



## Diversity of macro flora in Parangipettai coastal environment, southeast coast of India

Prasanth RM<sup>1</sup>, Suresh Kumar P<sup>2\*</sup>, Siva Kumar K<sup>3</sup>

<sup>1,2</sup> CAS in Marine Biology, Faculty of Marine Sciences, Annamalai University, Parangipettai, Cuddalore district, Tamil Nadu, India

<sup>3</sup> Department of Botany, Faculty of Sciences, Annamalai University, Annamalai Nagar, Chidambaram, Cuddalore district, Tamil Nadu, India

### Abstract

The present study attempt was made on the exploration of Macro Flora in Parangipettai Town panchayats of Cuddalore district, Tamilnadu. The plants were surveyed by Line Transect method and checklist was prepared. About 81 families were recorded in the study area of Parangipettai and it accounts for 0.07 percentage of world floral species diversity. Among the families, the Fabaceae family has predominantly occupied 8 percentage, Poaceae 7 percentage, Apocynaceae, Asteraceae and Caesalpiniaceae and others were occupied 5, 4, 4 and below 4 respectively. There are five latex producing plant families that were coming under 81 and it occupies 18 percentage of total species distribution. Herbs were the most predominant (40 percentage) followed by trees (34 percentage) and (15 percentage) shrub engaged in the total floral diversity. According to the IUCN red data book, 94 per cent of the observed plants fell in the least concern category, 1 percentage in a vulnerable category and 2 percentages in each near threatened, data deficiency and endangered categories. It includes Mangrove species like *Rhizophora spp*, *Avicennia spp* and *Excoecaria agallocha*. Saltmarsh species like *Suaeda spp* and *Sesuvium spp* were also recorded. Sand dune species like *Ipomoea spp* and *Spinifex spp* were present in the study area. In the total floral diversity, 40 per cent of the recorded plants were invasive. In this, most serious invasive species like *Eichhornia crassipes*, *Lantana camara*, and *Prosopis juliflora* have predominately occupied.

**Keywords:** flora, halophytes, IUCN, invasive species, line transect, mangrove

### 1. Introduction

Flora is indigenous native plant life in a particular region, time or period, climate and specific environment. Flora includes bacteria and fungi which are known as gut flora or skin flora (Iezzi *et al.*, 2019, Johnson *et al.*, 2002, Starliper, *et al.*, 1997) [10, 13, 21]. Flora is subdividing into native flora, agriculture or horticulture flora and weed flora according to the special environment (Whittaker, R. H., 1959 and Verma 1969) [23, 22]. Flora is higher and lower plants, they are widely used for food, fodder forage, fuel, fibre, oil, herbs, spices and industrial purpose for human and animals (Heywood 1992) [9]. The threats caused to flora is through biotic origins like natural plant competition, depredation, little ecological plasticity and poor reproductive strategy. Threats are caused to the floral diversity through human action like shepherding, trampling and traditional gathering. There are other threats through urbanization like improvement of roads network, construction of new roads and housing development and indirect threats through improved access of vehicles, the population on foot and neighbouring lands. Natural calamities like droughts, rock falls, fires, storms flood, landslides, volcanic activity and avalanches cause damage to the floral diversity (Fedoroff *et al.*, 2005) [8]. The floral diversity can be assessed by many methods like quadrat, transect, grad sect and plotless. According to this classification, floral diversity and distribution of study area were surveyed and assessed through lines transect method. Parangipettai covers around 12 sq.km areas; it includes many streets, roadways, government buildings and coastline. So, line transect method is the only way to survey and record the floral

distribution (Mesfin Woldearegay *et al.*, 2018) [25]. After the identification of plant species, their occupations in IUCN red list categories were investigated. The different categories like Extinct (EX), Extinct in the wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD) and Not Evaluated (NE) are available (IUCN red list data, 2019). Invasive alien plants species distribution was also investigated (Sudhakar Reddy *et al.*, 2008) [4]. The present survey was done to assess the floral distribution and diversity through a qualitative and quantitative way in Parangipettai. But still there are many such terrestrial and aquatic ecosystems that remain unexplored. The Parangipettai is one among them which has not received due attention. Hence, the present work is an attempt to study the diversity of macro flora in Parangipettai coastal environment, southeast coast of India.

### 2. Materials and Methods

#### 2.1 Description of the study area

The present study was carried out in the coastal environment of Parangipettai (Porto Novo), Tamil Nadu, India (Figure, 1). The study area is located on the north bank of Velar river mouth. It is one of the Coromandel coasts and trading centre for Yemenis and colonial-era Portuguese, Dutch and English. It is one of the town panchayats in Tamil Nadu after DTP (1953) act. The study area was surrounded by Chidambaram in the south, Virudhachalam in west and Cuddalore in north and Bay of Bengal in the east. Latitude and longitude of Parangipettai correspond to 11°29'28" N and 79°45'55" E. The total area of Parangipettai was 11.81

sq. km. This region was covered by sandy coastal alluvium with mangrove and tidal flat. The annual rainfall of the region was 1206.7 mm due to the northeast and south-east monsoon. The study region of Porto Novo annual temperature varies from maximum 42°C to minimum 28°C. According to the (2011) population report, the study area had 25,541 population and annual growth rate was 34 per cent. The region covered 18 wards and 145 streets.

## 2.2 Line Transect Method

We have followed a line transect sampling method to survey the floral distribution in Parangipettai (Buckland *et al.*, 1993) [3]. The survey was carried out from May 2017 to March 2019. The plant survey covered the entire area of Parangipettai, which includes Mangroves, Sand dunes, Saltmarsh, and Latex plants etc. Data collection were made from i) Killai to Parangipettai, ii) Mutlur to Parangipettai, iii) Pudhu chattiram to Parangipettai, iv) Samiyar pettai to Parangipettai, v) Mudasal odai to Parangipettai, vi) Annan koil Fishing centre to Parangipettai coastal villages of 11.81 sq.km. Data collection of the present study area were done through line transects of about 6 connecting roadways to Parangipettai.

The survey was carried out after between 8.00 am to 11.00 am. The plant species were observed and recorded through the line transects method. Some of the plant species were identified as in-situ and ex-situ in CAS in Marine biology. The habit of the identified plant species was classified into Herb, Shrub, Climber and Tree. The plant species that were producing a copious amount of latex families were also surveyed and listed (USDA, 2019). The present study was evaluated with IUCN red list categories and criteria. The surveyed plant species were compared with the division of Extinct, Extinct in the wild, Critically Endangered, Endangered, Vulnerable, and Nearby Threatened, Least concern, data deficiency and Not Evaluated. Figure 2 describes the IUCN red list categories and criteria (IUCN, 2019). The plant species recorded were further clarified for their origin e.g. invasive species.

