Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/18083
DOI URL: http://dx.doi.org/10.21474/IJAR01/18083

RESEARCH ARTICLE

STUDIES ON THE FLORISTIC DIVERSITY OF PUTHUKULANGARA KAVU, PAYYANNUR, KERALA, INDIA

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Manuscript Info

Manuscript History
Received: 31 October 2023
Final Accepted: 30 November 2023
Published: December 2023

Abstract

Maintenance of high level of biodiversity is essential for the stability and sustainability of an ecosystem. In natural habitats, the biodiversity represents an important pool of species and genetic material having immense potential use to human society. The floristic diversity of the Puthukulangara Kavu, situated in Karivellur - Peralam Grampanchayath of Payyannur Taluk, Kannur District and Kerala state was surveyed. A total of 108 plant species were recorded. Of this, 98 species belonging to 92 genera and 49 families constituted angiosperms. In addition, Gymnosperm and Pteridophytes were represented by one species each, Bryophytes and Fungi with 4 species each were recorded.

Introduction:-

Traditional practices are the conservation and protection of small forest patches by dedicating them to the local deities by various indigenous communities of the world. Such forest patches are called “Sacred Groves” (Khan et al., 2004). They represents the remnants of a forest ecosystem which was once established widely in the past centuries; now protected on the basis of some religious and cultural aspects, in pristine form. They have significant religious connotation for protecting the community. Maintenance of high level of biodiversity is essential for the stability and sustainability of an ecosystem. In natural habitats, the biodiversity represents an important pool of species and genetic material having immense potential use to human society.

In course of time, various anthropogenic activities have altered the structure and function of different ecosystems all over the world. The cumulative effect of all such factors is resulting in the large scale loss of valuable biodiversity. Depletion of biodiversity leads to disappearance of many valuable taxa even before their scientific value is discovered. So it is essential to focus public attention towards the conservation of existing biodiversity, for the survival of human beings on earth.

Although, there has been no comprehensive study on the sacred groves of the entire country, experts estimate the total number of sacred grove in India could be in the range of 100,000 - 150,000 (Malhotra etal., 2007). There is a concerted attempt going on throughout India for the documentation of floristic diversity of Sacred Groves.

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Methodology:-

Field surveys were conducted in the Kavu during the month of January-March 2018. Information pertaining to the kavu such as the deity, history, culture and also existing conservation practices were collected by consulting the stake holders and elderly people of the village. The major taboos, rituals and beliefs associated with the kavu were also recorded. Representative plant specimens were collected, identified and preserved following standard herbarium techniques (Fosberg & Sachet, 1965).

Study Area and the Myth

"Puthukulangara Kavu" is situated in Karivellur - Peralam Grampanchayath of Payyannur Taluk, Kannur District and Kerala state. It covers an area of about one acre. It is situated far away from the Traditional Home "Kakkoprath Edayil Veedu" (**Plate-1**). The age of the grove is approximately 500 years old. There are no daily rituals performed for the deity. But once in a year, the festival "Kalasam" is performed during the Malayalam month Tulaam-11, to worship the Godess "Puthukulanga Bhagavathi". They fear the wrath of the deity, if there is any violation from the traditional culture and rituals of the grove.

According to Mythology, earlier this Kavu has rich vegetation existed near the Traditional home "Kakkoprath Edayil Veedu". This was believed as the initial form of "Puthukulanga Kavu". Once there was an attempt of destruction of the Kavu by the peoples from outside. Then the "Karanavar" of the family, who is more attached to the Kavu, took a twig from that grove and threw the twig where the present Puthukulangara Kavu is situated. This particular site became the well protected "Puthukulangara Kavu". The devotees followed the culture and belief and also worshiped the Bhagavathi for the well being of the family and society.

