.28 47 Garcinia indica *# 0.03 0.03 1.00 0.28 47 Garcinia indica *# 0.13 0.03 1.00 0.28 48 Glacchidon zeylanicum 0.33 0.60 1.80 3.67 49 Grewia tiliaefolia # 0.17 0.23 1.40 1.62 50 Holigarna gradamii 0.23 0.47 2.00 4.10 51 Hora ingricans 0.03 0.03 1.00 0.28 54 kora brachiata 0.43 1.23 5.15 14.80 55 kora brachiata 0.43 0.23 0.27 1.14 2.30 55 kare antenuata 0.43 0.23 0.27 1.41 2.30 56 <t< td=""><td>42</td><td></td><td>0.07</td><td>0.07</td><td>1.00</td><td>0.00</td></t<> | 42 | | 0.07 | 0.07 | 1.00 | 0.00 |
| 44 Flacourtia montana # 0.10 0.10 1.00 0.83 45 Garcinia montica *# 0.20 0.33 1.67 2.18 46 Garcinia indica *# 0.03 0.03 1.00 0.28 47 Garcinia morella 0.43 1.70 3.92 9.16 48 Glochidion zeylanicum 0.33 0.60 1.80 3.67 49 Grewia tiliaefolia # 0.17 0.23 1.40 1.62 50 Holigarna arnottiana 0.13 0.37 1.70 4.64 1.80 51 Holigarna grahamii 0.23 0.47 2.00 4.10 54 kora nigricans 0.03 0.03 1.00 0.28 55 kora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 5.15 1.48.0 57 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Lannea coromandelica 0.07 0.07 1.00 0.55 50 Lege in | 43 | Flacourtia indica | 0.03 | 0.03 | 1.00 | 0.28 |
| 45 Garcinia gummi-gutta *# 0.20 0.33 1.67 2.18 46 Garcinia indica *# 0.03 0.03 1.00 0.28 47 Garcinia indica *# 0.13 0.33 0.60 1.80 3.67 48 Glochidion zeylanicum 0.33 0.60 1.80 3.67 49 Grevia tillaefolia # 0.17 0.23 1.40 1.62 50 Holigarna arnottiana 0.13 0.37 2.75 2.04 51 Holigarna arnottiana 0.63 1.67 2.63 9.10 54 Ixora brachiata 0.63 1.67 2.63 9.10 55 Ixora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuota 0.43 2.23 0.27 1.14 2.30 58 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 57 Lagerstroemalelica 0.07 0.07 1.00 0.55 50 Leai indica 0.07 0.07 1.00 0.55 61 | 44 | Flacourtia montana # | 0.10 | 0.10 | 1.00 | 0.83 |
| 46 Garcinia indica *# 0.03 0.03 1.00 0.28 47 Garcinia morella 0.43 1.70 3.92 9.16 48 Glochidion zylanicum 0.33 0.60 1.80 3.67 49 Grewia tiliaefolia # 0.17 0.23 1.40 1.62 50 Holigarna addomei 0.07 0.07 1.00 0.56 51 Holigarna baddomei 0.03 0.03 1.00 0.28 54 Kora brachiata 0.63 0.03 0.03 1.00 0.28 54 Kora brachiata 0.63 0.03 1.00 0.28 55 Ixora nigricans 0.03 0.03 1.00 0.28 55 Lava nigricans 0.03 0.03 1.00 0.28 56 Karema attenuata 0.43 2.23 5.15 1.480 50 Layerstroemalabarica 0.07 0.07 1.00 0.55 61 Linociera malabarica <th0< td=""><td>45</td><td>Garcinia gummi-gutta *#</td><td>0.20</td><td>0.33</td><td>1.67</td><td>2.18</td></th0<> | 45 | Garcinia gummi-gutta *# | 0.20 | 0.33 | 1.67 | 2.18 |
| 47 Garcinia marcella 0.03 0.03 1.00 0.23 47 Garcinia morella 0.43 1.70 392 9.16 48 Glochidion zeylanicum 0.33 0.60 1.80 3.67 49 Grewia tiliaefolia # 0.17 0.23 1.40 1.62 50 Holigarna arnottiana 0.13 0.37 2.75 2.04 51 Holea ponga 0.37 1.70 4.64 1.80 54 Ixora brachiata 0.63 1.67 2.63 9.10 55 Ixora nigricans 0.03 0.03 1.00 0.27 56 Knema attenuota 0.43 2.23 0.27 1.14 2.30 58 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Lagerstroemia diabarica 0.07 0.07 1.00 0.27 60 Ligustrum gamblei 0.03 0.13 4.00 0.49 61 Linociera malabarica | 46 | Carcinia indica *# | 0.03 | 0.03 | 1.00 | 0.28 |
| 47 Garcuna morelta 0.43 1.70 5.92 9.16 48 Glochidion zyelonicum 0.33 0.60 1.80 3.67 49 Grewia tiliaefolia # 0.17 0.23 1.40 1.62 50 Holigarna arnottiana 0.13 0.37 2.75 2.04 51 Holigarna grahamii 0.23 0.47 2.00 4.10 53 Horea prachiata 0.63 1.67 2.63 9.10 54 Ixora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 5.15 14.80 57 Lagerstroemia lanceolata 0.23 0.07 1.00 0.62 58 Lannea coromandelica 0.07 0.07 1.00 0.62 58 Lannea coromandelica 0.07 0.07 1.00 0.55 61 Liociera malabarica 0.07 0.07 1.00 0.55 62 Litsea foribunda 0.17 0.27 1.60 1.64 64 Lophopetalum wightanum | 40 | | 0.03 | 1.70 | 1.00 | 0.28 |
| 48 Glochidion zeylanicum 0.33 0.60 1.80 3.67 49 Grewia tiliaefolia # 0.17 0.23 1.40 1.62 50 Holigarna anottiana 0.13 0.37 2.75 2.04 51 Holigarna grahamii 0.23 0.47 2.00 4.10 53 Hopea ponga 0.37 1.70 4.64 11.80 54 Izora brachiata 0.63 1.67 2.63 9.10 55 Izora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 0.27 1.14 2.30 58 Lamea coromandelica 0.07 0.07 1.00 0.62 59 Leea indica 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 1.39 63 Lisea coreacea 0.17 0.17 1.01 1.31 1.50 64 Lonoicera malabarica | 47 | Garcinia morella | 0.43 | 1.70 | 3.92 | 9.16 |
| 49 Grewia tiliaefolia # 0.17 0.23 1.40 1.62 50 Holigarna anottiana 0.13 0.37 2.75 2.04 51 Holigarna badomei 0.07 0.07 1.00 0.56 52 Hoigarna grahamii 0.23 0.47 2.00 4.10 53 Horea prachiata 0.63 1.67 2.63 9.10 54 Ixora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 5.15 1.480 57 Lagerstroemia lanceolata 0.23 0.03 1.00 0.27 68 Lannea coromandelica 0.07 0.07 1.00 0.62 58 Lannea coreacea 0.17 0.17 1.00 0.55 61 Lipostrim gamblei 0.03 0.03 1.00 0.27 62 Litsea coreacea 0.17 0.17 1.00 0.55 62 Litsea floribunda 0.17 | 48 | Glochidion zeylanicum | 0.33 | 0.60 | 1.80 | 3.67 |
| Description Order | 49 | Grewia tiliaefolia # | 0.17 | 0.23 | 1 40 | 1.62 |
| 30 Proligarna baddomei 0.13 0.13 2.13 2.14 51 Holigarna baddomei 0.07 0.07 1.00 0.56 52 Holigarna baddomei 0.03 1.70 4.64 11.80 53 Horea prachiata 0.63 1.67 2.63 9.10 54 Ixora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 5.15 14.80 57 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Lannea coromandelica 0.07 0.07 1.00 0.62 59 Leea indica 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 1.39 62 Lisea foribunda 0.17 0.17 1.61 1.64 64 Lophopetalum wightainum 0.10 0.13 1.33 1.50 65 Mallotus tetracoccus 0.03 | 50 | Holioama amottiana | 0.17 | 0.25 | 2.75 | 2.04 |
