

Full Length Research Paper

Ethnobotanically important trees and their uses by Kattunaikka tribe in Wayanad Wildlife Sanctuary, Kerala, India

M. K. Ratheesh Narayanan¹, S. Mithunlal¹, P. Sujanapal¹, N. Anil Kumar¹, M. Sivadasan^{2*}, Ahmed H. Alfarhan² and A. A. Alatar²

¹Community Agrobiodiversity Centre, M. S. Swaminathan Research Foundation, Puthoorvayal, Kalpetta, Wayanad - 673 121, Kerala, India.

²Department of Botany and Microbiology, College of Science, King Saud University, P. B. No. 2455, Riyadh – 11451, Kingdom of Saudi Arabia.

Accepted 1 December, 2010

Wayanad Wildlife Sanctuary, situated in the Wayanad revenue district of Kerala, India falls under Nilgiri Biosphere Reserve on the Western Ghats. Floristic and ethnobotanical studies in the sanctuary resulted in the documentation of a total of 75 taxa of trees of ethnobotanical importance, and their uses by Kattunaikka tribe residing within the sanctuary are recorded. The potentialities of the medicinal properties of the trees are important and could be explored and utilized in the pharmaceutical industry.

Key words: Ethnobotany, ethnomedicinal plants, India, Kattunaikka, Kerala, traditional knowledge.

INTRODUCTION

Forests constitute an integral part of the social life of tribal groups and are home to the people who are entirely or partly dependent on forests for their livelihood. Of nearly 170 million people living in and around forests in India, more than half of them are tribal and depend on forest plants, especially trees for medicine, food, fuel, fodder and other non-timber forest products (NTFPs). They have names in their own dialect and identification practices for every tree. Trees have indirect and incremental impacts on local economies, food security and health. Due to over exploitation and deforestation, the forest resources are under severe threat and dwindling diversity of forest trees and availability of NTFPs have substantially deprived the rural poor of a supplementary source of both income and food.

Established in 1973, the Wayanad Wildlife Sanctuary

(Figure 1) is contiguous with the protected area network of Nagarhole and Bandipur National Parks of Karnataka on the northeast and Mudumalai National Park of Tamil Nadu on the southeast. Rich in biodiversity, the sanctuary is an integral part of the Nilgiri Biosphere Reserve, which has been established with the specific objective of conserving the biological heritage of the region. The total extent of the area is 344.44 km² and is divided into two discontinuous portions with revenue lands in between. The northwest portion of the sanctuary has only one range, namely: Tholpetty and has an area of 77.67 km². This range is contiguous with Nagarhole National Park, also known as Rajiv Gandhi National Park in Nagarhole in the northeast, Kakkankotte Reserve Forest in the north and Brahmagiri Hills of North Wayanad forest division in the east. The southern portion of the Sanctuary comprises an area of about 266.77 km².

It is contiguous with Mudumalai Wildlife Sanctuary of Tamil Nadu in the east and Bandipur Tiger Reserve (BTR) of Karnataka in the north and northeast. Following

*Corresponding author. E-mail: drmsivadasan@rediffmail.com.

