

CONSERVATION OF BIODIVERSITY AND SOCIO-CULTURAL DIMENSIONS OF SACRED GROVES OF KANNUR DISTRICT, KERALA

Sekaran, S^{1*} and S. Nisha Raj²

¹PG and Research Department of Botany, Sree Narayana College, Kannur, Kerala.

²PG Department of Biotechnology, SAS,SNDP Yogam College, Konni, Kerala.

*E.mail: drsekhar72@gmail.com

ABSTRACT

Sacred groves are small patches of forests, protected by local communities on religious grounds, rituals and culture. It represent a tradition of nature worship by dedicating patches of forests to deities and providing protection to such forest patches. They have immense value from genetic and ecological point of view. Results of studies conducted in eleven sacred groves in Kannur district of Kerala are compiled in this paper. Two hundred and three plant species including 10 true mangroves give an insight into the bio-ecological and socio cultural dimensions of sacred groves in helping and conserving the biological diversity. Kaliyattam a performing art with different forms of 'theyyam' is conducted every year offering to propitiate the deity by different communities in the villages. 'Devakooth' a theyyam performed by women in Thekkumpad kavu. is noteworthy among the performative rituals. These ritualistic practices centred around the sacred groves substantially contribute to the conservation and day- to-day management of ecological balance by sacred groves. The different types of roles played by sacred groves in maintaining the ecosystem integrity and biodiversity conservation are also presented in this paper.

Keywords: Biodiversity, Sacred groves, Kannur, Kerala.

1. INTRODUCTION

The socio-ecological system integrating with its cultural and spiritual dimensions with is still strong amongst many traditional societies. The initial impetus amongst traditional societies for conservation of biodiversity seems to have arisen out of the animistic religious belief system. The concept of "sacred grove" could be viewed as symbolic of "nature-human" inter connections with a variety of ritual linked to the diverse community living within the landscape boundary, who have their own right for natural resource use, large community participation is ensured (Ramakrishnan, 2005). Sacred groves are patches of climax vegetations of past, reserved on religious grounds. They have immense value from genetical and ecological point of view. These are natural treasure houses of plants and animals that can satisfy the scientific, cultural, aesthetic needs of mankind. Traditional ecological knowledge and its functioning in India is a complex subject and least understood. Kerala is said to have about 360 groves which contain 660 plant species (Induchoodan, 1992). However it is estimated that in two Northern districts of Kerala, (Kannur,

Kasargod) there are more than 1000 groves (Unnikrishnan, 1995). The kavu helps to conserve the diversity of plants and animals and also to build up and maintain cultural diversity of the region by providing platform for performing arts like "theyyam" and other festivals (Kunhikannan, 2005)

The presents study was carried out with to study the floristic diversity of certain sacred groves in Kannur and to elucidate the role of sacred groves in biodiversity conservation with sustainable livelihood of traditional and cultural aspects.

2. MATERIALS AND METHODS

The presents study was carried out with to study the floristic diversity of eleven sacred groves in Kannur and to elucidate the role of sacred groves in biodiversity conservation with sustainable livelihood of traditional and cultural aspects. The following sacred groves are selected for the study.

- 1) Madaikavu at Madai
- 2) Kunnathu Kav, Pannenpara
- 3) Kizhakken Kav, Chekkikulam
- 4) Muchilottu Kav, Narathu
- 5) Neeliyar Kottam Kav, Parassinikadavu

- 6) Sri Thundikoth Bhagavathi Kshetram, Valiyannur
- 7) Valiavalappu Kavau, Thavakkara
- 8) Thalikkavu Sri Bhagavathi Kshethram, Thalikkavu
- 9) Kalarivathukal Bhagavathi Temple, Valapattanam
- 10) Aanthur Kavau, Parassinikadavu
- 11) Thekkumpad and Thaze kavau

Madaikavu is a famous sacred grove situated at Iripuram in Pazhayangadi about 20km north of Kannur town. It is densely biodiverse region spreading about 1 0.5 acres. It is situated on the famous Madayi hills. Regarding the myths, the deity here is Madaikavilamma. Records suggest that this kavau was present even before 1300 AD. This is many centuries old and ancient records say that the Sri Rajarajeswara temple at Thaliparamba and Madayikavu are very closely related. The Kunnathu Kavau situated in Pannenpara the deity is Bhavur Karinkali, Kizhakkan Kavau is situated in Chekkikulam, Muchilottu Kavau is situated in Narathu, Neeliyar Kottam kavau is situated in Managattuparamba, Thundikoth Bhagavathi Kshetram is situated in Valiyanoor. The deity here is Bhagavathi, Valiyavalappu Kavau is situated in the middle of the town at Thavakkara. It is said to be more than 300 years old.

Fig. 1 Selected Sacred Groves in Kannur



Madai Kavau

Aanthur Kavau



Neeliarkottam Kavau

Madai vegetation



Thali kavau



Thekkumpad kavau and Wetland s around the Sacred grove

Fig. 2. Believes and Conservation (Rituals /Spirutuals)



Theechamunndi

Gulikan



Devakkooth

Karanavar



Devakkooth at Thekkumbad

Maritheyam at Madayi kavau

Thalikkavu Sri Bhagavathi Kshetram. It is one of the oldest and still diverse sacred grove. It is situated at Thalikkavu in Kannur town itself. It is

dated back to 250 years. Kalarivathukkal Bhagavathi Temple, Valapattanam, the 'Theyyam and Thira' festival of entire North Malabar is binded to this temple. It is a large sacred grove. Outside the sanctum sanatorium to the east is the Saraswathy Kshetram, to the north is the Nagakkavu and at the east is the great old banyan tree which is worshipped even today believing that the goddess had swing there. Aanthur Kavu situated nearby Parassinikadavu, the deity of this kavu is Bhagavathi.

