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## Phytodiversity studies of Nambineri wetland of Gopalamuthiram village, Tirunelveli district, Tamil Nadu

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### Abstract

The present study was undertaken to investigate the Phytodiversity of Nambineri wetland of Gopalamuthiram village, Tirunelveli district, Tamil Nadu. An extensive floristic survey was conducted during 2011 – 2014. In this floristic survey, 268 species of angiosperms belonging to 207 genera and 65 families were recorded and documented. Among which Dicotyledonae were represented by 51 families covering 209 species of 157 genera. Monocotyledonae were represented by 14 families covering 58 species of 50 genera. Dominant families were Poaceae with 28 species followed by Fabaceae (21), Euphorbiaceae (13), Acanthaceae (12), Compositae (11), Malvaceae and Solanaceae (10 each), Amaranthaceae, Rubiaceae and Verbenaceae (9 each), Caesalpiniaceae, Convolvulaceae and Scrophulariaceae (8 each), Apocynaceae, Asclepiadaceae, Lamiaceae and Mimosaceae (6 each). The dominating life form is herb with 156 species followed by shrub and tree 58 and 20 species respectively, while climbers with 34 species.

**Keywords:** floristic survey, taxonomy, medicinal plants, Nambineri wetland, Tirunelveli

### Introduction

Wetlands are quoted in the landscape as ecotones that appear along elevation and hydrological gradients between terrestrial and aquatic ecosystems <sup>[1]</sup>. They can be defined as regions that are transitional between terrestrial and aquatic systems, where the water table is near the surface or the land is inundated by shallow water, whether during the whole or part of the year <sup>[2]</sup>. Wetlands are important habitats because the heterogeneity in hydrology and soil conditions supports a broad variety of ecological niches and biodiversity <sup>[3]</sup>. Wetland vegetation is an important component of wetland ecosystems that plays a vital role in environmental function <sup>[4,5]</sup>. Wetland ecosystems typically show three characteristic ecological conditions, all of which are potential stressors for plant survival and growth: periodic to continuous inundation or soil-saturation with fresh or saline water; soils that are periodically anoxic (hydric soils); and hydrosols with rhizospheres experiencing periods of low or no oxygen availability <sup>[6]</sup>. A floristic study of wetland is essential for the construal of biological diversity. The identification and description of local flora are extremely paramount because it can illustrate exact species of the local areas and their occurrence, growing season, extinct species and finding incipient species <sup>[7]</sup>. Wetlands are considered to be a natural capital substitute for conventional flood control investments such as dykes, dams, and embankments <sup>[8]</sup>. Maya, <sup>[9]</sup> analyzed the economic importance of river vegetation of Kerala and gave the uses of 35 species including bank species apart from the true aquatic/wetland species. Wetlands are considered to have unique ecological features which provide numerous products and services to humanity <sup>[10]</sup>.

### Study area

Tirunelveli district covers an area of 6,823 sq.kms. It is in the south eastern part of Tamil Nadu and is triangular in shape. Nambinerikulam is located near Gopalamudrum village, Tirunelveli District, Tamil Nadu. It is system tank, have an irrigation capacity of 114.78 acres. The said wetland lies between 08.67 North latitude and 77.63 East longitudes (Figure 1). The average annual rainfall is around 700 mm, 70% of which occurs during October – December. The fundamental characteristic of this climate is due to the large variability of rains from year to year. The high amount of rain is almost always cyclonic in origin. The total rainfall was

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965.1, 753.97, 772.57 and 1346.59 mm for the year 2011, 2012, 2013 and 2014 respectively. The average rainfall for the rainy season was 220.77, 178.63, 133.77 and 283.95 for the year 2011, 2012, 2013 and 2014 respectively.

## Methods

An extensive floristic survey was conducted during the year 2011 - 2014. The survey of plant species was studied for the radius of 100 meters around pond area. The plant specimens were collected at different reproductive stages to prepare herbarium specimens and authenticate their correct identity. The collected specimens were identified taxonomically with the help of available monographs, taxonomic revisions and floras [11-16] and by using the field keys devised by Subramanyam [17].

## Results and Discussion

The Angiospermic flora of the Nambineri wetland has a total of 268 species. They belong to 207 genera and 65 families. Among which, 209 are Dicot and belong to 157 genera and 51 families; 58 are monocot and belong to 50 genera and 14 families (Table: 1, Figure 2). Among the dicot, 86 species are Polypetalae and family Fabaceae is the most dominant with 15 genera and 21 species. In Gamopetalae 76 genera covering 95 species are recorded and Acanthaceae is the most dominant family. In Monochlamydeae 13 species covering 7 genera are recorded and Euphorbiaceae is the most dominant family. In Monocot 28 species covers 23 genera representing 14 families (Table: 2, 3). In the dicots 17 species are trees, 54 shrubs, 106 herbs and 32 climbers. Monocot has 3 species of trees, 2 species of climbers, 4 species of shrubs and 50 herbs. Poaceae is the dominant family of the monocot (Table: 4). During the field survey, 95 species were used to treat various diseases. It is distributed in 45 families (Table: 5). Of 95 useful species, the family Fabaceae is most frequently used and represented with a total of 8 species, followed by

Euphorbiaceae (7), Convolvulaceae and Ceasalpiniaceae (5), Acanthaceae, Liliaceae, Malvaceae and Austraceae 5, and other families with less than 3 species. The present study indicates that the studied areas are very rich in wetland plant biodiversity and indigenous knowledge. The data on the medicinally important plants indicated that the observed species were used to treat gastrointestinal disorders, fever, cough, headache, anaemia, jaundice, worm infestation, diabetes, urinary disorders and skin diseases asthma cardiac diseases, wounds, diseases of blood, and other diseases. The local people are dependent on these species not only for domestic uses (especially food, manure, raw materials), but also to cure various diseases. According to collected information, only small quantities of some species are collected and sell in market. However, there are possibilities to enhance the income of the local communities, if properly managed the planning and management of the resources.

During off season when the tank gets dried the decomposed *Eichhornia* and other green leaves are collected in large quantity mixed with farm yard manure and prepared into compost. This is used as manure for paddy and other crops. Beside grasses fresh plants of *Eichhornia crassipes* and *Ipomea aquatica* are regularly collected and fed to cows and buffalos to enhance yield of milk. Occasionally the tender stems of *Pandanus* are collected and fed to temple elephants along with coconut leaves. The leaves of *Typha angustata* are collected in large quantity processed and prepared into screens (Thatti-Tamil). The aerial roots of *Pandanus* are dried and used as a country brush for white washing. So it is recommended to initiate the activities, such as inventory of useful species, habitat characteristics, identification of potential species for various economic uses and formulation and implementation of plan of action taking consideration of the needs of people and sustainable management of the wetlands.

