



Floristic Diversity and Phytosociological Studies of Selected Area in Kanayannur, Kannur District, Kerala

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Abstract: Flora is the breathing spores of ecosystem which holds the surface of earth to its heart. It is the green mirror of the ecosystem that absorbs toxic gases and makes the fresh. It ranges from the tiny *Wolffia* species (water meal) to giant water lily. A total of 111 vascular plant under 24 orders and 49 families were recorded. 110 were angiosperms and 1 gymnosperm. Poaceae is the dominant family. Based on the IVI values, we can identify the richly and poorly established plant species. *Ludwigia grandiflora* registered the highest IVI value of 16.33 and it is the richly established plant species. Conservation is essential to protect biodiversity and to impede the ongoing and upholding loss of plant diversity.

Index Terms - Flora, flora survey, phytosociological analysis, kanayannur, biodiversity, quadrant

INTRODUCTION

Flora is the simplest list of plants occurring within a given region and they are the living organisms lacking power of locomotion which resides its whole life in any circumstances at a single spot (Ramachandran *et al.*, 1988). Ramachandran and V J Nair (1988) prepared Flora of Kannur and they recorded 1,132 species from 3,670 km sq. area in Kannur district. Flora has been a part of human life from earlier times. Phytosociological analysis insights the basic information of plant species like frequency, abundance, density, basal cover, relative frequency, relative density, relative dominance, IVI and RIVI. The ultimate goal of phytosociology is characterization for vegetation types based on analysing floristic composition. The local plants act as the wealth of plant species. Most of the species have good medicinal value and it can be analyzed through phytosociological studies. In recent times, part of medicinal plant in traditional health care has diverted the attention of researchers towards ethno medicines (Qureshi *et al.*, 2014).

Floristic catalogues are the source of botanical details for a particular field and it serves as a useful point for numerous detailed learning (Keith, 1988). The listing of species is easy and comparatively less time consuming (Saima *et al.*, 2009) and it provides important public outreach and fundamental informations to use in addressing the biodiversity crisis (Funk *et al.*, 2007). Climatic condition and soil type also have a good influence in the properties of different medicinal plant species. Therefore through the analysis of certain area, certain medicinal property of plant can be detected. It is a fact that almost all the plant species have some medicinal property. This shows the importance of need for conserving the flora.

There are no previous studies conducted on the floral diversity and phytosociological analysis of the selected area of Kanayannur L.P School, Kannur. So, the present study is conducted to find out the plant diversity in our region. The current work deals to study floristic diversity and species richness. It also helps to understand the characters of floristic vegetation and conservation aspects with the help of phytosociological studies.

I. STUDY AREA

The study area, Kanayannur is concentrated in Kannur district, located in the northern part of Kerala. The climate is tropical in Kannur. The area lies at the latitude of 9.9183°N and a longitude of 76.4042°E. There is an average annual temperature of 33°C. The rainfall is significantly in most months of the year and has an average rainfall of 248 mm. The area is dry for 282 days a year with an average humidity of 42% and an UV index of 7.

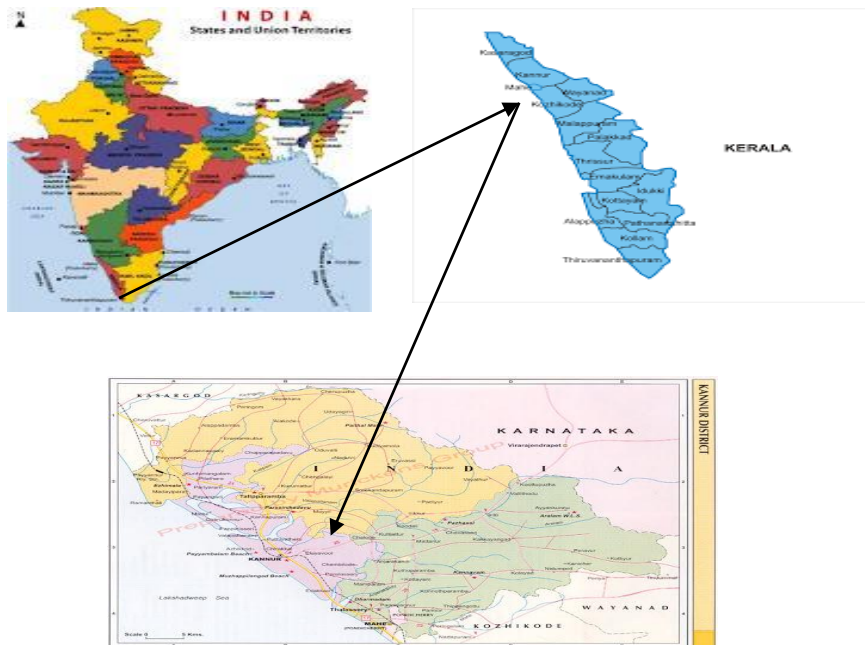


Fig.1: Study area

II. MATERIALS AND METHOD

FLORISTIC SURVEY

The floristic survey gives information about approximate floral wealth of surroundings of Kanayannur L P School and its role in conservation. During 2020-2021, a brief floristic survey of the school surroundings was carried out on vascular plants. The plants were identified with the Flowering plants of Travancore (Ram Rao, 1986), Flora of Presidency of Madras (Gamble, 1915-1936), Flora of Cannanore (Ramachandran and Nair, 1988). Nomenclature of each taxon are based on N. Sasidharan (2004) and also with by using available field keys. Specimens were collected, pressed and labeled for herbarium preparation (Jain and Rao, 1977). The identification was further confirmed by the help of taxonomic experts in Botany.