| 51 Holigarna beddomei 0.07 1.00 0.55 52 Holigarna grahamii 0.23 0.47 2.00 4.10 53 Hopea ponga 0.37 1.70 4.64 11.80 54 Ixora brachiata 0.63 1.67 2.63 9.10 55 Ixora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 5.15 1.480 57 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Larnea coromandelica 0.03 0.03 1.00 0.27 60 Ligustrum gamblei 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 1.55 62 Litsea coreacea 0.17 0.17 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus tetracoccus 0.03 0. | 30 | Holigarna arnolliana | 0.15 | 0.57 | 2.75 | 2.04 |
| 52 Holigarna grahamii 0.23 0.47 2.00 4.10 53 Hopea ponga 0.37 1.70 4.64 11.80 54 Ixora brachiata 0.63 1.67 2.63 9.10 55 Ixora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 5.15 1.48 57 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Lannea coromandelica 0.07 0.07 1.00 0.62 59 Leea indica 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea coreacea 0.17 0.17 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.03 1.00 0.27 68 Magifera indica # 0.43 <td>51</td> <td>Holigarna beddomei</td> <td>0.07</td> <td>0.07</td> <td>1.00</td> <td>0.56</td> | 51 | Holigarna beddomei | 0.07 | 0.07 | 1.00 | 0.56 |
| Hopea ponga 0.37 1.70 4.64 11.80 54 Ixora brachiata 0.63 1.67 2.63 9.10 55 Ixora nigricans 0.03 0.03 1.00 0.28 56 Knena attenuata 0.43 2.23 5.15 1.480 57 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Lamea coromandelica 0.03 0.03 1.00 0.27 60 Ligustrum gamblei 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea coreacea 0.17 0.17 0.61 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.03 1.00 0.27 71 Marecylon talbotianum # 0.37 1.90 | 52 | Holigarna grahamii | 0.23 | 0.47 | 2.00 | 4.10 |
| 53 Iropen porga 0.37 1.70 4.04 11.00 54 Ixora nigricans 0.03 0.03 1.00 0.28 55 Ixora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 5.15 1.480 57 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Lannea coromandelica 0.07 0.07 1.00 0.62 59 Leea indica 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea floribunda 0.17 0.17 1.60 1.64 64 Lophopetalum wightianum 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.03 1.00 0.27 67 Mallotus tetracoccus 0.03 0.03 1.00 0.27 71 Memecylon unbellatum # 0.33 </td <td>53</td> <td>Honea ponga</td> <td>0.37</td> <td>1 70</td> <td>4.64</td> <td>11.80</td> | 53 | Honea ponga | 0.37 | 1 70 | 4.64 | 11.80 |
| 54 Lora a high class 0.03 1.07 2.03 9.10 55 Ikora a high class 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 5.15 1.480 57 Lagerstroemia lanceolata 0.03 0.07 1.00 0.62 59 Leae indica 0.03 0.03 1.00 0.27 60 Ligustrum gamblei 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 1.55 62 Litsea coreacea 0.17 0.17 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.07 2.00 0.35 67 Mallotus privatica adacyolocus 0.03 1.00 0.27 71 Memecylon talbotianum # 0.37 | 55 | Inopeu pongu | 0.57 | 1.70 | 2.07 | 0.10 |
| 55 Lvora nigricans 0.03 0.03 1.00 0.28 56 Knema attenuata 0.43 2.23 5.15 14.80 57 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Lannea coromandelica 0.07 0.07 1.00 0.62 59 Leea indica 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea coreacea 0.17 0.17 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macarang peltata 0.10 0.17 1.67 0.98 66 Mallotus tetracoccus 0.03 0.03 1.00 0.27 68 Magifera indica # 0.43 0.60 1.38 5.00 69 Mapia foetida # 0.07 0.07 1.00 0.55 71 Memecylon umbeltatum # 0.33 0.87 2.60 4.33 73 Minusops elengi # 0 | 54 | Ixora brachiala | 0.05 | 1.07 | 2.05 | 9.10 |
| 56 Knema attenuata 0.43 2.23 5.15 14.80 57 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Lannea coromandelica 0.03 0.07 1.00 0.62 59 Leea indica 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea forbiunda 0.17 0.17 1.00 1.59 63 Litsea forbiunda 0.10 0.13 1.33 1.50 64 Lophopetalum wightianum 0.10 0.17 1.60 0.35 65 Macaranga peltata 0.10 0.17 1.60 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Mappia foetida # 0.07 0.07 1.00 0.57 71 Memecylon umbellatum # 0.33 0.87 2.60 4.33 73 Minusops elengi # 0.27 | 55 | Ixora nigricans | 0.03 | 0.03 | 1.00 | 0.28 |
| 57 Lagerstroemia lanceolata 0.23 0.27 1.14 2.30 58 Lannea coromandelica 0.07 0.07 1.00 0.62 59 Leea indica 0.03 0.03 1.00 0.27 60 Ligustrum gamblei 0.03 0.03 1.00 0.27 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea coreacea 0.17 0.17 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.03 1.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Maptia foetida # 0.07 0.07 1.00 0.55 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon unbellatum # 0. | 56 | Knema attenuata | 0.43 | 2.23 | 5.15 | 14.80 |
| St Lagennee coromandelica 0.07 0.07 1.00 0.62 58 Lannea coromandelica 0.03 0.03 1.00 0.27 60 Ligustrum gamblei 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea coreacea 0.17 0.17 1.00 1.33 63 Litsea floribunda 0.17 0.27 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus tetracoccus 0.03 0.03 1.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Mappia foetida # 0.07 0.07 1.00 0.25 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon tunbellatum # | 57 | Laverstroemia lanceolata | 0.23 | 0.27 | 1 14 | 2 30 |