**Table 1:** List of plants recorded in Nammaneri Wetland in Tirunelveli District

Sl. No	Botanical Name	Family	Vernacular Name
1.	<i>Abelmoschus esculentus</i> (L.) Moench.	Malvaceae	Vendai
2.	<i>Abelmoschus moschatus</i> Medic.	Malvaceae	Kasthuri vendai
3.	<i>Abrus precatorius</i> L.	Fabaceae	Kuntrimani
4.	<i>Abutilon indicum</i> (L.) Sweet	Malvaceae	Thuthi
5.	<i>Acacia sinuta</i> (Lour.) Merr.	Mimosaceae	Sivakai
6.	<i>Acalypha ciliata</i> Forssk.	Euphorbiaceae	Siruchinni
7.	<i>Acalypha indica</i> L.	Euphorbiaceae	Kuppaimeni
8.	<i>Acanthospermum hispidum</i> DC.	Compositae	Naimul
9.	<i>Achyranthes aspera</i> L.	Amaranthaceae	Nayuruvi
10.	<i>Aerva persica</i> (Burm. f.) Merr.	Amaranthaceae	Perumpeelai
11.	<i>Aerva lanata</i> (L.) Juss. ex Schult.	Amaranthaceae	Sirupeelai
12.	<i>Ageratum conyzoides</i> L.	Compositae	Poompillu
13.	<i>Alocasia indica</i> (Roxb.) Schott.	Araceae	Palsembu
14.	<i>Aloe vera</i> (L.) Burm. f.	Liliaceae	Katralai
15.	<i>Alternanthera pungens</i> Kunth.	Amaranthaceae	Otturamul
16.	<i>Alysicarpus monilifer</i> (L.) DC.	Fabaceae	Kurutheadakki
17.	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Mullukeerai
18.	<i>Amaranthus viridis</i> L.	Amaranthaceae	Kuppaikeerai
19.	<i>Ammannia baccifera</i> L.	Lythraceae	Erisalai
20.	<i>Andrographis paniculata</i> (Burm.F.) Wall. ex Nees.	Acanthaceae	Nilavembu
21.	<i>Anisomeles malabarica</i> (L.) R.Br.	Lamiaceae	Peithumbai
22.	<i>Aponogeton natans</i> (L.) Engler & K. Krause	Aponogetanaceae	Kottikizhangu
23.	<i>Apulda mutica</i> L.	Poaceae	-----
24.	<i>Argemone mexicana</i> L.	Papaveraceae	Piramathandu
25.	<i>Argyrea elliptica</i> (Roth) Choisy.	Convolvulaceae	-----
26.	<i>Aristida adscensionis</i> L.	Poaceae	Oosi pullu
27.	<i>Aristolochia bracteolata</i> Lam.	Aristolochiaceae	Adutheendapaalai
28.	<i>Arundo donax</i> L.	Poaceae	-----

29.	<i>Asparagus racemosus</i> Wild.	Liliaceae	Thanneervittan kizhangu
30.	<i>Asystasia gangetica</i> (L.) T.	Acanthaceae	Pasathikeerai
31.	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Vembu
32.	<i>Bacopa monnieri</i> (L.) Pennell.	Scrophulariaceae	Neer birahmi
33.	<i>Barleria cuspidata</i> Heyne ex. Nees.	Acanthaceae	-----
34.	<i>Barleria noctiflora</i> L.f	Acanthaceae	-----
35.	<i>Basella alba</i> L.	Basellaceae	Pasalai
36.	<i>Bergia capensis</i> L.	Elatinaceae	-----
37.	<i>Biophytum sensitivum</i> (L.) DC.	Oxalidaceae	Melsurukki
38.	<i>Blainvillea acmella</i> (L.) Philipson.	Compositae	-----
39.	<i>Blepharis maderaspatensis</i> (L.) Heyne ex Roth.	Acanthaceae	Nethiraiipoondu
40.	<i>Blumea obliqua</i> (L.) Druce.	Compositae	-----
41.	<i>Blumea malcolmii</i> Hook.f.	Compositae	-----
42.	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Mookkaratai
43.	<i>Boerhavia erecta</i> L.	Nyctaginaceae	Mookkaratai
44.	<i>Borassus flabellifer</i> L.	Arecaceae	Panai
45.	<i>Brachiaria distachya</i> (L.) Stapf.	Poaceae	-----
46.	<i>Calotropis gigantea</i> (L.)R.Br.	Asclepidaceae	Erukku
47.	<i>Canavalia africana</i> Dunn.	Fabaceae	Koliavarai
48.	<i>Capsicum frutescens</i> L.	Solanaceae	Milagai
49.	<i>Cardiospermum helicacabum</i> L.	Sapindaceae	Mudakartan
50.	<i>Carmona retusa</i> (Vahl.) Masamune	Boraginaceae	Kuruvichi poondu
51.	<i>Cascabela thevetia</i> (L.) Lipp.	Apocyanaceae	Ponnarali
52.	<i>Catharanthus roseus</i> (L.) G.Don	Apocynaceae	Nithyakalyani
53.	<i>Catharanthus pusillus</i> (Murr.) G. Don.	Apocynaceae	Milagaipoondu
54.	<i>Catunaregam spinosa</i> (Thunb.) Triven.	Rubiaceae	Marukkarai
55.	<i>Celosia argentea</i> L.	Amaranthaceae	Kozhikondai
56.	<i>Cenchrus ciliaris</i> L.	Poaceae	-----
57.	<i>Ceratophyllum demersum</i> L.	Ceratophyllaceae	-----
58.	<i>Chamaecrista absus</i> (L.) H.S.Irwin & Barneby	Caesalpinaceae	Kollu
59.	<i>Chamaecrista mimosoides</i> (L.) Greene	Caesalpinaceae	-----
60.	<i>Chamaecrista nigricans</i> (Vahl.) Greene	Caesalpinaceae	-----
61.	<i>Chloris barbata</i> Sw.	Poaceae	-----
62.	<i>Chrozophora rottleri</i> (Geisel.) Juss.	Euphorbiaceae	Purapirakki
63.	<i>Chrysopogon fulvus</i> (Spr.) Chiov.	Poaceae	-----
64.	<i>Cissus quadrangularis</i> L.	Vitaceae	Pirandai
65.	<i>Cissus vitiginea</i> L.	Vitaceae	Panadaiappan
66.	<i>Cleome gynandra</i> L.	Cleomaceae	Thaivezhai
67.	<i>Cleome viscosa</i> L.	Cleomaceae	Naivezhai
68.	<i>Clerodendrum inerme</i> (L.) Gaertn.	Verbenaceae	Peechangan
69.	<i>Clerodendrum phlomidis</i> L. f.	Verbenaceae	-----
70.	<i>Clitoria ternatea</i> L.	Fabaceae	Kakkanam
71.	<i>Coccinia grandis</i> (L.)Voigh.	Cucurbitaceae	Kovai
72.	<i>Cocculus hirsutus</i> (L.) Diers.	Menispermaceae	Kattukodi
73.	<i>Cocus nucifera</i> L.	Arecaceae	Thennai
74.	<i>Commelina benghalensis</i> L.	Commelinaceae	Kanavazhai
75.	<i>Corallocarpus epigaeus</i> (Rottl.) C. B. Clark.	Cucurbitaceae	Akashakarudan
76.	<i>Corchorus tridens</i> L.	Tiliaceae	Pinnakkupoondu
77.	<i>Corchorus trilocularis</i> L.	Tiliaceae	-----
78.	<i>Crotalaria juncea</i> L.	Fabaceae	Sanal
79.	<i>Crotalaria pallida</i> Dryd.	Fabaceae	-----
80.	<i>Cryptostegia grandiflora</i> R. Br.	Asclepiadaceae	Rubberkodi
81.	<i>Ctenolepis garcinii</i> (Burm.f.) Clarke.	Cucurbitaceae	Nypa
82.	<i>Cucumis trigonus</i> Roxb.	Cucurbitaceae	Siruthummatti
83.	<i>Cucurbita moschata</i> (Duch. ex Lam.) Duch. ex Poir.	Cucurbitaceae	Poosani
84.	<i>Cyanotis cristata</i> (L.) D. Don.	Commelinaceae	-----
85.	<i>Cynodon dactylon</i> (L.) Pers.	Poaceae	Arugampul
86.	<i>Cyperus clarkei</i> Cooke.	Cyperaceae	-----
87.	<i>Cyperus compressus</i> L.	Cyperaceae	-----
88.	<i>Cyperus haspan</i> L.	Cyperaceae	-----
89.	<i>Cyperus iria</i> L.	Cyperaceae	-----
90.	<i>Cyperus squarrousus</i> L.	Cyperaceae	-----
91.	<i>Dactyloctenium aegyptium</i> (L.) Willd.	Poaceae	-----
92.	<i>Datura innoxia</i> Mill.	Solanaceae	Oomaththai
93.	<i>Datura metel</i> L.	Solanaceae	Karu oomaththai
94.	<i>Dentella repens</i> (L.) Forst.	Rubiaceae	-----
95.	<i>Desmodium troflorum</i> (L.) DC.	Fabaceae	Sirupulladi
96.	<i>Dichrostachys cinerea</i> (L.) Wight & Arn.	Mimosaceae	Vidathalai
97.	<i>Dicliptera paniculata</i> (Forssk.) I.Darbysh.	Acanthaceae	Naganantha