PHYTOSOCIOLOGICAL ANALYSIS

The phytosociological analysis was determined by quadrant method with minimum quadrant size of 1×1 meter by species area curved method. Phytosociology attempts to describe the diversity in campus flora (Braun-Blanquet, 1928). Twenty quadrants were randomly taken for analysis. The minimum quadrant taken for the analysis is ten (Greig-Smith, 1974). It aims to analyze the vegetative environment of a given region. The data from the analysis consist of list of species in an area for the study and their abundance which gave information about which species are present in a certain area.

The numerical value were used to find out frequency, density, relative frequency, relative density, relative basal area, value index by using standard formula (Curtis and McIntosh, 1950).

Frequency, density and abundance were calculated using the following formula:

$$\text{Frequency} = \frac{\text{Number of quadrats in which the species present}}{\text{Total number of quadrats studied}} * 100$$

$$\text{Density} = \frac{\text{Total number of individuals of the species in all quadrats}}{\text{Total number of quadrats studied}}$$

$$\text{Abundance} = \frac{\text{Total number of individuals of the species in all quadrats}}{\text{Number of quadrats of occurrence of species}}$$

$$(4) \text{ Basal area} = \pi r^2$$

Where, $\pi = 3.14$ and r is the radius of the stem at the point of emergence

Relative frequency, relative density and relative dominance were calculated using the following formulae;

$$\text{Relative Frequency} = \frac{\text{Number of occurrence of the species}}{\text{Number of occurrence of all species}} * 100$$

$$\text{Relative density} = \frac{\text{Number of individuals of the species}}{\text{Number of individuals of all species}} * 100$$

$$\text{Relative dominance} = \frac{\text{Total basal area of the species}}{\text{Total basal area of all species}} * 100$$

$$\text{IVI} = \text{RD} + \text{RF} + \text{RDo}$$

$$\text{RIVI} = \text{IVI}/3$$

III. RESULT AND DISCUSSION

The floristic study and phytosociological analysis of the selected area of Kanayannur, Kannur district was carried out over a period of July 2020 to January 2021. Floristic composition is a good floristic marker because any kind of changing floristic compositions in different endogenous milieu show the existence of different ecological factors, lead to inter- and intra-specific diversity (Khansa *et al.*, 2019).

During the floristic study, a total of 111 vascular plants falling under 24 orders and 49 families were documented. Out of this, 110 were angiosperms and 1 gymnosperm. Among the angiosperms, dicot dominates with 87 members, while 21 members were monocot and only 2 magnolids (shows characters of both monocot and dicot) were documented in Table 3 & 4 (fig.2, 3). With respect to their habit, there are 37 herbs, 28 shrubs, 25 trees, 4 climbers, 4 creepers and 1 climbing fern. The dominant family is Poaceae with 9 species. The dominant order is Lamiales with 17 species. Plant species with their habit and family were listed in Table 1. Plants are collected from the study area for herbarium preparation. The link for digital herbarium of collected plants in the study area is <https://forms.gle/pELXnE82epdUFunU9>.

For the phytosociological analysis, quantitative ecological characters and synthetic characters were calculated using the respective formulas are given in Table 2. In the study area, *Asystasia gangetica* has higher frequency value (25) than rest of species. A total of 75 species have lowest frequency value (5). The plant species, *Schoenoplectus tabernaemontani* registered highest density (1.3) and 29 species showed the lowest density value (0.05). In the study area, *Verbena lasiostachys* distributed abundantly (12). *Centrosema virginianum* showed the lowest value of abundance (0.33). *Cocos nucifera* was considered to be the dominant species in the study area based on the basal cover, having the value of $116.07 \text{ mm}^2/\text{m}$. *Mangifera indica* occupied the second position with basal cover of $97.41 \text{ mm}^2/\text{m}$. A total of nine species showed the lowest basal cover value of $0.08 \text{ mm}^2/\text{m}$.

Floral diversity studies showing the regional diversity is well represented in floral composition due to various external influences (Khumbongmayum *et al.*, 2006). The study helps to identify the plant wealth and its potential values. Floral survey was done by quadrat method. All species present in the plot was identified and recorded during the time of survey. Identifying different plant communities is essential to identify ecosystem at a particular hierarchical level. Assessment of vegetation composition, understand species richness and diversity patterns is fundamental for conservation of these natural areas (Zhang *et al.*, 2013).

