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Floristic composition, diversity and ethnic culture in Mankara sacred grove, Palakkad District, Kerala, India

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Abstract
Sacred groves are a very ancient and widespread phenomenon in the old-world cultures, which are small patches of native vegetation traditionally been protected on the grounds of religious faith. Sacred groves have existed in India from the time immemorial as patches of densely wooded areas, venerated on religious grounds. Sacred groves have preserved many rare and endemic wild plant species, many of which hold potential benefit to man in medicine, agriculture and industry. The present work was carried out in Mankara Sacred Grove, Palakkad district, Kerala. Geographically the place lies between 10˚45′0″ N latitude and 76˚26′0″ E longitudes. About 114 plant species belonging to 54 families were collected from here. Plants were enumerated with botanical names, family, habit and local names. It includes 36Trees, 26 Shrubs, 41 Herbs, 2 Creeper and 10 Climbers. The collected plants were preserved as herbarium. Ethnic cultural practices in the sacred groves are also mentioned in this paper.

Keywords: sacred grove, Mankara, Palakkad, floristic diversity, botanical names, ethnic culture

1. Introduction
Sacred groves comprise of patches of forests or natural vegetation. Sacred groves are a very ancient and widespread phenomenon in the old-world cultures [2]. These spaces are protected by local communities because of their religious beliefs and traditional rituals that run through several generations. A sacred forest varies from one grove to another. In this sacred place even the dry foliage and fallen fruits are not touched. People believe that any kind of disturbance will offend the local deity, causing diseases, natural calamities or failure of crops [5]. Sacred groves form an important unit in the rural landscape of Kerala. Studies conducted in the state have already highlighted the fact that well conserved sacred groves of the state are comparable to the regional national forests for various attributes [4]. Many sacred groves of the state are also treasures of rare and endemic species. Sacred groves with their complex array of interaction influence the flora and fauna of the region as well as microclimate of the locality.

Sacred groves are ecologically significant because they 1) Conserve Biodiversity – The sacred groves are important repositories of floral and faunal diversity that have been conserved by local communities in a sustainable manner. They are often the last refuge of endemic species in the geographical region. 2) Recharge of aquatic ecosystem – The groves is often associated with ponds, streams or springs, which help meet the water requirements of the local people. The vegetative cover also helps in the recharging the aquifers. 3) Soil conservation: The vegetation cover of the sacred groves improves the soil stability of the area and also prevents soil erosion [7]

The sacred groves have some threats, the common threats identified are 1) Disappearance of the traditional belief systems. 2) Sacred groves in many parts of our country have been destroyed due to rapid urbanization and developmental interventions such as roads, railways tracks, dams including commercial forestry.3) Many groves are suffering due to 'Sanskritisation' or the transformation of the primitive forms of nature worship into formal temple worship. 4) Pressures due to increasing livestock and fuel wood collection [10]. But day by day due to interference of some peoples the plants are reducing. Conservation of sacred groves is essential for maintaining local biodiversity, the comprehensive health of a landscape and preserving the socio-cultural integrity of local communities are most important [6]. Keeping this view in mind in the present investigation an attempt has been made to study the vegetation around the important sacred grove Mankara and explore the ethnic cultural practices in that area.

2. Materials and Methods
Palakkad is the largest administrative district in Kerala state and has an area of 4,480 $km^{2.}$ In earlier times, Palakkad was known as Palakkatussery. The commonly held belief is that the name Palakkad is a fusion of two Malayalam words Pala, which the name was given for Barren land during the Sangam period and Kadu which means Forest. Palakkad is the gateway to Kerala due to the presence of Palakkad gap, in the Western Ghats. The district is gifted with Nelliampathy hills, silent valley national park, famous Parambikulam wild life sanctuary, Attappady hills, dams and 14 rivers. A part from this the district is blessed with beautiful forest which add beauty to the district. Area selected for the present study is Mankara in Palakkad district of Kerala state. The area is enclosed between 10˚45′0″ N latitude and 76˚26′0″ E longitudes. The elevation is 97m above the sea level. The annual rainfall of the district is around 2,397mm and the hottest month is March and the temperature is up to 38°C. The soil is highly diverse with clay gravel soil of lateritic origin. Studies are undertaken during August 2018 to January 2019. Field visit was conducted several times and collect the details of the plants. The Botanical identities of the plants have been confirmed with Flora of presidency of Madras [3], Flora of

Coimbatore [1], The Flora of Kerala [8] and also with eminent taxonomist.