98.	<i>Digitaria sanguinalis</i> Lam.	Poaceae	-----
99.	<i>Dipteracanthus prostratus</i> (Poir.) Nees.	Acanthaceae	Vedikikai chedi
100.	<i>Ecbolium viride</i> (Forssk.) Alston.	Acanthaceae	Pachchai kanakambaram
101.	<i>Echinochloa crus-galli</i> (L.) P. Beauv.	Poaceae	-----
102.	<i>Echinochloa colona</i> (L.) Link	Poaceae	-----
103.	<i>Eclipta prostrata</i> (L.) L. Mant.	Compositae	Karisalai
104.	<i>Eichhornia crassipes</i> (Mart.) Solms- Laub.	Pontederiaceae	Vengayathamara
105.	<i>Eluesine indica</i> (L.) Gaertn.	Poaceae	-----
106.	<i>Epilobium divaricatum</i> (L.) Cass.	Compositae	Kakkaranthai
107.	<i>Eragrostis aspera</i> (Jacq.) Nees.	Poaceae	-----
108.	<i>Eragrostis minor</i> Retz.	Poaceae	-----
109.	<i>Eragrostis tenella</i> (L.) Beauv.	Poaceae	-----
110.	<i>Eragrostis unioides</i> (Retz.) Nees ex. Stand.	Poaceae	-----
111.	<i>Eriocaulon heterolepis</i> Steud.	Eriocaulaceae	-----
112.	<i>Eriochloa procera</i> (Retz.) Hubb.	Poaceae	-----
113.	<i>Euphorbia thymifolia</i> L.	Euphorbiaceae	Chithirapaaladai
114.	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Ammanpatcharisi
115.	<i>Euphorbia rosea</i> Retz.	Euphorbiaceae	China ammanpatcharisi
116.	<i>Evolvulus alsinoides</i> (L.) L.	Asclepiadaceae	Vishnukiranthi
117.	<i>Ficus religiosa</i> L.	Moraceae	Arasu
118.	<i>Fimbristylis miliacea</i> (L.) Vahl.	Cyperaceae	-----
119.	<i>Flueggea leucopyrus</i> Willd.	Euphorbiaceae	Vetpoola
120.	<i>Gloriosa superba</i> L.	Liliaceae	Kanthaz
121.	<i>Gmelina asiatica</i> L.	Verbenaceae	Sirukumizh
122.	<i>Gomphrena globosa</i> L.	Amaranthaceae	Vadamalli
123.	<i>Gossypium herbaceum</i> L.	Malvaceae	Paruththi
124.	<i>Grewia hirsuta</i> Vahl.	Tiliaceae	Tavadu
125.	<i>Gymnema sylvestre</i> R.Br. ex Schult.	Asclepiadaceae	Sirukurinjan
126.	<i>Heliotropium indicum</i> L.	Boraginaceae	Thekkodukku
127.	<i>Hemidesmus indicus</i> (L.) R.Br.	Periplocaceae	Nannari
128.	<i>Heteropogon contortus</i> (L.) Beauv. ex Roam. & Schult.	Poaceae	-----
129.	<i>Hibiscus ovalifolius</i> (Forssk.) Vahl	Malvaceae	Kuruvitchipoondu
130.	<i>Hibiscus vitifolius</i> L.	Malvaceae	Kaviz thumbai
131.	<i>Hybanthus enneaspermus</i> (L.) Muell.	Violaceae	Orithalthamarai
132.	<i>Hydrilla verticillata</i> (L.f.) Royle	Hydrocharitaceae	-----
133.	<i>Hydrolea zeylanica</i> (L.) Vahl	Hydrophyllaceae	-----
134.	<i>Hygrophila auriculata</i> (Schumach.) Heine.	Acanthaceae	Neermulli
135.	<i>Hyptis suaveolens</i> (L.) Poit.	Lamiaceae	Ganga thulasi
136.	<i>Imperata cylindrica</i> (L.) Raeusch.	Poaceae	-----
137.	<i>Indigofera aspalathoides</i> Vahl.	Fabaceae	Sivanarvembu
138.	<i>Indigofera linnaei</i> L.	Fabaceae	Cheppunerunjil
139.	<i>Indigofera tinctoria</i> L.	Fabaceae	Neeli
140.	<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	Thazhaikodi
141.	<i>Ipomoea obscura</i> (L.) Ker Gawl.	Convolvulaceae	Thazhai
142.	<i>Ipomoea pes-tigridis</i> L.	Convolvulaceae	Pulisuvadi
143.	<i>Ipomoea sepiaria</i> J. Koenig ex. Roxb.	Convolvulaceae	Talikirai
144.	<i>Isachne miliacea</i> Roth.	Poaceae	-----
145.	<i>Ixora pavetta</i> Andr.	Rubiaceae	Sulundu
146.	<i>Jasminum auriculatum</i> Vahl.	Oleaceae	Pitchi
147.	<i>Jatropha glandulifera</i> Roxb.	Euphorbiaceae	Athalai
148.	<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	Athalai
149.	<i>Justicia adhatoda</i> L.	Acanthaceae	Adathodai
150.	<i>Justicia gendarussa</i> Burm.f.	Acanthaceae	Karunocchi
151.	<i>Justicia glauca</i> Rottl.	Acanthaceae	Thavasumurungai
152.	<i>Kylinga bulbosa</i> Beauv.	Cyperaceae	-----
153.	<i>Lantana camara</i> L.	Verbenaceae	Unni
154.	<i>Lantana wightiana</i> Wall. ex Gamble.	Verbenaceae	-----
155.	<i>Lawsonia inermis</i> L.	Lythraceae	Maruthontri
156.	<i>Lemna gibba</i> L.	Lemnaceae	-----
157.	<i>Leucas aspera</i> (Willd.) Link.	Lamiaceae	Thumbai
158.	<i>Limnophila heterophylla</i> (Roxb.) Benth.	Scrophulariaceae	-----
159.	<i>Limonia acidissima</i> L.	Rutaceae	Vila
160.	<i>Lindernia antipoda</i> (L.) Alston.	Scrophulariaceae	Thannirpoondu
161.	<i>Lindernia crustacea</i> (L.) F. V. Muell.	Scrophulariaceae	-----
162.	<i>Luffa cylindrica</i> (L.) M. Roem.	Cucurbitaceae	Nurai peerkan
163.	<i>Lycopersicon esculentum</i> Miller	Solanaceae	Thakkali
164.	<i>Merremia hederacea</i> (N. L. Burman) H. Hallier.	Convolvulaceae	-----
165.	<i>Merremia tridentata</i> (L.) Hall. f.	Convolvulaceae	Ammayarkoonthal
166.	<i>Mimosa pudica</i> L.	Mimosaceae	Thottal sinunki