The values of phytosociological analysis reported in the present study are best fitted with other studies. It provides the species richness of the study area. Analysis of IVI provides information about social status of the species and can be recognised as patterns for association of dominant species in a community (Parthasarathy, 1999). Stone and Frayer (1935) calculated the collective effect of plant height, basal area, density and number of species in the assessment of vegetation physiognomy. There are many plant species having low values of IVI. This needs more attention for the conservation of the species. Conservation is needed to protect biodiversity and there are steps to develop, maintain and protect vegetation. It is the care and protection of resources that can persist for future generations (Plant - talk.org).

Table 1: Total list of plant species in the selected region of Kanayannur, Kerala

S/No	SPECIES	FAMILY	HABIT
1	<i>Acacia auriculiformis</i> Benth.	Fabaceae	Tree
2	<i>Achyranthes aspera</i> L.	Amaranthaceae	Herb
3	<i>Acmella oleraceae</i> (L.) R.K.Jansen	Compositae	Herb
4	<i>Adhatoda vasica</i> L.	Acanthaceae	Shrub
5	<i>Aerva lanata</i> (L.) Juss.	Amaranthaceae	Herb
6	<i>Allamanda cathartica</i> L.	Apocynaceae	Shrub
7	<i>Aloe vera</i> (L.) Burm.f.	Liliaceae	Herb
8	<i>Alstonia scholaris</i> (L.) R. Br	Apocynaceae	Tree
9	<i>Alternanthera sessilis</i> (L.) R.Br.ex DC	Amaranthaceae	Herb
10	<i>Amorphophallus paeonifolius</i> (Dennst.) Nicolson	Araceae	Herb
11	<i>Andrographis paniculata</i> (Burm.f.) Nees	Acanthaceae	Herb
12	<i>Annona reticulata</i> L.	Nyctaginaceae	Climber
13	<i>Araca catechu</i> L.	Aracaceae	Tree
14	<i>Aristolochia indica</i> L.	Aristolochiaceae	Climber
15	<i>Asystasia gangetica</i> (L.) T.Anderson	Acanthaceae	Herb
16	<i>Averrhoa carambola</i> L.	Oxalidaceae	Shrub
17	<i>Axonopus compressus</i> (Sw.) P.Beauv.	Poaceae	Herb
18	<i>Azadirachta indica</i> A.Juss.	Aristolochiaceae	Tree
19	<i>Bacopa monnieri</i> (L.) Wettst.	Scrophulariaceae	Herb
20	<i>Bauhinia acuminata</i> L.	Caesalpinaceae	Tree