3.Results and Discussion

Sacred groves are patches of forests dedicated to a local spirit or deity and protected by cultural traditions and religious precepts. Floristic compositon in Mankara has been listed (Table 1). 114 species of angiosperms coming under 54 families were recorded and listed out (Table 1). The Families having maximum number of species present in the study area are presented (Table 2).114 plants are belongs to 54 families, dominant family is fabaceae (9) followed by apocynaceae (8) and acanthaceae (6).The plants listed above were distributed as 36 trees (31.57%), 27 shrubs (23.68%), 41 herbs (35.96%) and 10 climbers (8.77%), 2 creeper (1.75%) (Table 3). Plants were enumerated with botanical names, family, habit and local names (Table 1). Similar kind of work was done in Iriveri Sree Pulideva Temple at Kannur district [9]. (Table 3) Habit wise analysis of flora shows comparatively higher percentage of tree (31.51%) were predominant followed by herb (35.96%), shrub (23.68%) and climbers (8.77%). Creepers (1.75). Tree species are maintain the ecosystem balance in the grove. Hence their protection is very much necessary.

3.1Ethnic culture

The sacred groves of mankara are predominantly dedicated to serpent deities and are popularly known as sarpakavu. The idiols worshipped in the groves are Nagaraja, Nagayakshi, Chithrakoodakallu, Maninagam, Anjanamaninagam. Purity of mind and body are of utmost importance in the sarpakavu for pleasing the deities. Any form of cutting or removal of trees or their parts in the grove is prohibited, lest it should invite calamities in the family. Blighted patches or pustules all over the body, blindness, leprosy, loss of fortune, lack of progeny etc. are thought of as a result of the displeasure of serpent gods. Though serpent worship is done throughout the year, the month Vrischikom (a month in Malayalam calendar; spanning November 15- December 15) is regarded auspicious, when special offerings are given to the serpent gods. Mankara kavu owned by Nair families. Rites and rituals associated with the sarpakavu were found to be of two types. In the sarpakavu owned by Namboothiris, rituals are in Vedic style, involving mantra and thanthra.. In the sarpakavus of Nair, Ezhava and Thandan the rites and rituals are in primitive style, which comprises Noorumpalum as it is popularly called, and pulluvanpattu (Kalamezhuthupattu) and pambuthullal (Thullal).

3.2 Noorum Palum

Noorumpalum is a unique ritual performed in the sarpakavu by one of the senior members of the family or priests. Noorumpalam are offered on the Aayilyam star of every month or once in a year in any of the twelve months except karkidakom. It is a preparation of water, milk, ricepowder and turmeric powder; poured all along the idol and also offered in front of the deity.

3.3 Pulluvan Pattu

Pulluvanpattu, also known as Kalamezhutthupattu is another ritual associated with the sarpakavu, being performed by the people belonging to the pulluva community, who are considered as very ancient, seen associated with serpent worship. This is a very expensive ritual, generally performed once in a year or as and when found necessary. The different stages of this include kalamezhuthu, pooja, pattu, and thullal.

3.4 Kalamezhuthu

Kalamezhuthu is the preparatory initial stage of the ritual, during which colorful pictures of serpents are made using powders of various colors from easily available natural materials like rice flour, rice husks, charcoal, henna leaf, turmeric, quick lime etc. The festival site is cleaned, decorated with leaves of fig tree, mango, areca palm, betel young unopened leaves of toddy palm or coconut palm, young unopened inflorescence of areca palm. The floor is waxed with Panchavarnapodi, constituting five different colours made of natural materials. The colors of yellow, black, red, white, green and black representing the five natural elements of this universe. When the kalam is ready nilavilakku is lit, marking the beginning of the ritual. Invocation is done by silent prayers and floral offerings along with water. For this, only selected flowers and leaves; flowers of ixora, leaves of thulasi, flowers of thamara and leaves of koovalam are used. This is followed by offering of food to the gods invoked in the design followed by tender coconut, mature coconut, raw rice, fruits and milk.

The songs, pulluvanpattu are sung by the husband and wife of pulluva, who also plays certain musical instruments (kudam, veena and ilathalam). Now the helpers will stand with the tender inflorescences of areca palm in their hands, concentrating in the songs and the kalam. In the limited light of the nilavilakku, the song and the typical drumbeat transform these helpers to a hypnotized state. With this, they slowly swing their body and dance like a snake, and at climax they rub off the kalam. This dance is called thullal or pambuthullal. The same procedure of kalamezhuthu, pattu, thullal will continue for the whole period in the morning as well as in the afternoon.