Results and Discussion:-

The present study yielded a total of 108 plant species. Of this, 98 species belonging 92 genera and 49 families constituted angiosperms (**Table1; Figure 2**). They are represented by 91 species of dicotyledons and 7 monocotyledons. The life form analysis of angiosperms exhibited 28 trees, 21 shrubs, 41 herbs and 8 climbers (**Figure 3**). In addition, Gymnosperm and Pteridophytes were represented by one species each, Bryophytes and Fungi with 4 species each were recorded (**Table 2; Figure 2**). A perennial pond near to the Kavu was dominated by species of Azolla, Nymphoides, Oedogonium and Spirogyra. The floristic analysis revealed the occurrence of 9 species of endemics, 29 species of medicinal (**Tables 3**) and 8 species of edible plants such as Anacardium occidentale L., Artocarpus heterophyllus Lam., Centella asiatica (L.) Urb., Colocasia esculenta (L.) Schott., Manihot esculenta Crantz., Solanum americanum Mill., Syzygium caryophyllatum (L.) Alston and Syzygium zeylanicum (L.) DC.A number of weeds mainly Alysicarpus vaginalis (L.) DC., Chromolaena odorata (L.) King & Robins., Ipomoea cairia (L.) Sweet, Lantana camara L., Mikania micrantha Kunth and Pennisetum polystachion (L.) Schult. were observed.

Table 1:- List of Plant Species.

Sl.No.	Binomial	Family	Habit
1	Abrus precatorius L.	Fabaceae	Climber
2	Acacia mangium Willd.	Mimosaceae	Tree
3	Adenanthera pavonia L.	Mimosaceae	Tree
4	Ageratum conzoides L.	Asreraceae	Herb
5	Alternanthera sessilis (L.) R. Br.	Amaranthaceae	Herb
6	Alysicarpus vaginalis (L.) DC.	Fabaceae	Herb
7	Anacardium occidentale L.	Anacardiaceae	Tree
8	Ancistrocladus heyneanus Wall.	Ancistrocladaceae	Shrub
9	Aporosa lindleyana (Wight) Bail.	Euphorbiaceae	Tree
10	Artocarpus heterophyllus Lam.	Moraceae	Tree
11	Asystasia dalzelliana Sant.	Acanthaceae	Herb
12	Bulbophyllum rosemarianum Sathish et al.	Orchidaceae	Herb
13	Calopogonium mucunoides Desv.	Fabaceae	Climber
14	Cansjera rheedei Gmel.	Opiliaceae	Climber
15	Canthium rheedei DC.	Rubiaceae	Shrub
16	Carallia brachiata (Lour.) Merr.	Rhizophoraceae	Tree
17	Caryota urens L.	Arecaceae	Tree

