

Floristic analysis of Kongad Panchayath, Palakkad District, Kerala

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Abstract

The present study enumerates the floristic analysis of Kongad panchayat, Palakkad district. Floristic studies are essential in providing information on plant biodiversity in an ecosystem. Floral analysis is mainly done in order to get overall picture about the biodiversity of the Kongad Panchayath. Identification of the plants along with their families will give a clear picture about its floral characters. A checklist of the plant species in Kongad Panchayat was made during 2018. A total of 271 plant species belonging to 74 families were recorded. Plants were classified as per Bentham & Hooker (1862-1883). Habit wise classification shows that herbs were dominating with 32%. The most leading family was Acanthaceae with 23 plant species. Indigenous knowledge of the plants was also documented. During the study, 4 Endemic species were documented from the region. Invasive species, important medicinal plants and sacred plants are also documented. Studies on local and regional flora paid increased attention at ecological level in addition to taxonomic treatment, which proved to be more beneficial in the conservation and management practices.

Keywords: Floristic studies, Conservation, Kongad, Medicinal plants

Introduction

Plants are considered as the lungs of the earth. They are essential to balance nature. Plants form a major component of biodiversity. Biodiversity is the variety and variability among living organisms and ecosystem complexes in which they occur.

It is essential for human survival and economic well-being and for the ecosystem function and stability. Plants act as ecological indicators and they are well known for medicinal values. The taxonomic treatment of the flora can be achieved only through the process involving extensive exploration, identification and documentation.

Plants have a major role in the existence of living organisms. Many anthropogenic activities like deforestation, habitat destruction, over exploitation, etc. leads to the reduction in the number of plants. Many plants are at the brim of extinction and in all parts of the world their conservation needs priority. Anthropogenic activities adversely affect the natural balance and in such conditions the role of conservation aspects gets momentum. Botanists around the world have realized the potential danger of such forest destruction & consequent loss of species and have exhorted for an inventory of tropical plants. But, this still remains a far cry for several reasons, the most important of which is the current depreciation of explorative and floristic botany. Conservation processes start only by knowing the distribution of various plant groups. Through floristic study, different plant species distributed in an area are identified. The first and foremost process in ascertaining biodiversity is the taxonomic treatment of living organisms.

Plant identification has evolved over hundreds of years and depends to a large extent on what criteria and whose system is used. Plant identification implies comparisons of certain characteristics and then assigning a particular plant to a known taxonomic group. Ultimately arriving at a species

however, identification means recognition of material as the same or different from another known entity. It is a crucial process in taxonomy and it will help us to distinguish two closely related plants from one another. A comparison of flora of Kongad Panchayat and flora of Kottayam is also done. Through this comparison plants that are common in both places are documented.

Floral analysis is mainly done in order to get a clear picture about the rich biodiversity of the Kongad Panchayat. Identification of the plants along with their families will give a clear picture about its floral characters. Comparison of different families can also be possible with this study. Taxonomic information is essential for the detection, management and control of invasive alien species. Studies on local and regional flora paid increased attention at ecological level in addition to taxonomic treatment, which proved to be more beneficial in the management practices. In short, the taxonomic floristic study of the Panchayath will provide a basic understanding about the components of biodiversity of the area which is necessary for effective decision making about conservation and sustainable use.

Area of study

Kongad is a small panchayat situated in Palakkad district, Kerala. The total geographical area of the village is 1442 hectares. Kongad Panchayath lies between $10^{\circ} 51' 11''$ N latitude and $76^{\circ} 31' 18''$ E longitude. Palakkad is the land of paddy fields. It is a major paddy growing area of the state. The district receives on average 2362mm of rainfall annually. Kongad Panchayath lies in both mid and high land. Laterite soil is seen in major parts of the village. Laterites on high grounds are more compact when compared to low lying areas. Panchayat consist of 18 wards include Thrippalamunda, Kottassery, Attakkad, Cheraya, Manikkassery, Kolppadam, Kavunada, Poothamkod, Muccheeri, Kongad town, Mannanthara, Kottappadi, Puliyanakad, Thonikara, Parassery, Kunduvampadam, Mundancherry and Peringode. For convenience areas from the panchayath were selected from these wards and are divided into certain zones they include Poothamkod, Mucheri, Kongad town, Thonikara and Peringode. The study area mainly contain dry land components and vegetation is mainly deciduous type. The temperature remains moderate throughout the year, with exception in March and April being the hottest. Panchayats consist of huge trees, medicinal plants, rocks, ponds, invasive species, etc.



Materials and Method

Plant specimens for the studies were collected from Kongad Panchayath, Palakkad District. Extensive field work and repeated visits were conducted at different seasons throughout the year. The plant specimens are collected and the field characters were recorded in the field book from the collection spot itself. The plant specimens are collected in a polyethene bag. The specimens were treated with 70% alcohol, 5% formalin (9:1 ratio) mixture and tightly tied up. They were identified using authentic literature and herbarium. Some specimens were dissected under microscope for their detailed information and identification. The identified plants were listed and their specific characters were documented. The identified plant species are then arranged according to the system of classification by Bentham & Hooker (1862-1883). Most of the plants were photographed from the field. Indigenous knowledge about the plants has been documented through discussion with local people.

The herbarium specimens were identified with the help of Floras like The Flora of Presidency of Madras by J.S. Gamble, Flora Of The Tamilnadu Carnatic by K.M. Matthew, Flora Of British India by J.D. Hooker. Genera and species of the family in this work are arranged in the alphabetical order.

Results

In this study, it was found that Kongad Panchayath is rich in plant diversity. A total number of 271 species and 74 families were documented from the study area. The flora includes different categories such as herbs, shrubs, trees and climbers. The

families with maximum species diversity were Acanthaceae, Euphorbiaceae and Fabaceae. The plants were arranged according to Bentham and Hooker's classification. Comprehensive analysis

with emphasis on dominant families, medicinal properties, prominent weed species, and species with religious significance was also made in the study.

Table 1
List of plants documented from Kongad during the present study

Sl No.	Binomial	Family	Common Name	Habit
1	<i>Michelia champaca</i> L.	Magnoliaceae	Chembakam	Tree
2	<i>Annona squamosa</i> L.	Annonaceae	Seethapazham	Tree
3	<i>Polyalthia longifolia</i> (Sonner.)Thw.	Annonaceae	Aranamaram	Tree
4	<i>Cyclea peltata</i> (Lam.)Hook.f. & Thoms.	Menispermaceae	Padathali	Climber
5	<i>Tinospora sinensis</i> (Lour.)Merr.	Menispermaceae	Kattu Marunthu	Climber
6	<i>Cleome viscosa</i> L.	Capparaceae	Kattu Kaduku	Herb
7	<i>Cleome rutidosperma</i> DC.	Capparaceae	Neelavela	Herb
8	<i>Calophyllum inophyllum</i> L.	Clusiaceae	Punna	Tree
9	<i>Garcinia gummi-gutta</i> (L.) Robs.	Clusiaceae	Kodampuli	Tree
10	<i>Abutilon persicum</i> (Burm.f.) Merr.	Malvaceae	Thuththi	Shrub
11	<i>Hibiscus mutabilis</i> L.	Malvaceae	Changing rose	Shrub
12	<i>Hibiscus lobatus</i> (Murr.)	Malvaceae		Shrub
13	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Chembarathy	Shrub
14	<i>Hibiscus surattensis</i> L.	Malvaceae	Kakkapoo	Shrub
15	<i>Malvaviscus penduliflorus</i> DC.	Malvaceae	Molakuchembarathy	Shrub
16	<i>Sida acuta</i> Burm.f.	Malvaceae	Kurunthotti	Shrub
17	<i>Sida cordifolia</i> L.	Malvaceae	Ana Kurunthotti	Shrub
18	<i>Thespesia populnea</i> (L.) Soland. Ex Correa.	Malvaceae	Poovarasu	Tree
19	<i>Urena lobata</i> L.	Malvaceae	Orappam	Shrub
20	<i>Bombax ceiba</i> L.	Bombacaceae	Panji Maram	Tree
21	<i>Helicteres isora</i> L.	Sterculiaceae	Edampiri-Valampiri	Shrub
22	<i>Kleinhovia hospita</i> L.	Sterculiaceae		Tree
23	<i>Corchorus olitorius</i> L.	Tiliaceae		Shrub
24	<i>Triumfetta rhomboidea</i> Jacq.	Tiliaceae	Oorpam	Shrub
25	<i>Averrhoa bilimbi</i> L.	Oxalidaceae	Irumban Puli	Tree
26	<i>Biophytum sensitivum</i> (L.) DC	Oxalidaceae	Mukkutti	Herb
27	<i>Aegle marmelos</i> (L.) Correa	Rutaceae	Koovalam	Tree
28	<i>Citrus medica</i> L.	Rutaceae	Ganapathinaranga	
29	<i>Glycosmis pentaphylla</i> (Retz.) DC.	Rutaceae	Panal	Shrub
30	<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Kariveppu	Shrub