21	<i>Bauhinia purpurea</i> L.	Caesalpinaceae	Tree
22	<i>Biophytum sensitivum</i> (L.) DC.	Oxalidaceae	Herb
23	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Herb
24	<i>Bougainvillea spectabilis</i> Willd.	Nyctaginaceae	Climber
25	<i>Brachiaria ramosa</i> (Sm.) Griseb.	Poaceae	Herb
26	<i>Brachiaria remota</i> (Sm.) Griseb.	Poaceae	Herb
27	<i>Capsicum annum</i> L.	Solanaceae	Herb
28	<i>Cassia alata</i> (L.) Roxb.	Caesalpinaceae	Shrub
29	<i>Cassia fistula</i> L.	Caesalpinaceae	Tree
30	<i>Centella asiatica</i> (L.) Urban	Apiaceae	Herb
31	<i>Centrosema virginianum</i> (L.) Benth.	Leguminosae	Climber
32	<i>Circaea lutetiana</i> L.	Onagraceae	Herb
33	<i>Citrus limon</i> (L.) Osbeck	Rutaceae	Shrub
34	<i>Cocos nucifera</i> L.	Araceae	Tree
35	<i>Codiaeum variegatum</i> (L.) A.Juss.	Euphorbiaceae	Shrub
36	<i>Crossandra infundibuliformis</i> (L.) Nees	Acanthaceae	Shrub
37	<i>Cyanotis cristata</i> (L.) D. Don	Commelinaceae	Herb
38	<i>Dactyloctenium aegyptium</i> (L.) Willd	Poaceae	Herb
39	<i>Desmodium triflorum</i> (L.) DC.	Papilionaceae	Herb
40	<i>Eclipta alba</i> L.	Asteraceae	Herb
41	<i>Eragrostis uniolooides</i> (Retz.) Nees ex Steud.	Poaceae	Herb
42	<i>Eragrostis viscosa</i> (L.) Wolf	Poaceae	Herb
43	<i>Euphorbia pulcherrima</i> Willd. Ex Klotzsch	Euphorbiaceae	Shrub
44	<i>Frangipani plumeria</i> L.	Apocynaceae	Tree
45	<i>Galinsoga parviflora</i> Cav.	Compositae	Herb
46	<i>Gliricidia sepium</i> (Jacq.) Walp.	Fabaceae	Tree
47	<i>Gossypium herbaceum</i> L.	Malvaceae	Shrub
48	<i>Hedyotis brachypoda</i> R.Br. ex Wall.	Rubiaceae	Herb
49	<i>Hemigraphis alternata</i> (Burm.f) T.Anderson	Acanthaceae	Herb
50	<i>Hemigraphis colorata</i> L.	Acanthaceae	Herb
51	<i>Hibiscus rosasinensis</i> L.	Malvaceae	Shrub
52	<i>Ixora coccinea</i> L.	Rubiaceae	Shrub
53	<i>Jasminum sambac</i> (L.) Aiton	Oleaceae	Shrub
54	<i>Kaempferia galanga</i> L.	Zingiberaceae	Herb
55	<i>Kyllinga nemoralis</i> (J.R.Forst. & G.Forst.) Dandy ex Hutch. & Dalziel	Cyperaceae	Creeper
56	<i>Lantana camara</i> L.	Verbenaceae	Shrub
57	<i>Lepidium draba</i> L.	Brassicaceae	Shrub
58	<i>Leucas aspera</i> (Willd.) Link	Lamiaceae	Herb
59	<i>Ludwigia grandiflora</i> (Michx.) Greuter	Onagraceae	Herb
60	<i>Lygodium flexuosum</i> (L.) Sw.	Lygodiaceae	Climbing fern
61	<i>Macaranga peltata</i> Roxb. Mueller	Euphorbiaceae	Tree
62	<i>Malvaviscus arboreus</i> Cav.	Malvaceae	Shrub
63	<i>Mangifera indica</i> L.	Anacardiaceae	Tree
64	<i>Manihot esculenta</i> Crantz	Euphorbiaceae	Shrub
65	<i>Manikara zapota</i> (L.) P.Royen	Sapotaceae	Tree
66	<i>Maranta arundinacea</i> L.	Maranthaceae	Herb
67	<i>Medicago polymorpha</i> L.	Leguminosae	Creeper
68	<i>Melastoma malabathricum</i> L.	Melastomataceae	Shrub
69	<i>Mentha piperita</i> L.	Lamiaceae	Herb
70	<i>Merremia tridentate</i> (L.) Hallier f.	Convolvulaceae	Climber
71	<i>Mimulus ringens</i> L.	Phrymaceae	Herb
72	<i>Mitracarpus hirtus</i> (L.) DC.	Rubiaceae	Herb
73	<i>Moringa oleifera</i> Lam.	Moringaceae	Tree
74	<i>Murraya koenigii</i> (L.) Sprengel	Rutaceae	Tree
75	<i>Musa paradisiaca</i> L.	Musaceae	Tree
76	<i>Nerium oleander</i> L.	Apocynaceae	Shrub

77	<i>Ocimum gratissimum</i> L.	Lamiaceae	Herb
78	<i>Ocimum sanctum</i> L.	Lamiaceae	Herb
79	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Herb
80	<i>Panicum repens</i> L.	Poaceae	Shrub
81	<i>Panicum paludosum</i> Roxb.	Poaceae	Shrub
82	<i>Pennisetum polystachion</i> (L.) Schult.	Poaceae	Tree
83	<i>Phyllanthus niruri</i> L.	Phyllanthaceae	Shrub
84	<i>Physalis minima</i> L.	Solanaceae	Herb
85	<i>Piper longum</i> L.	Piperaceae	Herb
86	<i>Pothos scandens</i> L.	Araceae	Climber
87	<i>Prunus dulcis</i> (Mill.) D. A. Webb	Rosaceae	Tree
88	<i>Psidium guajava</i> L.	Myrtaceae	Tree
89	<i>Psychotria viridis</i> Ruiz & Pav.	Rubiaceae	Shrub
90	<i>Pterocarpus santalinus</i> L.f.	Fabaceae	Tree
91	<i>Quisqualis indica</i> L.	Combretaceae	Creeper
92	<i>Ricinus communis</i> L.	Euphorbiaceae	Shrub
93	<i>Rosa indica</i> L.	Rosaceae	Shrub
94	<i>Samanea saman</i> (Jacq.) Merr.	Fabaceae	Tree
95	<i>Schoenoplectus tabernaemontani</i> (C.C.Gmel.) Palla	Cyperaceae	Herb
96	<i>Sida acuta</i> Burm.f.	Malvaceae	Shrub
97	<i>Sida cordifolia</i> L.	Malvaceae	Shrub
98	<i>Synedrella nodiflora</i> (L.) Gaertn.	Asteraceae	Herb
99	<i>Syzygium aqueum</i> (Burm.f.) Alston	Myrtaceae	Tree
100	<i>Syzygium cumini</i> (L.) Skeels.	Myrtaceae	Tree
101	<i>Tabernaemontana divaricata</i> R.Br. ex Roem. & Schult.	Apocynaceae	Shrub
102	<i>Tamarindus indica</i> L.	Caesalpinaceae	Tree
103	<i>Tectona grandis</i> L.f.	Lamiaceae	Tree
104	<i>Tridax procumbens</i> L.	Asteraceae	Herb
105	<i>Tradescantia cerinthoides</i> Kunth	Commelinaceae	Herb
106	<i>Urena lobata</i> L.	Malvaceae	Shrub
107	<i>Verbena lasiostachys</i> Link	Verbenaceae	Herb
108	<i>Vernonia cinerea</i> (L.) H.Rob	Asteraceae	Herb
109	<i>Viola elatior</i> Fr.	Violaceae	Shrub
110	<i>Wedelia trilobata</i> (L.) Pruski	Asteraceae	Climber
111	<i>Wattakaka volubilis</i> (L.f.) Benth. Ex Hook.f	Asclepiadaceae	Climber