18	Centella asiatica (L.) Urb.	Apiaceae	Herb
19	Chassalia curviflora (Wall. ex Kurz) Thw. var. Ophioxyloides (Wall.) Deb & Krishna	Rubiaceae	Herb
20	Chromolaena odorata (L.) King & Robins.	Asteraceae	Herb
21	Chrysophyllum cainito L.	Sapotaceae	Tree
22	Cinnamomum verum Presl	Lauraceae	Tree
23	Cleome rutidosperma DC.	Capparaceae	Herb
24	Cleome viscosa L.	Capparaceae	Herb
25	Clerodendrum viscosum Vent.	Verbenaceae	Shrub
26	Coldenia procumbens L.	Boraginaceae	Herb
27	Colocasia esculenta (L.) Schott	Araceae	Herb
28	Commelina diffusa Burm.f.	Commelinaceae	Herb
29	Cyathula prostrata (L.) Blume	Amaranthaceae	Herb
30	Cynodon dactylon (L.) Pers.	Poaceae	Herb
31	Dalbergia horrida Mabb. var. horrida	Fabaceae	Shrub
32	Derris trifoliata Lour.	Fabaceae	Herb
33	Eclipta prostrata (L.) L.	Asteraceae	Herb
34	Elephantopus scaber L.	Asteraceae	Herb
35	Erycibe paniculata Roxb.	Convolvulaceae	Shrub
36	Ficus benghalensis L.	Moraceae	Tree
37	Ficus drupaceaThunb. var. pubescens(Roth) Corner	Moraceae	Tree
38	Ficus hispida L. f.	Moraceae	Tree
39	Gliricidia sepium (Jacq.) Kunth ex Walp.	Fabaceae	Tree
40	Gomphia serrata (Gaertn.) Kanis	Ochnaceae	Tree
41	Grangea maderaspatana (L.) Poir.	Asteraceae	Herb
42	Hedyotis hermanniana Dutta	Rubiaceae	Herb
43	Heliotropium indicum L.	Boraginaceae	Herb
44	Hibiscus hispidissimus Griff.	Malvaceae	Shrub
45	*Holigarna arnottiana Hook. f.	Anacardiaceae	Tree
46	*Hopea ponga (Dennst.) Mabb.	Dipterocarpaceae	Tree
47	*Hydnocarpus pentandra (Buch.-Ham.) Oken	Flacourtiaceae	Tree
48	Hygrophilla ringens (L.) Steud.	Acanthaceae	Shrub
49	Hyptis suaveolens (L.) Poit.	Lamiaceae	Herb
50	Ichnocarpus frutescens (L.) R. Br.	Apocynaceae	Climber
51	Ipomoea cairica (L.) Sweet	Convolvulaceae	Climber
52	Ixora coccinea L.	Rubiaceae	Shrub
53	Jasminum malabaricum Wight	Oleaceae	Climber
54	Lantana camara L.	Verbenaceae	Shrub
55	Leea indica (Burm. f.) Merr.	Leeaceae	
56	Limnophila chinensis (Osbeck) Merr.	Scrophulariaceae	Herb
57	Lindernia crustacea (L.) F.V. Muell.	Scrophulariaceae	Herb
58	Lindernia hyssopioides (L.) Haines	Scrophulariaceae	Herb
59	*Litsea oleoides (Meisner) Hook. f.	Lauraceae	Tree
60	Ludwigia perennis L.	Onagraceae	Herb
61	Macaranga peltata (Roxb.) Muell.- Arg.	Euphorbiaceae	Tree
62	Madhuca neriifolia (Moon) H. J. Lam	Sapotaceae	Tree
63	Manihot esculenta Crantz.	Euphorbiaceae	Shrub
64	Merremia umbellata (L.) Hall. f.	Convolvulaceae	Climber
65	Mikania micrantha Kunth	Asteraceae	Climber
66	Mimosa pudica L.	Mimosaceae	Herb
67	Mollugo pentaphylla L.	Molluginaceae	Herb
68	Nymphoides indica (L.) O. Ktze.	Menyanthaceae	Herb
69	Olea dioica Roxb.	Oleaceae	Tree

70	Pennisetum polystachyon (L.) Schult.	Poaceae	Herb
71	Persea macrantha (Nees) Kostrerm.	Lauraceae	Tree
72	Phyllanthus amarus Schum. & Thonn.	Euphorbiaceae	Herb
73	Piper nigrum L.	Piperaceae	Climber
74	Pothos scandens L.	Araceae	Climber
75	Rotala rotundifolia (Buch.-Ham. ex Roxb.) Koehne	Lythraceae	Herb
76	Rungia pectinata (L.) Nees	Acanthaceae	Herb
77	*Salacia macrosperma Wight	Hippocrateaceae	Climber
78	Saraca asoca (Roxb.) de Wilde	Caesalpiniaceae	Tree
79	Scoparia dulcis L.	Scrophulariaceae	Herb
80	Seidenfia rheedei (Sw.) Szlanch.	Orchidaceae	Herb
81	Sida acuta Burm. f.	Malvaceae	Herb
82	Smilax zeylanica L.	Smilacaceae	Climber
83	Solanum americanum Mill.	Solanaceae	Herb
84	Solena amplexicaulis (Lam.) Gandhi	Cucurbitaceae	Climber
85	Spermacoce hispida L.	Rubiaceae	Herb
86	Strychnos nux- vomica L.	Loganiaceae	Tree
87	*Strychnos vanprukii Craib	Loganiaceae	Climber
88	Syzygium caryophyllatum (L.) DC.	Myrtaceae	Tree
89	Syzygium zeylanicum (L.) DC.	Myrtaceae	Tree
90	*Tabernaemontana heyneana Wall.	Apocynaceae	Shrub
91	Tinospora cordifolia (Willd.) Hook. f. & Thoms.	Menispermaceae	Climber
92	Urena lobata L.	Malvaceae	Shrub
93	Utricularia aurea Lour.	Lentibulariaceae	Herb
94	Uvaria narum (Dunal) Wall. ex Hook. f. & Thoms.	Annonaceae	Shrub
95	*Vateria indica L.	Dipterocarpaceae	Tree
96	Vernonia cinerea (L.) Lees.	Asteraceae	Herb
97	Wattakaka volubilis (L.f.) Stapf	Asclepiadaceae	Climber
98	Wedelia chinensis (Osbeck) Merr.	Asteraceae	Herb