| 38Lannet communication0.070.071.000.0259Leea indica0.030.031.000.0260Ligustrum gamblei0.030.134.000.4961Linociera malabarica0.070.071.000.5562Litsea coreacea0.170.171.101.3363Litsea floribunda0.110.271.601.6464Lophopetalum wightianum0.100.131.331.5065Macaranga peltata0.100.171.670.9866Mallotus philippinensis0.030.031.000.2768Mangifera indica #0.430.661.385.0069Mapgia foetida #0.070.071.000.5570Mastrixia arborea0.030.031.000.2771Memecylon talbotianum #0.371.905.187.7972Memecylon umbellatum #0.330.872.604.3373Minusops elengi #0.270.873.254.2674Myristica alabarica *#0.070.071.000.5676Noelitsea scrobiculata0.030.031.000.2978Nothopegia racemosa0.330.732.203.8079Olea dioica0.772.873.7430.8580Persea macrantha #0.230.472.004.1981Phaganelia longifolia #< | 59 | Lannag coromandeling | 0.07 | 0.07 | 1.00 | 0.62 |
| 59 Leea indica 0.03 0.03 0.03 0.04 0.27 60 Ligustrum gamblei 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea coreacea 0.17 0.17 1.00 1.39 63 Litsea floribunda 0.17 0.27 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus tetracoccus 0.03 0.03 1.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Mappia foetida # 0.07 0.07 1.00 0.55 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon talbotianum # 0.37 1.90 5.18 7.17 72 Memecylon umbellatum # | 50 | | 0.07 | 0.07 | 1.00 | 0.02 |
| 60 Ligustrum gamblei 0.03 0.13 4.00 0.49 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea coreacea 0.17 0.17 1.00 1.39 63 Litsea floribunda 0.17 0.27 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus tetracoccus 0.03 0.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Mappia foetida # 0.07 0.07 1.00 0.55 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon umbellatum # 0.33 0.87 2.60 4.33 73 Minusops elengi # 0.27 0.87 3.25 4.26 74 Myristica dactyloides *# 0.17 1. | 59 | Leea indica | 0.03 | 0.03 | 1.00 | 0.27 |
| 61 Linociera malabarica 0.07 0.07 1.00 0.55 62 Litsea coreacea 0.17 0.17 1.00 1.39 63 Litsea floribunda 0.17 0.27 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.07 2.00 0.35 67 Mallotus tetracoccus 0.03 0.00 1.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Mappia foetida # 0.07 0.07 1.00 0.55 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon talbotianum # 0.37 1.90 5.18 7.17 72 Memecylon umbellatum # 0.37 0.67 1.00 0.56 74 Myristica dactyloides *# 0.17 1.23 7.40 5.79 75 Myristica mac | 60 | Ligustrum gamblei | 0.03 | 0.13 | 4.00 | 0.49 |
| 62 Litsea coreacea 0.17 0.17 1.00 1.39 63 Litsea floribunda 0.17 0.27 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.03 0.00 0.35 67 Mallotus tetracoccus 0.03 0.03 1.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Maptia foetida # 0.07 0.07 1.00 0.27 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon umbellatum # 0.37 1.90 5.18 7.17 72 Memecylon umbellatum # 0.37 0.07 1.00 0.56 74 Myristica dactyloides *# 0.17 1.23 7.40 5.79 75 Myristica dactyloides *# | 61 | Linociera malabarica | 0.07 | 0.07 | 1.00 | 0.55 |
| 02Litsea floribunda 0.17 0.27 1.60 1.64 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.07 2.00 0.35 67 Mallotus tetracoccus 0.03 0.03 1.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Mappia foetida # 0.03 0.03 1.00 0.27 71 Memecylon talbotianum # 0.37 1.90 5.18 7.17 72 Memecylon talbotianum # 0.33 0.87 2.66 4.33 73 Mimusops elengi # 0.27 0.87 3.25 4.26 74 Myristica dactyloides *# 0.17 1.23 7.40 5.79 75 Myristica malabarica *# 0.07 0.07 1.00 0.56 76 Noelitsea scrobiculata 0.03 0.07 2.00 4.19 80 Persea macrantha # 0.23 0.47 2.00 4.19 81 Phaganetia longifolia # 0.10 0.10 1.00 0.83 80 Persea macrantha # 0.23 0.43 1.86 2.86 85 Randia dumatorum # 0.37 1.40 3.82 6.18 85 Randia dumatorum # 0.07 0.07 1.00 0.75 87 Schleichera oleos | 62 | Litsea coreacea | 0.17 | 0.17 | 1.00 | 1 39 |
| 65Litsea joribuinda 0.17 0.27 1.60 1.64 64Lophopetalum wightianum 0.10 0.13 1.33 1.50 65Macaranga peltata 0.10 0.17 1.67 0.98 66Mallotus philippinensis 0.03 0.07 2.00 0.35 67Mallotus tetracoccus 0.03 0.03 1.00 0.27 68Mangifera indica # 0.43 0.60 1.38 5.00 69Mappia foetida # 0.07 0.07 1.00 0.27 71Memecylon talbotianum # 0.37 1.90 5.18 7.17 72Memecylon umbellatum # 0.33 0.87 2.60 4.33 73Mimusops elengi # 0.27 0.87 3.25 4.26 74Myristica dactyloides *# 0.17 1.23 7.40 5.79 75Myristica malabarica *# 0.07 0.07 1.00 0.56 76Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77Nothopegia beddomei 0.10 0.13 1.33 0.90 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 3.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 | C2 | Litzen Clenikun du | 0.17 | 0.17 | 1.00 | 1.57 |
| 64 Lophopetalum wightianum 0.10 0.13 1.33 1.50 65 Macaranga pellata 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.07 2.00 0.35 67 Mallotus tetracoccus 0.03 0.03 1.00 0.27 68 Margifera indica # 0.07 0.07 1.00 0.55 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon talboianum # 0.37 1.90 5.18 7.17 72 Memecylon umbellatum # 0.33 0.87 2.60 4.33 73 Minusops elengi # 0.27 0.87 3.25 4.26 74 Myristica dactyloides *# 0.17 1.23 7.40 5.79 75 Myristica malabarica *# 0.07 0.07 1.00 0.56 76 Noelitsea scrobiculata 0.03 0.03 1.00 0.29 78 Nothopegia bedd | 03 | Litsea fioribunaa | 0.17 | 0.27 | 1.60 | 1.04 |
| 65 Macaranga peltata 0.10 0.17 1.67 0.98 66 Mallotus philippinensis 0.03 0.07 2.00 0.35 67 Mallotus tetracoccus 0.03 0.03 1.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Mappia foetida # 0.07 0.07 1.00 0.55 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon talbotianum # 0.37 1.90 5.18 7.17 72 Memecylon umbellatum # 0.33 0.87 2.60 4.33 73 Minusops elengi # 0.27 0.87 3.25 4.26 74 Myristica dactyloides *# 0.17 1.23 7.40 5.79 75 Myristica malabarica *# 0.07 0.07 1.00 0.56 76 Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77 Nothopegia beddomei 0.10 0.13 1.33 0.90 78 Nothope | 64 | Lophopetalum wightianum | 0.10 | 0.13 | 1.33 | 1.50 |