The floristic composition of the sacred groves indicates the pre – existence of climax vegetation in the area. Sacred groves are considered as store house of rare, endemic and endangered plants because of floristic wealth and biodiversity conservation. The grove is associated with water bodies and thus contains large number of floras and faunas. Sacred groves are relicts from a past socio-cultural epoch, which served to transmit the cultural heritage generations from pre-historic time onwards. Conservation of natural resources in the past involved many taboos, rituals and other religious practices and sacred grooves was such a traditional socio-cultural mechanism aiming at nature conservation. The legal status and management of sacred groves in the country need to be examined and there is an urgent need to preserve and acknowledge the efforts of the people of this area in preserving the other small sacred patches of the forest as local biodiversity.

4. Acknowledgement

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Table 1: List of Plants Present in the Study Area

S. No.	Name of the plant	Family	Habit	Common name English / Malayalam
1.	*Abrus precatorius* Linn	Fabaceae	Climber	Kunnikkuru/rosary pea
2.	*Achyranthes aspera* Linn.	Amaranthaceae	Herb	Kataladi/chaff-flower
3.	*Adenanthera pavonina* L.	Mimosaceae	Tree	Manjadi /Red Lucky Seed
4.	*Adhatoda vasica* Nees	Acanthaceae	Shrub	Adalodakam/Malabar nut
5.	*Aegle marmelos*(L) Corr	Rutaceae	Tree	Vilvam/ wood apple
6.	*Aerva lanta* (L.) Juss.ex.Schult.	Amaranthaceae	Herb	Cherula/ Mountain knotgrass
7.	*Allamanda cathartica* L.	Apocynaceae	Shrub	Manjakolambi /golden trumpet,
8.	*Alpinia calcarata* Roxb.	Zingiberaceae	Herb	Aratta /Snap Ginger
9.	*Alstonia scolaris* R.Br.	Apocynaceae	Tree	Daivappala /Scholar Tree
10.	*Amarantus viridis* L	Amaranthaceae	Herb	*kuppacheera* / green amaranth.
11.	*Anacardium occidentale* L.	Anacardiaceae	Tree	Parankimavu/Cashewnut
12.	*Andrographis paniculata*Nees	Acanthaceae	Herb	Kiriyath/King of bitters
13.	*Annona squamosa L.*	Annonaceae	Tree	Seethapazham/Sugar apples
14.	*Areca catechu* L.	Aracaceae	Tree	*Kavungu/betel* palm
15.	*Argemone mexicana L.*	Papaveraceae	Herb	Mexican prickly poppy
16.	*Asparagus officinalis* L.	Asparagaceae	Herb	Sathavari/sparrow grass
17.	*Azadirachta indica* A. Juss.	Meliaceae	Tree	Veepu/ Neem
18.	*Bambusa bambos* (L.) Voss	Poaceae	Tree	Mula/Indian thorny bamboo
19.	*Barleria prattensis Santapau Shrub Pink Barleria*	Acanthaceae	Herb	Pink barleria
20.	*Bauhinia acuminata*L.	Fabaceae	Shrub	Vellamandharam/ White orchid
21.	*Bauhinia variegata L.*	Caesalpiniaceae	Tree	Mantharam/orchid tree
22.	*Biophytum sensitivum*(L.)DC	Oxalidaceae	Herb	Mukkutti/ Reinwardt's tree plant
23.	*Boerhaavia diffusa* L.nom.cons.	Nyctaginaceae	Herb	Thazhuthama/ hogweed