31	<i>Naringi crenulata</i> (Roxb.)	Rutaceae	Kaatunaragam	Tree
32	<i>Ruta chalepensis</i> (L.)	Rutaceae	Arootha	Herb
33	<i>Ailanthus excelsa</i> Roxb	Simaroubaceae	Matti	Tree
34	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Aryaveppu	Tree
35	<i>Naregamia alata</i> Wight & Arn.	Meliaceae	Nilanaragam	Herb
36	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Elentha	Tree
37	<i>Cissus vitiginea</i> L.	Vitaceae	Kattu Munthiri	Climber
38	<i>Leea indica</i> (Burm. f.) Merr.	Vitaceae	Choriantali	Shrub
39	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Valli-uzhinja	Climber
40	<i>Anacardium occidentale</i> L.	Anacardiaceae	Kasumanga	Tree
41	<i>Mangifera indica</i> L.	Anacardiaceae	Maavu	Tree
42	<i>Spondias pinnata</i> (L.F.) Kurz,prelim	Anacardiaceae	Ambazham	Tree
43	<i>Moringa oleifera</i> Lam	Moringaceae	Muringa	Tree
44	<i>Abrus precatorius</i> L.	Papilionaceae	Kunnikuru	Climber
45	<i>Abrus pulchellus</i> Wall.	Papilionaceae	Valiya kattumuthira	Herb
46	<i>Arachis hypogaea</i> L.	Papilionaceae	Nila Kadala	Herb
47	<i>Calopogonium mucunoides</i> Desv.	Papilionaceae		Herb
48	<i>Clitoria ternatea</i> L.	Papilionaceae	Sankupushpam	
49	<i>Crotalaria pallida</i> Aitton.	Papilionaceae	Kilukkampetti	
50	<i>Desmodium heterophyllum</i> (Willd). DC	Papilionaceae		Herb
51	<i>Desmodium gangeticum</i> (L.) DC.	Papilionaceae	Orila	
52	<i>Desmodium laxiflorum</i> DC.	Papilionaceae	Unda-orila	Herb
53	<i>Desmodium triflorum</i> (L.) DC.	Papilionaceae	Nilamparanda	Herb
54	<i>Pongamia pinnata</i> (L.) Pierre.	Papilionaceae	Ungu	Tree
55	<i>Pseudarthria viscida</i> (L.) Wight & Arn.	Papilionaceae	Moovila	Shrub
56	<i>Pterocarpus marsupium</i> Roxb.	Papilionaceae	Venga	Tree
57	<i>Tephrosia purpurea</i> (L.) Pers., Syn.	Papilionaceae	Kattamari	Herb
58	<i>Bauhinia acuminata</i> L.	Caesalpiniaceae	Vellamandharam	Shrub
59	<i>Caesalpinia pulcherrima</i> (L.) Swartz, Obs.	Caesalpiniaceae	Rajamalli	Shrub
60	<i>Cassia fistula</i> L.	Caesalpiniaceae	Kanikonna	Tree
61	<i>Chamaecrista mimosoides</i> (L.) Greene.	Caesalpiniaceae	Cheruthakara	Shrub
62	<i>Delonix regia</i> (Boj. Ex Hook) Rafin	Caesalpiniaceae	Poomaram	Tree
63	<i>Saraca asoca</i> (Roxb.) de Wilde, Blumea	Caesalpiniaceae	Ashoka	Tree
64	<i>Senna hirsute</i> (L.) Inwin & Barneby	Caesalpiniaceae		Shrub
65	<i>Senna occidentalis</i> (L.) Link, Handb	Caesalpiniaceae	Ponnari	Shrub
66	<i>Senna tora</i> (L.) Roxb., Fl. Ind.	Caesalpiniaceae	Thakara	Herb

67	<i>Tamarindus indica</i> L.	Caesalpiniaceae	Puli	Tree
68	<i>Acacia pennata</i> (L.) Willd.	Mimosaceae	Karinja	Climber
69	<i>Mimosa diplotricha</i> C. Wight	Mimosaceae	Ana Thottavadi	Climber
70	<i>Mimosa pudica</i> L.	Mimosaceae	Thottavadi	Herb
71	<i>Samanea saman</i> (Jacq.) Merr.	Mimosaceae		Tree
72	<i>Xylia xylocarpa</i> (Roxb.) Taub.	Mimosaceae	Irul	Tree
73	<i>Rosa multiflora</i> Thunb.	Rosaceae	Rose	Shrub
74	<i>Anogeissus latifolia</i> (Roxb. Ex DC.) Wall	Combretaceae	Kalkanjiram	Tree
75	<i>Calycopterus floribunda</i> (Roxb.) Poiret.	Combretaceae	Pullani	Climber
76	<i>Terminalia arjuna</i> (DC.) Wight & Arn.	Combretaceae	Neermaruth	Tree
77	<i>Terminalia catappa</i> L.	Combretaceae	Badam	Tree
78	<i>Terminalia eclipa</i> Willd.	Combretaceae	Karimaruth	Tree
79	<i>Terminalia paniculata</i> Roth.	Combretaceae	Maruth	Tree
80	<i>Quisqualis indica</i> L.	Combretaceae	Rangoon creeper	Shrub
81	<i>Callistemon citrinus</i> (Curtis) Skeels	Myrtaceae	Bottle brush	Tree
82	<i>Psidium guajava</i> L.	Myrtaceae	Perakka	Tree
83	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Njaval	Tree
84	<i>Syzygium jambos</i> (L.) Alston.	Myrtaceae	Champa	Tree
85	<i>Lawsonia inermis</i> L.	Lythraceae	Mailanchi	Shrub
86	<i>Ludwigia hyssopifolia</i> (G. Don) Excell.	Onagraceae	Neergrampu	Herb
87	<i>Passiflora foetida</i> L. var. hispida	Passifloraceae	Poocha Pazham	Climber
88	<i>Carica papaya</i> L.	Caricaceae	Papaya	Shrub
89	<i>Coccinia grandis</i> (L.) Voight.	Cucurbitaceae	Koval	Climber
90	<i>Cucurbita maxima</i> Duch.	Cucurbitaceae	Mathanga	Climber
91	<i>Cucumis sativus</i> L.	Cucurbitaceae	Cucumber	Climber
92	<i>Luffa acutangula</i> (L.) Roxb.	Cucurbitaceae	Kattupeechee	Climber
93	<i>Mukia maderaspatana</i> (L.) Roem.	Cucurbitaceae	Mukkapeeram	Climber
94	<i>Trichosanthes cucumerina</i> L.	Cucurbitaceae	Kaipan Padavalam	Climber
95	<i>Begonia malabarica</i> Lam.	Begoniaceae	Kalpulli	Herb
96	<i>Mollugo oppositifolia</i> L.	Aizoaceae	Kaippu Jeerakam	Herb
97	<i>Centella asiatica</i> (L.) Urban.	Apiaceae	Kodangal	Herb
98	<i>Chassalia curviflora</i> (Wall. Ex Kurz) Thw.	Rubiaceae	Karutha-amalpori	Shrub
99	<i>Gardenia jasminoides</i> Ellis	Rubiaceae	Gandharajan	Shrub
100	<i>Geophila repens</i> (L.) Johnst	Rubiaceae	Karumathil	Herb
101	<i>Ixora coccinea</i> L.	Rubiaceae	Thechi	Shrub
102	<i>Ixora cuneifolia</i> Roxb. Ex DC.	Rubiaceae		Shrub