*- endemic species

Table 2:- Lower forms.

Sl.No.	Binomial	Family
1	*Gnetum edule (Willd.) Blume	Gnetaceae
2	Azolla pinnata R. Br.	Azollaceae
3	Drynaria quercifolia (L.) J. Sm.	Polypodiaceae
4	Lygodium flexuosum (L.) Sw.	Lygodiaceae
5	Pteris quadriaurita Retz.	Polypodiaceae
6	Octoblepharum sp.	Calymperaceae
7	Hexogonia sp.	Polyporaceae
8	Lentinus sp.	Polyporaceae
9	Polyporous sp.	Polyporaceae
10	Pyrofomics sp.	Polyporaceae

*- endemic species

Table 3:- List of Medicinal Plants.

Sl. No.	Binomial	Family
1	Adenanthera pavonia L.	Mimosaceae
2	Alternanthera sessilis (L.) R. Br.	Amaranthaceae
3	Anacardium occidetale L.	Anacardiaceae
4	Aporosa lindleyana (Wight) Bail.	Euphorbiaceae

5	Artocarpus heterophyllus Lam.	Moraceae
6	Centella asiatica (L.) Urb.	Apiaceae
7	Chromolaena odorata (L.) King & Robins.	Asteraceae
8	Cinnamomum verum Presl	Lauraceae
9	Cleome rutidosperma DC.	Capparaceae
10	Cleome viscosa L.	Capparaceae
11	Cyathula prostrata (L.) Blume	Amaranthaceae
12	Cynodon dactylon (L.) Pers.	Poaceae
13	Eclipta prostrata (L.) L.	Asteraceae
14	Ficus benghalensis L.	Moraceae
15	Grangea maderaspatana (L.) Poir.	Asteraceae
16	Heliotropium indicum L.	Boraginaceae
17	Holigarna arnottiana Hook. f.	Anacardiaceae
18	Ixora coccinea L.	Rubiaceae
19	Mimosa pudica L.	Mimosaceae
20	Olea dioica Roxb.	Oleaceae
21	Phyllanthus amarus Schum. & Thonn.	Euphorbiaceae
22	Piper nigrum L.	Piperaceae
23	Saraca asoca (Roxb.) de Wilde	Caesalpiniaceae
24	Scoparia dulcis L.	Scorphulariaceae
25	Sida acuta Burm. f.	Malvaceae
26	Solanum americanum Mill.	Solanaceae
27	Strychnos nux- vomica L.	Loganiaceae
28	Tinospora cordifolia (Willd.) Hook.f. & Thoms.	Menispermaceae
29	Vernonia cinerea (L.f.) Lees.	Asteraceae

Figure 2:- Diversity of Plants in Puthukulangara Kavu.