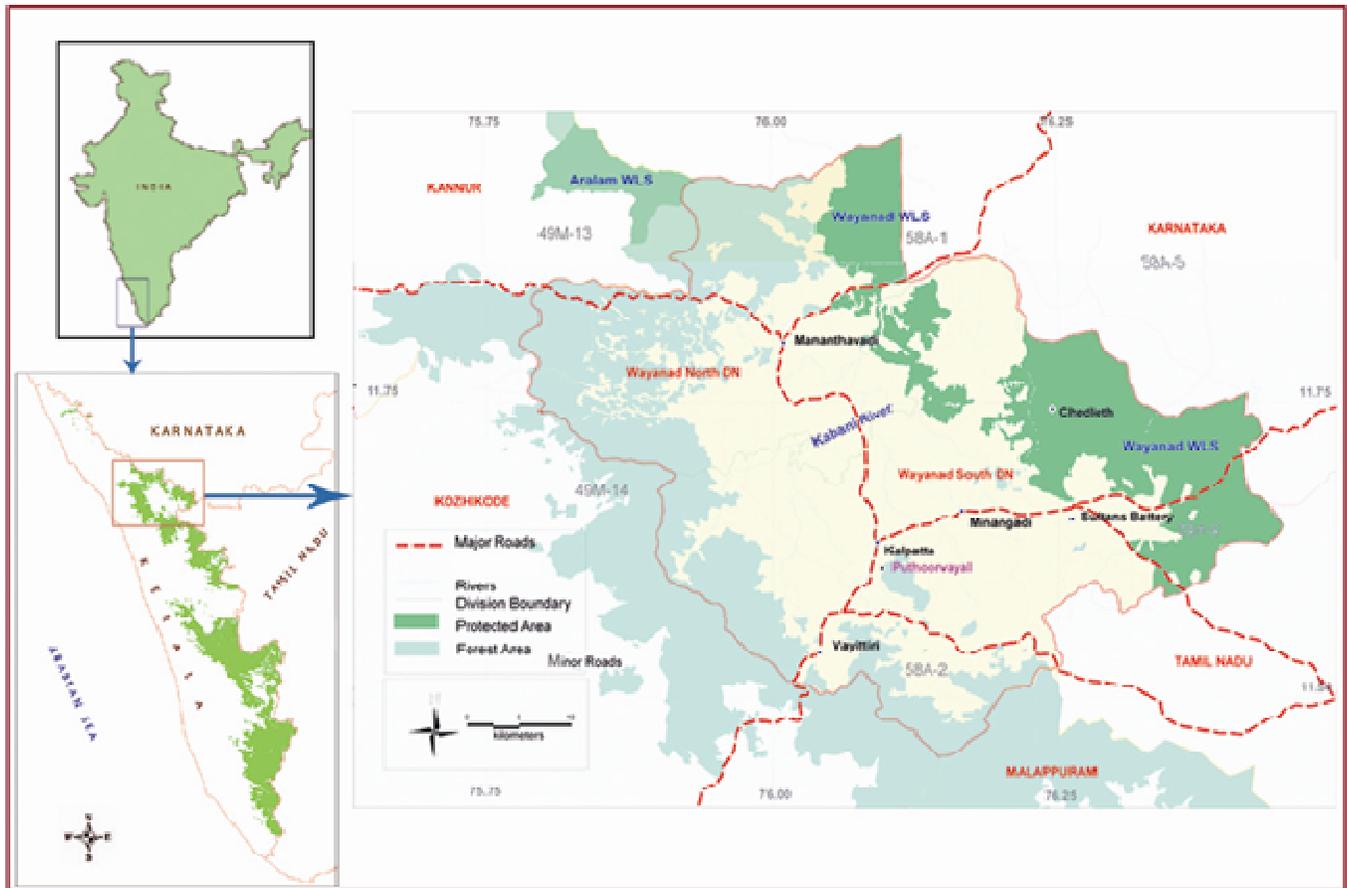


Figure 1. Map of Wayanad district showing Wayanad Wildlife Sanctuary.

Champion and Seth (1968), the natural vegetation of the Sanctuary can be broadly classified into West-coast tropical semi-evergreen forests, southern moist mixed deciduous forests and southern dry mixed deciduous forests. Moist deciduous forest is the dominant vegetation type in the Wayanad Wildlife Sanctuary (Muthanga, Begur, Tholpetty forest ranges). Eastern side of the Wayanad Wildlife Sanctuary is continuous with the deciduous forests of Mudumalai ranges of Tamil Nadu and Bandipur-Nagarhole National Parks of Karnataka. Apart from the above mentioned vegetation types, certain edaphic types such as Reed brakes, moist Bamboo brakes and low altitude marshy grasslands (Vayals) are also present. The Sanctuary does not possess typical montane forest types such as West-coast tropical evergreen forests, sholas and grasslands. About 110 sq. km of the sanctuary is under different plantations. Teak and Eucalyptus are the major plantation trees. Small-scale plantations of Bamboo, Silver oak (*Grevillea robusta*) and Pines (*Pinus spp.*) are retained in some forest area. The Wildlife Sanctuary forms a significant part of the catchment area of Kabani River which flows

towards east into Karnataka. Southern portion of the sanctuary is drained by Nulpuzha and Mavinahalla stream which combine to form Nuguhole river. Manjalthodu and other small streams in the sanctuary become dry during peak summer season.