Thekkumbadu village is a part of large cultural landscape within interconnections between the various ecosystem types, such as wetland ecosystems, water bodies, human management (kaippad paddy field) patch of forest around the sacred grove and mangrove forest ecosystem placed within a resource rich landscape unit provided the appropriate climate for sustaining protected forest ecosystem in the form of sacred groves (Thaye kavu),

agro ecosystem (kaippad paddy cultivation between two kavu) and mangrove forest ecosystem.

The inhabitants around this wetland sacred grove of thekkumbadu maintain a spiritual connection and are integral part of their lives. The coastal marine ecosystems/wetland ecosystems are known to be productive, exceedingly valuable areas among the various biodiversity regions of the World. Living along the interface between land and sea, the mangrove ecosystem support genetically diverse groups of aquatic and terrestrial organisms.

3. RESULTS AND DISCUSSION

Kannur known as the land of looms and lores is famous for its rituals and custom based on ancestry which had played a lot in preserving the biodiversity at least to a small extent. Sacred groves are important among them. It helped a lot in Biodiversity conserved of the district directly and indirectly.

Table 1. List of plant species identified in Madaikavu, Madai.

S.No	Botanical Name	Family	Common Name
1	<i>Erythrina variegata</i> L.	Malvaceae	Murikku
2	<i>Glyceria cepia</i>	Fabaceae	Sheemakonna
3	<i>Ficus religiosa</i> L.	Moraceae	Arrayal
4	<i>Aeglaia roxburghi</i> Hiern	Meliaceae	Punyava
5	<i>Vernonia cinerea</i> Less	Asteraceae	Poovamkurunthal
6	<i>Justicia japonica</i> Thunb	Acanthaceae	Neelipoochedy
7	<i>Utricularia aurea</i> Lour	Lentibulariaceae	Kakkapoovu
8	<i>Coleus umbonicus</i> L.	Lamiaceae	Mathilkoorkka
9	<i>Justicia procumbens</i> L.	Acanthaceae	
10	<i>Pouzolzia indica</i> Gaud	Urticaceae	Neycheera
11	<i>Dalbergia volubilis</i> Roxb.	Fabaceae	Jadavally
12	<i>Sopubia trifida</i> Ham	Scrophulariaceae	Kunhikolambi
13	<i>Justicia ekakusuma</i>	Acanthaceae	Eakakusumam
14	<i>Heliotropium indicum</i> L.	Boraginaceae	
15	<i>Neonotonia wightii</i> Lackey	Fabaceae	Paraneelapoovu
16	<i>Rotala malambuzhansis</i>	Lithraceae	Thadripoovu
17	<i>Vallisneria spiralis</i> Linn.	Hydrocharitaceae	Ribbon plant
18	<i>Nymphoides krishnakesara</i>	Nymphaeaceae	Pootthally
19	<i>Euphorbia kathragenes</i>	Euphorbiaceae	Paalutti
20	<i>Impatiens balsamina</i> L.	Balsaminaceae	Kashithumba
21	<i>Zizyphus mauritiana</i> (Lamk.)	Rhamnaceae	Vanthutali
22	<i>Rauvolfia serpentina</i>	Apocyanaceae	Sarppagandhi
23	<i>Curcuma cannanorensis</i> Ansari et al	Zingiberaceae	Kattumanghal
24	<i>Utricularia polygaloides</i> Linn.	Urticaceae	Kakkapoovu
25	<i>Lidernia ciliata</i> (Colsm)	Scrophulariaceae	Chiravanakku
26	<i>Rotala malabaricum</i>	Lythraceae	Parathamara
27	<i>Sapium insign</i> Benth	Euphorbiaceae	Kanmaram
28	<i>Strychnos rux.vomica</i> L.	Loganiaceae	Kanhiram
29	<i>Curculego orchioides</i> Gaertn	Hypoxidaceae	Nilappana
30	<i>Plumeria accuminata</i> Ait.	Apocynaceae	Pala
31	<i>Sida rhombifolia</i> L.	Malvaceae	Kurumthotty