103	<i>Ixora finlaysoniana</i> Wall.	Rubiaceae	Vella thechi	Shrub
104	<i>Mitracarpus villosus</i> (Sw.) DC.	Rubiaceae	Thaval	Herb
105	<i>Oldenlandia diffusa</i> (Willd.) Roxb.	Rubiaceae	Parpadagam	Herb
106	<i>Pavetta indica</i> L.	Rubiaceae	Pavetta	Shrub
107	<i>Spermacoce ocyroides</i> Burm.	Rubiaceae	Tharakeera	Herb
108	<i>Acmella calva</i> (DC.) R.K. Jansen.	Asteraceae	Kuppamanjal	Herb
109	<i>Chromolaena odorata</i> (L.) King & Robins.	Asteraceae	Communist-pacha	Shrub
110	<i>Crassocephalum crepidioides</i> (Benth.) S. Moore.	Asteraceae	Appuppanthadi	Herb
111	<i>Eclipta prostrate</i> (L.) L.	Asteraceae	Kayyunni	Herb
112	<i>Elephantopus scaber</i> L.	Asteraceae	Anachuvadi	Herb
113	<i>Emilia sonchifolia</i> (L.) DC.	Asteraceae	Muyalcheviyan	Herb
114	<i>Grangea maderaspatana</i> (L.) Poir. In Lam.	Asteraceae	Nelampala	Herb
115	<i>Mikania micrantha</i> Kunth in HBK	Asteraceae	Vayara	Climber
116	<i>Spilanthes ciliata</i> HBK	Asteraceae	Kuppameniya	Herb
117	<i>Spilanthes radicans</i> Jacq.	Asteraceae	Venapacha	Herb
118	<i>Synedrella nodiflora</i> (L.) Poir. in Lam.	Asteraceae	Mudianpacha	Herb
119	<i>Tridax procumbens</i> L.	Asteraceae	Odiyancheera	Herb
120	<i>Vernonia cinerea</i> (L.) Less.	Asteraceae	Poovan Kuruthal	Herb
121	<i>Lobelia alsinoides</i> Lam.	Lobeliaceae	Kakkapoo	Herb
122	<i>Manilkara zapota</i> (L.) P. Royen.	Sapotaceae	Sapota	Tree
123	<i>Mimusops elengi</i> L.	Sapotaceae	Elenji	Tree
124	<i>Pouteria campechiana</i> (Kunth.) Baehni.	Sapotaceae	Mutta Pazham	Tree
125	<i>Jasminum angustifolium</i> Vahl	Oleaceae	Kattumulla	Climber
126	<i>Jasminum multiflorum</i> (Burm.f.) Andrews	Oleaceae	Kudamulla	Climber
127	<i>Nyctanthes arbor-tristis</i> L.	Oleaceae	Pavizhamalli	Shrub
128	<i>Olea dioica</i> Roxb.	Oleaceae	Edala	Tree
129	<i>Allamanda cathartica</i> L. Mant.	Apocynaceae	Manja Kolambi	Shrub
130	<i>Alstonia scholaris</i> (L.) R. Br.	Apocynaceae	Pala	Tree
131	<i>Catharanthus roseus</i> (L.) Don.	Apocynaceae	Nithyakalyani	Herb
132	<i>Holarrhena pubescens</i> (Buch. Ham.) Wall	Apocynaceae	Kadalapala	Tree
133	<i>Ichnocarpus frutescens</i> (L.) R. Br. Mem.	Apocynaceae	Palvalli	Climber
134	<i>Nerium oleander</i> L.	Apocynaceae	Arali	Shrub
135	<i>Pentalinon luteum</i> (L.) B.F.	Apocynaceae		Climber
136	<i>Plumeria rubra</i> L.	Apocynaceae	Alari	Tree
137	<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz.	Apocynaceae	Sarpagandha	Shrub

138	<i>Tabernaemontana alternifolia</i> L.	Apocynaceae	Koonan Pala	Tree
139	<i>Tabernaemontana divaricata</i> (L.) R. Br. in Roem. & Schult.	Apocynaceae	Nandyarvattam	Shrub
140	<i>Calotropis gigantea</i> (L.) R. Br. in Ait.	Asclepiadaceae	Erikku	Shrub
141	<i>Strychnos nux-vomica</i> L.	Loganiaceae	Kanjiram	Tree
142	<i>Canscora diffusa</i> (Vahl) R. Br. ex Roem. & Schult	Gentianaceae	Jeerakapullu	Herb
143	<i>Heliotropium indicum</i> L.	Boraginaceae	Thelkada	Herb
144	<i>Evolvulus nummularius</i> (L.) L.	Convolvulaceae		Herb
145	<i>Hewittia sublobata</i> (L.F.) Kuntze.	Convolvulaceae	Ohana Valli	Climber
146	<i>Ipomoea hederifolia</i> L.	Convolvulaceae	Theepori mulla	Climber
147	<i>Ipomoea marginata</i> (Desr.) Manitz.	Convolvulaceae	Kolambi	Climber
148	<i>Ipomoea quamoclit</i> L.	Convolvulaceae	Akasha Mulla	Climber
149	<i>Merremia tridentatus</i> (L.) Hallier.	Convolvulaceae		Herb
150	<i>Capsicum frutescens</i> L.	Solanaceae	Mulak	Shrub
151	<i>Datura stramonium</i> L.	Solanaceae	Ummam	Shrub
152	<i>Lycopersicon esculentum</i> Miller. Gard.	Solanaceae	Thakkali	Herb
153	<i>Physalis minima</i> L.	Solanaceae	Njottanjodian	Herb
154	<i>Solanum torvum</i> SW. Nov.	Solanaceae	Chunda	Shrub
155	<i>Lindenia caespitosa</i> (Blume) Panigrahi	Scrophulariaceae		Herb
156	<i>Scoparia dulcis</i> L.	Scrophulariaceae	Kallurukki	Herb
157	<i>Torenia bicolor</i> Dalz.	Scrophulariaceae	Kakkapoo	Herb
158	<i>Spathodea campanulata</i> P. Beauv	Bignoniaceae	Thaneerkaimaram	Tree
159	<i>Adhatoda zeylanica</i> Medicus.	Acanthaceae	Adalodakam	Shrub
160	<i>Andrographis paniculata</i> (Burm.f.) Wallich	Acanthaceae	Kiriyath	Shrub
161	<i>Barleria cristata</i> L.	Acanthaceae	Chulli	Shrub
162	<i>Barleria prionitis</i> L.	Acanthaceae	Manjakanakabaram	Shrub
163	<i>Blepharis maderaspatensis</i> (L.) Roth.	Acanthaceae	Murikootti Pacha	Herb
164	<i>Crossandra infundibuliformis</i> (L.) Nees.	Acanthaceae	Kanakambaram	Shrub
165	<i>Dipteracanthus prostrates</i> (Poirot)Nees.	Acanthaceae	Thuppalampotti	Herb
166	<i>Ecbolium viride</i> (Forssk.) Alston	Acanthaceae	Neelakurinji	Shrub
167	<i>Eranthemum capense</i> L.	Acanthaceae		Shrub
168	<i>Justicia gendarussa</i> Burm.f.	Acanthaceae	Karunochi	Shrub
169	<i>Justicia japonica</i> Thunb.	Acanthaceae		Herb
170	<i>Justicia procumbens</i> L.	Acanthaceae		Herb
171	<i>Lepidagathis incurva</i> Buch-Ham.	Acanthaceae		Herb
172	<i>Meyenia hawtayneana</i> (Wallich) Nees.	Acanthaceae		Climber