A recent detailed analytical account of the articles published in twenty volumes of the journal *Ethnobotany* since its launch revealed the publication of 135 articles on ethnobotanical uses of Indian floristic elements (Goel and Tripathi, 2009). Ethnobotanical aspects of most of the states in India except smaller states like Manipur, Mizoram, Tripura, Nagaland, Himachal Pradesh, Sikkim, Andaman and Nicobar Islands and the alpine Himalayan regions have been covered by the studies. Shinwari (2010) provided an elaborate account on the medicinal plants research and development, conservation issues and marketing aspects, and referred several articles published on the ethnobotanical uses of plants of Pakistan. Many tribal and rural families of Wayanad district in Kerala use a wide range of species for their food and medicinal needs (Ratheesh Narayanan et al., 2002; Silja et al., 2008; Nisha and Sivadasan, 2007; Anil

Kumar et al., (2008). Available literature shows that there are 434 flowering plants used by the tribal people of Wayanad of which 184 are used for food (Ratheesh Narayanan et al., 2002; Balakrishnan et al., 2003; Hema et al., 2006), 244 are of medicinal use (Silja et al., 2008; Nisha and Sivadasan, 2007; Mini and Sivadasan, 2007), species are used for extracting fibres and 68 plants are recorded for other uses like fish poisoning, magico-religious purposes (Pramod et al., 2003), canes, resins and other minor forest produces (MFPs) (Ratheesh Narayanan, 2009). An ethnobotanical investigation in Lakshadweep Islands (Ansarali and Sivadasan, 2009) revealed the uses of 61 plant species for various purposes by the islanders.

A perusal of literature revealed that though a lot of work has been done on ethnobotany in Kerala, no detailed account on the ethnobotanical uses of trees by the Kattunaikka tribes of Wayanad is available. The present study has been undertaken with the aim of recording the details of various tree species used by the Kattunaikka tribes of the Wayanad Wildlife Sanctuary area. Kattunaikka is the dominant ethnic group that inhabits the Wayanad Wildlife Sanctuary. These people living in the vicinity of forests are depending on the sanctuary for meeting their requirements of food, medicine, minor forest produces (MFPs), fire wood, and small timber needs for house construction. The people of Kattunaikka or Kattunaikkan tribe are peculiar in their habit and daily routine and they are variously referred to as Jenu Kuruman, Tenu Kurumban and Naikkan.

The term Kattunaikkan has been derived from the word Kadu, meaning forest, and Naikkan meaning leader or headman (Thurston, 1909). The community is now predominantly distributed in the Wayanad district of Kerala. They worship trees, rocks, sun, moon, local deities and the spirits of their ancestors. Rice and ragi are their staple cereals supplemented by edible wild roots and tubers (Balakrishnan et al., 2003). Food gathering, honey collection, hunting, fishing and trapping of birds and animals for meat are the traditional occupations of the Kattunaikka, which a few of them still pursue till date. Majority of the people depend on their traditional knowledge on medicinal plants for treating various ailments.

MATERIALS AND METHODS

Frequent trips were carried out for plant collection to different habitats and important localities of the Wayanad Wildlife Sanctuary in different seasons during 2006 to 2009. Repeated collections were made of certain tree specimens to get all essential parts of the plant. The herbarium specimens were prepared as per the standard specifications (Fosberg and Sachet, 1965; Bridson and Forman, 1991). Specimens were identified with pertinent literature, and deposited in the herbarium at the Community Agrobiodiversity Centre of the M. S. Swaminathan Research Foundation, Kalpetta, Wayanad. Ethnobotanical information such as the uses of the plants, local names of plants used, the parts of the plants used, etc.

were gathered from Kattunaikka tribal groups of the study area. Five tribal colonies were randomly selected from the Sanctuary for the traditional knowledge documentation. Each colony was visited 4 to 5 times and both men and women of age varying between 20 to 60 years were interviewed to get details of trees being used by them for various purposes. Transect walks were undertaken with men and women who seemed comparatively more knowledgeable about the tree diversity of the Sanctuary and their uses.

RESULTS AND DISCUSSION

A total of 101 taxa of trees under 79 genera belonging to 32 families were collected and identified from the Wayanad Wildlife Sanctuary. This forms about 15% of the total tree species of Kerala. Moist deciduous forest is the dominant vegetation type in the Wayanad Wildlife Sanctuary. During wet season, because of the thick foliage of trees, the canopy looks similar to that of semi-evergreen forests. During January to April, the trees become more or less deciduous but the forests never become deciduous *in toto*. The leafless period varies from a few weeks to five months depending on the species.