## 3. Results

In the world floral distribution around 290 plants species ie.0.07 percentage are distributed in Parangipettai coastal environment (Figure 3). This 290 plant species are coming under 81 plant families. Based on the % of distribution the plant families are grouped into A1 to A14. The group A1 predominantly occupied 8 %, A2 7%, A3 5%, A6, A7 and A8 are 3%, followed by A9 and A10 were 2% and A11, A12, A13 and A14 are around 1% (Figure 4 and 9). Halophytes, Xerophytes, Mangrove, Hydrophytes, etc were witnessed in the study. Latex producing plant species occupied around 18 % of 5 families also present. Herbs were predominantly distributed around 40 % i.e. 122 species, followed by Trees 34 % i.e. 104 species, Shrubs 15 % i.e. 47 species and Climbers were 11% i.e. 34 species in the 81 families (Figure 5). 5 latex producing plant families were observed. In the latex producing families herbs comprises 40 % followed by Trees 34%, Shrubs 15 % and others are climbers (Figure 10). According to the IUCN red list categories there are 96 % plant species coming under least concern (Includes few Terrestrial and Aquatic species). The remaining, 4 % belongs to Vulnerable, near threatened, data deficiency, and endangered species (It includes few mangrove, Sand dune, salt marsh and latex plants) (Figure

6). 40 % of the observed species fall in the Invasive category. In the invasive category *Eichhornia spp*, *Lantana spp* and *Prosopis spp* were found dominant (Figure 7 and 8).

## 4. Discussion

The world floral species accounts to 4, 65,668 and 47,513 in India. Out of this, 17,672 and 290 in Tamilnadu and Parangipettai respectively were distributed in. The study area has different biotopes of mangrove, salt marsh, sand dunes, etc. Hence, the observed plant families had different types of adaptation and distribution like, Halophytes, Xerophytes, Mangrove, Hydrophytes, etc. Figure 3 describes the Number and percentage distribution of flora in World, India, Tamilnadu, and Parangipettai.

Woldearegay *et al* (2018) [25] studied in Yegof dry Afromontane forest, North Eastern Ethiopia's species diversity, population's structure and regeneration status of woody plants. Diversity and natural regeneration of mangrove vegetation in the tracking area of Kemujan Island, Karimunjawa National Park, Indonesia were studied by Winata, *et al.*, 2017 [24]. Composition and diversity of plants in Sibuti mangrove forest, Sarawak, Malaysia were also studied (Shah *et al.*, 2015). Threat assessment of high-value medicinal plants of cold desert areas in Johar valley, Kailash Sacred Landscape, was done by India (Pandeya, *et al.*, 2018). (Nautiyal *et al.*, 2015) [16] They studied flora and fauna diversity in India. Coastal Sand Dune Floral Diversity in Cuddalore Coastal Areas, Southeast Coast of India another study was done on by Arulmoorthy and Srinivasan., 2017 [1]. The all these studies had used the line transects method to survey the forest, park, desert and sand dune region. The present study was also employed the line transect method to assess the diversity of flora in aquatic [Marine and Fresh (lentic and lotic)], terrestrial region and coastline in overall Parangipettai.

Kherissat and Esawi (2019) [14] survey the plant diversity of Wadi Hassan, Jordan and recorded the 206 species belongs to 138 genera and 35 family. A total of 76 species of plants belonging to 66 genera and 43 families were recorded in Yegof forest (Woldearegay *et al.*, 2018) [25]. 12 species in 5 families were recorded in Karimunjawa national park (Winata, *et al.*, 2017) [24]. The cold desert region of 22 species was recorded (Pandeya, *et al.*, 2018). 32 species belonging to 20 families were identified along the Cuddalore coastal area (Arulmoorth and Srinivasan., 2017) [1]. In the present study, there are about 290 species belongs to 81 families were recorded in Parangipettai, Southeast coast of India. Table 1 elucidate the Check-list of Macro Floral Distribution in Parangipettai.

Compositae (20.5%), Cruciferae (10.2%), Leguminosae (8.3%) and Boraginaceae (6.8%), followed by Caryophyllaceae and Gramineae (5.4%) were reported by Kherissat and Esawi (2019) [14]. Fabaceae was the dominant family represented by 9 species (11.84%) followed by Rhamnaceae and Oleaceae 4 species each (5.26%) and Anacardiaceae and Lamiaceae 3 species each (3.95%) (Woldearegay *et al.*, 2018) [25]. The present study indicates Fabaceae (8 %) is a dominant likewise Woldearegay *et al.*, 2018 [25] following Poaceae (7 %), Apocynaceae (5%), Asteraceae (4%), and other below 4 % were recorded in the present study area. (Table 1, 2 and Figure 4) describes the Percentage of floral family distribution in Parangipettai. Species diversity study in Ethiopia 10 (13.2%) were trees, 15

(19.7%) tree/shrub, 39 (51.3%) shrubs, 8 (10.5%) climbers and 4 (5.3%) herbs were recorded (Woldearegay *et al.*, 2018) [25]. According to the floral habit distribution in Parangipettai coastal environment, different plant types such as trees (29 %), shrubs (16 %), herbs (43 %) and climbers (12 %) existed. Here, the herbs present are more in number whereas the numbers of climbers present are less. (Table 1, and Figure 5) describes the Number and Percentage wise distribution of habit in Parangipettai.

There 22 threatened and high-value medicinal plants were recorded in Johar valley, India (Pandeya, *et al.*, 2018). The present study area had Endangered (2%), Vulnerable (1%), Near Threatened (1%), Least concern (94%) and Data deficiency (1%). In the present, 94 percentages least concern category report to i.e. 63 species were present and Data deficiency (1%). It shows the least concern distribution is high and others in low are condition. (Table 1 and Figure

6) describes the percentage of floral distribution according to IUCN red list categories in Parangipettai. Among the herbaceous recorded in the Himalayas region, alien or Invasive species were found to be distributed in wild 80 % and in cultivation 43 % (Muzafar *et al.*, 2017). According to the IUCN report (2000), there are 173 Invasive species present in India. In this, present investigation 69 species were distributed in Parangipettai coastal environment, which contributed to 40 % of Indian invasive species (Sudhakar *et al.*, 2008) [4]. The other continents like Africa, America and Europe have invasive species of about 2 %, 13% and 16% respectively. Species includes like *Eichhornia crassipes*, *Lantana camara* and *Prosopis juliflora* were most hindrance. (Table 1, Figure 7 and 8) describe Invasive species origin distribution in Parangipettai and Comparison of Invasive species distribution in India and Parangipettai.

