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Research article

ENDEMIC TREES OF WESTERN GHATS–A CHECK LIST FROM WAYANAD DISTRICT, KERALA, INDIA

Volga V. R.[1], M. K. Ratheesh Narayanan[1, 2], N. Anil Kumar[1]

[1]M S Swaminathan Research Foundation, Puthoorvayal, Kalpetta 673131, Wayanad Dist., Kerala, India
[2]present address: Dept. Of Botany, Payyannur College, Payyannur 670327, Kannur Dist., Kerala, India
volgacabc@yahoo.com, vrvolga@gmail.com

ABSTRACT: A study was conducted to find out the diversity of endemic tree species of southern Western Ghats in Wayanad District of Kerala, India. For this several field trips were conducted in all area of Wayanad and collected materials for identification. A total number of 136 species comes under 38 family were recorded. Out of these family Lauraceae shows more number of plants with 17 species.
Key words: Endemic, Western Ghats, Wayanad

INTRODUCTION

The Western Ghats is a chain of mountains of 1600 Km in length running parallel to West cost of Peninsular India from the river Tapthi to Kanyakumari, the southern tip of peninsular India. Western Ghats is one of the 33 recognized ecologically sensitive zones in the World, which is a home to 1500 flowering plants, at least 84 amphibian species, 16 bird species, 7 mammals and, which are not only found nowhere else in the world, but restricted to specific habitat niches. The significance of the Western Ghats is that along with its rich biodiversity, it also supports a rich Environment-dependant civilization of several thousand years. It is estimated that there are four thousand species of flowering plants known from the Western Ghats and 1,500 (nearly 38 percent) of these are endemic [4]. Approximately 63 percent of India's woody evergreen taxa are endemic to the Western Ghats [2]. There are several centres of plant endemism and species richness within the Western Ghats. For instance, of the 280 woody endemic species found south of Karnataka, 70 species are endemic to the southernmost Travancore region. This high level of diversity and endemism in the Western Ghats has conferred on them the hot spots statuses. The southern section of Western Ghats is by far the richest area in context to floristic composition and concentration of endemic taxa [7]. Nayar has identified three endemic centres in Kerala–Agasthyamalai, Anamalai high ranges and Silent valley–Wayanad.

Nearly 4000, or 27% of the total plant species in India, have been recorded from the Western Ghats [8]. The evergreen forests of the Western Ghats are characterized by a very high percentage of species endemic to the region. The total number of endemic plant species is estimated to be 1500 (MacKinnon & MacKinnon 1986). Among the evergreen tree species, 56% are endemic. Therefore, the Western Ghats are considered as one of the biodiversity hot spots of the world [3]. Species richness and endemism are, however, not uniformly distributed along the Ghats. The southernmost regions which have the most favorable climatic conditions with high, but not excessive, rainfall and short dry season are the ones with the highest biodiversity and contain the highest number of endemic species [9, 12]. Southern Western Ghats is one of the two mega endemic centres in Western Ghats [7] Kerala form a major species rich part of Southern Western Ghats harbouring a total of 4679 flowering plants out of which 1637 are endemics and 483 are listed as threatened and tree forms form major elements in flora of Kerala. A total of 1016 tree species are reported to occur in Kerala, out of which 319 are Western Ghats endemic and 171 listed as threatened [16].

MATERIALS AND METHODS

Study Area

Wayanad district is with a hilly terrain on the southern Western Ghats and located in the northeast part of Kerala at a distance of about 76 km from the seashores of Kozhikode. The area lies between North latitude 11^0 26' to 12^0 00' and East longitude 75^0 75' to 76^0 56'. The altitude varies from 700-2100 metres above MSL. It is bounded on the east by Nilgiris and Mysore district of Tamil Nadu and Karnataka respectively, on the north by Coorg district of Karnataka, on the south by *Malappuram* district and on the west by *Kozhikode* and *Kannur* districts of Kerala. The forest records of 1887 show that *Wayanad* had about 75801 acres of reserve forest and 111897 acres of reserve land. According to the forest department, the present forest cover is about 787 sq. km.

Methodology

An extensive field survey of the study area was carried out from August 2010 to December 2012 for listing the tree species. Most of the forest areas were covered in accordance with the phonologic period of corresponding family for getting flowering and fruiting specimen for identification. Collected specimens were identified with the help of Flora of the Presidency of Madras [1], The Flora of Tamil Nadu, India, Flowering Plants of Thrissur Forests [15], Biodiversity Documentation for Kerala. Part 6: Flowering plants. [16], Floristic study of Wayanad District giving special emphasis to Rare Threatened plants [13].

RESULT AND DISCUSSION

Besides many individual publications on rediscoveries and conservation status of rare and threatened species of Western Ghats, IUCN (2006) published a checklist of rare and threatened plants of Indian region. Southern Western Ghats is the richest area in context to floristic composition with 1286 species of endemic taxa (Nayar, 1996). The present study records 136 endemic taxa comprising 83 genera of 38 families of flowering plants. In which more endemism is seen in family Lauraceae (17species) followed by Rubiaceae and Euphorbiaceae (11 species each), Myrtaceae and Annonaceae (10 species) Anacardiaceae (9 species), Celastraceae (6 species) Ebenaceae, Dipterocarpaceae and Symplocaceae (5 species each), Flacourtiaceae, Sterculiaceae, Meliaceae, Caesalpiniaceae (4 species). The details of plants are given below.