173	<i>Nelsonia canescens</i> (Lam.) Spreng.	Acanthaceae		Herb
174	<i>Odontonema strictum</i> (Nees.) Kuntze	Acanthaceae		Herb
175	<i>Pachystachys lutea</i> Nees.	Acanthaceae		Herb
176	<i>Phaulopsis imbricata</i> (Forsskal) Sw.	Acanthaceae		Herb
177	<i>Plumbago zeylanica</i> L.	Acanthaceae	Vella Koduveli	Shrub
178	<i>Rhinacanthus nasutus</i> (L.) Kurz.	Acanthaceae	Nagamalla	Shrub
179	<i>Rungia parviflora</i> (Retz.) Nees in Wall.	Acanthaceae		Herb
180	<i>Russelia equisetiformis</i> Schltr. & Cham.	Acanthaceae		Shrub
181	<i>Thunbergia grandiflora</i> (Roltler) Roxb.	Acanthaceae		Climber
182	<i>Clerodendrum infortunatum</i> L.	Verbenaceae	Peruku	Shrub
183	<i>Clerodendrum paniculatum</i> L.	Verbenaceae	Krishnakireedam	Shrub
184	<i>Lantana camara</i> L.	Verbenaceae	Aripp	Shrub
185	<i>Tectona grandis</i> L. f.	Verbenaceae	Thekku	Tree
186	<i>Anisomeles indica</i> (L.) O. Ktze	Lamiaceae	Chedayan	Shrub
187	<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae	Natta Poochedi	Shrub
188	<i>Leucas aspera</i> (Willd.) Link.	Lamiaceae	Thumba	Herb
189	<i>Ocimum americanum</i> L. Cent.	Lamiaceae	Kattu Ramathulasi	Herb
190	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Krishnathulasi	Shrub
191	<i>Pogostemon purpurascens</i> Dalz.	Lamiaceae	Poothachu	Herb
192	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Thazhuthama	Herb
193	<i>Bougainvillea spectabilis</i> Willd	Nyctaginaceae	Kadasu Poovu	Shrub
194	<i>Mirabilis jalapa</i> L.	Nyctaginaceae	Mal-mani-chedi	Herb
195	<i>Achyranthes aspera</i> L.	Amaranthaceae	Kadaladi	Herb
196	<i>Aerva lanata</i> (L.) Juss. Ex Schult.	Amaranthaceae	Cheula	Herb
197	<i>Alternanthera tenella</i> Colla, Mann.	Amaranthaceae		Herb
198	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Cherucheera	Herb
199	<i>Amaranthus tricolor</i> L.	Amaranthaceae	Cheera	Herb
200	<i>Amaranthus viridis</i> L.	Amaranthaceae	Kuppa Cheera	Herb
201	<i>Celosia argentea</i> (L.) Kuntze	Amaranthaceae	Kozhi Poovu	Herb
202	<i>Cyathula prostrata</i> (L.) Blume.	Amaranthaceae	Cherukadaladi	Herb
203	<i>Gomphrena celosioides</i> Mart.	Amaranthaceae	Nirvadamalli	Herb
204	<i>Gomphrena globosa</i> L.	Amaranthaceae	Vadamalli	Herb
205	<i>Pupalia lappacea</i> (L.) Juss.	Amaranthaceae		Herb
206	<i>Antigonon leptopus</i> Hook & Arn.	Polygonaceae	The Poovalli	Climber

207	<i>Peperomia pellucida</i> (L.) Kunth.	Piperaceae	Mashithandu	Herb
208	<i>Piper longum</i> L.	Piperaceae	Thippali	Shrub
209	<i>Piper nigrum</i> L.	Piperaceae	Kurumulaku	Climber
210	<i>Myristica fragrans</i> Houtt.	Myristicaceae	Jathika	Tree
211	<i>Cinnamomum malabatum</i> (Burm. f.) Blume	Lauraceae	Lavangam	Tree
212	<i>Dendrophthoe falcata</i> (L.f.) Etting.	Loranthaceae	Ithil Kanni	Shrub
213	<i>Santalum album</i> L.	Santalaceae	Chandanam	Tree
214	<i>Acalypha hispida</i> Burm. f.	Euphorbiaceae	Poochavalan	Shrub
215	<i>Acalypha paniculata</i> Miq.	Euphorbiaceae	Valia-kuppaimeni	Herb
216	<i>Aporosa acuminata</i> Thw.	Euphorbiaceae	Nervetti	Shrub
217	<i>Croton hirtus</i> L' Herit	Euphorbiaceae		Herb
218	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Attuvattappala	Herb
219	<i>Euphorbia prostrata</i> Ait	Euphorbiaceae		Herb
220	<i>Hevea brasiliensis</i> (Willd. Ex A. Juss) Muell.-Arg.	Euphorbiaceae	Rubber	Tree
221	<i>Jatropha curcas</i> L.	Euphorbiaceae	Kadalavanakku	Shrub
222	<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	Chuvannakadalavanakku	Shrub
223	<i>Macaranga peltata</i> (Roxb.) Muell.-Arg. in DC	Euphorbiaceae	Uppila	Tree
224	<i>Mallotus philippensis</i> (Lam.) Muell.-Arg	Euphorbiaceae	Kapila	Tree
225	<i>Manihot esculenta</i> Crantz., Inst. Rei.	Euphorbiaceae	Kappa	Shrub
226	<i>Microstachys chamaelea</i> (L.) Muell.	Euphorbiaceae	Kodiyavannakku	Herb
227	<i>Phyllanthus acidus</i> (L.) Skeels.	Euphorbiaceae	Arinelli	Tree
228	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Nelli	Tree
229	<i>Phyllanthus myrtifolius</i> Moon.	Euphorbiaceae		Shrub
230	<i>Phyllanthus reticulatus</i> Poir.	Euphorbiaceae	Neeroli	Shrub
231	<i>Phyllanthus rheedei</i> Wight.	Euphorbiaceae		Herb
232	<i>Ricinus communis</i> L.	Euphorbiaceae	Avanakku	Shrub
233	<i>Tragia involucrata</i> L.	Euphorbiaceae	Kodithoova	Herb
234	<i>Trema orientalis</i> (L.) Blume.	Ulmaceae	Amapotti	Tree
235	<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Chakka	Tree
236	<i>Artocarpus incisus</i> (Thunb.) L. f.	Moraceae	Kadachakka	Tree
237	<i>Ficus benghalensis</i> L.	Moraceae	Aal	Tree
238	<i>Ficus hispida</i> L.	Moraceae	Parakam	Tree