Table 2: Phytosociological analysis of the selected area in Kanayannur, Kerala

S/N o	SPECIES	QUANTITATIVE ATTRIBUTES				SYNTHETIC ATTRIBUTES				
		F (%)	A (Indiv iduals /m ²)	Density (Individu als/m ²)	B.C (mm ² /m)	RF	RD	RBA	IVI	RIVI
1	<i>Acacia auriculiformis</i> Benth.	5	3	0.15	3.86	0.61	0.53	0.58	1.72	0.57
2	<i>Achyranthes aspera</i> L.	5	8	0.4	0.38	0.61	1.42	0.05	2.08	0.69
3	<i>Acmella oleraceae</i> (L.) R.K.Jansen	15	4	0.6	1.96	1.84	2.13	0.29	4.26	1.42
4	<i>Adhatoda vasica</i> L.	5	2	0.1	1.25	0.61	0.35	0.18	1.14	0.38
5	<i>Aerva lanata</i> (L.) Juss.	10	10.5	1.05	0.48	1.23	3.73	0.07	5.03	1.68
6	<i>Allamanda cathartica</i> L.	10	1.5	0.15	7.93	1.23	0.53	1.20	2.96	0.99
7	<i>Aloe vera</i> (L.) Burm.f.	10	3	0.3	1.96	1.23	1.06	0.29	2.58	0.86
8	<i>Alstonia scholaris</i> (L.) R. Br	5	1	0.05	0.38	0.61	0.18	0.06	0.85	0.28
9	<i>Alternanthera sessilis</i> (L.) R.Br.ex DC	10	4.5	0.45	0.80	1.23	1.59	0.12	2.94	0.98
10	<i>Amorphophallus paeonifolius</i> (Dennst.) Nicolson	5	3	0.15	3.87	0.61	0.53	0.58	1.72	0.57
11	<i>Andrographis paniculata</i> (Burm.f.) Nees	10	6.5	0.65	1.40	1.23	2.30	0.21	3.74	1.25
12	<i>Annona reticulata</i> L.	5	2	0.1	5.30	0.61	0.35	0.80	1.76	0.59
13	<i>Araca catechu</i> L.	5	2	0.1	21.88	0.61	0.35	3.31	4.27	1.42
14	<i>Aristolochia indica</i> L.	5	2	0.1	0.34	0.61	0.35	0.05	1.01	0.34
15	<i>Asystasia gangetica</i> (L.) T.Anderson	25	3	0.75	0.32	3.07	2.66	0.05	5.78	1.93
16	<i>Averrhoa carambola</i> L.	5	1	0.05	13.97	0.61	0.18	2.11	2.9	0.97
17	<i>Axonopus compressus</i> (Sw.) P.Beauv.	10	10.5	1.05	0.08	1.23	3.73	0.12	5.08	1.69
18	<i>Azadirachta indica</i> A.Juss.	5	1	0.05	6.42	0.61	0.18	0.97	1.76	0.59
19	<i>Bacopa monnieri</i> (L.) Wettst.	5	5	0.25	0.38	0.61	0.89	0.06	1.56	0.52
20	<i>Bauhinia acuminata</i> L.	10	0.5	0.05	4	1.23	0.18	0.60	2.01	0.67
21	<i>Bauhinia purpurea</i> L.	5	1	0.05	6.42	0.61	0.18	0.97	1.76	0.59
22	<i>Biophytum sensitivum</i> (L.) DC.	15	3	0.45	0.08	1.84	1.59	0.01	3.44	1.15
23	<i>Boerhavia diffusa</i> L.	5	3	0.15	0.85	0.61	0.53	0.13	1.27	0.42
24	<i>Bougainvillea spectabilis</i> Willd.	10	4	0.4	13.4	1.23	1.42	0.66	3.21	1.07
25	<i>Brachiaria ramosa</i> (Sm.) Griseb.	15	4.7	0.7	0.08	1.84	2.49	0.12	4.45	1.48
26	<i>Brachiaria remota</i> (Sm.) Griseb.	10	7.5	0.75	0.08	1.23	2.66	0.12	4.01	1.34
27	<i>Capsicum annum</i> L.	5	8	0.4	0.48	0.61	1.42	0.07	2.1	0.7
28	<i>Cassia alata</i> (L.) Roxb.	5	3	0.15	1.54	0.61	0.53	0.23	1.37	0.45
29	<i>Cassia fistula</i> L.	5	1	0.05	6.87	0.61	0.18	1.04	1.83	0.61
30	<i>Centella asiatica</i> (L.)	5	1	0.05	0.4	0.61	0.18	0.06	0.85	0.28