24.	*Caesalpinia mimosoides* Lam.	Fabaceae	Woody climber	Chingamullu
25.	*Caesalpinia sappan* Linn	Fabaceae	Tree	sappanwood
26.	*Calophyllum inophyllum* L.	Clusiaceae	Tree	Punna/Alexandrian laurel balltree
27.	*Calotropis gigantea* (L.)W.T.Aiton	Asclepiadaceae	Shrub	Erikku/Crown Flower
28.	*Cardiospermum halicacabum* L.	Sapinadaceae	Herb	Uzhinja/Balloon plant
29.	*Cassia fistula* L.	Fabaceae	Tree	Kanikkonna/ Golden shower tree
30.	*Cassia occidentalis* L.	Casesalpinaceae	Tree	Thakara /coffeeweed
31.	*Catharanthus roseus* (L.) Don.	Apocynaceae	Shrub	Nithiakalyani/ Periwinkle
32.	*Centella asiatica* (L.) Urban	Apiaceae	Herb	Indian pennywort
33.	*Cissus latifolia* Lam.	Vitaceae	Climber	Chunnambuvalli
34.	*Citrus limon* (Linn)	Rutaceae	Tree	Naranga/lemon
35.	*Clerodendron infortunatum L.*	Verbenaceae	Shrub	Vatta perivilam/ Hill glory bower
36.	*Clerodendrum viscosum*Vent.	Verbinaceae	Small tree	Vatta-perivalam/Glory Tree
37.	*Clitoria terneata L.*	Fabaceae	Climber	Shangupushpam/ Blue pea vine
38.	*Cocos nucifera*L.	Aracaceae	Tree	Thengu/ Coconut plant
39.	*Coleus aromaticus* Lour.	Lamiaceae	Herb	Panikoorkka/ Indian borage
40.	*Commelina benghalensis* L.	Commelinaceae	Herb	Climbing Day Flower
41.	*Costu spictus* D.Don.	Costaceae	Herb	Insulin plant
42.	*Crossandra infundibuliformis* (L.) Nees	Acanthaceae	Shrub	Kanakambaram/ Funnel flower
43.	*Crotalaria striata* D.C.	Fabaceae	Shrub	Kilukkampettichedi/ Smooth Rattlebox
44.	*Curculigo orchioides* Gaertn.	Hypoxidaceae	Herb	Nilappana/ golden eye-grass
45.	*Curcuma aromatic* Salisb.	Zingiberaceae	Shrub	Kasthuri manjal
46.	*Cynodon dactylon* (Linn.)pers.	Poaceae	Herb	Karuka pull
47.	*Cyperus rotundus* L.	Cyperaceae	Herb	Coco grass
48.	*Datura metel* Linn	Solanaceae	Herb	Ummatham/Thornapple
49.	*Desmodium gangeticum*(L.)DC.	Fabaceae	Under shrub	Moovila/shalparni
50.	*Desmostachya bipinnata* (L.) Stapf	Poaceae	Herb	Halfa grass
51.	*Diospyros paniculata* Dalz.	Ebenaceae	Tree	*Ilakatta/karivela*
52.	*Eclipta alba* L.	Asteraceae	Herb	Kayyonni/Bhirngaraja/ False daisy
53.	*Elephantopuss caber* L.	Asteraceae	Herb	Anayatiyan/Elephant foot
54.	*Euphorbia hirta* L.	Euphorbiaceae	Herb	Amampatchaiaraisi/ Pill bearing spurge
55.	*Evolvulus alsinoides* (Linn.) Linn.	Convolvulaceae	Herb	*Vishnukranthi* /Neela kurunji
56.	*Ficus benghalensis* L.	Moraceae	Tree	Peraal/ Indian banyan
57.	*Ficus religiosa* (L.)	Moraceae	Tree	Arayaal /peepal tree/
58.	*Glycosmis pentaphylla* (Retl.) DC.	Rutaceae	Small tree	Panal /Ash sheora
59.	*Heliotropium indicum* L.	Boraginaceae	Herb	Thekkada/ Indian heliotrope,
60.	*Hemidesmus indicus* (Linn)	Apocynaceae	Creeper	Nannari/ Indian sarsaparilla
61.	*Hibiscus rosasinensis* L.	Rubiaceae	Shrub	Chembarathi/Shoe flower
62.	*Ichnocarpus frutescence (*L.) R. Br.	Apocynaceae	Shrub	Black creeper
63.	*Ipomoea aquatica* Forsk.	Convolvulaceae	Climber	Water-spinach