167.	<i>Monocharia vaginalis</i> (Burm.f) Presl.	Pontederiaceae	-----
168.	<i>Morinda pubescens</i> J.E.Smith.	Rubiaceae	Nuna
169.	<i>Moringa pterygosperma</i> Gaertn..	Moringaceae	Murungai
170.	<i>Mucuna pruriens</i> (L.) DC.	Fabaceae	Poonaiikaali
171.	<i>Mukia maderaspatana</i> (L.) M. Roam.	Cucurbitaceae	Musumusukkai
172.	<i>Murraya koenigii</i> (L.) Sprengel.	Rutaceae	Kariveppilai
173.	<i>Murraya paniculata</i> (L.) Jack.	Rutaceae	Kattu kariveppilai
174.	<i>Musa paradisiaca</i> L.	Musaceae	Vazhai
175.	<i>Nelumbo nucifera</i> Gaerth.	Nelumbonaceae	Tamarai
176.	<i>Neptunia oleracea</i> Lour.	Mimosaceae	Sundaikrai
177.	<i>Nerium oleander</i> L.	Apocynaceae	Arali
178.	<i>Nothosaerva brachiata</i> (L.) Wt.	Amaranthaceae	Kannupeealai
179.	<i>Nyctanthes arbor-tristis</i> L.	Oleaceae	Pavazhamalli
180.	<i>Nymphaea nouchali</i> Burm. f.	Nymphaeaceae	Sevalli
181.	<i>Nymphaea pubescens</i> Roxb.	Nymphaeaceae	Alli
182.	<i>Nymphoides indicum</i> (L.) Kuntze.	Menyanthaceae	-----
183.	<i>Ocimum americanum</i> L.	Lamiaceae	Naithulasi
184.	<i>Ocimum bacillicum</i> L.	Lamiaceae	Thiruneetru pachilai
185.	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Thulasi
186.	<i>Oldenlandia corymbosa</i> (L.) Lam.	Rubiaceae	Saya
187.	<i>Oldenlandia umbellata</i> L.	Rubiaceae	Saya
188.	<i>Oryza sativa</i> L.	Poaceae	Nel
189.	<i>Ottelia alismoides</i> (L.) Pers.	Hydrocharitaceae	-----
190.	<i>Pandanus odorifer</i> (Forssk.) Kuntze	Pandanaceae	Thazhai
191.	<i>Panicum repens</i> L.	Poaceae	-----
192.	<i>Paspalum geminatum</i> L.	Poaceae	-----
193.	<i>Passiflora edulis</i> Sims.	Passifloraceae	-----
194.	<i>Passiflora foetida</i> L.	Passifloraceae	Naipidukkan
195.	<i>Pavetta indica</i> L.	Rubiaceae	Malai pavattai
196.	<i>Pedaliium murex</i> L.	Pedaliaceae	Perunerunjil
197.	<i>Pergularia daemia</i> (Forssk.) Chiov.	Asclepidaceae	Veliparuthi
198.	<i>Perotis indica</i> (L.) Kuntze.	Poaceae	Narivalpullu
199.	<i>Phoenix loureiroi</i> Kunth	Arecaceae	Malaieechem
200.	<i>Phyla nodiflora</i> (L.) Greene.	Verbenaceae	Poduthalai
201.	<i>Phyllanthus amarus</i> Schum & Thonn.	Euphorbiaceae	Kizhainelli
202.	<i>Phyllanthus maderaspatensis</i> L.	Euphorbiaceae	Melkainelli
203.	<i>Phyllanthus reticulatus</i> Poir.	Euphorbiaceae	Karumpoola
204.	<i>Physalis minima</i> L.	Solanaceae	Sodakku thakkali
205.	<i>Pistia stratiotes</i> L.	Araceae	-----
206.	<i>Polygala javana</i> DC.	Polygalaceae	Perianangai
207.	<i>Pongamia pinnata</i> (L.) Poir.	Fabaceae	Pungan
208.	<i>Portulaca oleracea</i> L.	Portulacaceae	Paruppu kizhangu
209.	<i>Priva cardifolia</i> (L.f.) Druce	Verbenaceae	-----
210.	<i>Prosopis cineraria</i> (L.) Druce.	Mimosaceae	Vanni
211.	<i>Pterocarpus marsupium</i> Roxb.	Fabaceae	Vengai
212.	<i>Rivea hypocrateriformis</i> (Desr.) Choisy	Convolvulaceae	Musuttai
213.	<i>Rothia indica</i> (L.) Druce.	Fabaceae	Vayuroothi kuzhai
214.	<i>Saccharum spontaneum</i> L.	Poaceae	Peykarumbu
215.	<i>Sarcostemma secamone</i> (L.) Bennett	Asclepidaceae	Usipalai
216.	<i>Scoparia dulcis</i> L.	Scorophulariaceae	Sarkaraivembu
217.	<i>Senna alata</i> (L.) Roxb.	Caesalpinaceae	Seemaigathi
218.	<i>Senna auriculata</i> (L.) Roxb.	Caesalpinaceae	Aavaram
219.	<i>Senna occidentalis</i> (L.) Link	Caesalpinaceae	Oosithagarai
220.	<i>Sennna tora</i> (L.) Roxb.	Caesalpinaceae	Thagarai
221.	<i>Setaria intermedia</i> Roam. & Schult.	Poaceae	-----
222.	<i>Setaria verticillata</i> (L.) Beauv.	Poaceae	-----
223.	<i>Sida acuta</i> Burm.f.	Malvaceae	Arivalmanai poondu
224.	<i>Sida cardifolia</i> L.	Malvaceae	Sitramutti
225.	<i>Sida cordata</i> (Burm. f.) Borssum	Malvaceae	Pazhampasi
226.	<i>Solanum melongena</i> L.	Solanaceae	Kathrikkai
227.	<i>Solanum nigrum</i> L.	Solanaceae	Manathakkali
228.	<i>Solanum surattense</i> Burm. f.	Solanaceae	Kandankathiri
229.	<i>Solanum torvum</i> Sw.	Solanaceae	Sundai
230.	<i>Solanum trilobatum</i> L.	Solanaceae	Thothuvezhai
231.	<i>Sopubia delphinifolia</i> (L.) G.Don.	Scorophulariaceae	-----
232.	<i>Spermacoce hispida</i> L.	Rubiaceae	Natthaichoori
233.	<i>Spermacoce ocymoides</i> Burm. f. var.	Rubiaceae	-----
234.	<i>Sphagneticola trilobata</i> (L.) Pruski	Compositae	Manjal karisalai
235.	<i>Spirodela polyrrhiza</i> (L.) Schl.	Lemnaceae	-----