Table-1: List of Endemic Trees Recorded.

Scientific Name	**Family**
Dillenia bracteata Wight	Dilleniaceae
Magnolia nilagirica (Zenk.) Figlar	Magnoliaceae
Goniothalamus cardiopetalus (Dalz.) Hook. f. & Thoms.	Annonaceae
Goniothalamus wynaadensis (Bedd.) Bedd.	Annonaceae
Meiogyne pannosa (Dalz.) Sinclair	Annonaceae
Meiogyne ramarowii (Dunn) Gandhi in Sald.	Annonaceae
Metrephora grandiflora Bedd.	Annonaceae
Miliusa nilagirica Bedd	Annonaceae
Miliusa wayanadica Ratheesh *et* al	Annonaceae
Orophea uniflora Hook. f. & Thoms.	Annonaceae
Phaeanthus malabaricus Bedd.	Annonaceae
Polyalthia fragrans (Dalz.) Bedd.	Annonaceae
Casearia rubescens Dalz.	Flacourtiaceae
Casearia wynadensis Bedd.	Flacourtiaceae
Hydnocarpus macrocarpa (Bedd.) Warb. in Engl. & Prantl	Flacourtiaceae
Hydnocarpus pentandra (Buch.-Ham.) Oken	Flacourtiaceae

Xanthophyllum arnottianum Wight	Xanthophyllaceae
Calophyllum austroindicum Kosterm. *ex* Stevens	Clusiaceae
Calophyllum calaba L.	Clusiaceae
Poeciloneuron indicum Bedd.	Bonnetiaceae
Gordonia obtusa Wall.ex Wight & Arn.	Theaceae
Dipterocarpus indicus Bedd.	Dipterocarpaceae
Hopea erosa (Bedd.) van Sloot.	Dipterocarpaceae
Hopea parviflora Bedd.	Dipterocarpaceae
Hopea ponga (Dennst.) Mabb.	Dipterocarpaceae
Vateria indica L.	Dipterocarpaceae
Cullenia exarillata Robyns	Bombacaceae
Pterospermum reticulatum Wight & Arn	Sterculiaceae
Pterospermum rubiginosum Heyne ex Wight & Arn	Sterculiaceae
Grewia heterotricha Mast.	Sterculiaceae
Grewia umbellifera Bedd.	Sterculiaceae
Elaeocarpus munronii (Wight) Mast	Elaeocarpaceae
Vepris bilocularis (Wight & Arn.) Engl. in Engl. & Prantl	Rutaceae
Aglaia barberi Gamble	Meliaceae
Aglaia malabarica Sasidh.	Meliaceae
Dysoxylum malabaricum Bedd. *ex* Hiern in Hook. f.	Meliaceae
Reinwardtiodendron anamalaiense (Bedd.) Mabb.	Meliaceae
Ilex malabarica Bedd.	Aquifoliaceae
Euonymus angulatus Wight	Celastraceae
Euonymus indicus Heyne ex Roxb.	Celastraceae
Euonymus paniculatus Wight *ex* Lawson in Hook. f.	Celastraceae
Euonymus serratifolius Bedd.	Celastraceae
Glyptopetalum grandiflorum Bedd.	Celastraceae
Microtropis stocksii Gamble	Celastraceae
Otonephelium stipulaceum (Bedd.) Radlk.	Sapindaceae
Gluta travancorica Bedd.	Anacardiaceae
Holigarna arnottiana Hook. f.	Anacardiaceae
Holigarna ferruginea Marchand	Anacardiaceae
Holigarna grahamii (Wight) Kurz.	Anacardiaceae
Holigarna nigra Bourd.	Anacardiaceae
Nothopegia racemosa (Dalz.) Ramam. in Sald. & Nicols.	Anacardiaceae
Nothopegia travancorica Bedd. *ex* Hook. f.	Anacardiaceae
Semecarpus auriculata Bedd.	Anacardiaceae
Solenocarpus indicus Wight & Arn.	Anacardiaceae
Ormosia travancorica Bedd.	Fabaceae
Cynometra beddomei Prain	Caesalpiniaceae
Cynometra travancorica Bedd.	Caesalpiniaceae
Kingodendron pinnatum (Roxb.& DC.) Harms in Engl. & Prantl	Caesalpiniaceae
Humboldtia brunonis Wall.	Caesalpiniaceae
Atuna indica (Bedd.) Kosterm.	Chrysobalanaceae
Terminalia travancorensis Wight & Arn.	Combretaceae
Eugenia argentea Bedd.	Myrtaceae
Eugenia indica (Wight) Chithra in Nair & Henry	Myrtaceae
Meteoromyrtus wynaadensis (Bedd.) Gamble	Myrtaceae
Syzygium densiflorum Wall. ex Wight & Arn	Myrtaceae