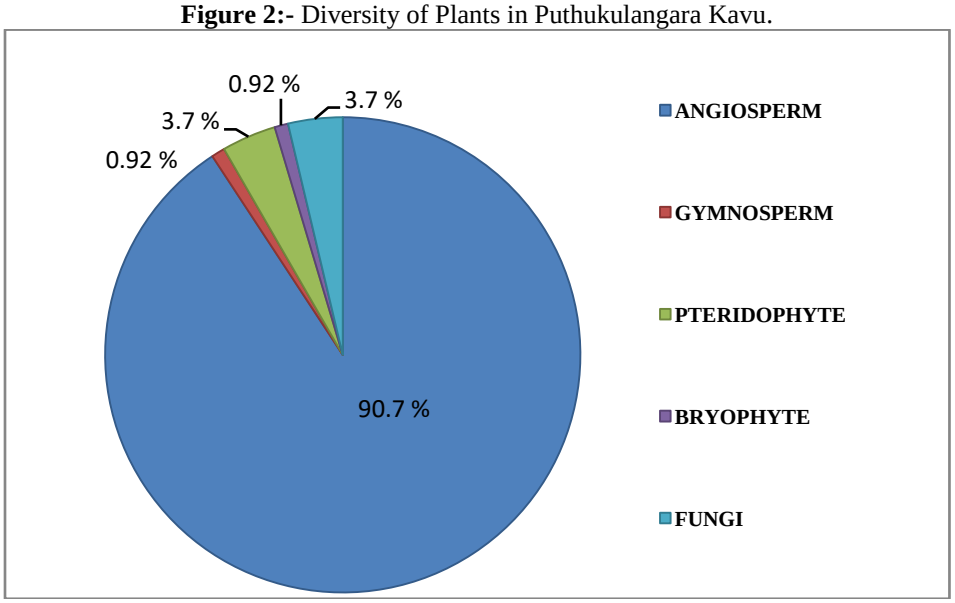

Figure 3:- Diversity of Life forms (Angiosperms) in Puthukulangara Kavu.

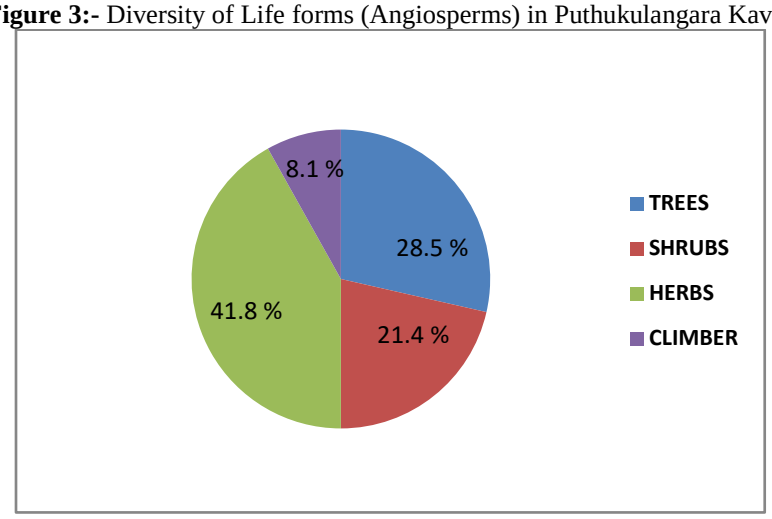

Plate I:- General View Of Puthukulangara Kavu.

Conclusion:-

Puthukulangara Kavu is a repository of a number of indigenous plant species. It acts as an in-situ conservation site which influences the microclimate of the area. An indepth study of the biodiversity and regular monitoring is required for its conservation. At present there is no specific conservation package existing. It is left undisturbed and as a result natural regeneration of species takes place. At present the Kavu is free from threats of any kind. There are no signs of anthropogenic pressures i.e. (human and his cattle). People in the nearby areas do not enter the Kavu even for collecting fallen dry logs.

Acknowledgements:-

The authors place on record their sincere gratitude to the Principal and Head, Dept. of Botany, Mahatma Gandhi Govt. Arts College, Mahe, for providing facilities. We are thankful to the stake holders of the Grove for their support.

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