Major upper canopy trees are *Pterocarpus marsupium*, *Tectona grandis*, *Terminalia chebula*, *T. crenulata*, *T. paniculata*, *Lagerstroemia microcarpa*, *Bombax ceiba*, *Tetrameles nudiflora*, *Dalbergia lanceolaria*, *D. sissooides*, *Grewia tiliifolia*, *Stereospermum colais*, *Diospyros montana*, *Semecarpus anacardium*, *Madhuca indica*, *Shorea roxburghii*, *Syzygium cumini*, *Schleichera oleosa*, *Bauhinia malabarica*, *Haldina cordifolia*, *Mitragyna parvifolia*, *Bridelia retusa*, *Radermachera xylocarpa*, etc. Middle canopy trees are *Olea dioica*, *Dillenia pentagyna*, *Gmelina arborea*, *Grewia tiliifolia*, *Litsea coriacea*, *Careya arborea*, *Buchanania lanzan*, *Glochidion ellipticum*, *G. tomentosum*, *Phyllanthus emblica*, *Butea monosperma*, *Lannea coromandelica*, *Cassia fistula*, etc. The lower storey trees are *Wrightia tinctoria*, *Catunaregum spinosa*, *Casearia tomentosa*, *Cipadessa baccifera*, *Holarrhena pubescens*, *Naringi crenulata*, *Tamilnadia uliginosa*, etc. Eastern side of the Wayanad Wildlife Sanctuary continuous with the deciduous forests of Mudumalai ranges of Tamil Nadu and Bandipur-Nagarhole National Parks of Karnataka is dominated by southern dry mixed-deciduous forests type. *Anogeissus latifolia*, *Schrebera swietenoides*, *Phyllanthus emblica*, *Phyllanthus indofischerii*, *Cleistanthus collinus*, *Premna tomentosa*, *Terminalia chebula*, *T. paniculata*, *Shorea roxburghii*, *Stereospermum suaveolens*, *Lagerstroemia parviflora*, etc. are the dominant trees of this region. *Hopea parviflora*, *Dolichandrone arcuata*, *Radermachera xylocarpa*, *Cordia monoica*, *Bauhinia racemosa*, *Calophyllum calaba*, *Terminalia elliptica*, *T. paniculata*, *Flacourtia montana*, *Phyllanthus indofischeri*, *Casearia wynadensis*, *Hydnocarpus pentandra*, *Chionanthus malaelengi*, *Cinnamomum malabratum* and *Lagerstroemia microcarpa* are the endemic trees found in the study area. A total of 75 trees have been found to be used for

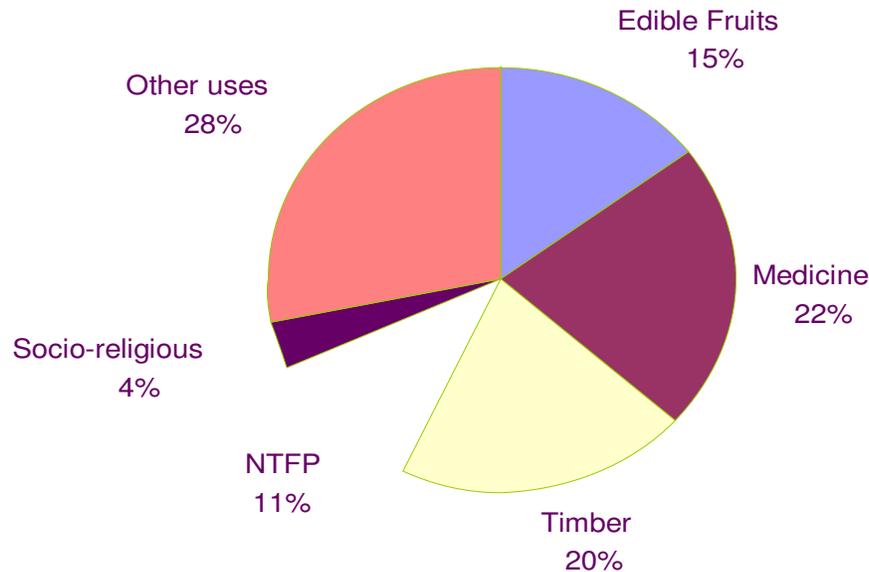


Figure 2. Relative percentage of usage of tree species by the Kattunaikka tribe of Wayanad district.

various purposes by Kattunaikka tribe (Figure 2 and Table 1). Different parts of the trees like roots, leaves, bark, wood, exudates, inflorescence, fruits, seeds, etc. are used by this community as sources of medicines, food, timber, fodder and fuel. Fruits of 16 trees like *Buchanania lanzan*, *Diospyros melanoxylon*, *Ficus racemosa*, *Flacourtia montana*, *Madhuca longifolia*, *Schleichera oleosa*, *Semecarpus anacardium*, etc. are eaten as raw after ripening. Tender fruits of *Buchanania lanzan*, *Mangifera indica*, and *Tamilnadia uliginosa* and flowers of *Gmelina arborea* are used as vegetables. Leaves, bark and roots of 23 trees are used for various medicinal purposes of which leaves of *Toona ciliata*, and *Mangifera indica* are used to cure cold and fever. Bark of *Calophyllum calaba*, *Terminalia bellirica*, *Phyllanthus indofischeri*, *Schleichera oleosa*, and *Vitex altissima* are used against skin diseases. Six tree species are used against dysentery or to cure gastric troubles. Bark of *Bauhinia malabarica* and *Butea monosperma* are used against abdominal pain. Juice from the roots of *Callicarpa tomentosa* and resin from the bark of *Terminalia elliptica* are used to cure stomach ache.