Syzygium laetum (Buch.-Ham.) Gandhi in Sald.& Nicols.	Myrtaceae
Syzygium malabaricum (Bedd.) Gamble	Myrtaceae
Syzygium mundagam (Bourd.) Chithra in Nair & Henry	Myrtaceae
Syzygium stocksii (Duthie) Gamble	Myrtaceae
Syzygium travancoricum Gamble	Myrtaceae
Memecylon randerianum S. M. & M. R. Almeida	Melastomataceae
Memecylon sisparense Gamble	Melastomataceae
Memecylon talbotianum Brandis in Talbot	Melastomataceae
Lagerstroemia microcarpa Wight	Lythraceae
Schefflera racemosa (Wight) Harms in Engl. & Prantl	Araliaceae
Mastixia arborea (Wight) Bedd. ssp. meziana (Wang.) Matthew	Cornaceae
Canthium travancoricum (Bedd.) Hook. f	Rubiaceae
Hymenodictyon obovatum Wall. in Roxb.	Rubiaceae
Ixora brachiata Roxb. ex DC.	Rubiaceae
Ixora elongata Heyne ex G. Don	Rubiaceae
Ixora notoniana Wall. ex G. Don	Rubiaceae
Ixora sivarajiana Pradeep	Rubiaceae
Lasianthus venulosus (Wight & Arn.) Wight	Rubiaceae
Ochreinauclea missionis (Wall. *ex* G. Don) Ridsdale	Rubiaceae
Pavetta travancorica Bremek	Rubiaceae
Psychotria nilgiriensis Deb & Gangop.	Rubiaceae
Psychotria truncate Wall. in Roxb.	Rubiaceae
Isonandra perrottetiana A. DC. in DC.	Sapotaceae
Palaquium ellipticum (Dalz.) Baill.	Sapotaceae
Diospyros bourdillonii Brandis.	Ebenaceae
Diospyros candolleana Wight	Ebenaceae
Diospyros nilagirica Bedd.	Ebenaceae
Diospyros paniculata Dalz.	Ebenaceae
Diospyros pruriens Dalz.	Ebenaceae
Symplocos foliosa Wight	Symplocaceae
Symplocos macrocarpa Wight *ex* Clarke ssp. kanarana (Talbot) Nooteb	Symplocaceae
Symplocos macrophylla Wall. *ex* A. DC	Symplocaceae
Symplocos macrophylla Wall. *ex* A. DC ssp. rosea (Bedd.) Nooteb.	Symplocaceae
Symplocos wynadense (O. Kuntze.) Nooteb.	Symplocaceae
Chionanthus courtallensis Bedd.	Oleaceae
Chionanthus linocieroids (White) Bennet & Raizad	Oleaceae
Ligustrum perrottetii A. DC. in DC.	Oleaceae
Tabernaemontana heyneana Wall.	Apocynaceae
Knema attenuata (Hook. f. & Thoms.) Warb.	Myristicaceae
Myristica malabarica Lamk.	Myristicaceae
Actinodaphne bourdillonii Gamble	Lauraceae
Actinodaphne malabarica Balakr.	Lauraceae
Actinodaphne tadulingamii Gamble	Lauraceae
Apollonias arnottii Nees	Lauraceae
Beilschmiedia wightii (Nees) Benth. *ex* Hook. f.	Lauraceae
Cinnamomum malabatrum (Burm. f.) Bl	Lauraceae
Cinnamomum sulphuratum Nees in Wall.	Lauraceae

Cinnamomum wightii Meisner in DC.	Lauraceae
Cryptocarya beddomei Gamble	Lauraceae
Litsea beddomei Hook. f.	Lauraceae
Litsea bourdillonii Gamble	Lauraceae
Litsea floribunda (Bl.) Gamble	Lauraceae
Litsea ghatica Sald.	Lauraceae
Litsea laevigata (Nees) Gamble	Lauraceae
Litsea oleoides (Meisner) Hook. f.	Lauraceae
Litsea stocksii Hook.f.	Lauraceae
Litsea venulosa (Meisner) Hook.f.	Lauraceae
Helicia nilagirica Bedd.	Proteaceae
Baccaurea courtallensis (Wight) Muell.-Arg. in DC.	Euphorbiaceae
Croton malabaricus Bedd.	Euphorbiaceae
Dimorphocalyx glabellus Thw. var. lawianus (Muell.-Arg.) Chakrab. & Balakr.	Euphorbiaceae
Drypetes venusta (Wight) Pax & Hoffm	Euphorbiaceae
Drypetes wightii (Hook. f.) Pax & Hoffm.	Euphorbiaceae
Epiprinus mallotiformis (Muell.-Arg.) Croizat	Euphorbiaceae
Glochidion ellipticum Wight	Euphorbiaceae
Mallotus atrovirens Muell.-Arg.	Euphorbiaceae
Phyllanthus indofischeri Bennet	Euphorbiaceae
Phyllanthus megacarpus (Gamble) Kumari & Chadrab.	Euphorbiaceae
Sauropus saksenianus Manilal	Euphorbiaceae
Artocarpus hirsutus Lamk.	Moraceae
Ficus beddomei King	Moraceae

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