236.	<i>Stachytarpheta jamaicensis</i> (L.) Vahl.	Verbenaceae	Seemai nayuruvi
237.	<i>Stemodia viscosa</i> Roxb.	Scrophulariaceae	-----
238.	<i>Sterculia foetida</i> L.	Sterculiaceae	Peemaram
239.	<i>Striga angustifolia</i> (D. Don.) Saldana.	Scrophulariaceae	-----
240.	<i>Stylosanthes fruticosa</i> (Retz) Alston.	Fabaceae	Manipul
241.	<i>Tabernaemontana divaricata</i> R.Br.	Apocyanaceae	Nandiyavattai
242.	<i>Tagetes erecta</i> L.	Compositae	Chendu poo
243.	<i>Tamarindus indica</i> L.	Caesalpiniaceae	Puli
244.	<i>Tecoma stans</i> (L.) Kunth.	Bignoniaceae	Ponnarali
245.	<i>Tephrosia purpurea</i> (L.) Pers.	Fabaceae	Kozhunchi
246.	<i>Tephrosia villosa</i> (L.) Pers.	Fabaceae	Poonaikozhunchi
247.	<i>Thespesia populnea</i> (L.) Sol.	Malvaceae	Poovarasu
248.	<i>Tinospora cordifolia</i> (Willd.) Miers ex Hook.f. & Thoms.	Menispermaceae	Seenthil
249.	<i>Tonningia axillaris</i> (L.) Kuntze	Commelinaceae	Vazhukaipul
250.	<i>Tragia involucrata</i> L.	Euphorbiaceae	Kanchori
251.	<i>Trianthema portulacastrum</i> L.	Aizoaceae	Vellaicharanai
252.	<i>Tribulus terrestris</i> L.	Zygophyllaceae	Sirunerunjil
253.	<i>Trichodesma indicum</i> (L.) R. Br.	Boraginaceae	Kavizhthumbai
254.	<i>Tridax procumbens</i> L.	Compositae	Kenatrupooundu
255.	<i>Typha angustata</i> Bory & Chaub.	Typhaceae	Sampu
256.	<i>Urginea indica</i> (Roxb.) Kunth.	Liliaceae	Narivengayam
257.	<i>Vigna mungo</i> (L.) Hepper.	Fabaceae	Ulundu
258.	<i>Vigna radiata</i> (L.) Wilcz.	Fabaceae	Pachchaipayir
259.	<i>Vigna trilobata</i> (L.) Verdc.	Fabaceae	Panipayir
260.	<i>Vitex negundo</i> L.	Verbenaceae	Nochchi
261.	<i>Waltheria indica</i> L.	Sterculiaceae	Kurunthiadakki
262.	<i>Wattakaka volubilis</i> (L.fil.) Stapf.	Asclepiadaceae	Perunkurinjan
263.	<i>Wolffia globosa</i> (Roxb.) Hartog & Vander.	Lemnaceae	-----
264.	<i>Wrightia tinctoria</i> (Roxb.) R.Br.	Apocyanaceae	Vetpalai
265.	<i>Xanthium indicum</i> Koenig	Compositae	Maruloomathai
266.	<i>Ziziphus jujuba</i> Mill.	Rhamnaceae	Ilandhai
267.	<i>Ziziphus oenopolia</i> (L.) Mill.	Rhamnaceae	Soorakodi
268.	<i>Zornia diphylla</i> (L.) Pers.	Fabaceae	-----

**Table 2:** Diversity of Dicots and Monocots in Nambineri Wetland

Taxa	Dicot		Monocot		Total Number
	Number	Percentage	Number	Percentage	
Families	51	78.46	14	21.53	65
Genera	157	76.69	50	25.38	207
Species	209	77.98	58	21.64	268

**Table 3:** Diversity of Polypetalae, Gamopetalae, Monochlamydeae (Dicots) and Monocots in Nambineri Wetland

Taxa		Family		Genus		Species	
		No	%	No	%	No	%
Dicot	Polypetalae	27	41.54	62	29.95	86	32.08
	Gamopetalae	17	26.15	76	36.71	95	35.44
	Monochlamydeae	07	10.76	19	9.17	28	10.44
Monocot		14	21.54	50	24.15	59	22.01