Watery exudation of *Terminalia elliptica* and *Cassine albens* are used for curing eye diseases. Leaves of *Ficus hispida* are used for the expulsion of placenta during delivery in cattle. Leaves of *Vitex altissima* is used to heal deep cut wounds and bark of *Grewia tiliifolia* is used as an effective hair tonic. Gum obtained from *Pterocarpus marsupium* is used as a tongue cleaner.

Twenty one species are having high timber value and used for house construction materials, household articles, furniture, etc. Thirty trees are used for various domestic

purposes like fire wood, making toys, agricultural implements, ropes, etc. Wood of *Shorea roxburghii* is widely used as a source of fuelwood for cooking and making fireplaces during winter. Crushed leaves of *Casearia wynadensis* and fruits of *Hydnocarpus pentandra* are used as fish poison. Fruits and seeds of *Buchanania lanzan*, *Terminalia bellirica*, *T. chebula*, *T. elliptica*, *Phyllanthus emblica*, *P. indofischeri*, *Pongamia pinnata*, *Hydnocarpus pentandra*, *Schleichera oleosa*, etc. and bark of *Cinnamomum malabratrum*, *Persea macrantha*, etc. and leaves of *Diospyros melanoxylon* are largely collected and marketed by Kattunaikka tribe as a major source of their income. They collect 5 types of honey from the wildlife sanctuary and the bulk of honey is produced from the pollens of *Lagerstroemia microcarpa* and *Lagerstroemia parviflora*.

Conclusion

Ethnobotanical investigations related to the tribal communities of Kerala have been made by earlier workers with different perspectives (Pushpangadan and Atal, 1984; Ramachandran and Nair, 1981). The present study revealed that Kattunaikka community in the Wayanad Wildlife Sanctuary are quite knowledgeable on the tree diversity and quite conscious on the importance of protection of their biological resources. The valuable ethnobotanical and ethnomedicinal knowledge about the tree diversity is in place since time immemorial and is passed on from generation to generation by word of mouth. The trees are important sources for use and

Table 1. Popular uses of tree species in Wayanad Wildlife Sanctuary.

	Scientific name	Local name as used by Kattunaikka	Uses
1	<i>Adenantha pavonina</i> L.	Manjadi	Seeds are used as toys by the children.
2	<i>Albizia lebbek</i> (L.) Benth.	Kunnimara	Wood is of high timber value and used for various purposes.
3	<i>Albizia chinensis</i> (Osb.) Merr.	Goddan	Timber is of good quality used for various purposes, and also used as fire wood.
4	<i>Anogeissus latifolia</i> (Roxb. ex DC.) Wall. ex Guill. and Perr.	Venjil	Used as fire wood; resin extracted stem is used for ritualistic purposes.
5	<i>Artocarpus hirsutus</i> Lam.	Hebbelsh	Fruits and seeds are edible; wood is of high timber value and used for various purposes
6	<i>Bauhinia malabarica</i> Roxb.	Cheruhulippan	Bark is used to cure abdominal pain.
7	<i>Bombax ceiba</i> L.	Poola mara	Cotton obtained from dried fruits used in stuffing pillows; roots has stimulant and tonic properties.
8	<i>Buchanania lanzan</i> Spreng.	Murickil	Fruits are edible; bark is used to cure diarrhoea; leaves are used to prepare delicious foods like Dosai and Ada.
9	<i>Butea monosperma</i> (Lam.) Taub.	Muthage	Bark is used to cure stomach ache; seeds are used to make toys.
10	<i>Callicarpa tomentosa</i> (L.) L.	Gida	Juice from the roots is used to cure stomach ache.
11	<i>Calophyllum calaba</i> L.	Venjil	Oil from the seed is used to cure skin diseases.
12	<i>Careya arborea</i> Roxb.	Gavala	Bark is used against veterinary diseases.
13	<i>Caryota urens</i> L.	Hane mara	Tender leaves are edible. Starch extracted from the stem is used as food. Wood is used for making houses and cattle shed.
14	<i>Casearia wynadensis</i> Bedd.	Meenkollimara	Leaves are used as fish poison for fishing.
15	<i>Cassia fistula</i> L.	Kekke mara	Wood of high timber value and used for many domestic purposes; flowers are used to worship God.
16	<i>Cassine albens</i> (Retz.) Kosterm.	Malaimarimara	Watery exudation from the trunk is used for curing red-eyeness due to conjunctivitis.
17	<i>Cinnamomum malabatum</i> (Burm. f.) Blume	Orle	Bark is marketed as a NTFP; leaves are used to prepare delicious foods like Dosai and Ada; bark is used as condiment.