**Table 1:** Check-list of Macro Floral Distribution in Parangipettai

Sl. No	Family	Scientific Name	Common Names	Habit	IUCN list	Invasive species
1	A1.1	<i>Abrus precatorius L.</i>	Coral bead vine, rosary pea, Kundu mani	C	N	N
2	A1.1	<i>Arachis hypogaea L.</i>	Groundnut, earthnut, monkey nut, peanut, Manila kottai, manila payaru, nilakatalai, verkkataalai	H	N	B2
3	A1.1	<i>Butea monosperma (LAM).TAUB.</i>	Flame of the forest, bastard teak, battle of Plassey tree, Bengal kino, palas tree, parrot tree, Kincukam, palasam	T	N	N
4	A1.1	<i>Clitoria ternatea L.</i>	Butterfly pea, Sanku-Poo, kannikkodi	C	N	B2
5	A1.1	<i>Crotalaria verrucosa L.</i>	Blue rattlepod, blue flowered crotalaria, blue flower rattlepod, purple popbush, shack shack, tooth leaf rattlepod, Kilukiluppai, Potu-Gally-Gista,, cankuiti	H	N	N
6	A1.1	<i>Dalbergia latifolia Roxb.</i>	Black rosewood, blackwood tree, Bombay blackwood, east indian rose wood, indian blackwood, indian palisandre, indian rose wood, java palisandre, Malabar rose wood, roseta rosewood, Nukkam, totakatti	T	VU	N
7	A1.1	<i>Dalbergia sissoo LINN.</i>	Indian rose wood	T	N	N
8	A1.1	<i>Desmodium triflorum (L). DC.</i>	Creeping tick trefoil, three flower beggarweed, tropical trefoil, three flower beggarweed, matty demodium, Sirupullati, ciru pullati, sirupulladi	H	LC	N
9	A1.1	<i>Erythrina variegata LINN.</i>	Indian coral tree, Lenten tree, tiger claw, Kalyana murungai	T	LC	N
10	A1.1	<i>Indigofera aspalathoides VAHL EX DC.</i>	Iraivan vembu, Sivanarvembu, Wiry Indigo	H	N	N
11	A1.1	<i>Indigofera linnaei Ali.</i>	Birdsville indigo, Cheppunerunnil	H	N	N
12	A1.1	<i>Indigofera tinctoria L.</i>	True indigo, Nilam, achitam	S	N	N
13	A1.1	<i>Lablab purpureus (L). Sweet</i>	Lablab bean, hyacinth bean, bonavista bean, Egyptian bean, Avarai, motchai	C	N	N
14	A1.1	<i>Pongamia pinnata (L). Pierre</i>	Pongam tree, indian beech tree, pongame oil tree, pungai	T	LC	N
15	A1.1	<i>Prosopis juliflora (Sw.) DC.</i>	Algarroba, mesquite, Seemaikaruvellam	T	N	B2
16	A1.1	<i>Vigna mungo (L). Hepper</i>	Urad, black matpe, black gram, mung bean, urd bean, Uluntu	H	N	N
17	A1.1	<i>Vigna radiate (L). Wilczek.</i>	Moong bean, Passi payaru	H	N	N
18	A10.1	<i>Borassus flabellifer L.</i>	Palmyra palm, African fan palm, borassus palm, doub palm, great fan palm, lontar palm, tala palm, toddy palm, Panaimaram	T	EN	B4
19	A10.1	<i>Cocos nucifera (L.)</i>	Coconut, Thennai	T	N	B2
20	A10.1	<i>Dyopsis lutescens (H.Wendl)</i>	Golden can palm, areca palm, butterfly palm, Madagascar palm	T	TH	N
21	A10.1	<i>Phoenix sylvestris (L.) Roxb.</i>	date palm	T	N	N
22	A10.1	<i>Phoenix dactylifera (L.)</i>	Wild date palm, date sugar palm, Indian wild date, Indian winepalm, silver date palm, sugar date palm, sugar palm, Inthupaanai, kaattinchu, icham	T	LC	B2
23	A10.2	<i>Agave tequilana F.A.C. Weber</i>	Blue agave, tequila agave	H	N	N
24	A10.2	<i>Asparagus racemosus Willd.</i>	Satawari, buttermilk root, climbing asparagus, water root, wild asparagus, wild carrot, Thanneer-Vitaan	C	N	N
25	A10.2	<i>Sansevieria trifasciata Prain.</i>	Snake plant, mother in law's tongue	H	N	B4
26	A10.2	<i>Dracaena marginata Hort.</i>	Dragon tree	S	N	N
27	A10.2	<i>Dracaena reflexa Lam.</i>	Song of India	S	N	N
28	A10.3	<i>Phyllanthus acidus (L.)</i>	Star gooseberry Aranelli	T	N	N
29	A10.3	<i>Phyllanthus amarus Schum. &amp; Thonn.</i>	Carry me seed, black catnip, child pick a back, gale of wind, gulf leaf flower, hurricane weed, shatterstone, stone breaker, Keelanelli, kizkaynelli	H	N	N