Note: No – Number, % - Percentage

**Table 4:** Habit Distribution of Nambineri Wetland

Habit	Dicot	Monocot	Total
Herb	106	50	156
Shrub	54	4	58
Tree	17	3	20
Climber	32	2	34

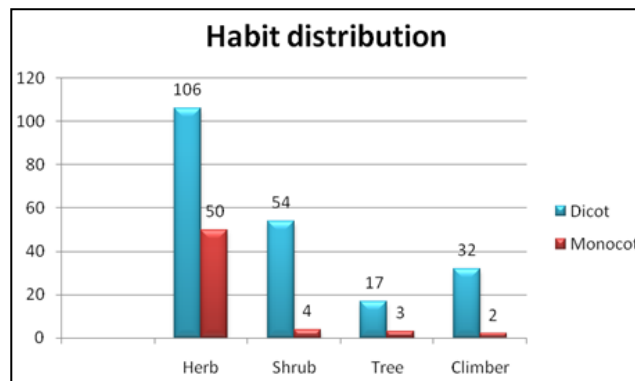


Fig 1: Habit Distribution

Table 5: List of Medicinal plants recorded in the Nambineri Wetland

S.No	Botanical Name	Local Name	Parts used / Uses
1.	<i>Abrus precatorius</i> L	Gundumani	Root- diuretic, tonic. seed paste - used in affections of nervous system
2.	<i>Abutilon indicum</i> L.	Thuthi	Root and leaf decoction - used in cough, cold. Seeds - poisonous.
3.	<i>Acalypha indica</i> L.	Kuppaimeni	Bark – Astringent. Pods - urinary diseases. Twigs - used as tooth brush.
4.	<i>Acanthospermum hispidum</i> DC.	Kombumul	Whole plant – paste used in skin diseases. Leaf juice - fever.
5.	<i>Achyranthes aspera</i> L.	Nayuruvi	Whole plant – used in kidney stone. Root - dental care.
6.	<i>Aerva lanata</i> (L.)Juss.ex Schult.	Poolaipoo	Flowers - kidney stone. Root - headache
7.	<i>Aloe vera</i> (L.) Burm.f.	Karchalai	Root and leaf – leprosy, piles, mental disorders, stomach disorders, eye diseases.
8.	<i>Amaranthus spinosus</i> L.	Mullukeerai	Whole plant –fever. Leaves used as enema and to cure piles and leprosy.
9.	<i>Ammannia baccifera</i> L.	Neermel neruppu	Whole plant – extract used against ring worm.
10.	<i>Anisomeles malabarica</i> (L.) R.Br.	Perunthumbai	Whole plant – extract used in rheumatism.
11.	<i>Aponogeton natans</i> (L.) Engler & K. Krause	Kottikizhangu	Tubers - skin diseases, edible.
12.	<i>Argimone mexicana</i> L.	Piramathandu	Sap – used in eye diseases. Yellow milky sap is used to treat scabies.
13.	<i>Aristolochia bracteolata</i> Lam.	Aadutheendapalai	Roots – purgative, anthelmintic.
14.	<i>Asparagus racemosus</i> Wild.	Thanneervittan kizhangu	Tubers- cooling and to promote milk secretion.
15.	<i>Azadirachta indica</i> A. Juss.	Vembu	Bark – in skin diseases. Leaves- antiseptic, used to cure ulcers and eczema. Berries purgative. Tender twigs to clean teeth.
16.	<i>Basella alba</i> L.	Kodippasalai	Leaf – abscess, constipation, cooling, thrust.
17.	<i>Bergia capensis</i> L.	Punnai	Whole plant – wounds, cuts and boils.
18.	<i>Biophytum sensitivum</i> (L.) DC.	Nilaccurunki	Whole plant – tonic in skin complaints. Decoction of leaves - diabetes.
19.	<i>Blepharis maderaspatensis</i> (L.) Heyne ex Roth.	Nethirappoindu	Leaf paste applied to forehead for curing head-ache.
20.	<i>Boerhavia diffusa</i> L.	Vattacharanai	Roots and leaves – diuretic and ant- inflammatory.
21.	<i>Calotropis gigantea</i> (L.) R.Br.	Erukku	Milky juice applied locally in thorn prikes. Flowers – in asthma.
22.	<i>Cardiospermum helicacabum</i> L.	Modakkatthan	Whole plant - vatha diseases. Roots- diuretic, laxative.
23.	<i>Cascabela thevetia</i> (L.) Lipp.	Manja arali	Leaf and stem – Cancer. Fruit – poisonous.
24.	<i>Chamaecrista absus</i> (L.) H.S.Irwin & Barneby	Kattu kollu	Leaves used in cough. Seeds in skin troubles and ring worms.
25.	<i>Senna auriculata</i> L.	Avaram	Roots used in skin diseases. Leaves and fruits anthelmintic. Seeds in ophthalmic, diabetes and chylous urine.
26.	<i>Senna occidentalis</i> L.	Peithagarai	Leaves and seeds in skin diseases.
27.	<i>Senna tora</i> (L.) Roxb.	Oosithagarai	Leaves and seeds are used for ringworm.
28.	<i>Catunaregam spinosa</i> (Thunb.) Triven.	Mathukkarai	Bark – astringent – used in diarrhoea, dysentery and also in rheumatism.
29.	<i>Celosia argentea</i> L.	Kopurakontrai	Seeds used in diarrhoea, mouth sore and eye – troubles.
30.	<i>Centella asiatica</i> (L.) Urban.	Vallarai	Whole plant – diuretic and tonic. Leaf extract as tonic for improving the memory and used in cardiac diseases.
31.	<i>Cissus quadrangularis</i> L.	Pirandai	Leaves and young shoots – used in stomach troubles. Juice of the stem – used in scurvy.
32.	<i>Cleome gynandra</i> L.	Thai vezhai	Leaf extract – used in head-ache, rheumatism. Seeds anthelmintic.
33.	<i>Cleome viscosa</i> L.	Naikkadugu	Leaf juice – digestive. Seeds anthelmintic.
34.	<i>Clitoria ternatea</i> L.	Sangupushpam	Root, leaf and seeds used to cure head-ache & fever.
35.	<i>Coccinia grandis</i> (L.)Voigh.	Kovai	Root, leaf and seeds used in diabetes and skin diseases. Fruits edible.
36.	<i>Commelina benghalensis</i> L.	Kanavazhai	Whole plant – laxative.
37.	<i>Cynodon dactylon</i> (L.) Pers.	Arugampullu	Plant extract – diuretic, to reduce the blood sugar level, urinary troubles.
38.	<i>Datura innoxia</i> Mill.	Oomathai	Leaves and fruits –asthma and skin diseases.
39.	<i>Desmodium troflorum</i> (L.) DC.	Sirupulladi	Leaves –dysentery and diarrhoea
40.	<i>Eclipta prostrata</i> (L.) L. Mant.	Karisalai	Whole plant - chronic fever, antiseptic, hair tonic, jaundice.