239	<i>Ficus religiosa</i> L.	Moraceae	Arayal	Tree
240	<i>Spathoglottis plicata</i> Blume.	Orchidaceae	Ground orchid	Herb
241	<i>Alpinia purpurata</i> (Vieill) Schum.	Zingiberaceae		Herb
242	<i>Cucurma aeruginosa</i> Roxb.	Zingiberaceae	Karimanjal	Herb
243	<i>Cucurma aromatica</i> Salisb.	Zingiberaceae	Kasthuri Manjal	Herb
244	<i>Curcuma longa</i> L.	Zingiberaceae	Manjal	Herb
245	<i>Costus speciosus</i> (Koenig.) J.E. Smith	Costaceae	Anakova	Herb
246	<i>Musa paradisiaca</i> L.	Musaceae	Vazha	Herb
247	<i>Canna indica</i> L.	Cannaceae	Canna	Herb
248	<i>Dioscorea alata</i> L.	Dioscoreaceae	Kachil	Climber
249	<i>Curculigo orchoides</i> Gaertn.	Hypoxidaceae	Nilappana	Herb
250	<i>Scadoxus multiflorus</i> (Martyn) Raf.	Amaryllidaceae	Football lilly	Herb
251	<i>Zephyranthes minuta</i> (Kunth) D.	Amaryllidaceae		Herb
252	<i>Asparagus racemosus</i> Willd.	Liliaceae	Shatavari	Climber
253	<i>Gloriosa superba</i> L.	Liliaceae	Menthonni	Climber
254	<i>Commelina benghalensis</i> L.	Commelinaceae	Adukkavettila	Herb
255	<i>Cyanotis axillaris</i> (L.) D.	Commelinaceae		Herb
256	<i>Areca catechu</i> L.	Arecaceae	Kazhangu	Tree
257	<i>Borassus flabellifer</i> L.	Arecaceae	Karimbana	Tree
258	<i>Caryota urens</i> L.	Arecaceae	Aanapana	Tree
259	<i>Cocos nucifera</i> L.	Arecaceae	Thengu	Tree
260	<i>Amorphophallus commutatus</i> (Schott) Engl.	Araceae	Kattuchena	Herb
261	<i>Caladium bicolor</i> (Ait. ex Dryand.) Vent.	Araceae	Varnachembu	Herb
262	<i>Colocasia esculenta</i> (L.) Schott. in Schott & Endl.	Araceae	Chembu	Herb
263	<i>Pothos scandens</i> L.	Araceae	Paruvakodi	Climber
264	<i>Bulbostylis barbata</i> (Rottb.) Kunth.	Cyperaceae		Herb
265	<i>Cyperus cephalotes</i> Vahl	Cyperaceae		Herb
266	<i>Cyperus malaccensis</i> Lam. Illustr.	Cyperaceae	Koonikkorappullu	Herb
267	<i>Kyllinga nemoralis</i> (J.R. & G. Forst.)	Cyperaceae	Paalnirvasi	Herb
268	<i>Bambusa bambos</i> (L.) Voss in Vilmin	Poaceae	Mula	Shrub
269	<i>Eleusine indica</i> (L.) Gaertn	Poaceae	Kaatuthina	Herb
270	<i>Eragrostis unioides</i> (Retz.) Nees.	Poaceae	Karayampullu	Herb
271	<i>Pennisetum polystachion</i> (L.) Schult.	Poaceae		Herb

Discussion

In this study, it was found that Kongad Panchayath is rich in plant diversity. A total number of 271 species and 74 families were documented from the study area. The flora includes different categories such as herbs, shrubs, trees and climbers. In the study area it was observed the presence of 17 invasive species in large amounts.

These plants have the ability to thrive and spread aggressively outside its natural range. They put extreme pressure on native plants and threatened species may succumb to this pressure. Ultimately, they alter habitats and reduce biodiversity. So, proper measures have to destroy the invasive plant species so that the rich biodiversity of the area can be conserved.

It was also observed that the panchayath is very rich in medicinal plant diversity. Plants have been used for medicinal purposes long before the prehistoric period. Treatment with medicinal plants is considered very safe as there are no or minimal side effects. The use of medicinal plants for the treatment is increasing now-a-days. So, effective control measures should be taken to conserve them. Plants having religious significance are also documented.

Plant species like *Saraca asoca* and *Santalum album* are listed in IUCN vulnerable category and are also present in the study area. *Naregamia alata* a plant from Meliaceae and *Terminalia paniculata* from combretaceae, both are endemic to Peninsular India and *Cinnamomum malabattrum* endemic to southern-Western Ghats and *Torenia bicolor* endemic to Western Ghats are also documented.

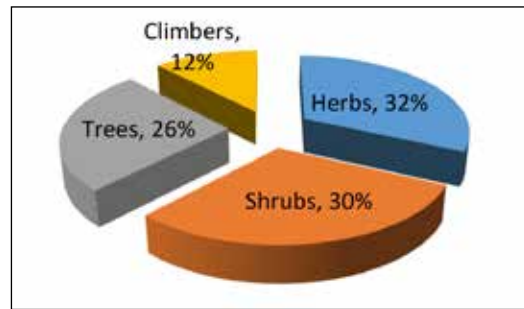
The main purpose behind this floristic study is not only to document the plant species within the panchayath, but also to make everyone aware about the importance of conservation of the rich biodiversity we have for our future generations to come. The conservation of biodiversity has multidimensional objectives. The conservation of biological diversity seeks to maintain the life support system, provided by nature in all ways and

the living resources, essentially for ecologically sustainable development. Conservation of biodiversity is essential not only for the survival of the natural resources but also for the survival of human beings.

**Table 2
Most Represented Families**

Sl No.	Family	No. Of Species
1	Acanthaceae	23
2	Euphorbiaceae	20
3	Fabaceae	14
4	Asteraceae	13