30	A10.3	<i>Phyllanthus emblica L.</i>	Amla, indian gooseberry, Nelli	T	N	N
31	A10.3	<i>Phyllanthus reticulatus Poir.</i>	Black honey shrub, black berried featherfoil, potato bush, netted leaved leaf flower, Civappu p pula, karu nelli, kattu kkila nelli, pula	S	N	N
32	A10.3	<i>Phyllanthus virgatus G. Forst.</i>	Seed under leaf, vigate leaf flower	H	N	N
33	A11.1	<i>Cordia sebestena L.</i>	Scarlet cordial, orange Geiger tree, sebesten plum, Geiger tree, aechinaruvihli	T	LC	N
34	A11.1	<i>Heliotropium curassavicum L.</i>	Seaside heliotrope, wild heliotrope, salt heliotrope	H	LC	N
35	A11.1	<i>Heliotropium indicum L.</i>	Indian heliotrope, Indian turnsole, Tetukotukki	H	N	N
36	A11.1	<i>Millingtonia hortensis Linn.</i>	Cork tree, tree jasmine, Kaattu-Malli Mouval Pannir-Poo	T	N	N
37	A11.2	<i>Eucalyptus globules Labil.</i>	Southern blue gum	T	N	B1
38	A11.2	<i>Eucalyptus tereticornis Sm.</i>	Forest red gum, bastard box, blue gum, flooded gum, grey gum mountain gum	T	N	B1
39	A11.2	<i>Psidium guajava L.</i>	Guava, Koiya	T	LC	B2
40	A11.2	<i>Syzygium cumini (L.) Skeels.</i>	Java plum, jamun, Nagai	T	N	N
41	A11.3	<i>Jasminum grandiflorum L.</i>	Royal jasmine, Spanish jasmine, Catalonian jasmine, Anankam, Catimallikai, Catimullai	S	N	N
42	A11.3	<i>Jasminum sambac var.</i>	Arabian jasmine of Orleans, Kodi mullai	S	N	N
43	A11.3	<i>Nyctanthes arbor-tristis L.</i>	Har singar, coral jasmine, tree of sorrow, queen of the night, Pavizhamalli	T	N	N
44	A11.3	<i>Jasminum officinale L.</i>	Common jasmie, true jasmine, poet's jasmine	S	N	N
45	A12.1	<i>Annona reticulata L.</i>	Netted custard apple, bullock's heart, bull's heart, Ramachita	T	N	B2
46	A12.1	<i>Annona squamosa L.</i>	Sugar apple, custard apple, Sitapalam	T	N	B2
47	A12.1	<i>Polyalthia longifolia (Sonn).</i>	Ashok, false ashok, mast tree, sita ashok, Vansulam	T	N	N
48	A12.2	<i>Calotropis gigantea (L.) Ait.</i>	Crown flower, Erukku	S	N	B4
49	A12.2	<i>Pergularia daemia (Forsk).</i>	Pergularia, Uttamani, seendhal kodi	C	N	N
50	A12.2	<i>Hemidesmus indicus (L.) R. Br</i>	Indian sarsaparilla, Nannaari, sugandipala	C	N	N
51	A12.3	<i>Lumnitzera racemosa Wild.</i>	Black mangrove, white flowered mangrove, Tipparathai	T	LC	N
52	A12.3	<i>Terminalia arjuna (Roxb.) Wight &amp; Arn.</i>	Arjun, Marutu	T	N	N
53	A12.3	<i>Terminalia catappa L.</i>	Indian almond, Nattuvadumai	T	N	N
54	A12.4	<i>Commelina diffusa Burm.f.</i>	Creeping dayflower, climbing day flower	H	LC	N
55	A12.4	<i>Commelina benghalensis L.</i>	Bengal dayflower, whiskered commelina, tropical spiderwort, Kanavazhai, Vuzhaipadathi, aduthinnathalai, kanan valai	H	LC	N
56	A12.4	<i>Cyanotis axillaris (L.) D. Don ex Sweet.</i>	Creeping cradle plant, Vazhukai pul	H	LC	N
57	A12.5	<i>Ammannia baccifera L.</i>	Blistering ammannia, acrid weed, monarch redstem, tooth cup, Kalluruvi	H	LC	N
58	A12.5	<i>Lawsonia inermis L.</i>	Henna, Marudaani	S	N	N
59	A12.5	<i>Punica granatum L.</i>	Pomegranate, Madulai	T	LC	B2
60	A12.6	<i>Acacia auriculiformis Benth.</i>	Earleaf Acacia, Ear-pod Wattle, Papuan Wattle, Auri, Northern Black Wattle, Maankathu	T	LC	N
61	A12.6	<i>Acacia nilotica (L.) Delile.</i>	Gum Arabic, Karuvelai	T	LC	N
62	A12.6	<i>Samanea saman (Jacq.) Merr.</i>	Rain tree, coco tamarind, acacia preta, French tamarind, monkey pod, saman, Amaivagai, thoongumoonji maram	T	N	N
63	A12.7	<i>Bougainvillea glabra var.</i>	Bougainvillea, lesser bougainvillea, Kaakithapoo	S	N	B2
64	A12.7	<i>Boerhavia diffusa L.</i>	Red hogweed, Tar vine, red spiderling, wineflower	H	N	N
65	A12.7	<i>Mirabilis jalapa L.</i>	Four o'clock, beauty of the night, marvel of peru, Anthimanthara, pattarashu	S	N	B2
66	A12.8	<i>Ziziphus rugosa Lam.</i>	Wild jujube, wrinkled jujube, Totari	T	N	N
67	A12.8	<i>Ziziphus mauritiana Lam.</i>	Indian jujube, indian plum, Elandhai	T	N	N
68	A12.8	<i>Ziziphus oenoplia (L.) Miller.</i>	Jackal jujube, small fruited jujube, wild jujube, Suraimullu, Chooraimullu, Suraiilantai	S	N	N
69	A12.9	<i>Ixora coccinea L.</i>	Ixora, jungle geranium, rugmini, Vedchi	S	N	N
70	A12.9	<i>Morinda citrifolia (Noni).</i>	Indian mulberry, great morinda, Nuna	T	N	N
71	A12.9	<i>Spermacoce alata Aubl.</i>	Broad leaf buttonweed, winged false buttonweed, Nathai-Chori	H	N	N
72	A13.1	<i>Anacardium occidentale L.</i>	Cashew, Mundiri, andima	T	N	B2
73	A13.1	<i>Mangifera indica L.</i>	Mango, Ma	T	DD	N
74	A13.10	<i>Pedaliu murex L.</i>	Large caltrops, Yanai nerunjil	H	N	B2
75	A13.10	<i>Sesamum indicum L.</i>	Sesame, Cirrel, El, Ellu, Tilam	H	N	N
76	A13.11	<i>Rhizophora mucronata Lam.</i>	Asiatic mangrove, Kandhal, peykkandal	T	LC	N
77	A13.11	<i>Rhizophora apiculata Bl.</i>	Tall stilt mangrove, Cirugandal, kantal	T	LC	N
78	A13.12	<i>Sapindus emarginatus Vahl.</i>	Notched leaf soapnut, Ponnankottai, Manipunganmaram, Poovandikottai	T	N	N
79	A13.12	<i>Cardiospermum halicacabum L.</i>	Balloon vine, love in a puff, heart pea, heartseed, Mudakatthaan, Cancivimeti, kottavan	C	N	N