Table 1. Continued.

18	<i>Cordia obliqua</i> Willd.	Sella mara	Fruit pulp used as a natural gum.
19	<i>Crataeva magna</i> (Lour.) DC.	Panthukaimara	Fruits are used as balls by Kattunaikka children.
20	<i>Dalbergia lanceolaria</i> L. f.	Naivide	Timber is used to make agricultural implements.
21	<i>Dalbergia latifolia</i> Roxb.	Vide	Bark is used to make ropes; wood of high timber value and used for various purposes.
22	<i>Diospyros melanoxylon</i> Roxb.	Veedihale Thoopru mara	Leaves are used to make Cigars commonly known as Beedi; fruits are edible; leaves are marketed as a NTFP for making Beedi.
23	<i>Diospyros montana</i> Roxb.	Kalkkuthi	Crushed leaves are used as fish poison.
24	<i>Dolichandrone arcuata</i> (Wight) Clarke	Cheru Hajjeri	Bark is used to cure dysentery.
25	<i>Erythrina stricta</i> Roxb.	Murukku	Wood is used to make toys for children.
26	<i>Ficus benghalensis</i> L.	Alamara	Twigs are used as tent-poles.
26	<i>Ficus hispida</i> L. f.	Parage	Bark is used to make ropes; leaves used as a medicine for easy expulsion of placenta during the delivery in cattle.
28	<i>Ficus racemosa</i> L.	Atthi mara	Fruits are edible.
29	<i>Ficus tsjahela</i> Burm. F.	Shela mara	Bark is used for chewing with betel leaves; gum obtained from the bark is used to prepare trap for bird hunting.
30	<i>Flacourtia montana</i> Graham	Chalirumara	Fruits are edible.
31	<i>Garcinia gummi-gutta</i> (L.) Robs.	Kongappuli	Fruits are edible and used in curries.
32	<i>Garuga pinnata</i> Roxb.	Kaigoddan	Used as supporting trees for pepper.
33	<i>Gmelina arborea</i> Roxb.	Kumbilu mara	Flowers are used as vegetable.
34	<i>Grewia tiliifolia</i> Vahl	Thadassi	Bark- powder is used to cure dysentery; bark is used as an effective hair tonic; bark fiber is used to make ropes.
35	<i>Haldina cordifolia</i> (Roxb.) Ridsd.	Vettakkadambu	Timber value.
36	<i>Hopea parviflora</i> Bedd.	Thorjal	Wood of timber value and used for various purposes.

Table 1. Continued.

37	<i>Hydnocarpus pentandra</i> (Buch.-Ham.) Oken.	Neerubitte	Dried fruits and seeds are collected as valuable NTFPs and sold to tribal Society; oil extracted from seeds used to cure skin diseases; leaves and fruits are used as fish poison; seed coat is used to make lamp.
38	<i>Kydia calycina</i> Roxb.	Bonde mara	Source of good honey.
39	<i>Lagerstroemia microcarpa</i> Wight	Sanneegi	Wood of high timber value; flowers are source of good honey.
40	<i>Lagerstroemia parviflora</i> Roxb.	Elthi	Flowers are source of good honey.
41	<i>Lannea coromandelica</i> (Houtt.) Merr.	Pajagodan	Fruits are used for its stomachic properties.
42	<i>Litsea coriacea</i> (Heyne ex Meisner) Hook. f.	-	Wood is used for domestic purposes like making agricultural implements.
43	<i>Madhuca longifolia</i> (Koenig) Macbr.	Hippe	Fruits are edible.
44	<i>Magnolia champaca</i> (L.) Baill. ex Pierre		Wood is of timber value; bark is medicinal for skin diseases.
45	<i>Mangifera indica</i> L.	Thoremaavu	Fruits are edible; fruits are used to treat hemorrhage of the uterus; the fumes from the leaves are inhaled to get relief from throat infections; wood is of timber value.
46	<i>Melia azedarach</i> L.	Vembu	Leaves are used as cattle feed.
47	<i>Miliusa tomentosa</i> (Roxb.) Finet and Gagnep.	Hazzar	Bark is used to cure dysentery.
48	<i>Mitragyna parvifolia</i> (Roxb.) Korth.	Kayyakkadambu	Wood is of timber value.
49	<i>Persea macrantha</i> (Nees) Kosterm.	Komaan	Bark is collected and marketed as a NTFP.
50	<i>Phyllanthus emblica</i> L.	Nelli	Fruits are edible; fruits are collected and marketed as a NTFP.
51	<i>Phyllanthus indofischeri</i> Bennet	Karanelli	Fruits are edible; bark-ash is used to cure skin diseases; fruits are used for making beverages.
52	<i>Pongamia pinnata</i> (L.) Pierre	Hongie	Seeds and fruits are marketed as a NTFP. leaves are good fodder; wood is of timber value.
53	<i>Psydrax umbellata</i> (Wight) Bridson	Holecole	Young branches are used to make brooms