| 66 Mallotus philippinensis 0.03 0.07 2.00 0.35 67 Mallotus tetracoccus 0.03 0.03 1.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Mappia foetida # 0.07 0.07 1.00 0.55 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon talbotianum # 0.33 0.87 2.60 4.33 73 Mimusops elengi # 0.27 0.87 3.25 4.26 74 Myristica dactyloides *# 0.17 1.23 7.40 5.79 75 Myristica malabarica *# 0.07 0.07 1.00 0.56 76 Noelitsea scrobiculata 0.03 0.07 2.00 3.80 78 Nothopegia racemosa 0.33 0.73 2.20 3.80 79 Olea dioica 0.77 2.87 3.74 30.85 80 Persea macrantha # | 65 | Macaranga peltata | 0.10 | 0.17 | 1.67 | 0.98 |
| 67 Mallous tetracoccus 0.03 0.03 1.00 0.27 68 Mangifera indica # 0.43 0.60 1.38 5.00 69 Mappia foetida # 0.07 0.07 1.00 0.27 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon talbotianum # 0.37 1.90 5.18 7.17 72 Memecylon umbellatum # 0.33 0.87 2.60 4.33 73 Mimusops elengi # 0.27 0.87 3.25 4.26 74 Myristica dactyloides *# 0.17 1.23 7.40 5.79 75 Myristica malabarica *# 0.07 0.07 1.00 0.56 76 Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77 Nothopegia beddomei 0.10 0.13 1.33 0.90 78 Nothopegia racemosa 0.33 0.03 1.00 0.29 80 Persea macrantha # 0.23 0.47 2.00 4.19 81 Phaganelia | 66 | Mallotus philippinensis | 0.03 | 0.07 | 2.00 | 0.35 |
| 61Mathematical terradoccus 0.03 0.03 0.03 1.00 0.27 68 Mappia foetida # 0.07 0.07 1.00 0.55 69 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon talbotianum # 0.37 1.90 5.18 7.17 72 Memecylon umbellatum # 0.33 0.87 2.60 4.33 73 Minusops elengi # 0.27 0.87 3.25 4.26 74 Myristica dactyloides *# 0.17 1.23 7.40 5.79 75 Myristica malabarica *# 0.07 0.07 1.00 0.56 76 Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77 Nothopegia beddomei 0.10 0.13 1.33 0.90 78 Nothopegia racemosa 0.33 0.73 2.20 3.80 79 Olea dioica 0.77 2.87 3.74 30.85 80 Persea macrantha # 0.23 0.47 2.00 4.19 81 Phaganelia longifolia # 0.03 0.03 1.00 0.29 82 Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83 Polyalthia fragrans 0.07 0.07 1.00 0.75 84 Pterospermum diversifolium 0.23 0.43 1.86 2.86 85 Randia dumatorum # 0.37 1.40 3.82 6.18 86 <td< td=""><td>67</td><td>Mallotus totugo o ous</td><td>0.02</td><td>0.07</td><td>1.00</td><td>0.35</td></td<> | 67 | Mallotus totugo o ous | 0.02 | 0.07 | 1.00 | 0.35 |
| 68Mangifera indica # 0.43 0.60 1.38 5.00 69Mappia foetida # 0.07 0.07 1.00 0.55 70Mastrixia arborea 0.03 0.03 1.00 0.27 71Memecylon talbotianum # 0.37 1.90 5.18 7.17 72Memecylon umbellatum # 0.33 0.87 2.60 4.33 73Minusops elengi # 0.27 0.87 3.25 4.26 74Myristica dactyloides *# 0.17 1.23 7.40 5.79 75Myristica malabarica *# 0.07 0.07 1.00 0.56 76Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77Nothopegia beddomei 0.10 0.13 1.33 0.90 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 30.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.03 0.03 1.00 0.28 89Spondias mangifera *# 0.03 0.00 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 < | 07 | | 0.05 | 0.05 | 1.00 | 0.27 |
| 69 Mappia foetida # 0.07 0.07 1.00 0.55 70 Mastrixia arborea 0.03 0.03 1.00 0.27 71 Memecylon talbotianum # 0.37 1.90 5.18 7.17 72 Memecylon umbellatum # 0.33 0.87 2.60 4.33 73 Mimusops elengi # 0.27 0.87 3.25 4.26 74 Myristica dactyloides *# 0.17 1.23 7.40 5.79 75 Myristica malabarica *# 0.07 0.07 1.00 0.56 76 Nothopegia beddomei 0.10 0.13 1.33 0.90 78 Nothopegia racemosa 0.33 0.73 2.20 3.80 79 Olea dioica 0.77 2.87 3.74 30.85 80 Persea macrantha # 0.23 0.43 1.60 0.29 81 Phaganelia longifolia # 0.03 0.03 1.00 0.29 82 Phyllanthus emblica *# | 68 | Mangifera indica # | 0.43 | 0.60 | 1.38 | 5.00 |
| 70Mastrixia arborea0.030.031.000.2771Memecylon talbotianum #0.371.905.187.1772Memecylon umbellatum #0.330.872.604.3373Minusops elengi #0.270.873.254.2674Myristica dactyloides *#0.171.237.405.7975Myristica malabarica *#0.070.071.000.5676Noelitsea scrobiculata0.030.072.000.3577Nothopegia beddomei0.100.131.330.9078Nothopegia racemosa0.330.732.203.8079Olea dioica0.772.873.7430.8580Persea macrantha #0.030.031.000.2982Phyllanthus emblica *#0.100.101.000.8383Polyalthia fragrans0.070.304.501.5084Pterospermum diversifolium0.230.431.862.8685Randia dumatorum #0.371.403.826.1886Sapium insigne0.070.071.000.7587Schleichera oleosa0.030.031.000.2889Spondias mangifera *#0.030.103.000.4390Sterculia guttata0.070.071.000.5591Symplocos cochinchinensis0.200.472.332.5292Sy | 69 | Mappia foetida # | 0.07 | 0.07 | 1.00 | 0.55 |
| 71Memecylon talbotianum # 0.37 1.90 5.18 7.17 72Memecylon umbellatum # 0.33 0.87 2.60 4.33 73Mimusops elengi # 0.27 0.87 3.25 4.26 74Myristica dactyloides *# 0.17 1.23 7.40 5.79 75Myristica malabarica *# 0.07 0.07 1.00 0.56 76Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77Nothopegia beddomei 0.10 0.13 1.33 0.90 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 30.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83Polyalthia fragrans 0.07 0.30 4.50 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.03 0.03 1.00 0.28 89Spondias mangifera *# 0.03 0.03 1.00 0.28 89Spondias mangifera *# 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 | 70 | Mastrixia arborea | 0.03 | 0.03 | 1.00 | 0.27 |
| 11Interceyton unbellatum # 0.37 1.50 2.10 1.17 72Memecyton unbellatum # 0.33 0.87 2.60 4.33 73Minusops elengi # 0.27 0.87 3.25 4.26 74Myristica dactyloides *# 0.17 1.23 7.40 5.79 75Myristica malabarica *# 0.07 0.07 1.00 0.56 76Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77Nothopegia beddomei 0.10 0.13 1.33 0.90 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 30.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83Polyalthia fragrans 0.07 0.30 4.50 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.03 0.03 1.00 0.28 89Spondias mangifera *# 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplucos racemosa 0.33 $0.$ | 71 | Memecylon talbotianum # | 0.37 | 1.90 | 5.18 | 7 1 7 |