32	<i>Leucas plukenetii</i> (Roth) Spreng.	Lamiaceae	Thumba
33	<i>Xanthium indicum</i> Roxb	Asteraceae	Karamullu
34	<i>Phyllanthus amarus</i> schum Th	Euphorbiaceae	Keezharnelly
35	<i>Lantana camara</i> L	Lamiaceae	Kattuthulasi
36	<i>Physalis minima</i> Linn.	Solanaceae	Muttambigha
37	<i>Cyclea peltata</i> Diels	Pedaliaceae	Ellumpoovu
38	<i>Zehneria scabra</i> Sond.	Cucurbitaceae	Kurukkanvellary
39	<i>Ipomaea sepiaria</i> Koen	Convolvulaceae	Palamthangi
40	<i>Micrococca mercurialis</i> Benth.	Euphorbiaceae	Kunukady
41	<i>Anamirta cocculus</i> W and A	Cucurbitaceae	Padolam
42	<i>Merremia tridentata</i> L. Hall.f.	Convolvulaceae	Thiruthali
43	<i>Flacourtia montana</i> Grah	Pittosporaceae	Karuvachakka
44	<i>Celosia argentea</i> Linn.	Amaranthaceae	Mayoorasika
45	<i>Desmodium triflorum</i> (L.) DC	Papilionaceae	Nilamparanda
46	<i>Smithia conferta</i> J.E. Smith	Leguminosae	
47	<i>Memecylon malabaricum</i> cogn	Melastomaceae	Kayambo
48	<i>Amorphophallus dubius</i> Bl.	Araceae	Chena
49	<i>Biophytum sensitivum</i> DC	Gerahiaceae	Mukkutty
50	<i>Ericaulon</i>	Ericaulaceae	Choothu
51	<i>Colocassia esculentum</i>	Araceae	Thalu
52	<i>Oroxylum indicum</i> (L.) Vent.	Bignoniaceae	Mothiravalli
53	<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Vellakoduveli
54	<i>Cryptolepis buchananii</i> Roem.andSchult	Asclepidaceae	Palvalli
55	<i>Elephantopus scaber</i> L.	Asteraceae	Aanachuvadi
56	<i>Justicia japonica</i> Thunb.	Acanthaceae	Karimaram
57	<i>Evolvulus nummularis</i>	Convolvulaceae	Vishnukranthi
58	<i>Buchanania augustifolia</i> Roxb.	Anacardiaceae	
59	<i>Premna latifolia</i> (Roxb.)	Verbenaceae	Munja
60	<i>Vitex trifolia</i> L.	Verbenaceae	Notchi
61	<i>Murdannia nudiflora</i> (L.) Brenan	Commelinaceae	Paravellamkudiyam
62	<i>Ageratum conyzoides</i> (L.)	Asteraceae	Appakkadu
63	<i>Jatropha glandulifera</i> Roxb.	Euphorbiaceae	Nattavanakku

Table 2. List of plant species identified in Kunnathu Kav, Pannenpara.

S.No	Botanical Name	Family	Common Name
1	<i>Dioscoria alata</i> L	Dioscoreaceae	Kachhil
2	<i>Clerodendrum viscosum</i> vent	Verbenaceae	Vattaperuvalam
3	<i>Mallotus philippinensis</i> M.Arg	Euphorbiaceae	Kurukutty
4	<i>Piper nigrum</i> L	Piperaceae	Thippali
5	<i>Naregamia alata</i> wight and Arn.	Meliaceae	Nilanarakam
6	<i>Citrus grandis</i> Osbeck	Rutaceae	Bambloose
7	<i>Cyclea peltata</i> (Lamk) Hoof. F and Thoms	Menispermaceae	Padavally
8	<i>Wattakaka volubilis</i> (L.f) stapf	Asclepiadiaceae	Palvally
9	<i>Lindernia ciliata</i> Pennell	Scrophulariaceae	Chiravanakku
10	<i>Calycopteris floribunda</i> (Roxb) Poir	Combretaceae	Pullanhi
11	<i>Caryota urens</i> L	Arecaceae	Anappana
12	<i>Holigarna arnottiana</i> Hook.f	Anacardiaceae	Cheru maram
13	<i>Plumeria rubra</i> L.	Apocynaceae	Chembakam
14	<i>Cassia fistula</i> L	Caesalpiniaceae	Konna
15	<i>Acacia auriculiformis</i> L	Mimosae	Acacia
16	<i>Hibiscus rosasinensis</i> L	Malvaceae	Chembarathy
17	<i>Santalum album</i> L	Santalaceae	Chandanam
18	<i>Artocarpus heterophylla</i> Lam.	Moraceae	Plavu
19	<i>Anacardium occidentale</i> L	Anacardiaceae	Kashumavu

20	<i>Emilia sonchifolia</i> L. DC	Asteraceae	Muyalcheviyan
21	<i>Phyllanthus amarus</i> schum and Thonn	Euphorbiaceae	Kizharnelly
22	<i>Tectona grandis</i> L.f	Verbenaceae	Jathi
23	<i>Curculigo orchioides</i> Gaertn	Hypoxidaceae	Nilappana
24	<i>Ocimum sanctum</i> L	Lamiaceae	Thulasi
25	<i>Alstonia scholaris</i> L. R. Br.	Apocynaceae	Ezhilampala
26	<i>Costus speciosus</i> (Koenig) smith	Zingiberaceae	Kanhipoovu
27	<i>Adenanthera pavonina</i> L	Mimosae	Manjadi
28	<i>Pathos scandens</i> L	Araceae	Paruvakodi
29	<i>Vigna vexillata</i> L. A. Rich	Papilionaceae	Kattuzhunnu
30	<i>Mimusops elengi</i> L	Sapotaceae	Elanghi
31	<i>Piper betle</i> L	Piperaceae	Vettila
32	<i>Biophytum sensitivum</i> DC	Oxalidaceae	Mukkutty
33	<i>Zehneria scabra</i> Sond	Cucurbitaceae	Kurukkanvellary

Table 3. List of plant species identified in Kizhakken Kavu Chekkikulam.

S.No	Botanical Name	Family	Common Name
1	<i>Mussaenda frondosa</i> L.	Rubiaceae	Vellila
2	<i>Hibiscus rosasinensis</i> L.	Malvaceae	Chembarathy
3	<i>Ocimum sanctum</i> Linn.	Lamiaceae	Thulasi
4	<i>Glycerdia cepia</i>	Fabaceae	Sheemakonna
5	<i>Plumaria accuminata</i> Ait.	Apocynaceae	Chembakam
6	<i>Ipomoea pentaphylla</i> Jacq.	Convolvulaceae	Anchilachedi
7	<i>Lantana camara</i> L	Verbenaceae	Aripoo
8	<i>Xanthium streumarium</i> Wight	Asteraceae	Karamullu

Table 4. List of plant species identified in Muchilottu Kavu, Narathu.