41.	<i>Epaltes divaricata</i> (L.) Cass.		Roots - astringent and tonic.
42.	<i>Euphorbia hirta</i> L.	Amman pacharisi	Whole plant –cough and asthma. Latex - warts.
43.	<i>Euphorbia rosea</i> Retz.	Palkodi	Leaves - vermifuge.
44.	<i>Evolvulus alsinoides</i> (L.) Linn.	Vishnukirandhi	Whole plant – tonic, febrifuge, vermifuge. Dried leaves - asthma.
45.	<i>Ficus religiosa</i> L.	Arasamaram	Bark – astringent. Seeds – tonic. Leaves - purgative.
46.	<i>Gloriosa superba</i> L.	Kalappai kizhangu	Tubers – stomachic, anthelmintic, spleen complaints, tumours and rheumatism.
47.	<i>Oldenlandia pubercula</i> (G.Don) Arn.	Chayaver	Leaves and roots –asthma and bronchitis.
48.	<i>Hemidesmus indicus</i> (L.) R.Br.	Nannari	Root – diuretic, aromatic, rheumatism.
49.	<i>Hibiscus rosa-sinensis</i> L.	Semparutthi	Leaf – anodyne, emollient and laxative. Flower – bronchial catarrh, hair tonic, diabetes.
50.	<i>Hybanthus enneaspermus</i> (L.) Muell.	Orilaithaamarai	Whole plant – diuretic, tonic, used in urinary affections.
51.	<i>Hygrophila auriculata</i> (Schumach.) Heine.	Neermulli	Plant – diuretic
52.	<i>Indigofera aspalathoides</i> Vahl	Sivanar vembu	Leaves, flowers and tender shoots – used in skin diseases.
53.	<i>Indigofera tinctoria</i> L.	Seppu nerunji	Leaf – decoction given in ellipsy and insanity.
54.	<i>Indigofera tinctoria</i> L.	Avuri	Plant juice –fever, jaundice.
55.	<i>Ipomoea obscura</i> (L.) Ker Gawl.	Siruthali	Leaves –aphthous affections.
56.	<i>Ipomoea pes-tigridis</i> L.	Pulisuvadi	Leaves – used in the form of poultice to boils, sores, pimples. Roots purgative.
57.	<i>Jatropha glandulifera</i> Roxb.	Vella adhalai	Plant juice and leaves - warts and tumours. Seed oil – purgative, rheumatism.
58.	<i>Jatropha gossypifolia</i> L.	Chevvalathalai	Decoction of leaves - purgative and stomachic. Latex - ulcers.
59.	<i>Justicia adhatoda</i> L.	Adathodai	Root, leaf – brochila asthma, cough, fever, diabetes.
60.	<i>Leucas aspera</i> (Willd.) Link.	Thumbai	Leaf juice - chronic skin eruptions and swellings.
61.	<i>Limnophila heterophylla</i> (Roxb.) Benth.		Plant – antiseptic. Leaves given for indigestion and dysentery.
62.	<i>Merremia tridentata</i> (L.) Hall. f.	Ammayar koonthal	Plant – used in rheumatism, piles and urinary disorders. Root extract – toothache.
63.	<i>Mimosa pudica</i> L.	Thottarsinungi	Root – decoction used in urinary troubles. Leaf paste – applied to hydrocele.
64.	<i>Mukia maderaspatana</i> (L.) M. Roam.	Musumusukkai	Tender shoots and leaves laxative also used cough & vomiting.
65.	<i>Muntingia calabura</i> L.	Thean poosani	Flower – headache, incipient cold.
66.	<i>Murraya koenigii</i> (L.) Spreng.	Kariveppilai	Root – renal pains. Leaf – dropsy, dysentery, chronic fever, mental disorders.
67.	<i>Ocimum americanum</i> L.	Naithulasi	Herb – diuretic & tonic.
68.	<i>Ocimum tenuiflorum</i> L.	Thulasi	Leaves - antiperiodic, bronchitis, ringworm and skin diseases.
69.	<i>Passiflora foetida</i> L.	Mosukkattan	Decoction of leaves - in asthma. Fruits - emetic.
70.	<i>Petalium murex</i> L.	Yanai nerunji	Whole plant - urinary disorders.
71.	<i>Pergularia daemia</i> (Forssk.) Chiov.	Veliparuthi	Leaf – decoction in asthma.
72.	<i>Peristrophe paniculata</i> (Forssk.) Brummit.	Nagananda	Herb – used in fever, snake poison.
73.	<i>Phyla nodiflora</i> (L.) Greene.	Poduthalai	Herb – diuretic and febrifuge. Paste of fresh plant applied to boils, swollen, cervical glands.
74.	<i>Phyllanthus amarus</i> Schum & Thonn.	Keela nelli	Whole plant – used in jaundice, diabetes, urinary disorders and skin diseases.
75.	<i>Physalis minima</i> L.	Sudakkuthakkali	Fruits and leaves - tonic, diuretic and tonic.
76.	<i>Rivea hypocrateriformis</i> (Desr.) Choisy	Musuttai kodi	Root – parturition.
77.	<i>Flueggea luccopyrus</i> (Willd.)Muell.	Mulluppulatti	Leaf – dysentery, digestive disorders, source, worm killer, vermifuge.
78.	<i>Urginea indica</i> (Roxb.) Kunth.	Narivengayam	Bulb – used an expectorant, cardiac stimulant and diuretic.
79.	<i>Sida acuta</i> Burm.f.	Arvalmanai poondu	Decoction of root – rheumatic affections.
80.	<i>Sida cardifolia</i> L.	Vellakurunthotti	Whole plant –piles and abscess. Root – nerve tonic.
81.	<i>Solanum surattense</i> Burm. f.	Kandangathiri	Root - expectorant. Leaf juice and fruits – cough, asthma.
82.	<i>Solanum torvum</i> Sw.	Sundai	Fruit –liver and spleen enlargement.
83.	<i>Sopubia delphinifolia</i> (L.) G. Don.		Plant juice – applied to sores on foot.
84.	<i>Tagetes erecta</i> L.	Tulukka samandi	Whole plant – cold, bronchitis. Root – laxative. Leaf – boils, vermifuge. Flower – diuretic.
85.	<i>Tamarindus indica</i> L.	Puli	Fruit pulp – laxative.
86.	<i>Tecoma stans</i> (L.) Kunth.	Nagasambagam	Root – diuretic, tonic, vermifuge. Leaf – diabetes.
87.	<i>Tephrosia purpurea</i> (L.) Pers.	Kattukozhinji	Root – bowel complaints.
88.	<i>Tinospora cardifolia</i> (Willd.) Miers ex Hook. f. & Thoms.	Chinthil	Stem – used in fever, anaemia, jaundice, worm infestation, cough.
89.	<i>Tonningia axillaris</i> (L.) Kuntze.	Vazhukai pul	Whole plant – Tympanities.
90.	<i>Tribulus terrestris</i> L.	Nerunjil	Herb – diuretic.
91.	<i>Trichodesma indicum</i> (L.) R. Br.	Kasithumbai	Whole plant – emollient, diuretic. Roots – used in dysentery, pounded and applied to swellings of joints.
92.	<i>Tridax procumbens</i> L.	Kinathuppondu	Leaf juice – used to check the bleeding of wounds.
93.	<i>Urginea indica</i> (Roxb.) Kunth.	Narivengayam	Bulb – used as cardio tonic, expectorant and diuretic also used in rheumatism and skin troubles.