Table 1. Continued.

54	<i>Pterocarpus marsupium</i> Roxb.	Honye	Exudation from the stem is used as tongue cleaner; gum exudation is used against body pain.
55	<i>Radermachera xylocarpa</i> (Roxb.) K. Schum.	Udi mara	The fruits are used to keep away the rats from the cucurbit gardens.
56	<i>Salix tetrasperma</i> Roxb.	Neeruveshe	Twigs are used to make baskets.
57	<i>Schleichera oleosa</i> (Lour.) Oken	Sakade	Fruits are edible; seeds are used against skin diseases; timber valuable.
58	<i>Schrebera swietenoides</i> Roxb.	Gante mara	Fire wood; dried fruits are used to make bells of cow.
59	<i>Scolopia crenata</i> (Wight and Arn.) Clos	Cheruchaliru	Fruits are edible; wood is used as fire wood.
60	<i>Semecarpus anacardium</i> L. f.	Geru	Dried fruits are edible but young fruits are allergic.
61	<i>Shorea roxburghii</i> G. Don	Jal	Bark-ash used to cure gastric acidity; resin used for various religious purposes; used as fire wood.
62	<i>Stereospermum colais</i> (Buch.-Ham. Ex Dillwyn) Mabb.	Hajjeri	Bark is used to cure stomach diseases and dysentery.
63	<i>Stereospermum suaveolens</i> (G. Don) DC.	Valiya Hajjeri	Timber valuable and used for various purposes.
64	<i>Syzygium cumini</i> (L.) Skeels	Neeril	Fruits are edible.
65	<i>Syzygium zeylanicum</i> (L.) DC.	Koli	Fruits are edible.
66	<i>Tamarindus indica</i> L.	Huljae	Fruits are used in curries; seeds are also edible in roasted form; wood is of high timber value.
67	<i>Tamilnadia uliginosa</i> (Retz.) Tirveng. and Sastre	Pindichakka	Fruits are edible.
68	<i>Tectona grandis</i> L. f.	Thekku	Wood of high timber value, used for various purposes.
69	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Ellemara	Bark is used against skin diseases; fruits are edible; dried fruits are marketed as a NTFP; wood of high timber value.
70	<i>Terminalia chebula</i> Retz.	Ellemara	Fruits are marketed as a NTFP; wood of high timber value.
71	<i>Terminalia elliptica</i> Willd.	Matty	Resin from the bark is used to cure stomach ache; water stored on the tree trunk is used to cure redness of eye due to conjunctivitis; fruits are collected and marked as a NTFP; wood of high timber value.

Table 1. Continued.

72	<i>Terminalia paniculata</i> Roth	Merija	Wood of high timber value; used as fire wood.
73	<i>Toona ciliata</i> Roem.	Goddan	Gum obtained from bark is used to cure fever and diarrhea.
74	<i>Trewia nudiflora</i> L.	Mutsal mara	Fruits are used as gotty for play by Kattunaikka children; use the fruits as projectile to shoot birds and squirrels with sligshots.
75	<i>Vitex altissima</i> L. f.	Hule	Leaves are used to cure deep wounds.

Local names given are as used by Kattunaikka.

income for this community. Due to high demand and less access and availability of forest resources, these people are forced to go for unsustainable harvest of resources. Therefore, concerted actions are needed to sensitize the community for the judicious exploitation and conservation of these vital resources, and preservation of traditional knowledge on the uses of plants. The potential medicinal uses of the trees based on the traditional knowledge of the tribal community could be scientifically explored and therapeutic value assessed for utilization in pharmaceutical industry.