S.No	Botanical Name	Family	Common Name
1	<i>Rauvolfia serpentina</i> Benth	Apocynaceae	Sarppagandhi
2	<i>Zehneria scabra</i> Sond.	Cucurbitaceae	Kurukkan vellary
3	<i>Carallia barachiata</i> (Lour.) Merr.	Rhizophoraceae	Vanghanna
4	<i>Chasalia curviflora</i> Thw.	Rubiaceae	Velutha aval pori
5	<i>Santalum album</i> L	Santalaceae	Chandanam
6	<i>Stachytarpheta urticaefolia</i> (salisb.) sims.	Verbenaceae	Chiravanakku
7	<i>Justicia prostrata</i> (cl.) Gamble	Acanthaceae	
8	<i>Lygodium fluxos</i> smith	Pteridophyta	Polivally
9	<i>Quisqualis indica</i> L	Combretaceae	Kulamarinhi

Table 5. List of plant species identified in Neeliyar Kottam Kavu, Parassinikadavu.

S.No	Botanical Name	Family	Common Name
1	<i>Alangium salvifolium</i> Wang.var	Alangiaceae	Angholam
2	<i>Desmos lawii</i> (Hook.f. and Thoms)	Anonaceae	Panal
3	<i>Artabotrys zeylanicus</i> Hk.f.	Anonaceae	
4	<i>Knoxia wightiana</i> wall	Rubiaceae	
5	<i>Jasminum ritchii</i> Cl.	Oleiaceae	Kattupichhakam
6	<i>Memecylon lawsoni</i> Gamb	Melastomaceae	
7	<i>Sonerila rheedii</i> W.and A.	Melastomaceae	
8	<i>Strychnos nux- vomica</i> L.	Loganiaceae	Kanhiram
9	<i>Bulbophyllum neilgherrense</i> wight	Orchidaceae	Punnilachedi

Table 6. List of plant species identified in Sri Thundikoth Bhagavathi Kshetram,Valiyannur.

S.No	Botanical Name	Family	Common Name
1	<i>Ocimum sanctum</i> Linn	Lamiaceae	Thulasi
2	<i>Plumaria accuminata</i> Ait	Apocynaceae	Chembakam
3	<i>Terminalia catappa</i> Linn	Combretaceae	Badam
4	<i>Cassia fistula</i> L	Caesalpiniaceae	Konna
5	<i>Mangifera indica</i> L.	Anacardiaceae	Mavu
6	<i>Anacardium occidentale</i> L	Anacardiaceae	Kashumavu
7	<i>Cleome viscosa</i> L.	Capparidaceae	Kattukaduku
8	<i>Leucas plukenetii</i> (Roth) Spreng.	Lamiaceae	Thumba
9	<i>Tridax procumbens</i> L.	Asteraceae	Thalatherippan
10	<i>Vernonia cinerea</i> Less	Asteraceae	Poovamkurunthal
11	<i>Aerva lanata</i> L. schult	Amaranthaceae	Cheroola
12	<i>Cyathula prostrata</i> (L.) Bl	Amaranthaceae	Aanachuvadi
13	<i>Mitracarpus verticillatus</i> (Schum and Thonn)	Rubiaceae	-
14	<i>Mimosa pudica</i> L	Mimosae	Thottavady
15	<i>Sida rhombifolia</i> L.	Malvaceae	Kurumthotty
16	<i>Phyllanthus amarus</i> Schum and Thonn	Euphorbiaceae	Keezharnelly
17	<i>Scoparia dulcis</i> L.	Scrophulariaceae	Kallurukky
18	<i>Gloriosa superba</i> L.	Liliaceae	Mendhonni
19	<i>Cassia mimosoidis</i> L.	Caesalpiniaceae	-
20	<i>Crotalaria striata</i> DC.	Fabaceae	Kilukkampatti
21	<i>Hedyotis diffusa</i> Willd	Rubiaceae	
22	<i>Portulaca oleracea</i> L.	Portulacaceae	pathumanipoov
23	<i>Ludwigia hyssopifolia</i> (G.Don) Exell	Onagraceae	-
24	<i>Memecylon umbellatum</i> Burm.F.	Melastomaceae	Kayambu

Table 7. List of plant species identified in Valiavalappu Kav, Thavakkara.

S.No	Botanical Name	Family	Common Name
1	<i>Amaranthus irritidis</i> L.	Amaranthaceae	Mullancheerra
2	<i>Sesamum indicum</i> L.	Pedaliaceae	Kattellu
3	<i>Carica papaya</i> Linn.	Caricaceae	Papaya
4	<i>Mukia maderaspatana</i> L. Roem.	Cucurbitaceae	Kattuvellary
5	<i>Ageratum conyzoides</i> L.	Asteraceae	Appa
6	<i>Colocasia esculenta</i> L.	Araceae	Kattu chembu
7	<i>Plumaria accuminata</i> Ait.	Apocynaceae	Chembakam
8	<i>Tamarindus indicus</i> L.	Caesalpiniaceae	Puli
9	<i>Strychnos nux-vomica</i> L.	Loganiaceae	Kanhiram
10	<i>Leucas blukenetii</i> (Rosh.) Spreng.	Lamiaceae	Thumba
11	<i>Tagetes erectus</i>	Asteraceae	Chetty
12	<i>Hyptis suaveolens</i> (L.) Poir	Lamiaceae	Kattuthulasi
13	<i>Calotropis gigantea</i> R.Br.	Asclepiadaceae	Erikku
14	<i>Sida rhombifolia</i> L.	Malvaceae	Kurumthotty
15	<i>Anona squamosa</i> L.	Anonaceae	Aathachakka
16	<i>Curculigo orchioides</i> Gaertn	Hypoxidaceae	Nilappana
17	<i>Adhatoda vasica</i> Nees.	Acanthaceae	Adalodakam
18	<i>Desmodium trifolium</i> L. DC.	Leguminosae	Nilamparanda
19	<i>Macaranga peltata</i> (Roxb.) Huell Arg.	Euphorbiaceae	Uppila
20	<i>Crotalaria striata</i> DC.	Papilionaceae	Kilukilukkipoo
21	<i>Lantana camara</i> L.	Verbenaceae	Arippoo
22	<i>Ficus carica</i>	Moraceae	Atthi
23	<i>Datura metel</i> L.	Solanaceae	Ummam
24	<i>Ocimum sanctum</i> Linn.	Lamiaceae	Krishnathulasi
25	<i>Cassia tora</i> L.	Caesalpiniaceae	Thavara