| 12Memecyton umbeltatum # 0.33 0.87 2.60 4.33 73Minusops elengi # 0.27 0.87 3.25 4.26 74Myristica dactyloides *# 0.17 1.23 7.40 5.79 75Myristica malabarica *# 0.07 0.07 1.00 0.56 76Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77Nothopegia beddomei 0.10 0.13 1.33 0.90 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 30.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83Polyalthia fragrans 0.07 0.30 4.50 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.37 1.40 3.82 6.18 86Sapium insigne 0.07 0.07 1.00 0.28 89Spondias mangifera *# 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplocos cochinchinensis 0.20 0.47 | 71 | Memecyton tubottunum # | 0.37 | 0.07 | 2.00 | 1.17 |
| 73Mimusops elengi # 0.27 0.87 3.25 4.26 74Myristica dactyloides *# 0.17 1.23 7.40 5.79 75Myristica malabarica *# 0.07 0.07 1.00 0.56 76Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77Nothopegia beddomei 0.10 0.13 1.33 0.90 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 30.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83Polyalthia fragrans 0.07 0.30 4.50 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.37 1.40 3.82 6.18 86Sapium insigne 0.07 0.07 1.00 0.75 87Schleichera oleosa 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplocos racemosa 0.33 0.87 2.60 4.68 93Syzygium caryophyllatum # 0.20 0.23 <t< td=""><td>12</td><td>Memecyton umbettatum #</td><td>0.55</td><td>0.87</td><td>2.00</td><td>4.55</td></t<> | 12 | Memecyton umbettatum # | 0.55 | 0.87 | 2.00 | 4.55 |
| 74Myristica dactyloides *# 0.17 1.23 7.40 5.79 75Myristica malabarica *# 0.07 0.07 1.00 0.56 76Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77Nothopegia beddomei 0.10 0.13 1.33 0.90 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 30.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83Polyalthia fragrans 0.07 0.30 4.50 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.37 1.40 3.82 6.18 86Sapium insigne 0.07 0.07 1.00 0.75 87Schleichera oleosa 0.03 0.03 1.00 0.28 89Spondias mangifera *# 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplucos racemosa 0.33 0.87 2.60 4.68 93Syzygium caryophyllatum # 0.20 0.23 <td>73</td> <td>Mimusops elengi #</td> <td>0.27</td> <td>0.87</td> <td>3.25</td> <td>4.26</td> | 73 | Mimusops elengi # | 0.27 | 0.87 | 3.25 | 4.26 |
| 75Myristica malabarica *# 0.07 0.07 1.00 0.56 76Noelitsea scrobiculata 0.03 0.07 2.00 0.35 77Nothopegia beddomei 0.10 0.13 1.33 0.90 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 30.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83Polyalthia fragrans 0.07 0.30 4.50 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.37 1.40 3.82 6.18 86Sapium insigne 0.07 0.07 1.00 0.75 87Schleichera oleosa 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplocos racemosa 0.33 0.87 2.60 4.68 93Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94Syzygium caryophyllatum # 0.03 0.10 3.00 0.43 95Syzygium caryophyllatum # 0.27 6.6 | 74 | Myristica dactyloides *# | 0.17 | 1.23 | 7.40 | 5.79 |
| 10Information interaction10010010010076Noelitsea scrobiculata0.030.072.000.3577Nothopegia beddomei0.100.131.330.9078Nothopegia racemosa0.330.732.203.8079Olea dioica0.772.873.7430.8580Persea macrantha #0.230.472.004.1981Phaganelia longifolia #0.030.031.000.2982Phyllanthus emblica *#0.100.101.000.8383Polyalthia fragrans0.070.304.501.5084Pterospermum diversifolium0.230.431.862.8685Randia dumatorum #0.371.403.826.1886Sapium insigne0.070.071.000.7587Schleichera oleosa0.030.206.000.7188Semicarpus anacardium *0.030.103.000.4390Sterculia guttata0.070.071.000.5591Symplocos cochinchinensis0.200.231.171.7694Syzygium caryophyllatum #0.200.231.171.7695Syzygium cumini *#0.501.172.338.9895Syzygium claum0.030.103.000.4396Tabernaemontana heyneana #0.100.131.330.9097T | 75 | Myristica malabarica *# | 0.07 | 0.07 | 1.00 | 0.56 |
| 10Nothopegia beddomei 0.03 0.07 2.00 0.33 77Nothopegia beddomei 0.10 0.13 1.33 0.90 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 30.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83Polyalthia fragrans 0.07 0.30 4.50 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.37 1.40 3.82 6.18 86Sapium insigne 0.07 0.07 1.00 0.75 87Schleichera oleosa 0.03 0.20 6.00 0.71 88Semicarpus anacardium * 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplucos racemosa 0.33 0.87 2.60 4.68 93Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94Syzygium caryophyllatum # 0.03 0.10 3.00 0.43 95Syzygium leatum 0.03 0.10 3 | 76 | Noolitsog sovobioulata | 0.07 | 0.07 | 2.00 | 0.25 |
| 77Nothopegia beddomet 0.10 0.13 1.33 0.90 78 Nothopegia racemosa 0.33 0.73 2.20 3.80 79 Olea dioica 0.77 2.87 3.74 30.85 80 Persea macrantha # 0.23 0.47 2.00 4.19 81 Phaganelia longifolia # 0.03 0.03 1.00 0.29 82 Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83 Polyalthia fragrans 0.07 0.30 4.50 1.50 84 Pterospermum diversifolium 0.23 0.43 1.86 2.86 85 Randia dumatorum # 0.37 1.40 3.82 6.18 86 Sapium insigne 0.07 0.07 1.00 0.75 87 Schleichera oleosa 0.03 0.20 6.00 0.71 88 Semicarpus anacardium * 0.03 0.10 3.00 0.43 90 Sterculia guttata 0.07 0.07 1.00 0.55 91 Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92 Symplucos racemosa 0.33 0.87 2.60 4.68 93 Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata | 70 | Noemseu scrobicululu | 0.03 | 0.07 | 2.00 | 0.55 |