64.	*Ixora coccinea* L.	Rubiaceae	Shrub	Chethi/ Flame of the woods
65.	*Justicia adhatoda*.L.	Acanthaceae	Shrub	Adalodakam/Malabar nut,
66.	*Kampferia galanga* L.	Zingiberaceae	Herb	Aromatic ginger
67.	*Lantana camara* Linn.	Verbenaceae	Shrub	Aripoo/ Big-sage
68.	*Lawsonia inermis* L.	Lythraceae	Shrub	Mayilanchi/Henna plant
69.	*Leucas lavandulifolia* L.	Lamiaceae	Herb	Thumba
70.	*Loranthus ferrugineus* Roxb.	Loranthaceae	Climber	Ithikanni /mistletoe
71.	*Mangifera indica*L.	Anacardiaceae	Tree	Manga/Mango Tree
72.	*Mimosa pudica*L.	Leguminosae	Herb	Thottavaadi/ Sensitive plant
73.	*Mimusops elengi* Linn.	Sapotaceae	Tree	Makizhampoovu/Spanish cherry,
74.	*Murraya koenigii* (L.) Sprengel.	Rutaceae	Tree	Kariveppila/Karry tree
75.	*Musa paradisiaca* L.	Musaceae	Herb	Vazha/Banana plant
76.	*Mussaenda frondosa* L.	Rubiaceae	Shrub	Vellila/ white rag plant
77.	*Mollugo pentaphylla L.*	Aizoaceae	Herb	Parpadakapullu/ Five leaved carpetweed
78.	*Nyctanthus arbor-tristis* Linn.	Oleaceae	Tree	Pavizhamalli
79.	*Ocimum sanctum* L.	Lamiaceae	Shrub	Thulasi/ Holy basil
80.	*Oldenlandia corymbosa* Linn	Rubiaceae	Herb	Diamond flower
81.	*Oxalis corniculata* L.	Oxalidaeae	Herb	Poliyarala/Creeping wood sorrel
82.	*Pajanelia longifolia* (Wild.) K.Schum	Bignoniaceeae	Tree	Azhantha/ Pajanelia
83.	*Pedalium murex*.L.	Pedaliaceae	Shrub	Aananjerinjil /Bara Gokhru
84.	*Phyllanthus emblica* L.	Euphorbiaceae	Tree	Nellikka/Goose berry
85.	*Phyllanthus niruri* Linn.	Euphorbiaceae	Herb	Kizhaarnelli/gale of the wind
86.	*Piper betle* L.	Piperaceae	Climber	Vettila/betel
87.	*Piper longum* L.	Piperaceae	Climber	Thippali/Long pepper
88.	*Piper nigram* L.	Piperaceae	Climber	Kurumulagu/Black pepper
89.	*Plumbago rosea* Linn.	Plumbaginaceae	Shrub	Chivappu-koduveli/ Indian Leadwort
90.	*Pongamia pinnata* (L.) Pierre	Fabaceae	Tree	Pongam/Pongam tree
91.	*Quisqualis indicum* L.	Combretaceae	Creeper	Rangoon creeper
92.	*Rauwvolfia serpentine* (L.) Benth.exKurz	Apocynaceae	Herb	Sarpagandhi/ Indian snakeroot
93.	*Ricinus communis* Linn.	Euhorbiaceae	Shrub	Aavanakku/Castor bean
94.	*Saraca asoca*(Roxb) Willd	Fabaceae	Tree	Ashokam/Ashoka tree
95.	*Scoparia dulcis*L.	Scorphulariaceae	Herb	Kallurukki/ Sweet broomweed
96.	*Sesamum indicum* L.	Pedaliaceae	Herb	Ellu/ sesamum
97.	*Sida acuta* Burm.f.	Malvaceae	Herb	Anakurunthotti/ Broom weed
98.	*Strychnosnux-vomica* Linn.	Loganiaceae	Tree	Kanjiram/ Snake wood
99.	*Syzygium caryophyllatum* (L.) Alston	Myrtaceae	Tree	Kaattunjaval
100.	*Tabernamontana divarticata*(L).	Apocynaceae	Shrub	Nandiyarvattam/ Crape jasmine
101.	*Tamarindus indica* L.	Caesalpiniaceae	Tree	Puli maram/ Tamarind tree
102.	*Tecoma stans* (L.). Juss. ex. Kunth.	Bignoniaceae	Small tree	Yellow Bells
103.	*Tectona grandis* L.f.	Lamiaceae	Tree	Tekku/ teak wood
104.	*Terminalia catapa* L.	Combretaceae	Tree	Badam/Almond
105.	*Thespesia populnea* (L.) Sol. Ex Corr.	Malvaceae	Tree	Pooparathi/portia tree
106.	*Tinospora cordifolia* (Thunb). Miers	Menispermaceae	Climber	heart-leaved moonseed/
107.	*Tridax procubens L.*	Asteraceae	Herb	Railpoochedi/ Coatbuttons
108.	*Tylophora indica* R.Br.	Asclepidaceae	Shrub	Chittamritam./ heart-leaved moonseed
109.	*Thunbergia erecta* (Benth.) T.Anderson	Acanthaceae	Shrub	Bush clockvine
110.	*Urena lobata* L.	Malvaceae	Undershrub	Caesarweed
111.	*Vernonia cinerea* (Linn.) Less.	Asteraceae	Herb	Poovamkurunal/ Little ironweed
112.	*Vetiveria zizanioides* L. Nash	Poaceae	Herb	Ramacham/Vetiver
113.	*Wrightia tinctoria* (Roxb) R.Br.	Apocynaceae	Tree	Palamaram/Pala indigo plant
114.	*Zingiber officinale* Roscoe	Zingiberaceae	Herb	Inji/Ginger