Table 8. List of plant species identified in Thalikavu Sri Bhagavathi Kshetram Thalikavu.

S.No.	Botanical Name	Family	Common Name
1	<i>Plumeria acuminata</i> Ait.	Apocynaceae	Chembakam
2	<i>Strychnos nux-vomica</i> L.	Loganiaceae	Kanhiram
3	<i>Ficus religiosa</i> L.	Moraceae	Arayal
4	<i>Aegle marmelose</i> corr	Rutaceae	Koovalam
5	<i>Cassia fistula</i> L.	Caesalpinaceae	Konna
6	<i>Sida rhombifolia</i> L.	Malvaceae	Kurumthotty
7	<i>Crotalaria pallida</i> Dryand	Papilionaceae	Kilukilukkipoovu
8	<i>Gloriosa superba</i> L.	Liliaceae	Mendhonni
9	<i>Hyptis suaveolens</i> L. Poir	Lamiaceae	Kattuthulasi
10	<i>Leucas plukenetii</i> (Roth) spreng	Lamiaceae	Thumba
11	<i>Mimosa pudica</i> L.	Mimosae	Thottavadi
12	<i>Datura metel</i> L.	Solanaceae	Ummam
13	<i>Cleome viscosa</i> Linn	Capparidaceae	Kattukadugu
14	<i>Macaranga peltata</i> (Roxb.) Muell-Arg.	Euphorbiaceae	Uppila
15	<i>Rauwolfia serpentina</i> (L) Kurz	Apocynaceae	Sarppaghandhi
16	<i>Curculigo orchioides</i> Gaertn.	Hypoxidaceae	Nilappana
17	<i>Mussaenda frondosa</i> L.	Rubiaceae	Veleela
18	<i>Caryota urens</i> L.	Arecaceae	Aanapanna
19	<i>Zizyphus oenoplia</i> L. Mill	Rhamnaceae	Kottakapazham
20	<i>Spondias pinnata</i> L.f. kurz.	Anacardiaceae	Ambayam
21	<i>Tabernaemontana heyneana</i> . Wall	Apocynaceae	Pala
22	<i>Pouzolzia wightii</i> Benn-Pl. Jan Rar	Urticaceae	Neycheera
23	<i>Cassia tora</i> L.	Caesalpinaceae	Thavara
24	<i>Colocassia esculenta</i> L.Schotta	Araceae	Thalu
25	<i>Ocimum sanctum</i> Linn.	Lamiaceae	Krishnathulasi
26	<i>Ageratum conyzoides</i> L.	Asteraceae	Appa
27	<i>Urena lobala</i> L.	Malvaceae	Uthiram
28	<i>Uvaria narum</i> (Dunal) Wall.	Anonaceae	Nagavalli
29	<i>Jasminum multiflorum</i> Burm.f	Oleaceae	Kattumulla
30	<i>Tagetes erectus</i>	Asteraceae	Chetty

Table 9. List of plant species identified in Kalarivathukal Bhagavathi Kshetram, Valapattanam.

S.No.	Botanical Name	Family	Common Name
1	<i>Pothos scandens</i> L.	Araceae	Paruvakodi
2	<i>Mallotus philippensis</i> (Lam.) Muelt Arg.	Euphorbiaceae	Koovukoodi
3	<i>Calycopteris floribunda</i> (Roxb.) Poin	Combretaceae	Jadapoovu
4	<i>Strychnos nux-vomica</i> L.	Loganiaceae	Kanhiram
5	<i>Alstonia scholaris</i> L.R.Br.	Apocynaceae	Ezhilampala
6	<i>Phyllanthus emblica</i> Schum Th	Euphorbiaceae	Nelli
7	<i>Caryota urens</i> L.	Arecaceae	Anappana
8	<i>Cassia occidentalis</i> L.	Caesalpinaceae	May flower
9	<i>Santalum album</i> L.	Santalaceae	Chandanam
10	<i>Dalbergia volubilis</i> Roxb.	Fabaceae	Jadavally
11	<i>Plumeria acuminata</i> Ait.	Apocynaceae	Chembakam
12	<i>Quisqualis indica</i> L.	Combretaceae	Kulamarinhi

Table 10. List of plant species identified Anthur Kavu, Parassinikadavu.