	Urban									
31	<i>Centrosema virginianum</i> (L.) Benth.	15	0.33	0.05	0.32	1.84	0.18	0.05	2.07	0.69
32	<i>Circaea lutetiana</i> L.	5	8	0.4	0.08	0.61	1.42	0.01	2.04	0.68
33	<i>Citrus limon</i> (L.) Osbeck	5	1	0.05	0.75	0.6	0.18	0.11	0.9	0.3
34	<i>Cocos nucifera</i> L.	5	1	0.05	116.07	0.61	0.18	17.58	18.37	6.12
35	<i>Codiaeum variegatum</i> (L.) A.Juss.	5	2	0.1	0.91	0.61	0.35	0.14	1.1	0.37
36	<i>Crossandra infundibuliformis</i> (L.) Nees	5	4	0.2	1.63	0.61	0.71	0.24	1.56	0.52
37	<i>Cyanotis cristata</i> (L.) D. Don	5	6	0.3	0.11	0.61	1.06	0.02	1.69	0.56
38	<i>Dactyloctenium aegyptium</i> (L.) Willd	10	2.5	0.25	0.09	1.23	0.89	0.01	2.13	0.71
39	<i>Desmodium triflorum</i> (L.) DC.	5	3	0.15	0.18	0.61	0.53	0.03	1.2	0.4
40	<i>Eclipta alba</i> L.	5	3	0.15	0.15	0.61	0.53	0.02	1.16	0.38
41	<i>Eragrostis unioloides</i> (Retz.) Nees ex Steud	5	3	0.15	0.09	0.61	0.53	0.01	1.15	0.38
42	<i>Eragrostis viscosa</i> (L.) Wolf	5	9	0.45	0.11	0.61	1.59	0.02	2.22	0.74
43	<i>Euphorbia pulcherrima</i> Willd. Ex Klotzsch	5	1	0.05	13.45	0.61	0.18	2.03	2.82	0.94
44	<i>Frangipani plumeria</i> L.	10	1	0.05	25.68	1.23	0.18	3.88	5.29	1.76
45	<i>Galinsoga parviflora</i> Cav.	10	7.5	0.75	0.32	1.23	2.66	0.05	3.94	1.31
46	<i>Gliricidia sepium</i> (Jacq.) Walp.	5	1	0.05	17.93	0.61	0.18	2.71	3.5	1.17
47	<i>Gossypium herbaceum</i> L.	5	2	0.1	8.24	0.61	0.35	1.24	2.2	0.73
48	<i>Hedyotis brachypoda</i> R.Br. ex Wall.	5	3	0.15	0.34	0.61	0.53	0.05	1.19	0.39
49	<i>Hemigraphis alternata</i> (Burm.f) T.Anderson	10	1.5	0.15	0.38	1.23	0.53	0.06	1.82	0.61
50	<i>Hemigraphis colorata</i> L.	5	7	0.35	0.72	0.61	1.24	0.11	1.96	0.65
51	<i>Hibiscus rosasinensis</i> L.	5	1	0.05	2.83	0.61	0.18	0.43	1.22	0.41
52	<i>Ixora coccinea</i> L.	5	2	0.1	1.24	0.61	0.35	0.18	1.14	0.38
53	<i>Jasminum sambac</i> (L.) Aiton	5	3	0.15	0.85	0.61	0.53	0.13	1.27	0.42
54	<i>Kaempferia galanga</i> L.	5	2	0.1	0.32	0.61	0.35	0.05	1.01	0.34
55	<i>Kyllinga nemoralis</i> (J.R.Forst. & G.Forst.) Dandy ex Hutch. & Dalziel	5	6	0.3	0.18	0.61	1.06	0.03	1.7	0.57
56	<i>Lantana camara</i> L.	10	1.5	0.15	1.24	1.23	0.53	0.18	1.94	0.65
57	<i>Lepidium draba</i> L.	10	2	0.2	0.32	1.23	0.71	0.05	1.99	0.66
58	<i>Leucas aspera</i> (Willd.) Link	15	3	0.45	0.08	1.84	1.59	0.01	3.44	1.15
59	<i>Ludwigia grandiflora</i>	5	14	0.7	0.32	0.61	2.49	0.05	3.15	1.05