80	A13.13	<i>Manilkara zapota (L.) P.Royen.</i>	Chikoo, sapodilla plum, chico sapote, noseberry, Chappotta, chimaiyiluppai	T	N	N
81	A13.13	<i>Madhuca longifolia</i> Var.	Indian butter tree, Attiruppaiillupei	T	N	N
82	A13.2	<i>Tecoma stans (L.) Juss. Ex kunth.</i>	Yellow bells, yellow trumpet, yellow elder, Manjarali. Sonnapatti	T	N	B2
83	A13.2	<i>Spathodea campanulata Beauv.</i>	African tulip tree, fountain tree, Patadi	T	LC	N
84	A13.3	<i>Ceiba pentandra (L.) Gaertn.</i>	Kapok, Ceiba, White Silk-Cotton Tree, Pancu	T	LC	B2
85	A13.3	<i>Bombax ceiba L.</i>	Silk cotton tree, kapok tree, Sittan, sanmali	T	N	N
86	A13.5	<i>Cleome gynandra L.</i>	Wild spider flower, African spider flower, cat whiskers, bastard mustard, Taivelai, nalvelai, velai, acakanta	H	N	B2
87	A13.5	<i>Cleome viscosa L.</i>	Asian spider flower, yellow spider flower, tick weed, Naikadduku	H	N	B2
88	A13.6	<i>Cyperus squarrosus L.</i>	Bearded flatsedge	H	N	N
89	A13.6	<i>Cyperus rotundus L.</i>	Common nut sedge, coco grass, nutgrass, purple nutsedge, Korai-Pul, korai kilangu, muthakasu	H	LC	N
90	A13.7	<i>Azadirachta indica A.Juss.</i>	Neem, Veppai, sengumaru	T	LC	N
91	A13.7	<i>Melia azedarach L.</i>	Chinaberry tree, Persian lilac, pride of india, bead tree, lilac tree, Kattu vembhu	T	LC	N
92	A13.8	<i>Cocculus hirsutus (L.) Diels</i>	Broom creeper, ink berry, Kattu kkoti	C	N	N
93	A13.8	<i>Tinospora cordifolia (Willd.) Hook.f. and Thoms.</i>	Gulbel, indian tinospora, Kunali	C	N	N
94	A13.9	<i>Nymphaea lotus L.</i>	Pink water lily, pink lotus, Vellambal	H	LC	N
95	A13.9	<i>Nymphaea nouchali Burm.f.</i>	Blue water lily, blue lotus of india, Neelambal	H	LC	N
96	A14.1	<i>Dracaena fragrans (L.) Ker-Gawl.</i>	Corn plant	S	N	N
97	A14.10	<i>Casuarina equisetifolia L.</i>	Whistling pine, casuarinas, common ironwood, beefwood, bull-oak, Savukku	T	LC	B1
98	A14.11	<i>Suaeda maritima (L.) Dumort.</i>	Annual sea blite, herbaceous seepweed, sea blite, seaside Indian saltwort, Nila vumarai, koyey kasseray keeray, kayey kasseray keeray, yella keeray	H	N	N
99	A14.12	<i>Calophyllum inophyllum L.</i>	Beauty leaf, Alexandrian laurel, Punnai	T	LC	N
10	A14.13	<i>Juncus bufonius L.</i>	Toad rush, candy stripe rush, lakeshore bulrush	H	LC	N
10	A14.14	<i>Gloriosa superba L.</i>	Glory lily, gloriosa lily, tiger claw, claw, Kallappai kilangu	C	LC	N
10	A14.15	<i>Lindernia crustacea or Torenia crustacea (L.) F. Muell.</i>	Malaysian lindernia, bittle false pimperl, Malaysian false pimperl	H	LC	N
10	A14.16	<i>Dendrophthoe falcata (L.F.) Ettiingh.</i>	Honey suckle mistletoe, neem mistletoe, Pulluri, pulluruvi, uchi	S	N	N
10	A14.17	<i>Marsilea quadrifolia L.</i>	Four leaf clover, European waterclover	H	LC	N
10	A14.18	<i>Moringa oleifera Lam.</i>	Drumstick tree, horseradish tree, Murungai	T	N	N
10	A14.19	<i>Muntingia calabura L.</i>	Jamaica cherry, panama cherry, Singapore cherry, strawberry tree, jam tree, cotton candy berry, calabura, Ten pazham	T	N	N
10	A14.2	<i>Trianthema portulacastrum L.</i>	Desert horse purslane, giant pigweed, horse purslane, Sharunnai, Shavalai, Charu velai	H	N	N
10	A14.20	<i>Musa paradisiaca L.</i>	Banana, Vaalaimaram	H	N	N
10	A14.22	<i>Nelumbo nucifera Gaertn.</i>	Lotus, sacred lotus, east indian lotus, Chenthaamarai, tamarai, ambal	H	N	N
11	A14.23	<i>Pandanus odorifer (Forssk).</i>	Kewda, fragrant screw pine, umbrella tree, screw tree, Ketakai, Talai	T	LC	N
11	A14.24	<i>Argemone mexicana L.</i>	Mexican prickly poppy, Mexican poppy, prickly poppy, Kudiyotti	H	N	B2
11	A14.25	<i>Passiflora foetida L.</i>	Love in a mist, stinking passionflower, Siruppunaikkali	C	N	B2
11	A14.26	<i>Eichhornia crassipes (Mart.) Solms.</i>	Water hyacinth, Venkayattamarai	H	N	B2
11	A14.27	<i>Talinum fruticosum (L.) Juss.</i>	Ceylon spinach, water leaf, Surinam purslane, Philippine spinach, florida spinach, potherb fameflower, Kuththu-Pasalkeerai	H	N	N
11	A14.28	<i>Embelia ribes Burm.f.</i>	Vidanga, baoberang, embelia, Vitankam, vivilangam, vollai	C	N	N
11	A14.29	<i>Rosa x damascene Mill.</i>	Damask rose, Pannir Roja	S	N	N
11	A14.3	<i>Aponogeton natans (L.) Engl. &amp; K.Krause.</i>	Floating lace plant, drifting sword plant, Kotti kizhangu, kotti	H	LC	N
11	A14.30	<i>Azima tetraacantha Lam.</i>	Beedle bush, mistletoe berrythorn, azima, needle bush, bee sting bush, sting bush, Sugam cheddi, sangilai, sung elley, Changan chedi	S	N	N
11	A14.31	<i>Salvinia molesta Mitch.</i>	Kariba weed, giant salvinia	H	N	B2
12	A14.32	<i>Scoparia dulcis L.</i>	Sweet broom weed, weed broom wort, Sarakotthini	H	N	B2
12	A14.33	<i>Melochia corchorifolia L.</i>	Chocolate weed, wire bush, redweed, Punnakkukkirai	H	N	B2
12	A14.34	<i>Corchorus aestuans L.</i>	East indian mallow, jute, west African mallow	H	N	B2
12	A14.35	<i>Typha angustifolia L.</i>	Lesser indian reed mace, elephant grass, small bulrush, lesser cattail, Sambu	H	LC	N
12	A14.36	<i>Hybanthus enneaspermus (L.) F. Muell.</i>	Spade flower, pink ladies slipper	H	N	N
12	A14.37	<i>Cissus quadrangularis L.</i>	Veldt Grape, devil's Backbone, Perandai	S	N	N
12	A14.38	<i>Tribulus terrestris L.</i>	Puncture vine, caltrop, yellow vine, goathead, Palleru mullu	C	N	N
12	A14.4	<i>Aristolochia indica L.</i>	Indian birthwort, duck flower Isvaramuli	C	N	N