Table 2: Families having maximum number of Species present in the study area

S. No.	Family	No. of species
1	Fabaceae	9
2	Amaranthaceae	3
3	Mimosaceae	1
4	Acanthaceae	6
5	Rutaceae	4
6	Apocynaceae	8
7	Zingiberaceae	4
8	Anacardiaceae	2
9	Annonaceae	1
10	Aracaceae	2
11	Papaveraceae	1
12	Asparagaceae	1

13	Meliaceae	1
14	Poaceae	4
15	Caesalpiniaceae	3
16	Oxalidaceae	2
17	Nyctaginaceae	1
18	Clusiaceae	1
19	Asclepiadaceae	2
20	Sapinadaceae	1
21	Apiaceae	1
22	Vitaceae	1
23	Verbenaceae	3
24	Lamiaceae	4
25	Commelinaceae	1
26	Costaceae	1
27	Hypoxidaceae	1
28	Cyperaceae	1
29	Solanaceae	1
30	Ebenaceae	1
31	Asteraceae	4
32	Euphorbiaceae	4
33	Convolvulaceae	2
34	Moraceae	1
35	Moraceae	1
36	Boraginaceae	1
37	Rubiaceae	4
38	Lythraceae	1
39	Loranthaceae	1
40	Leguminosae	1
41	Sapotaceae	1
42	Musaceae	1
43	Aizoaceae	1
44	Oleaceae	1
45	Bignoniaceeae	3
46	Pedaliaceae	2
47	Piperaceae	3
48	Plumbaginaceae	1
49	Combretaceae	2
50	Scorphulariaceae	1
51	Malvaceae	4
52	Loganiaceae	1
53	Myrtaceae	1
54	Menispermaceae	1

Table 3: Percentage distribution of plant species in the study area

S. No.	Habit	Number of Plants	Distribution (%)
1	Tree	36	31.57
2	Shrub	27	23.68
3	Herb	41	35.96
4	Climber	10	8.77
5	Creeper	2	1.75

5. References

1. Chandrabose M, Nair NC. Flora of Coimbatore, 1988.
2. Devaraj P, Ramanujam MP, Ganesan T. Status report of sacred groves of Pondicherry Region and Strategies for Conservation. Institute of Forest Genetics and Tree Breeding PB 1061, R.S. Puram, Coimbatore 641002, India, 2005, 16-21.
3. Gamble JS. Flora of The Presidency of Madras Vo 1,2&3. Botanical Survey of India; Calcutta, 1967.
4. Khan ML, Khumbongmayum AD, Tripathi RS. The sacred groves and their significance in conserving biodiversity an overview. International Journal of Ecology and Environmental sciences, 2008; 34:277-291.
5. Murugan.K, Ramachandran VS, Swarupanandan K, Ramesh. M. Socio-cultural perspectives to the Sacred Groves and serpentine worship in Palakkad district, Kerala. Indian journal of traditional knowledge. 2007; 7(3):455-462.
6. Nair NC, Mohanan CN. On the Rediscovery of Four Threatened Species of the Sacred Groves of Kerala. Journal of Economic and Taxonomic Botany, Scientific Publishers, Jodhpur, 1981; 2:233-235.
7. Ramanujam MP, Cyril KPK. Woody species diversity of four sacred groves in the Pondicherry region of South India. Biodiversity and Conservation, 2003; 12:289-299.
8. Sreekumar PV, Nair VJ. Flora of Kerala: grasses. Flora of India: series 2, 1991.
9. Swathi BR, Joseph S. Floristic composition and ethnomedicinal practices of Iriveri Sree Pulideva Temple, Kannur district, Kerala.International Journal of Botany Studies. 2017; 2(3):16-14.
10. Varsha S Khude. Study of plant community structure around Ramling: A sacred grove, International Journal of Botany Studies. 2019; 5(4):19-21.