	(Michx.) Greuter									
60	<i>Lygodium flexuosum</i> (L.) Sw.	5	2	0.1	0.32	0.61	0.35	0.05	1.01	0.34
61	<i>Macaranga peltata</i> Roxb. Mueller	5	1	0.05	11.45	0.61	0.18	1.73	2.52	0.84
62	<i>Malvaviscus arboreus</i> Cav.	5	2	0.1	5.06	0.61	0.35	0.76	1.72	0.57
63	<i>Mangifera indica</i> L.	10	1	0.1	97.41	1.23	0.35	14.75	16.33	5.44
64	<i>Manihot esculenta</i> Crantz	5	8	0.4	2.37	0.61	1.42	0.35	2.38	0.79
65	<i>Manikara zapota</i> (L.) P.Royen	5	1	0.05	12.81	0.61	0.18	1.94	2.73	0.91
66	<i>Maranta arundinacea</i> L.	5	3	0.15	0.23	0.61	0.53	0.03	1.17	0.39
67	<i>Medicago polymorpha</i> L.	5	1	0.05	0.32	0.61	0.18	0.05	0.84	0.28
68	<i>Melastoma malabathricum</i> L.	5	6	0.3	1.24	0.61	1.06	0.18	1.85	0.62
69	<i>Mentha piperita</i> L.	5	3	0.15	0.32	0.61	0.53	0.05	1.19	0.39
70	<i>Merremia tridentata</i> (L.) Hallier f.	5	1	0.05	0.82	0.61	0.18	0.12	0.91	0.30
71	<i>Mimulus ringens</i> L.	5	10	0.5	0.08	0.61	1.78	0.01	2.4	0.8
72	<i>Mitracarpus hirtus</i> (L.) DC.	10	9	0.9	0.08	1.23	3.19	0.01	4.43	1.48
73	<i>Moringa oleifera</i> Lam.	5	3	0.15	5.89	0.61	0.53	0.89	2.03	0.68
74	<i>Murraya koenigii</i> (L.) Sprengel	15	5.3	0.8	8.76	1.84	2.84	1.32	6	2
75	<i>Musa paradisiaca</i> L.	5	2	0.1	9.95	0.61	0.35	1.50	2.46	0.82
76	<i>Nerium oleander</i> L.	5	2	0.1	7.25	0.61	0.35	1.09	2.05	0.68
77	<i>Ocimum gratissimum</i> L.	10	1.5	0.15	0.91	1.23	0.53	0.13	1.89	0.63
78	<i>Ocimum sanctum</i> L.	15	2.6	0.4	1.96	1.84	1.42	0.29	3.55	1.18
79	<i>Ocimum tenuiflorum</i> L.	15	4	0.6	0.72	1.84	2.13	0.11	4.08	1.36
80	<i>Panicum repens</i> L.	5	1	0.05	0.32	0.61	0.18	0.05	0.84	0.28
81	<i>Panicum paludosum</i> Roxb.	5	1	0.05	0.08	0.61	0.18	0.01	0.8	0.26
82	<i>Pennisetum polystachion</i> (L.) Schult.	5	5	0.25	0.32	0.61	0.89	0.05	1.55	0.52
83	<i>Phyllanthus niruri</i> L.	5	11	0.55	0.34	0.61	1.95	0.05	2.61	0.875
84	<i>Physalis minima</i> L.	5	2	0.1	0.53	0.61	0.35	0.08	1.04	0.35
85	<i>Piper longum</i> L.	10	1	0.1	0.48	1.23	0.35	0.07	1.65	0.55
86	<i>Pothos scandens</i> L.	5	1	0.05	0.08	0.61	0.18	0.12	0.91	0.30
87	<i>Prunus dulcis</i> (Mill.) D. A. Webb	5	1	0.05	12.93	0.61	0.18	1.95	2.74	0.91
88	<i>Psidium guajava</i> L.	15	1.3	0.2	4.4	1.84	0.71	0.66	3.21	1.07
89	<i>Psychotria viridis</i> Ruiz & Pav.	10	2.5	0.25	0.32	1.23	0.89	0.05	2.17	0.72
90	<i>Pterocarpus santalinus</i> L.f.	5	1	0.05	32.75	0.61	0.18	4.96	5.75	1.92
91	<i>Quisqualis indica</i> L.	5	1	0.05	2.83	0.61	0.18	0.42	1.21	0.40
92	<i>Ricinus communis</i> L.	5	1	0.05	0.53	0.61	0.18	0.08	0.87	0.29
93	<i>Rosa indica</i> L.	5	2	0.1	0.45	0.61	0.35	0.07	1.03	0.34
94	<i>Samanea saman</i> (Jacq.) Merr.	5	1	0.05	7.73	0.61	0.18	1.17	1.96	0.65