ACKNOWLEDGEMENTS

The members of the Kattunaikka tribe residing inside the Wayanad Wildlife Sanctuary, especially Shri. Vijayan and Ms. Meenakshy of Ponkuzhy Kattunaikka colony were the main source of ethnobotanical and ethnomedicinal information. Their willingness to share the valuable knowledge and their wholehearted co-operation are gratefully acknowledged.

The authors are thankful to the Director, M. S. Swaminathan Research Foundation, Chennai, India for providing facilities and support. The logistics provided by the Kerala State Forest Department for the fieldwork are remembered with gratitude. Various help extended by Mr. P. Prajeesh, Mr. K. Manudev, and Ms. K. A. Sujana are acknowledged with thanks. The last three authors wish to acknowledge the encouragements provided by the Vice-Rector, King Saud University, and the Director, Centre of Excellence in Biodiversity Research, King Saud University, Riyadh.

REFERENCES

Anil Kumar N, Ratheesh Narayanan MK, Satheesh K (2008). Traditional knowledge of three 'mycophilic' communities on wild edible mushrooms of Wayanad district, Kerala. *Ethnobot.*, 20(1): 41-47.

Ansarali KC, Sivadasan M (2009). Ethnobotanical investigations in Lakshadweep Islands, India. *Ethnobot.*, 21(1 and 2): 18-24.

Balakrishnan V, Ratheesh Narayanan MK, Anil Kumar N (2003). Ethnotaxonomy of *Dioscorea* among the Kattunaikka people of Wayanad District, Kerala. *Inter. Plant Genetic Newslett.*, 135: 24-32.

Bridson DM, Forman L (1991). *The Herbarium Handbook*. Royal Botanic Gardens, Kew.

Champion HG, Seth SK (1968). *A revised Survey of the Forest Types of India*. Government of India Press, Delhi.

Fosberg FR, Sachet MM (1965). *Manual for Tropical Herbaria* (Reg. Veg. 39). IAPT, Utrecht, The Netherlands.

Goel AK, Tripathi S (2009). Ethnobotanical spectrum of Indian Flora: An overview during the past 20 years in the journal *Ethnobotany*. *Ethnobot.*, 21(1 and 2): 131-154.

Hema ES, Sivadasan M, Anil Kumar N (2006). Studies on edible species of Amaranthaceae and Araceae used by Kuruma and Paniya tribes in Wayanad district, Kerala, India. *Ethnobot.*, 18(1): 122-126.

Mini V, Sivadasan M (2007). Plants used in ethno-veterinary medicine by Kurichya tribe of Wayanad district in Kerala, India. *Ethnobot.*, 19: 16-21.

Nisha VM, Sivadasan M (2007). Ethnodermatologically significant plants used by traditional healers of Wayanad district, Kerala. *Ethnobot.*, 19: 55-61.

Pramod C, Sivadasan M, Anil Kumar N (2003). Ethnobotany of religious and supernatural beliefs of Kurichya of Wayanad district, Kerala, India. *Ethnobot.*, 15: 11-19.

Pushpangadan P, Atal CK (1984). Ethno-medico-botanical investigations in Kerala- some primitive tribes of Western Ghats and their herbal medicines. *J. Ethnopharmacol.*, 2: 59-78.

Ramachandran VS, Nair VJ (1981). Ethnobotanical studies in Cannanore district, Kerala State (India). *J. Econ. Taxon. Bot.*, 2: 65-72.

Ratheesh Narayanan MK (2009). Floristic study of Wayanad District with special emphasis on conservation of rare and threatened flowering plants. Ph. D. Thesis, University of Calicut, Kerala, India.

Ratheesh Narayanan MK, Balakrishnan V, Anil Kumar N (2002). Coping role of wild edibles - a case study from Paniya tribes of Wayanad District, India. In: *Agro biodiversity Source Book, CIP-UPWARD*, Philippines, pp. 100-108.

Shinwari ZK (2010). Medicinal Plants Research in Pakistan. *J. Med. Pl. Res.*, 4(3): 161-176.

Silja VP, Samitha Varma K, Mohanan KV (2008). Ethnomedicinal plant knowledge of the Mullukuruma tribe of Wayanad district, Kerala. *Indian J. Trad. Knowl.*, 7(4): 604-612.

Thurston E (1909). *Castes and Tribes of Southern India*. Vols. 1-5. Cosmo Publications, Delhi.