S.No	Botanical Name	Family	Common Name
1	<i>Calycopteris floribunda</i> (Roxb.) Poir.	Combretaceae	Jadapoovu
2	<i>Strychnos nux-vomica</i> L.	Loganiaceae	Kanhiram
3	<i>Mussaenda frondosa</i> L.	Rubiaceae	Veleela
4	<i>Plumeria accuminata</i> . Ait.	Apocynaceae	Chembakam

5	<i>Aegle marmelos</i> corr.	Rutaceae	Koovalam
6	<i>Ficus religioisa</i> L.	Moraceae	Arayal
7	<i>Curculigo orchioides</i> Gaertn.	Hypoxidaceae	Nilappana
8	<i>Caryota urens</i> L.	Arecaceae	Aanappana
9	<i>Azadirachta indica</i> A Juss	Miliaceae	Veppu
10	<i>Santalum album</i> L.	Santalaceae	Chandam
11	<i>Tectona grandis</i> L.f.	Verbenaceae	Jadhi
12	<i>Holigarna arnottiana</i> Hook.f.	Anacardiaceae	Cheru maram
13	<i>Alstonia scholaris</i> (L.) R. Br.	Apocynaceae	Ezhilampala
14	<i>Ocimum sanctum</i> Linn.	Lamiaceae	Thulasi
15	<i>Emilia sonchifolia</i> (L.) DC	Asteraceae	Muyal cheviyan
16	<i>Cassia fistula</i> L.	Caesalpiniaceae	Konna
17	<i>Anona squamosa</i> Linn.	Anonaceae	Aathachakka
18	<i>Sida rhombifolia</i> L.	Malvaceae	Kurumthotty
19	<i>Jasminum muttiflorum</i> Burm.f.	Oleaceae	Kattumulla
20	<i>Memecylon umbellatum</i> Burm.f.	Melastomaceae	Kashavu
21	<i>Mimusops elengi</i> Linn	Sapotaceae	Elanghi

Table 11. Plants collected from Thekkumbad (Mangrove Associated Plants).

S.no	Botanical name	Family	Local name	Habit
1	<i>Utricularia reticulate</i> J. E .Sm	Lentibulariaceae	Kakkapoovu	Herb
2	<i>Cyanotis cristata</i> (L.) D .Don	Commelinaceae		Herb
3	<i>Ipomoea pes-caprae</i> (L.) Sweet	Convolvulaceae		Herb
4	<i>Cyperus rotundus</i> L . Sp. Pl	Cyperaceae	Muthanga	Herb
5	<i>Carex filicina</i> Nees	Cyperaceae		Herb
6	<i>Clerodendrum inerme</i> (L.)	Verbenaceae		Shrub
7	<i>Eichornia crassipes</i> (Mart.) Solms	Pontederiaceae		Herb
8	<i>Sphaeranthus indicus</i> L.	Asteraceae		Herb
9	<i>Exacum tetragonum</i> Roxb . Fl	Gentianaceae		Herb
10	<i>Ludwigia octovalvis</i> (Jacq.)Raven	Onagraceae		Herb
11	<i>Wedelia biflora</i> (L.) DC	Asteraceae	Kammal poovu	Herb
12	<i>Premna serritifolia</i> L.	Verbenaceae		Shrub
13	<i>Cassia mimosoides</i> L.	Caesalpiniaceae		Herb
14	<i>Scirpus dichotoma</i> L.	Cyperaceae		Herb
15	<i>Eclipta alba prostrata</i> (L.)L.Mant	Asteraceae	Kayyoonji	Herb
16	<i>Ageratum conyzoides</i> L.	Asteraceae		Herb
17	<i>Lindernia crustacean</i> (L.)F.v-Muell	Scrophulariaceae		Herb
18	<i>Limnophila indica</i> (L.)Druce	Scrophulariaceae		Herb
19	<i>Commelina benghalensis</i> L.	Commelinaceae	Vazhapadathi	Herb
20	<i>Desmodium triflorum</i> (L.)	Papilionaceae		Herb
21	<i>Desmodium laxiflorum</i> Dc	Papilionaceae		Herb
22	<i>Oldenlandia repens</i> L.	Rubiaceae		Herb
23	<i>Derris trifoliata</i> Lour.Fl.	Papilionaceae		Climbing shrub
24	<i>Eriocaulon diana</i> e Fyson var.	Eriocaulaceae		Herb
25	<i>Crotalaria juncea</i> L.	Papilionaceae		Herb
26	<i>Scoparia dulcis</i> L.	Scrophulariaceae	Kallurukki	Herb
27	<i>Synedrella nodiflora</i> L.	Asteraceae		Herb
28	<i>Vernonia arboriea</i> Buch -Ham	Asteraceae	Poovakurundal	Herb
29	<i>Sida acuta</i> Burm.f.Fl	Malvaceae	Kurundhotti	Herb
30	<i>Leucas aspera</i> (Wild.)Link	Lamiaceae	Thumba	Herb
31	<i>Gloriosa superb</i> L.	Liliaceae	Mendonni	Climber
32	<i>Vanda roxburghii</i> R.Br	Orchidaceae	Maravazha	Herb
33	<i>Ixora coccinea</i> L.	Rubiaceae	Kattu thechi	Shrub