95	<i>Schoenoplectus tabernaemontani</i> (C.C.Gmel.) Palla	15	8.7	1.3	0.32	1.84	4.61	0.05	6.5	2.17
96	<i>Sida acuta</i> Burm.f.	5	3	0.15	0.38	0.61	0.53	0.06	1.2	0.4
97	<i>Sida cordifolia</i> L.	5	4	0.2	0.72	0.61	0.71	0.11	1.43	0.48
98	<i>Synedrella nodiflora</i> (L.) Gaertn.	5	5	0.25	1.25	0.61	0.89	0.19	1.69	0.56
99	<i>Syzygium aqueum</i> (Burm.f.) Alston	15	3	0.15	27.14	1.83	0.53	4.11	6.47	2.16
100	<i>Syzygium cumini</i> (L.) Skeels.	5	1	0.05	32.55	0.61	0.18	4.93	5.72	1.90
101	<i>Tabernaemontana divaricata</i> R.Br. ex Roem. & Schult.	5	9	0.45	0.72	0.61	1.59	0.11	2.31	0.77
102	<i>Tamarindus indica</i> L.	5	1	0.05	49.9	0.61	0.18	7.55	8.34	2.78
103	<i>Tectona grandis</i> L.f.	5	1	0.05	10.51	0.61	0.18	1.59	2.38	0.79
104	<i>Tridax procumbens</i> L.	10	4	0.4	0.48	1.23	1.42	0.07	2.72	0.91
105	<i>Tradescantia cerinthoides</i> Kunth	5	6	0.3	0.32	0.61	1.06	0.05	1.72	0.57
106	<i>Urena lobata</i> L.	5	3	0.15	0.4	0.61	0.53	0.06	1.2	0.4
107	<i>Verbena lasiostachys</i> Link	5	12	0.6	0.32	0.61	2.13	0.05	2.79	0.93
108	<i>Vernonia cinerea</i> (L.) H.Rob	15	3.7	0.55	0.38	1.83	1.95	0.06	3.84	1.28
109	<i>Viola elatior</i> Fr.	20	5	1	0.32	2.45	3.55	0.05	6.05	2.02
110	<i>Wedelia trilobata</i> (L.) Pruski	5	5	0.25	0.32	0.61	0.89	0.05	1.55	0.52
111	<i>Wattakaka volubilis</i> (L.f.) Benth. Ex Hook.f	5	1	0.05	0.32	0.61	0.18	0.05	1.84	0.61
	TOTAL	815		28.15	660.19					

Table 3: Representation of plant habit

PLANT HABIT	NUMBER OF SPECIES
Herb	37
Shrub	28
Trees	25
Climbers	4
Creepers	4
Climbing fern	1

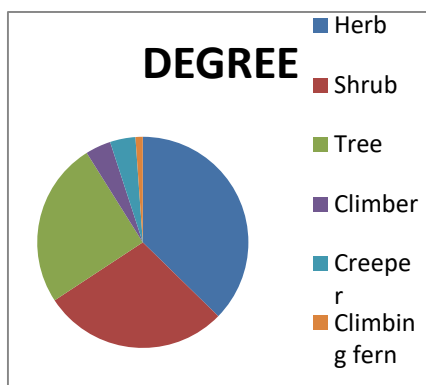


Fig. 2: Representation of plant habit

Table 4: Representation of systematic group of plants

SYSTEMATIC GROUP OF PLANTS	NUMBER OF SPECIES
Dicot	87
Monocot	21
Magnoliids	2
Gymnosperm	1

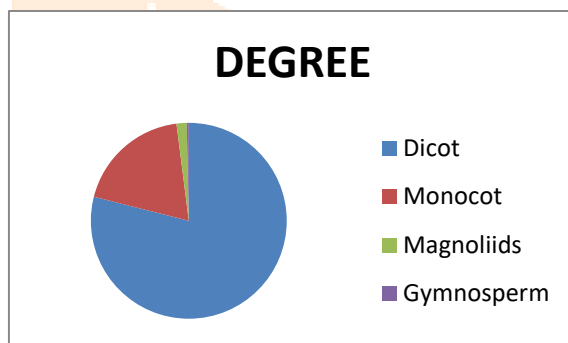


Fig. 3: Representation of systematic group of plants

IV. SUMMARY

The biodiversity of study area is important for the conservation of endemic and native species. The floral diversity and phytosociological analysis was studied over a time of July 2020 to January 2021 in selected area of Kanayannur, Kannur. A total of 111 plant species under 49 families were registered. Poaceae is the dominant family in study area. Some plant species with flowers were collected for herbarium preparation. Phytosociological calculations of each species were done by using respective formulas for understanding species richness. The main objectives of the study include the analysis of floristic composition and species richness in the selected area.

The study helps to envisage the potentiality for the ecological status and richness of biodiversity. Based on the IVI value in phytosociological analyses, it is helpful to identify the richly and poorly established plant species in study area. According to this value, *Ludwigia grandiflora* is the highly established plant species in study area.

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