12	A14.5	<i>Aloe vera</i> (L.) Burm.f.	Aloe vera, burn plant, Kathalai	H	N	N
12	A14.6	<i>Opuntia stricta</i> Haw.	Erect prickly pear, Nagathali, chappathikalli	S	N	B2
13	A14.7	<i>Canna indica</i> L.	Indian shot, wild canna, Kalvalai	H	N	N
13	A14.8	<i>Capparis spinosa</i> L.	Alpine caper bush, caper bush, flinders rose	S	N	N
13	A14.9	<i>Carica papaya</i> L.	Papaya, melon tree, pawpaw, tree melon, pappali	T	N	B2
13	A2.1	<i>Aeluropus lagopoides</i> L.	Mangrove grass, rabbit foot aeluropus, Katal arukampul	H	N	N
13	A2.1	<i>Alloteropsis cimicina</i> (L.) Stapf.	Summer grass, bug seed grass, cockatoo grass	H	N	N
13	A2.1	<i>Arundo donax</i> L.	Giant reed, Spanish cane, Colorado river reed, wild cane, Caravanam, koraikkuccu, korukachi	H	LC	B2
13	A2.1	<i>Bambusa bambos</i> (L.) Voss.	Indian thorny bamboo, giant thorny bamboo, male bamboo, spiny bamboo, spring bamboo, Kulay munkil, peru munkil	H	N	N
13	A2.1	<i>Bambusa vulgaris</i> Schrad.	Bamboo, common bamboo, Moongil	H	N	N
13	A2.1	<i>Chloris barbata</i> Sw.	Swollen finger grass, airport grass, feather finger grass, finger grass, peacock plumegrass, plush grass, purpletop chloris, swollen fingergrass, swollen windmill grass, Chevvarakupul., Kuruthupillu, kodai pullu, kattuk kotumai	H	N	B2
13	A2.1	<i>Vetiveria zizanioides</i> (L.) Nash.	Vetiver	H	N	N
14	A2.1	<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass, Arugu ; Aruvam-Pillu Mooyarpul	H	N	N
14	A2.1	<i>Dactyloctenium aegyptium</i> (L.) Willd.	Crowfoot grass, beach wiregrass, coast button grass, comb fringe grass, duck grass, Durban crowfoot, four finger grass	H	N	N
14	A2.1	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Calcutta bamboo, hard bamboo, iron bamboo, male bamboo, stone bamboo, solid bamboo, Ciru munkil, kal munkil, kattu munkil	H	N	N
14	A2.1	<i>Echinochloa crus-galli</i> (L.) P. Beauv.	Barnyard grass, jungle rice, cock's foot, prickly grass, cockspur grass	H	LC	N
14	A2.1	<i>Hordeum murinum</i> ssp. <i>leporinum</i> .	Hare barley, mouse barley	H	LC	N
14	A2.1	<i>Oplismenus burmannii</i> (Retz.) P. Beauv.	Wavy leaf basketgrass	H	N	N
14	A2.1	<i>Oplismenus undulatifolius</i> (Ard.) Roem and Schult.	Wavyleaf basketgrass	H	N	N
14	A2.1	<i>Oryza sativa</i> L.	Rice, paddy, sake, sea grass matting, Arishi, arisi, nellu	H	N	N
14	A2.1	<i>Perotis indica</i> (L.) Kuntze.	Indian comet grass, Narival, kudiraival pull, thopparai pullu	H	N	N
14	A2.1	<i>Saccharum ravennae</i> L.	Ravenna grass, hardy pampas grass, Italian sugarcane	H	N	N
15	A2.1	<i>Spinifex littoreus</i> (Burm.f.) Merr.	Ravan's Moustache, Littoral Spinegrass, ravana-meesai, iravanabul, iravananpu	H	N	N
15	A2.1	<i>Saccharum spontaneum</i> L.	Kans grass, Pekkarimpu	H	LC	B5
15	A2.1	<i>Paspalidium flavidum</i> (Retz.) A. Camus.	Yellow watercrown grass	H	LC	N
15	A3.1	<i>Allamanda blanchetii</i> A.DC.	Purple allamanda	H	N	N
15	A3.1	<i>Allamanda cathartica</i> L.	Golden trumpet vine, allamanda vine	C	N	B2
15	A3.1	<i>Carissa carandas</i> L.	Karanda, kalakkai	S	N	N
15	A3.1	<i>Carissa macrocarpa</i> (Eckl.) A.DC.	Natal plum	S	N	N
15	A3.1	<i>Carissa spinarum</i> L.	Wild karanda, Chirukila	S	N	N
15	A3.1	<i>Catharanthus roseus</i> (L.) G. Don.	Periwinkle, Madagascar periwinkle, rosy periwinkle, vinca	H	N	B4
15	A3.1	<i>Cryptostegia grandiflora</i> (Roxb.) R.Br.	Rubber vine, Palai	C	N	B3
16	A3.1	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton.	Black creeper, Paravalli, udargodi, udarkkoti	C	N	N
16	A3.1	<i>Nerium oleander</i> L.	Oleander, arali	S	LC	B5
16	A3.1	<i>Plumeria rubra</i> L.	Frangipani, plumeria, Nela sampangi	T	N	B2
16	A3.1	<i>Rauvolfia tetraphylla</i> L.	Wild snake root, devil pepper, be still tree, American serpentwood, be still tree, devil root, milkbush, Pampukaalaachchedi, Paambukkala	S	N	B2
16	A3.1	<i>Tabernaemontana divaricata</i> (L.) R.Br.ex. Roem and Schult.	Crape jasmine, moonbeam, carnation of India, Nandiar vattai	T	N	N
16	A3.1	<i>Wrightia antidysenterica</i> (L.) R. Br.	Arctic snow, winter cherry tree, milky way, snowflake, pudpitchaya, sweetindrajao, hyamaraca	S	N	N
16	A3.1	<i>Wrightia tinctoria</i> R.Br.	Sweet indrajao, pala indigo plant, dyers' oleander, Paalai	T	LC	N
16	A4.1	<i>Bauhinia racemosa</i> Lam.	Bibi leaf tree, Atti, tataki	T	N	B2
16	A4.1	<i>Caesalpinia pulcherrima</i> (L.) Sw.	Peacock flower, pride of Barbados, dwarf Poinciana, Mayurkonrai	S	N	B2
16	A4.1	<i>Cassia fistula</i> L.	Amaltas, golden shower tree, indian laburnum, Konrai	T	LC	N
17	A4.1	<i>Delonix regia</i> (Boj. Ex. Hook)	Flame tree, royal Poinciana	T	LC	B2