| 78Nothopegia racemosa 0.33 0.73 2.20 3.80 79Olea dioica 0.77 2.87 3.74 30.85 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83Polyalthia fragrans 0.07 0.30 4.50 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.37 1.40 3.82 6.18 86Sapium insigne 0.07 0.07 1.00 0.75 87Schleichera oleosa 0.03 0.20 6.00 0.71 88Semicarpus anacardium * 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplocos racemosa 0.33 0.87 2.60 4.68 93Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94Syzygium caryophyllatum # 0.03 0.10 3.00 0.43 95Syzygium leatum 0.03 0.10 3.00 0.43 96Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97Terminalia tomentosa 0.13 0.57 <td>11</td> <td>Nothopegia beddomei</td> <td>0.10</td> <td>0.13</td> <td>1.33</td> <td>0.90</td> | 11 | Nothopegia beddomei | 0.10 | 0.13 | 1.33 | 0.90 |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$ | 78 | Nothopegia racemosa | 0.33 | 0.73 | 2.20 | 3.80 |
| 80Persea macrantha # 0.23 0.47 2.00 4.19 81Phaganelia longifolia # 0.03 0.03 1.00 0.29 82Phyllanthus emblica *# 0.10 0.10 1.00 0.83 83Polyalthia fragrans 0.07 0.30 4.50 1.50 84Pterospermum diversifolium 0.23 0.43 1.86 2.86 85Randia dumatorum # 0.37 1.40 3.82 6.18 86Sapium insigne 0.07 0.07 1.00 0.75 87Schleichera oleosa 0.03 0.20 6.00 0.71 88Semicarpus anacardium * 0.03 0.03 1.00 0.28 89Spondias mangifera *# 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplocos racemosa 0.33 0.87 2.60 4.68 93Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94Syzygium leatum 0.03 0.10 3.00 0.43 96Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97Terminalia paniculata 0.40 2.67 6.67 20.16 98Terminalia tomentosa 0.13 0.57 4.25 3.23 99Vitex altissima 0.27 0.60 < | 79 | Olea dioica | 0.77 | 2 87 | 3 74 | 30.85 |
| 30 $Persea macranina #$ 0.23 0.47 2.00 4.19 81 $Phaganelia longifolia #$ 0.03 0.03 1.00 0.29 82 $Phyllanthus emblica *#$ 0.10 0.10 1.00 0.83 83 $Polyalthia fragrans$ 0.07 0.30 4.50 1.50 84 $Pterospermum diversifolium$ 0.23 0.43 1.86 2.86 85 $Randia dumatorum #$ 0.37 1.40 3.82 6.18 86 $Sapium insigne$ 0.07 0.07 1.00 0.75 87 $Schleichera oleosa$ 0.03 0.20 6.00 0.71 88 $Semicarpus anacardium *$ 0.03 0.03 1.00 0.28 89 $Spondias mangifera *#$ 0.03 0.10 3.00 0.43 90 $Sterculia guttata$ 0.07 0.07 1.00 0.55 91 $Symplocos cochinchinensis0.200.472.332.5292Symplocos racemosa0.330.872.604.6893Syzygium caryophyllatum #0.200.231.171.7694Syzygium cumini *#0.501.172.338.9895Syzygium leatum0.030.103.000.4396Tabernaemontana heyneana #0.100.131.330.9097Terminalia paniculata0.402.676.6720.16$ | 80 | Barraa maarantha # | 0.22 | 0.47 | 2.00 | 4 10 |
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| 84 Pterospermum diversifolium 0.23 0.43 1.86 2.86 85 Randia dumatorum # 0.37 1.40 3.82 6.18 86 Sapium insigne 0.07 0.07 1.00 0.75 87 Schleichera oleosa 0.03 0.20 6.00 0.71 88 Semicarpus anacardium * 0.03 0.03 1.00 0.28 89 Spondias mangifera *# 0.03 0.10 3.00 0.43 90 Sterculia guttata 0.07 0.07 1.00 0.55 91 Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92 Symplocos racemosa 0.33 0.87 2.60 4.68 93 Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94 Syzygium cumini *# 0.50 1.17 2.33 8.98 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Term | 83 | Polvalthia fragrans | 0.07 | 0.30 | 4.50 | 1.50 |
| 34° $11erosperman arversystem0.23^{\circ}0.43^{\circ}1.30^{\circ}2.30^{\circ}85^{\circ}Randia dumatorum #0.37^{\circ}1.40^{\circ}3.82^{\circ}6.18^{\circ}85^{\circ}Sapium insigne0.07^{\circ}0.07^{\circ}1.00^{\circ}0.75^{\circ}87^{\circ}Schleichera oleosa0.03^{\circ}0.20^{\circ}6.00^{\circ}0.71^{\circ}88^{\circ}Semicarpus anacardium *0.03^{\circ}0.03^{\circ}1.00^{\circ}0.28^{\circ}89^{\circ}Spondias mangifera *#0.03^{\circ}0.10^{\circ}3.00^{\circ}0.43^{\circ}90^{\circ}Sterculia guttata0.07^{\circ}0.07^{\circ}1.00^{\circ}0.55^{\circ}91^{\circ}Symplocos cochinchinensis0.20^{\circ}0.47^{\circ}2.33^{\circ}2.52^{\circ}92^{\circ}Symplocos racemosa0.33^{\circ}0.87^{\circ}2.60^{\circ}4.68^{\circ}93^{\circ}Syzygium caryophyllatum #0.20^{\circ}0.23^{\circ}1.17^{\circ}1.76^{\circ}94^{\circ}Syzygium caryophyllatum #0.20^{\circ}0.13^{\circ}3.99^{\circ}95^{\circ}Syzygium leatum0.03^{\circ}0.10^{\circ}3.09^{\circ}96^{\circ}Tabernaemontana heyneana #0.10^{\circ}0.13^{\circ}1.33^{\circ}99^{\circ}Vitex altissima0.27^{\circ}0.60^{\circ}2.25^{\circ}9.38^{\circ}100^{\circ}Zanthoxylum rhetsa #0.03^{\circ}0.03^{\circ}1.00^{\circ}0.27^{\circ}$ | 81 | Ptarosparmum divarsifalium | 0.23 | 0.43 | 1.86 | 2.86 |
| 85Randa dumatorum # 0.37 1.40 3.82 6.18 86Sapium insigne 0.07 0.07 1.00 0.75 87Schleichera oleosa 0.03 0.20 6.00 0.71 88Semicarpus anacardium * 0.03 0.03 1.00 0.28 89Spondias mangifera *# 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplocos racemosa 0.33 0.87 2.60 4.68 93Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94Syzygium cumini *# 0.50 1.17 2.33 8.98 95Syzgigum leatum 0.03 0.10 3.00 0.43 96Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97Terminalia paniculata 0.40 2.67 6.67 20.16 98Terminalia tomentosa 0.13 0.57 4.25 3.23 99Vitex altissima 0.27 0.60 2.25 9.38 100Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 04 | n leiospermum uiversijoiium | 0.23 | 1.40 | 1.80 | 2.80 |