34	<i>Lantana camara</i> L.	Verbenaceae	Arippu	Shrub
35	<i>Justicia simplex</i> D.Don	Acanthaceae		Herb
36	<i>Mimusops elengi</i> L.	Sapotaceae	Elangi	Tree
37	<i>Ficus religiosa</i> L.	Moraceae	Arayal	Tree
38	<i>Costus speciosus</i> (koen.) Smith	Zingiberaceae		Herb
39	<i>Mukia maderaspatana</i> (L.)	Cucurbitaceae	Kurukan vellari	Climber
40	<i>Erythrina variegata</i> Lam.	Papilionaceae	Murikke	Tree
41	<i>Bacopa monnieri</i> (L.)	Scrophulariaceae	Brammi	Herb
42	<i>Tinospora cordifolia</i> (Thunb.) Miers	Menispermaceae	Chittamrudh	Climber
43	<i>Arenga wightii</i> Griff	Arecaceae	Kaattupana	Tree
44	<i>Bombax ceiba</i> L.	Bombacaceae	Theepetimaram	Tree
45	<i>Holigarna arnottiana</i> Hook.	Anacardiaceae	Cheru maram	Tree
46	<i>Thespesia populnea</i> (L.)	Malvaceae	Puvarasu	Small tree
47	<i>Melastoma malabathricum</i> L.	Melastomataceae	Athiraani	Shrub
48	<i>Cinnamomum zeylanicum</i> Garc.	Lauraceae	Karuvapatta	Tree
49	<i>Calophyllum inophyllum</i> L.	Clusiaceae	Attupunnam	Tree
50	<i>Morinda citrifolia</i> L.	Rubiaceae	Manjanathi	Tree
51	<i>Cerbera manghas</i>	Apocynaceae	Othalom	Small tree
52	<i>Aerva lanata</i> (L.)	Amaranthaceae	Cherupula	Herb
53	<i>Pandanus fascicularis</i> L.	Pandanaceae	Kaitha	Small tree
54	<i>Ipomoea companulata</i> L.	Convolvulaceae	Manippoovu	Climber
55	<i>Glyricidea sepia</i> (Jacq.)Walp.	Papilionaceae	Seemakonna	Tree
56	<i>Ananas comosus</i> Mill.	Bromeliaceae	Kaitha chakka	Shrub
57.	<i>Calamus rotang</i> L.	Arecaceae	Chooral	Shrub
58	<i>Vitis trifolia</i> L.	Vitaceae	Kaatumunthiri	Climber
59.	<i>Ocimum sanctum</i> L.	Lamiaceae	Thulasi	Herb
60.	<i>Hyptis suaveolens</i> L.	Lamiaceae	Katuthulasi	Herb
61.	<i>Heliotropium indicum</i> L.	Boraginaceae		Herb
62.	<i>Rauvolfia serpentina</i>	Apocynaceae	Sarpagandhi	Herb
63.	<i>Alstonia constricta</i>	Apocynaceae	Pala	Tree
64	<i>Dioscoria alata</i>	Dioscoriaceae	Kaachil	Climber
65.	<i>Eupatorium odoratum</i>	Asteraceae	Communistpacha	Shrub
66.	<i>Colacasia esculenta</i>	Araceae	Chembu	Herb
67.	<i>Euphorbia hirta</i>	Euphorbiaceae		Herb
68.	<i>Biophytum sensitvum</i>	Oxalidaceae	Mukutti	Herb
69.	<i>Tectona grandis</i> L.f.	Verbenaceae	Teak	Tree
70.	<i>Melochia corchorifolia</i> L.	Sterculiaceae	Mullan chedi	Herb
71.	<i>Coix lacremajobi</i>	Poaceae	Kalla chedi	Herb
72.	<i>Alysicarpus vaginalis</i>	Papilionaceae		Herb

Table 12. True Mangrove plants collected from Thekkumpad.

S.no	Botanical name	Family	Local name	Habit
1	<i>Acanthus ilicifolius</i> L.	Acanthaceae	Chulli	Shrub
2	<i>Aegiceras corniculata</i> L.	Myrsinaceae	Chakkara kandal	Tree
3	<i>Avicennia marina</i> Fosk)vierh	Avicenniaceae	Uppatti	Tree
4	<i>Avicennia officinalis</i> L.	Avicenniaceae	Oori	Tree
5	<i>Bruguiera cylindrical</i> (L)Bl	Rhizophoraceae		Tree
6	<i>Exoecaria agallocha</i> L.	Euphorbiaceae	Kannampotti	Tree
7	<i>Kandelia candel</i> (L)Druce	Rhizophoraceae	Poo kandal	Tree
8	<i>Rhizophora mucronata</i> Lamk	Rhizophoraceae	Pranthan kandal	Tree
9	<i>Rhizophora apiculata</i> Blume	Rhizophoraceae		Tree
10	<i>Sonneratia alba</i> J.Smith	Sonneratiaceae	Nakshatra kandal	Tree

Table 13. Cultivated crops.

S.no	Botanical name	Family	Local name	Habit
1	<i>Oryza sativa L.</i>	Poaceae	Nellu	Herb
2	<i>Musa paradisiacal L.</i>	Musaceae	Vaazha	Gigantic herb
3	<i>Cocos nusifera L.</i>	Arecaceae	Thengu	Tree
4	<i>Ipomoea batatas .L</i>	Convolvulaceae	Madura kizhangu	Trailing herb
5	<i>Zingiber officinalis Rose.</i>	Zingiberaceae	Injhi	Herb
6	<i>Maranta arundinaaceae L.</i>	Marantaceae	Koova	Herb
7	<i>Manihot esculenta</i>	Euphorbiaceae	Maracheeni	Shrub
8	<i>Cucumis sativus L.</i>	Cucurbitaceae	Vellari	Climber
9	<i>Lathyrus sps.</i>	Papilionaceae	Kota payar	Climber
10	<i>Trichosanthes anguina L.</i>	Cucurbitaceae	Padavalam	Climber