**Graph 1
Habit wise distribution of documented plants**



Graph 2

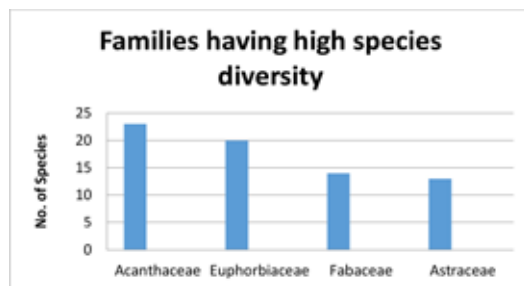


Table 3
Medicinal uses of plants documented from the study site

Binomial	Part used	Medicinal uses
<i>Aegle marmelos</i>	Fruit and Bark	antidiarrhoeal, antimicrobial, antiviral, radioprotective, anticancer, chemopreventive, antipyretic, ulcer healing, antigenotoxic, diuretic, antifertility and anti-inflammatory properties.
<i>Andrographis paniculata</i>	Whole plant	Fever, colic pain, loss of appetite, irregular stools and diarrhea, common cold, cough, fever, hepatitis, tuberculosis, mouth ulcers, bronchitis gastro-intestinal disorder and sores.
<i>Azadirachta indica</i>	Bark,root,flower,seed and leaf	Antibacterial, anthelmintic, antiviral, anticancer and Immunomodulatory agent.
<i>Boerhavia diffusa</i>	Root,leaves and seeds	cure disorders like intestinal colic, kidney disorders, cough, hemorrhoids, skin diseases, alcoholism, insomnia, eye diseases, asthma and jaundice
<i>Calotropis gigantea</i>	Root,bark and milk	Treating skin, digestive, respiratory, circulatory and neurological disorders and was used to treat fevers, elephantiasis, nausea, vomiting, and diarrhea.
<i>Cassia fistula</i>	Leaves, bark and pods	The ripe pods and seeds are widely used as a laxative. The bark or leaves are applied to skin problems.
<i>Catharanthus roseus</i>	Leaf, root and stem	used for relieving muscle pain, depression of the central nervous system, also used for applying to wasp stings and to heal wounds. Its application ranges widely from the prevention of diabetes to treatment of stomach ache
<i>Centella asiatica</i>	Whole plant	wound healing, the herb is recommended for the treatment of various skin conditions such as leprosy, lupus, varicose ulcers, eczema, psoriasis, diarrhoea, fever, amenorrhea, diseases of the female genitourinary tract and also for relieving anxiety and improving cognition.
<i>Cinnamomum malabratrum</i>	Leaves	Used to prevent stomach pain. It is used for treating wounds, fevers, intestinal worms, headaches and menstrual problems. The plant is also used for treatment of some tumours
<i>Desmodium gangeticum</i>	Whole plant	The plant has febrifuge, aphrodisiac, analgesic, diuretic, anti-inflammatory, and haemorrhagic properties.. It is an important ingredient of <i>dashmoolarishta</i> and <i>chyavanprash</i> .
<i>Eclipta prostrata</i>	Whole plant	Plays a role in the treatment of several diseases, including infectious hepatitis, snake venom poisoning, gastritis, and respiratory diseases such as a cough and asthma.
<i>Glycosmis pentaphylla</i>	Fruits	for the treatment of a variety of ailments including cough, fever, chest_pain, anemia, jaundice, liver disorders, inflammation, bronchitis, rheumatism, urinary__tract infections, pain, bone fractures, toothache, gonorrhea, diabetes, cancer and other chronic diseases.
<i>Helicteres isora</i>	Root, stem, bark and Fruits	Treating diarrhea, dysentery, abdominal colic pain, intestinal parasites,etc
<i>Ichnocarpus frutescens</i>	Whole plant	use as in atrophy, bleeding gums, convulsions, cough, delirium, dysentery, glossitis, hematuria, measles etc.

<i>Lawsonia inermis</i>	Whole plant	Used for headache, hemicranias, lumbago, bronchitis, boils, ophthalmia, cephalitis, sores, amenorrhea, scabies, diseases of the spleen, dysuria, bleeding disorder, skin diseases, diuretic, antibacterial, antifungal, anti-amoebiasis, astringent, anti-hemorrhagic, hypotensive and sedative effect.
<i>Leucas aspera</i>	Leaves and flowers	It has antifungal, prostaglandin inhibitory, antioxidant, antimicrobial, antinociceptive and cytotoxic activities. It is used in the traditional medicine of the Philippines to treat snake bites It is also an antipyretic, it is a herb that has the ability to help reduce fevers
<i>Mimusops elengi</i>	Root, flowers, bark and seeds	<ul style="list-style-type: none"> Used to prepare lotion for wounds and ulcers. Leaves are used as an antidote in snakebite. Seed bark decoction is used as aphrodisiac, cardio tonic and to treat mouth ulcer.
<i>Piper longum</i>	Fruit	It is most commonly used to treat chronic bronchitis, asthma, constipation, gonorrhoea, paralysis of the tongue, diarrhoea, cholera, chronic malaria, viral hepatitis, respiratory infections, stomachache, and bronchitis, diseases of the spleen, cough, and tumors.
<i>Plumbago zeylanica</i>	Root and Root Bark	Used in the treatment of stubborn chronic rheumatoid arthritis, skin diseases and tumorous growths
<i>Pseudarthria viscida</i>	Whole plant	It is used in the treatment of asthma and nervous dysfunction. It is also used in the treatment of insect bites and used against inflammations, vomiting, etc.
<i>Rauvolfia serpentina</i>	Root	Effective for hypertension. It also is used to treat severe agitation in patients with mental disorders.
<i>Saraca asoca</i>	Stembark, flower and seed	Stem bark is strongly astringent and a uterine sedative, uterine tonic, and styptic, having a stimulating effect on endometrial and ovarian tissue. Bark is also useful in dyspepsia, fever, and burning sensation. It is also used to treat menorrhagia, leucorrhoea, internal bleeding, hemorrhoids, and hemorrhagic dysentery.
<i>Scoparia dulcis</i>	Whole plant	Whole plant is grind into fine paste and ingested internally to cure kidney stone and other urinary problems
<i>Strychnos nux-vomica</i>	Seeds and stem bark	It is used for diseases of the digestive tract, disorders of the heart and circulatory system, diseases of the eye, and lung disease. It is also used for nerve conditions, depression, migraine headache, symptoms of menopause, and a blood vessel disorder called Raynaud's disease.
<i>Tabernaemontana alternifolia</i>	Latex	Latex is used to cure skin diseases.
<i>Terminalia arjuna</i>	Bark	Which has been used as a cardi tonic in heart failure, ischemic, cardiomyopathy, atherosclerosis, myocardium necrosis and has been used for the treatment of different human diseases like blood diseases, anemia, venereal and viral disease
<i>Vernonia cinerea</i>	Whole plant	A decoction of the leaves and roots is used to promote wound healing and to treat fevers. A mixture of the leaves is used to make a tonic for women after childbirth. Leaves are boiled in coconut oil and applied on hair to promote hair growth.

Endemism and conservation status

Cinnamomum malabatum and *Tabernaemontana alternifolia* both are endemic to Southern Western Ghats, *Naregamia alata* and *Terminalia paniculata* are endemic to Peninsular India and *Torenia bicolor* endemic to Western Ghats are documented. Plant species like *Saraca asoca* and *Santalum album* are listed in IUCN vulnerable category and are also present in the study area.

Dominant weed Species

Acmella calva, *Alternanthera tenella*, *Chromolaena odorata*, *Calopogonium mucunoides*, *Clitoria ternatea*, *Gomphrena globosa*, *Lantana camara*, *Mikania micrantha*, *Mimosa diplotricha*, *Mimosa pudica*, *Amaranthus spinous*, *Croton hirtus*, *Passiflora foetida*, *Pennisetum polystachyon*, *Ricinus communis*, *Synedrella nodiflora*, *Tridax procumbens* are some of the major invasive species found on the study area.

Religious significance of plants documented from the study site

Some plants have important religious significance also. *Saraca asoca* is mentioned in Ramayana in reference to the Ashoka Vatika where Hanuman first met Sita. It is one of the most sacred trees in

Hindu culture. It is usually found near the gates of Hindu temples. *Santalum album* is another plant having high religious importance. The heartwood of sandal is used in religious pujas to make Chandan Paste. Indian sandalwood is worshiped in most of the religions mainly in Hinduism and Buddisam. It is said that Lord Krishna likes *Mimusops elengi* flowers very much. The flowers are considered to be very sacred in Jainism and Buddhism. The fragrant flowers offered to Lord Ganesha during the 21-pushpa puja. *Ocimum tenuiflorum* is most often regarded as a consort of Vishnu in the form of Mahalakshmi. It is a sacred plant in Hinduism. Presence of the Holy *Ocimum* plant in Hindu homes is believed to increase devotion, meditation and protection. *Aegle marmelos* is considered as one of the sacred trees of Hindus. The leaves are highly used in Shiva temples. Its fruit is used in religious rituals. *Citrus medica* is another plant used for religious ritual during Ganapathihomam. *Phyllanthus emblica* is significant in that worship of Goddess Lakshmi. Fruit is said to have originated from the drops of Amrith which spilled on earth accidentally. *Curcuma longa* is another plant that has religious significance. Its powder is used to represent inner pride and purity. It is widely used in Nagapoojas.

PLATE 1



Fig. 1-9: 1.*Polyalthia longifolia* (Sonner.) Thw.; 2.*Garcinia gummi-gutta* (L.) Robs.; 3.*Hibiscus rosa-sinensis* L.; 4.*Sida cordifolia* L.; 5.*Helicteres isora* L.; 6.*Averrhoa bilimbi* L.; 7.*Biophytum sensitivum* (L.) Correa.; 8.*Citrus medica* L.; 9.*Glycosmis pentaphylla* (Retz.) DC.