| 86 Sapium insigne 0.07 0.07 1.00 0.75 87 Schleichera oleosa 0.03 0.20 6.00 0.71 88 Semicarpus anacardium * 0.03 0.03 1.00 0.28 89 Spondias mangifera *# 0.03 0.10 3.00 0.43 90 Sterculia guttata 0.07 0.07 1.00 0.55 91 Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92 Symplocos racemosa 0.33 0.87 2.60 4.68 93 Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94 Syzygium claum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima | 85 | Kanaia aumatorum # | 0.57 | 1.40 | 3.82 | 0.18 |
| 87 Schleichera oleosa 0.03 0.20 6.00 0.71 88 Semicarpus anacardium * 0.03 0.03 1.00 0.28 89 Spondias mangifera *# 0.03 0.10 3.00 0.43 90 Sterculia guttata 0.07 0.07 1.00 0.55 91 Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92 Symplocos racemosa 0.33 0.87 2.60 4.68 93 Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94 Syzygium cumini *# 0.50 1.17 2.33 8.98 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima | 86 | Sapium insigne | 0.07 | 0.07 | 1.00 | 0.75 |
| 88 Semicarpus anacardium * 0.03 0.03 1.00 0.28 89 Spondias mangifera *# 0.03 0.10 3.00 0.43 90 Sterculia guttata 0.07 0.07 1.00 0.55 91 Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92 Symplocos racemosa 0.33 0.87 2.60 4.68 93 Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94 Syzygium caryophyllatum # 0.50 1.17 2.33 8.98 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylu | 87 | Schleichera oleosa | 0.03 | 0.20 | 6.00 | 0.71 |
| Spondas mangifera *# 0.03 0.03 1.00 0.23 89 Spondas mangifera *# 0.03 0.10 3.00 0.43 90 Sterculia guttata 0.07 0.07 1.00 0.55 91 Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92 Symplocos racemosa 0.33 0.87 2.60 4.68 93 Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94 Syzygium cumini *# 0.50 1.17 2.33 8.98 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.0 | 88 | Semicarnus anacardium * | 0.03 | 0.03 | 1.00 | 0.28 |
| 89Spondulas manggera *# 0.03 0.10 3.00 0.43 90Sterculia guttata 0.07 0.07 1.00 0.55 91Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92Symplocos racemosa 0.33 0.87 2.60 4.68 93Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94Syzygium cumini *# 0.50 1.17 2.33 8.98 95Syzygium leatum 0.03 0.10 3.00 0.43 96Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97Terminalia paniculata 0.40 2.67 6.67 20.16 98Terminalia tomentosa 0.13 0.57 4.25 3.23 99Vitex altissima 0.27 0.60 2.25 9.38 100Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 80 | Senacarpus anacaran | 0.03 | 0.05 | 2.00 | 0.42 |
| 90 Sterculta guttata 0.07 0.07 1.00 0.55 91 Symplocos cochinchinensis 0.20 0.47 2.33 2.52 92 Symplocos racemosa 0.33 0.87 2.60 4.68 93 Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94 Syzygium caryophyllatum # 0.50 1.17 2.33 8.98 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 07 | sponaus mangijera "# | 0.03 | 0.10 | 3.00 | 0.45 |
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| 92 Symplocos racemosa 0.33 0.87 2.60 4.68 93 Syzygium caryophyllatum # 0.20 0.23 1.17 1.76 94 Syzygium cumini *# 0.50 1.17 2.33 8.98 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 91 | Symplocos cochinchinensis | 0.20 | 0.47 | 2.33 | 2.52 |
| 93 Syzygium caryophyllatum # 0.20 0.03 1.17 1.76 94 Syzygium cumini *# 0.50 1.17 1.76 94 Syzygium cumini *# 0.50 1.17 1.76 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 92 | Symplocos racemosa | 0.33 | 0.87 | 2.60 | 4.68 |
| 94 Syzygium curvoprytuum # 0.20 0.23 1.17 1.16 94 Syzygium curvini *# 0.50 1.17 2.33 8.98 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 03 | Syzyaium caryonhyllatum # | 0.20 | 0.22 | 1 17 | 176 |
| 94 Syzygium cumini *# 0.50 1.17 2.33 8.98 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 7J 04 | Syzygium caryopnyllalum # | 0.20 | 0.23 | 1.1/ | 1.70 |
| 95 Syzygium leatum 0.03 0.10 3.00 0.43 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 94 | syzygium cumini *# | 0.50 | 1.17 | 2.55 | 8.98 |
| 96 Tabernaemontana heyneana # 0.10 0.13 1.33 0.90 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 95 | Syzygium leatum | 0.03 | 0.10 | 3.00 | 0.43 |
| 97 Terminalia paniculata 0.40 2.67 6.67 20.16 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 96 | Tabernaemontana heyneana # | 0.10 | 0.13 | 1.33 | 0.90 |
| 98 Terminalia tomentosa 0.13 0.57 4.25 3.23 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 97 | Terminalia paniculata | 0.40 | 2.67 | 6.67 | 20.16 |
| 99 Vitex altissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 98 | Terminalia tomentosa | 0.13 | 0.57 | 4 25 | 3 23 |
| yuex attissima 0.27 0.60 2.25 9.38 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 00 | Vitan altigaing | 0.15 | 0.01 | 2.25 | 0.29 |
| 100 Zanthoxylum rhetsa # 0.03 0.03 1.00 0.27 | 99 | v uex attissima | 0.27 | 0.60 | 2.25 | 9.38 |
| | 100 | Zanthoxylum rhetsa # | 0.03 | 0.03 | 1.00 | 0.27 |

F: Frequency D: Density A: Abundance SIV: Species Importance Value* Non-Timber Forest Products (NTFP) # Medicinal Tree Species In the present study, 40 families were documented in 30 quadrates. Among these, Rubiaceae is most frequently distributed family (0.87) and followed by Oleaceae (0.80). The family Rubiaceae shows highest density followed by Myristicaceae (3.70 & 3.53 respectively) and Combretaceae emerged as most abundant family (8.08) followed by Myristicaceae (7.57) (Table 2). Oleaceae contributes highest basal area (24827.65 m²) followed by Combretaceae (24367.57m²). Oleaceae emerged as most important family exhibits highest FIV (25.53) and is followed by Anacardiaceae (23.15) (Table 2). The documented families showed Shannon's diversity value 3.18 and Simpson's richness value 0.05.