17	A4.1	<i>Peltophorum pterocarpum</i> (DC.)K.Heyne.	Copperpod, rusty shield bearer, peela gulmohar, Perunkonrai	T	N	N
17	A4.1	<i>Senna alata</i> (L.). Roxb.	Candle bush, ringworm shrub, Seemaikathi, Vandukolli	S	N	N
17	A4.1	<i>Senna auriculata</i> (L.). Roxb.	Tanner's cassia, Aavaram	S	N	N
17	A4.1	<i>Senna alexandrina</i> Mill.	Tirunelveli senna, Egyptian senna, Nilavirai, alakalam, alakalampokki	S	N	N
17	A4.1	<i>Senna occidentalis</i> (L.) Link.	Coffee senna, coffeeweed, negro coffee, Nattamtakarai, Payaverai	H	N	N
17	A4.1	<i>Senna siamea</i> Lam.(H.S. Irwin and Barneby.	Siamese senna, Siamese cassia, Manjalkonrai, Manje-Konne, Chelumalarkkonrai	T	LC	N
17	A4.1	<i>Tamarindus Indica</i> L.	Tamarind, Pulia-Maram	T	LC	B2
17	A4.1	<i>Delonix elata</i> (L.). Gamble.	White gulmohar, white poincian, Perungondrai, Vadanarayanan, Varatti	T	LC	N
17	A4.2	<i>Ageratum conyzoides</i> L.	Goat weed, billy goat weed, tropical whiteweed, pumpillu, Appakutti	H	N	B2
18	A4.2	<i>Blumea Obligua</i> (L.) Druce.	spiny leaved blumea	H	N	B2
18	A4.2	<i>Chrysanthemum grandiflora</i> Tzeuleu.	cut mum, garden mum, pot mum	H	N	B4
18	A4.2	<i>Chrysanthemum indicum</i> L.	Indian Chrysanthmum, Chrysanthemum, Saamandi, Javadi	H	N	B4
18	A4.2	<i>Cyanthillium cinereum</i> (L.) H.Rob.	Little iron wood, purple fleabane, Puvamkuruntal	H	N	N
18	A4.2	<i>Eclipta prostrata</i> L.	False daisy, trailing eclipta, Karisilaanganni, Koti-K-Kaiyan	H	LC	B2
18	A4.2	<i>Emilia sonchifolia</i> (L.) DC.ex. Wight.	Purple sow thistle, cupid's shaving brush, Emilia, flora's paint brush, red tassel flower, Muyalcevi, mayarcevi	H	N	B4
18	A4.2	<i>Sphagneticola trilobata</i> (L.) Pruski.	Yellow dots, creeping daisy, wedelia	H	N	N
18	A4.2	<i>Tagetes erecta</i> L.	Marigold, African, marigold, Aztec marigold, Thulikkaimallikai, Chendumalli.	H	N	B2
18	A4.2	<i>Tithonia diversifolia</i> (Hemsl.) A.Gray.	Gaint Mexican sunflower, Japanese sunflower, shrub sunflower, tree marigold, Kaatusuriagandhi	S	N	N
18	A4.2	<i>Tridax procumbens</i> L.	Tridax daisy, coat buttons, Mexican daisy, Kenathuppoondu, Vettukkaaya-Thalai	H	N	B2
19	A4.2	<i>Xanthium strumarium</i> L.	Common cocklebur, broad bur, burdock datura, clotbur, rough cocklebur, Marul-umattai	H	N	B2
19	A5.1	<i>Acalypha indica</i> L.	Indian copper leaf, Indian nettle, three seeded mercury, Kuppaimeni, koli-p-puntu	H	N	N
19	A5.1	<i>Codiaeum variegatum</i> (L.) Rumph.ex.A.Juss.	Croton, Kozhivalan.	H	N	N
19	A5.1	<i>Excoecaria agallocha</i> L.	Blinding Tree, Milky mangrove, Blind-your-eye mangrove, River poison tree, tillai	T	LC	N
19	A5.1	<i>Euphorbia heterophylla</i> L. Bayer.	Wild poinsettia, wild spurge, lesser green poinsettia	H	N	B2
19	A5.1	<i>Euphorbia hirta</i> L.	Asthma weed, common spurge, cats hair, Ammapaccharisi	H	N	B2
19	A5.1	<i>Euphorbia tirucalli</i> L.	Pencil tree, firestick plants, indian tree spurge, naked lady, pencil cactus, sticks on fire, Cakkalavi, catukalavi, kalli	S	LC	N
19	A5.1	<i>Jatropha gossypifolia</i> L.	Bellyache bush, cotton leaf physic nut, Siriaamanakku, Adalai	S	N	N
19	A5.1	<i>Jatropha curcas</i> L.	Physic Nut, Jatropha, Barbados nut, Kattukkotai	T	N	N
19	A5.1	<i>Pedilanthus tithymaloides</i> (L.) Poit.	Devils's backbone, Japanese poinsettia, slipper spurge, redbird cactus, Christmas candle	H	N	N
20	A5.1	<i>Ricinus communis</i> L.	Castor bean, cator oil plant, wonder tree, Aamanaku, vilakennai kottaimuttu	T	N	B4
20	A5.1	<i>Tragia hispida</i> Willd.	Bristly climbing nettle, Kanchori	C	N	N
20	A6.1	<i>Capsicum annuum</i> L.	Capsicum, sweet pepper, chili pepper, cayenne pepper, paprika, Milakaaki	H	LC	B2
20	A6.1	<i>Datura metel</i> L.	Devils trumpet, horn of plenty, downy thorn apple, safed dhatura, Umatai, Umathan	H	N	B2
20	A6.1	<i>Datura stramonium</i> L.	Jimsonweed, thornapple, Jamestown weed, devils apple	H	N	B2
20	A6.1	<i>Lycopersicon esculentum</i> Mill.	Tomato, Simai-Thakkali	S	LC	B2
20	A6.1	<i>Physalis lagascae</i> R.and S.	Ground cherry, sun berry, Sodakkuthakkaali, Tholtakkali.	H	N	N
20	A6.1	<i>Solanum melongena</i> L.	Brinjal, aubergine, eggplant, Kattri	H	N	N
20	A6.1	<i>Solanum nigrum</i> L.	Black nightshade, black berry night shade, nightshade, poisonberry, Manatakkali	H	N	N
20	A6.1	<i>Solanum torvum</i> Sw.	Turkey berry, susumber, Sundaikkai	S	N	B2
21	A6.1	<i>Solanum trilobatum</i> L.	Purple fruited pea eggplant, thai nightshade, Thoothuvalai	C	N	N
21	A6.1	<i>Solanum virginianum</i> L.	Thorny nightshade, yellow berried nightshade, thai eggplant, Kandan-Kathari	H	N	N
21	A6.2	<i>Abutilon indicum</i> (L.) Sweet.	Indian mallow, country mallow, abutilon, indian abutilon, Paniyaratutti	S	N	N
21	A6.2	<i>Hibiscus cannabinus</i> L.	Kenf, deccan hemp, brown indian hemp, Palungu, pulimanji	H	N	N
21	A6.2	<i>Hibiscus rosa sinensis</i> L.	China rose, Chinese hibiscus, Cembarutti	S	N	N
21	A6.2	<i>Hibiscus tiliaceus</i> L.	Sea hibiscus, mahoe, cotton tree, beach hibiscus, Nir paratthi	T	N	N