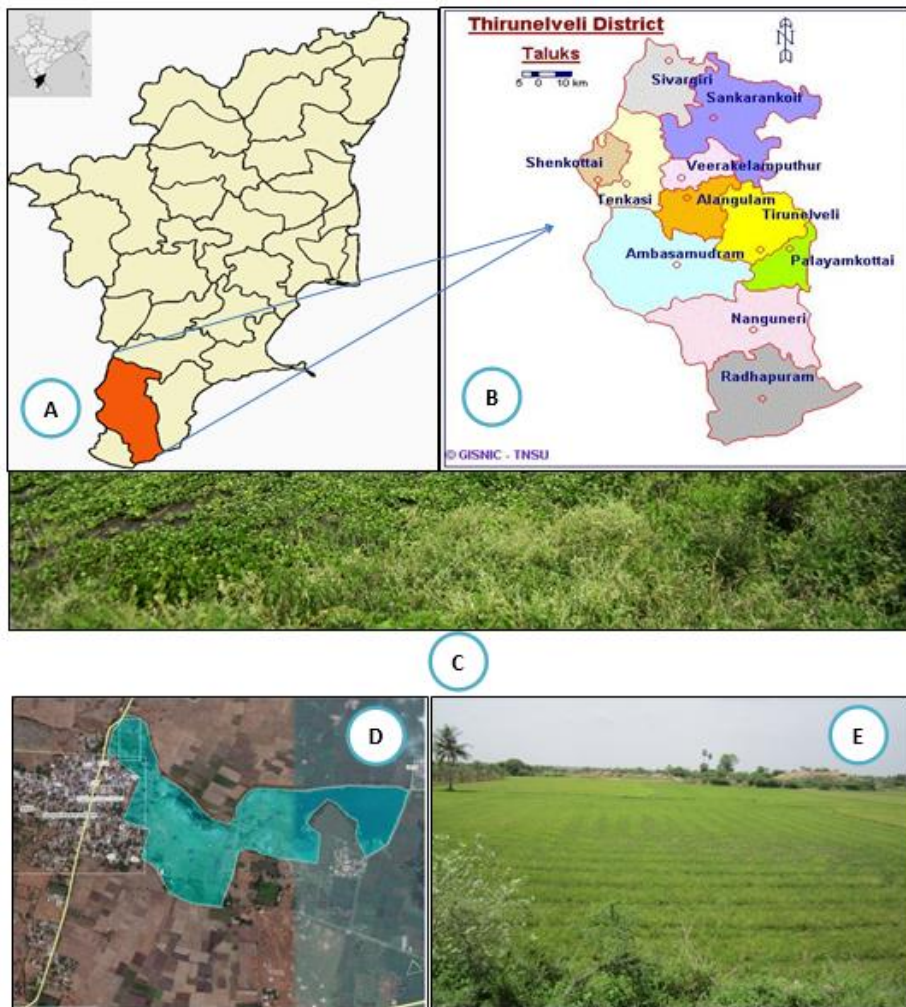


94.	<i>Vigna trilobata</i> (L.) Verdc.	Panipayar	Leaves – used as tonic and sedative.
95.	<i>Vitex negundo</i> L.	Nochi	Leaves – used as tonic and vermifuge. Green leaves are burnt and the smoke used to repel mosquitoes. Fumes of boiled leaves – used to cure head-ache.

**Conclusion**

Biological diversity is an asset of vital significance to human beings, as it provides food, medicine and industrial raw materials along with an immense potential for accruing many unknown benefits to future generations. Wetlands are vital ecosystems which provide livelihoods for the millions of people who live within and around them. Man depends on wetlands for most of his needs from time immemorial. Most of the human civilizations arose around the wetland systems. Wetlands are considered to have unique ecological features which provide numerous products and services to humanity. Ecosystem goods provided by the wetlands mainly include: water for irrigation; fisheries; non-timber forest products;

water supply; and recreation. Major services include: carbon sequestration, flood control, groundwater recharge, nutrient removal, and toxics retention and biodiversity maintenance. It is concluded that the quantitative and qualitative floristic survey, constant monitoring and protection of aquatic and semi-aquatic bodies are the need of the hour in order to save the aquatic flora and to maintain the wild progenitors of the wetland plants. Humanity prides itself on its advanced technologies and science portraying it as the ultimate saviour in times of disaster but natural catastrophes in the past and present have time and again have slapped us with the reality of the fact that we still and will always depend on these natural systems to sustain and cradle human civilisation.



**Plate 1:** A. Overview of Nambineri Wetland  
 A). Tamil Nadu state highlighted with Tirunelveli Dt. B). Tirunelveli Dt.  
 C). Overview of Nambinneri wetland. D). Satellite image. E-Vegetation nearby the study area.





**Fig 2:** Selected plant species reported in the study area

A) *Aerva javanica* (Burm. f.) Juss. ex Schult, B) *Aloe vera* (L.) Burm. f., C) *Cissus quadrangularis* L. D) *Corallocarpus epigaeus* (Rottler) Hook. f., E) *Dichrostachys cinerea* (L.) Wight & Arn. F) *Gloriosa superba* L., G) *Limonia acidissima* Groff, H) *Mimosa pudica* L., I) *Pergularia daemia* (Forssk.) Chiov., J) *Senna tora* (L.) Roxb., K) *Tamarindus indica* L., L) *Trichosanthes tricuspidata* Lour., M) *Wattakaka volubilis* (L. f.) Stapf.

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