PLATE 2

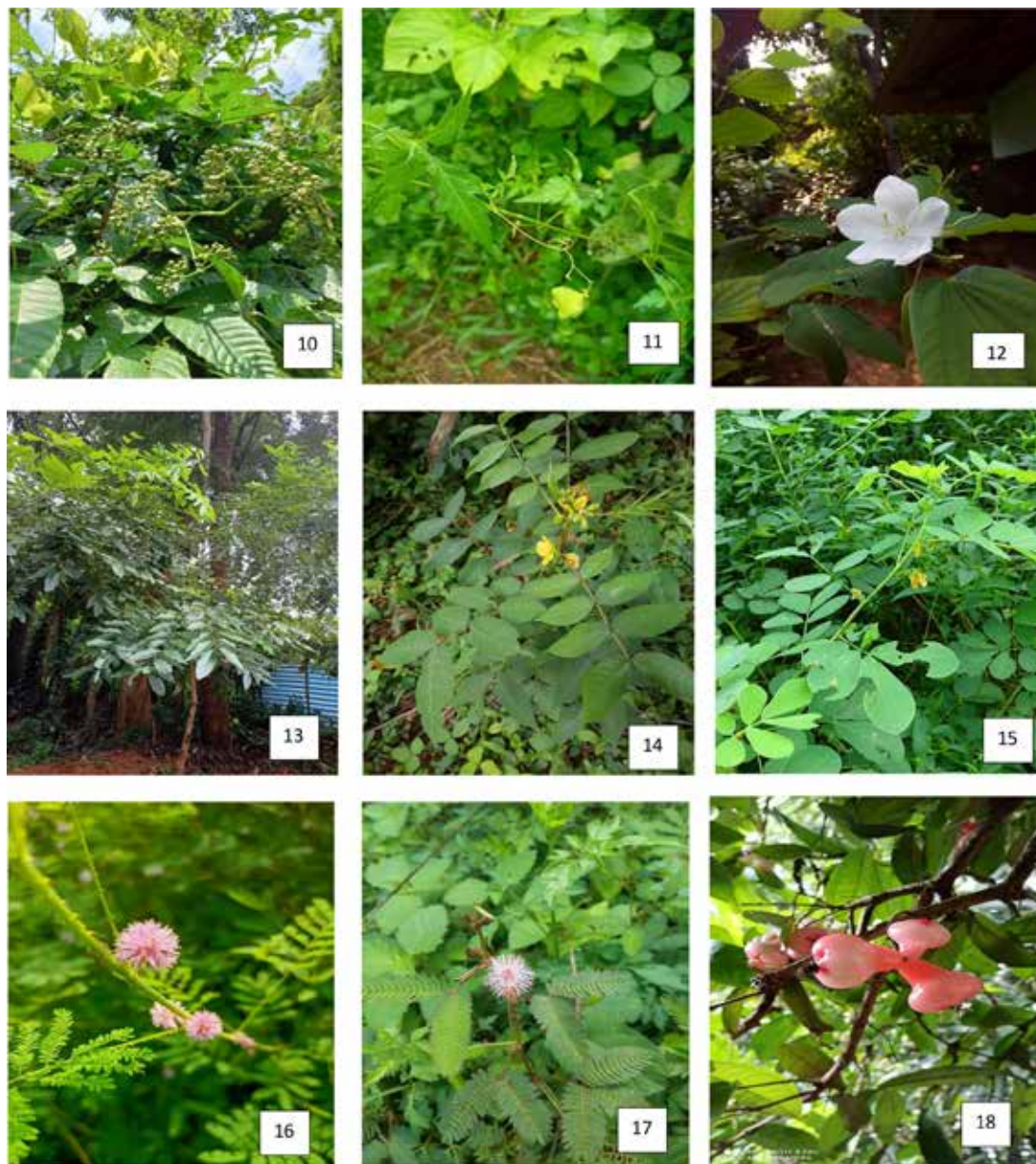


Fig 10-18: 10.*Leea indica* (Burm. f.) Merr.; 11.*Cardiospermum halicacabum* L.; 12.*Bauhinia acuminata* L.; 13.*Cassia fistula* L.; 14.*Senna occidentalis* (L.) Inwin & Barneby; 15.*Senna tora* (L.) Roxb., Fl. Ind.; 16.*Mimosa diplotrica* C. Wight; 17.*Mimosa pudica* L.; 18.*Syzygium jambos* (L.) Alston

PLATE 3



Fig: 19-27: 19.*Carica papaya* L., 20.*Chassalia curviflora* (Wall. ex Kurz) Thw., 21.*Gardenia jasminoides* Ellis., 22.*Ixora coccinea* L., 23.*Ixora finlaysoniana* Wall., 24.*Eclipta prostrata* (L.)L. ; 25.*Tridax procumbens* L., 26.*Pouteria campechiana* (Kunth.) Baehni, 27.*Jasminum angustifolium* Vahl.

PLATE 4



Fig :28-36 : 28.*Allamanda cathartica* L. Mant, 29.*Catharanthus roseus* (L.) Don., 30.*Nerium oleander* L., 31.*Rauvolfia serpentina* (L.) Benth. ex Kurz, 32.*Tabernaemontana alternifolia* L., 33.*Tabernaemontana divaricate* (L.)R. Br. in Roem. & Schult, 34.*Hewittia sublobata* (Hallier.L.F.) Kuntze., 35.*Heliotropium indicum* L., 36.*Merremia tridentatus* (L.) Hallier.