In the present study eleven important sacred groves are selected in Kannur district. The floristic diversity of selected ten sacred groves shows 151 of plant species and 131 genera belong to 56 families were reported in ten sacred groves. Among the these in Madayi kavu reported 63 plant species, followed by Kunnathu kavu 33 species, Thalikavu 30 species, Valiavalappu kavu 25 species, Thundikoth Bhagavathi Kshetram 24 species, Aanthur kavu 21 species, Kalarivathukal Bhagavathi Temple 12 species, Muchilottu kavu and Neeliarkottam kave recorded 9 species each and , Kizhakken kavu recorded only 8 species. The kavu helps to conserve diversity of plants and animals and also to build up and maintain cultural diversity of the region by providing platform for performing arts like "theyyam" and other festivals (Kunhikannan, 2005). The list plants collected from these sacred groves are presented in Table 1-10.

The Thekkumpad kavu has the unique nature compared to the above ten sacred grove. In the present study, 92 plant species identified, of these 92 species, 72 species are mangrove associates and 10 species are true mangroves. The list plants collected from these sacred groves are presented in Table 11-14. The recorded true mangroves are *Acanthus ilicifolius*. L, *Aegiceras corniculata* L, *Avicennia marina* (Forsk) Vierh, *Avicennia officinalis* L, *Avicennia alba* Blume, *Bruguiera cylindrical* (L) Bl, *Bruguiera gymnorhiza* L, *Exoecaria agallocha* L, *Kandelia candel* (L) Druce, *Rhizophora mucronata* Lamk, *Rhizophora apiculata* and *Sonneratia alba* J.Smith. Ten species are identified as cultivated plants by the local peoples. These 92 plant species belongs to the 48 family and 87 genera. The herbaceous plants are dominant in Thekkumpad and 47 herbaceous plants are identified. Trees, shrubs and climbers are also recorded. 25 trees identified among these 3 of them are small trees. Besides this 11 shrubs and 9 climbers are noticed. Asteraceae,

papilionaceae are found dominant families in which 7 genera each reported in these families. Among the mangrove associates Cyperaceae plants are dominant. Indeed many such species that are culturally valued ecologically significant keystone value to the ecosystem, through their contribution to ecosystem integrity (Ramakrishnan *et al* 1998, 2000). The avifauna of the certain sacred groves of North Malabar including Thazekkavu of thekkumpad were reported (Sasikumar 2005)

The present study give an insight into the bio-ecological and socio cultural dimensions of sacred groves in helping and conserving the biological diversity. Kaliyattam a performing art with different forms of 'theyyam' is conducted every year offering to propitiate the deity by different communities in the villages. These festivals are socio-religious ceremonies performed in north Kerala since ancient time (Kurup, 2004). The 'Devakooth' a theyyam performed by women in Thekkumpad kavu. is noteworthy among the performative rituals. These ritualistic practices centred around the sacred groves substantially contribute to the conservation and day-to-day management of ecological balance by sacred groves. Marithayyam will be performed at Madayi kavu on the 16th day of Malayalam month karkidagam.

Sacred groves are the part of the socioecological system, the concept of village as part of a large cultural landscape, with interconnections between the various ecosystem type such as forests, water bodies and human-managed agroecosystem types placed within a resource rich landscape unit provided the appropriate climate for sustaining protected forest ecosystems in the form of sacred groves. In other words, presence of resource rich healthier natural ecosystem type is a prerequisite for conservation of the sacred groves.

REFERENCES

- Induchoodan, N.C. (1992). Ecological studies on the sacred groves of Kerala. Final report to WWF, New Delhi
- Kunhikannan, C. (2005). Traditions, Rituals and Biodiversity in Sacred grove of Karakkavu, Kasargod district, Kerala state-a case study. In: C. Kunhikannan and B. Gurudev Singh (eds.) *Strategy for Conservation of Sacred Groves*. Institute of Forest Genetics and Tree Breeding, Coimbatore, India. pp 125-136.
- Kurup, K.K.N. (2004). Theyyam-A Ritual Dance of Kerala <http://www.theyyam.com>.
- Ramakrishnan, P.S., (2005). Sacred Groves Integrated within the Cultural landscape. In: C. Kunhikannan and B. Gurudev Singh (eds) *Strategy for Conservation of Sacred Groves*. Institute of Forest Genetics and Tree Breeding, Coimbatore, India. p. 108-116.
- Ramakrishnan, P.S., Saxena, K.G and Chandrasekara, (eds.) (1998). *Conserving the Sacred: For Biodiversity Management*. UNESCO and Oxford and IBH Publ. New Delhi. p. 480.
- Ramakrishnan, P.S., U.M. Chandrasekara, C. Elourd, C.Z. Guilmoto, R.K. Maikhuri, K.S. Rao, S. Sankar and K.G. Saxena, (2000). *Mountain Biodiversity, Land Use Dynamics and Traditional Ecological Knowledge*. UNESCO and Oxford and IBH Publ. New Delhi. p. 353.
- Sasikumar, C. (2005). Avifauna of the sacred groves of North Kerala. In: C. Kunhikannan and B. Gurudev Singh (eds) *Strategy for Conservation of Sacred Groves*. Institute of Forest Genetics and Tree Breeding, Coimbatore, India. p. 97-107.
- Unnikrishnan, E. (1995). *Uttarakeralathile Visudhavanangal oru Paristhithi- Nadodi-amsekarapadanam (Sacred groves of North Kerala- an Eco-folklore study)* - Malayalam, Jeevarekha, Thrissur . Kerala.