Table 2. Diversity of Families in the study area

| S.No. | Family | F | D | А | FIV |
|-------|------------------|------|------|------|-------|
| 1 | Anacardiaceae | 0.77 | 2.90 | 3.78 | 23.15 |
| 2 | Annonaceae | 0.07 | 0.33 | 5.00 | 1.63 |
| 3 | Apiaceae | 0.03 | 0.03 | 1.00 | 0.34 |
| 4 | Apocyanaceae | 0.10 | 0.13 | 1.33 | 1.09 |
| 5 | Arecaceae | 0.03 | 0.03 | 1.00 | 0.34 |
| 6 | Burseraceae | 0.03 | 0.07 | 2.00 | 0.46 |
| 7 | Caesalpiniaceae | 0.03 | 0.03 | 1.00 | 0.34 |
| 8 | Casuarinaceae | 0.07 | 0.20 | 3.00 | 1.01 |
| 9 | Celastraceae | 0.23 | 0.53 | 2.29 | 3.92 |
| 10 | Clusiaceae | 0.47 | 2.07 | 4.43 | 11.15 |
| 11 | Combrataceae | 0.40 | 3.23 | 8.08 | 22.47 |
| 12 | Dilleniaceae | 0.13 | 0.20 | 1.50 | 1.59 |
| 13 | Dipterocarpaceae | 0.37 | 1.73 | 4.73 | 10.82 |
| 14 | Ebenaceae | 0.57 | 1.63 | 2.88 | 10.32 |
| 15 | Elaeocarpaceae | 0.33 | 0.60 | 1.80 | 4.41 |
| 16 | Euphorbiaceae | 0.60 | 2.53 | 4.22 | 14.16 |
| 17 | Flacourtiaceae | 0.13 | 0.13 | 1.00 | 1.36 |
| 18 | Icacinaceae | 0.07 | 0.07 | 1.00 | 0.68 |
| 19 | Lauraceae | 0.67 | 2.20 | 3.30 | 17.58 |
| 20 | Lecythidaceae | 0.37 | 0.97 | 2.64 | 5.64 |
| 21 | Lythraceae | 0.23 | 0.27 | 1.14 | 2.63 |
| 22 | Malvaceae | 0.17 | 0.23 | 1.40 | 1.90 |
| 23 | Melastomataceae | 0.50 | 2.77 | 5.53 | 11.48 |
| 24 | Meliaceae | 0.40 | 1.50 | 3.75 | 10.87 |
| 25 | Mimosaceae | 0.17 | 0.47 | 2.80 | 2.75 |
| 26 | Moraceae | 0.27 | 0.37 | 1.38 | 3.81 |
| 27 | Myristicaceae | 0.47 | 3.53 | 7.57 | 22.17 |
| 28 | Myrtaceae | 0.70 | 2.20 | 3.14 | 14.74 |
| 29 | Oleaceae | 0.80 | 3.07 | 3.83 | 25.53 |
| 30 | Papilionaceae | 0.07 | 0.07 | 1.00 | 0.68 |
| 31 | Phyllanthaceae | 0.33 | 0.60 | 1.80 | 4.18 |
| 32 | Poaceae | 0.03 | 0.10 | 3.00 | 0.48 |
| 33 | Rubiaceae | 0.87 | 3.70 | 4.27 | 19.84 |
| 34 | Rutaceae | 0.30 | 1.17 | 3.89 | 5.56 |
| 35 | Sapindaceae | 0.50 | 2.67 | 5.33 | 17.50 |
| 36 | Sapotaceae | 0.27 | 0.93 | 3.50 | 4.67 |
| 37 | Sterculiaceae | 0.27 | 0.50 | 1.88 | 3.58 |
| 38 | Symplocaceae | 0.43 | 1.33 | 3.08 | 7.58 |
| 39 | Verbanaceae | 0.27 | 0.60 | 2.25 | 7.26 |
| 40 | Vitaceae | 0.03 | 0.03 | 1.00 | 0.34 |

F: Frequency, D: Density, A: Abundance, BA: Basal area, FIV: Family Importance Value

Conclusion

SWLS shows very rich diversity of trees. The presence of 100 species of trees belonging to 40 families within 30 quadrates (1.2 hectares) indicates their species richness. *Olea dioica* is the most frequently distributed and species with density, basal area and is emerged as most important tree species in the SWLS. It is found in evergreen, semi-evergreen and moist deciduous forest of the area. Hence the family Oleaceae contributes highest FIV. The most abundant species is

contributed by Myristica dactyloides which is one of the RET species with NTFP value. The Shannon's diversity value of 3.95 and Simpson's species richness of 0.03, revealed very good tree diversity in the sanctuary. Among the documented tree species 16 species have NTFP values and 26 species are medicinally important. Some of medicinally important tree are Phaganelia longifolia, Mappia foetida, Myristica dactyloides, Phyllanthus emblica. Species for which seeds, bark, leaf or fruits are extracted as NTFPs like Myristica malabarica, М. dactyloides, Garcinia gummi-gutta, Cinnamomum malabatrum. The presence of Myristica dactyloides, Dipterocarpus indicus, Dysoxylum malabaricum, Diospyros paniculata, Elaeocarpus tuberculatus, Eugenia macrosepala, Litsea floribunda, Mastrixia arborea, Polyalthia fragrance, Pterospermum diversifolium. indicates the evergreen nature of the forest whereas the presence of Terminalia paniculata, Randia dumetorum, Flacourtia montana, Grewia tiliaefolia, Careya arborea, Cedrela toona. represented the moist deciduous nature of the forest.

Acknowledgements

Authors are grateful to Forest department, Sharavathi Wildlife Sanctuary, Shivamogga for giving us an opportunity to explore the tree species of protected area. Authors are thankful to all the lecturers and staffs, Department of Botany, Sri J.C.B.M. College who helped during project.

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