PLATE 5

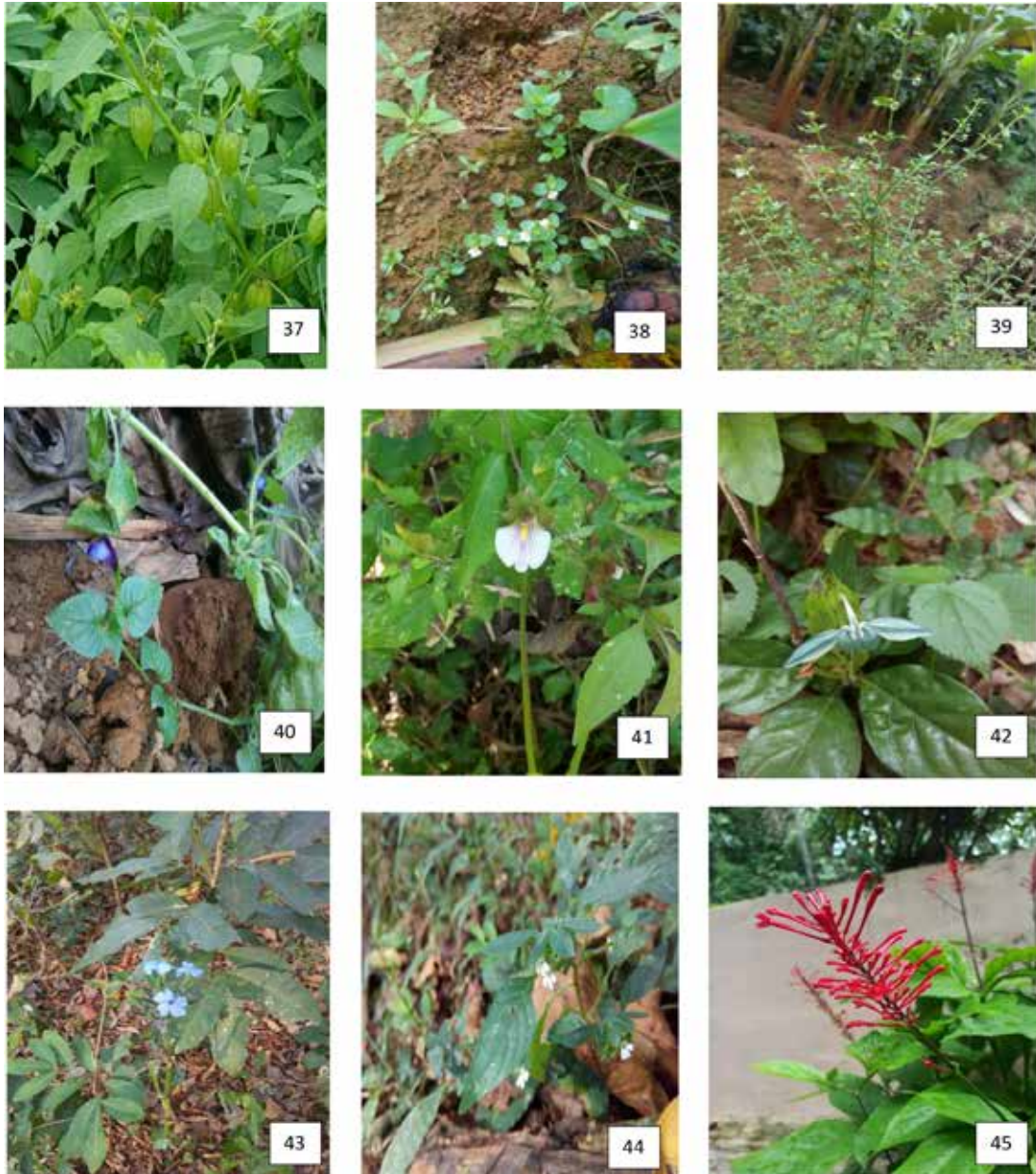


Fig : 37-45: 37.*Physalis minima* L., 38.*Lindernia caespitosa* (Blume) Panigrahi, 39.*Scoparia dulcis* L., 40.*Torenia bicolor* Dalz., 41.*Blepharis maderaspatensis* (L.) Roth., 42.*Ecbolium viride* (Forssk.) Alston., 43.*Eranthemum capense* L., 44.*Lepidagathis incurva* Buch- Ham., 45.*Odontonema strictum* (Nees.) Kuntze.

PLATE 6



Fig: 46-54 : 46.*Plumbago zeylanica* L., 47.*Russelia equisetiformis* Schltr. & Cham., 48.*Clerodendron infortunatum* L., 49.*Leucas aspera* (Willd.) Link., 50.*Boerhavia diffusa* L., 51.*Mirabilis jalapa* L., 52.*Piper longum* L., 53.*Piper nigrum* L., 54.*Cinnamomum malabattrum* (Burm. f.) Blume

PLATE 7

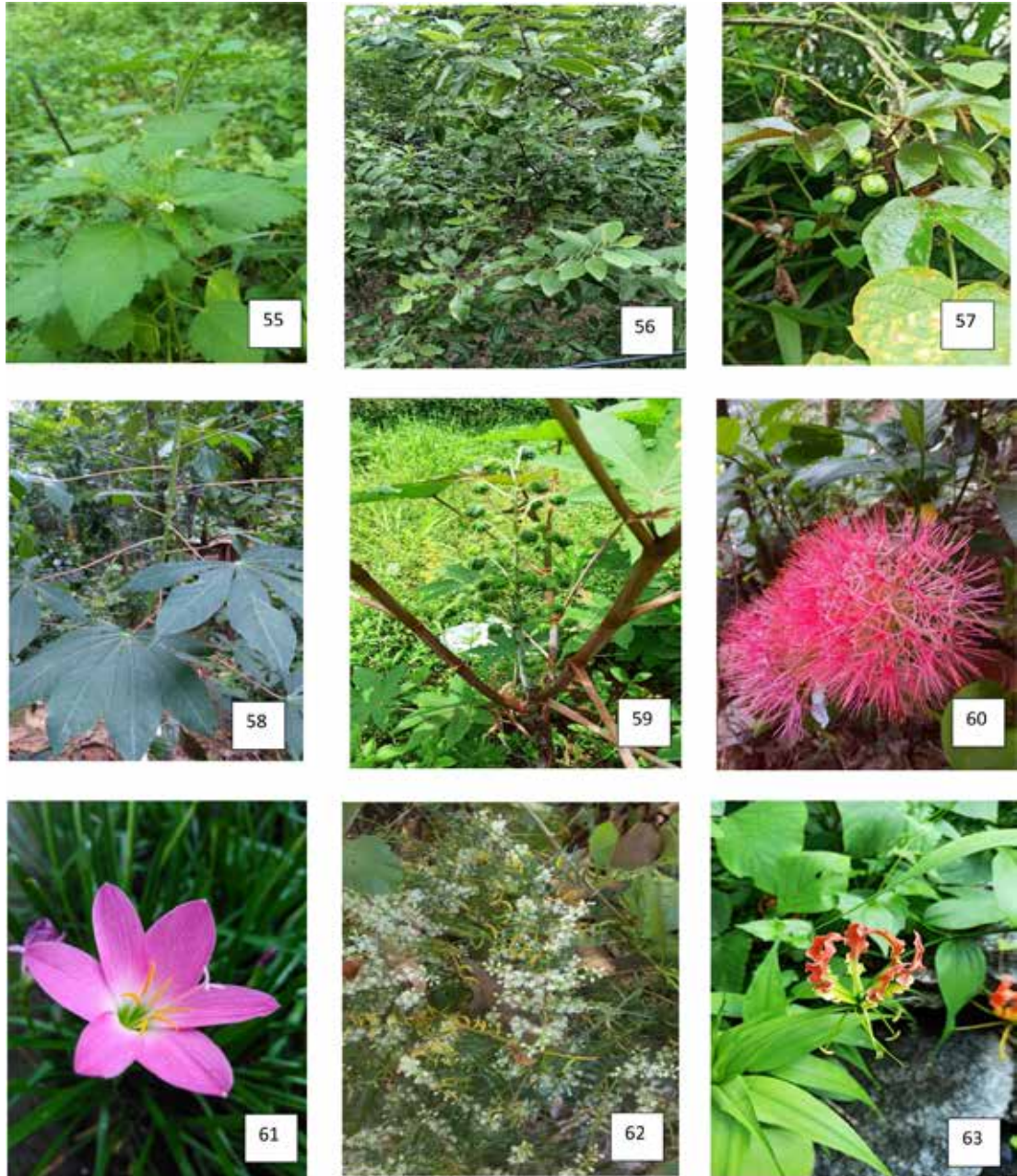


Fig: 55-63: 55. *Croton hirtus* L' Herit., 56. *Santalum album* L., 57. *Jatropha gossypifolia* L., 58. *Manihot esculenta* Crantz., 59. *Ricinus communis* L., 60. *Scadoxus multiflorus* (Martyn) Raf., 61. *Zephyranthes minuta* (Kunth) D., 62. *Asparagus racemosus* Willd., 63. *Gloriosa supeba* L.

Conclusion

The main purpose behind this floristic study is not only to document the plant species within the panchayath, but also to make everyone aware about the importance of conservation of the rich biodiversity we have for our future generations to come. The conservation of biodiversity has multidimensional objectives. The conservation of biological diversity seeks to maintain the life support system, provided by nature in all ways and the living resources, essentially for ecologically sustainable development. Conservation of biodiversity is essential not only for the survival of the natural resources but also for the survival of human beings. Kongad is a biodiversity rich area. Not much destructions are present in the study area so that plants are conserved in a well manner.

Acknowledgement

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