21	A6.2	<i>Sida cordifolia L.</i>	Heart leaf sida	H	N	N
21	A6.2	<i>Sida rhombifolia L.</i>	Cuban jute, jelly leaf, queensland hemp, Kurundotti	H	N	N
21	A6.2	<i>Sida acuta Burm.f.</i>	Common wireweed, morning mallow, common fanpetals, Palambasi	H	N	B2
21	A6.2	<i>Sida cordata Burm.f. Borss. Waalk.</i>	Long stalk sida, heart leaf sida, country mallow, flannelweed, heartleaf fanpetals, Kurunthotti, palampasi, mayir,manikkam	H	N	N
22	A6.2	<i>Thespesia populnea (L.) Soland.ex. Correa.</i>	Indian tulip tree, aden apple, portia tree, Puvarasu	T	LC	N
22	A6.3	<i>Acanthus ilicifolius L.</i>	Sea Holly, holly-leaved acanthus, holly mangrove, Kaludaimulli	S	LC	N
22	A6.3	<i>Andrographis paniculata (Burm.f.) Wall.ex.Nees.</i>	Kariyat, Creat, Nilavembu	H	N	N
22	A6.3	<i>Asystasia gangetica (L.)</i>	Ganges primrose, Chinese violet, creeping foxglove, Miti-kirai	H	N	N
22	A6.3	<i>Avicennia marina (Forssk.) Vierh.</i>	Grey Mangrove, white mangrove, Kanna, Venkandan	T	LC	N
22	A6.3	<i>Avicennia officinalis L.</i>	Indian Mangrove, White Mangrove, Venkanthal	T	LC	N
22	A6.3	<i>Barleria cristata L.</i>	Philippine Violet, bluebell barleria, crested Philippine violet, crested purple nail dye, Cem-mulli,Mituri, Nila-c-cemmulli, uta-mulli, vellai-nilamparam	S	N	N
22	A6.3	<i>Crossandra infundibuliformis (L.) Nees.</i>	Crossandra, firecracker flower, unarmed orange nail dye, cem-payirava-p-puntu, kanakamparam, pavala-k-kurinci, tintiyam	H	LC	N
22	A6.3	<i>Ecbolium ligustrinum (Vahl).</i>	Green Shrimp plant, ice crossandra, blue fox tail nail dye, green ice crossandra, turquoise crossandra, Nilampari	S	N	N
22	A6.3	<i>Hygrophila auriculata (Schumach.) Heine.</i>	Marsh barbell, Nir-mulli	S	LC	N
23	A6.3	<i>Justicia Procumbens L.</i>	Water willow, Kotakacalai, arm, knteyu, kukkurm	H	N	N
23	A7.1	<i>Citrullus lanatus (Thunb.) Matsum. &amp; Nakai.</i>	Watermelon	C	N	N
23	A7.1	<i>Citrullus colocynthis (L.) Schrad</i>	Bitter apple, colocynth, bitter cucumber, egusi, vine of Sodom, Kumatti, pey-komatti	C	N	N
23	A7.1	<i>Coccinia indica (L.) Voigt</i>	Ivy gourd, Kovai	C	N	N
23	A7.1	<i>Ctenolepis garcinii (Burm. f.) C.B. Clarke.</i>	Garcen's bur cucumber, Naripagal	C	N	N
23	A7.1	<i>Cucumis sativus L.</i>	Cucumber, Vellarikkay	C	N	N
23	A7.1	<i>Luffa acutangula (L.) Roxb.</i>	Ribbed sponge gourd, angled loofah, Chinese okra, dish-cloth gourd, ribbed gourd, Peerkangaai, peyppirkam, akacaveni, akacavenkkoti	C	N	N
23	A7.1	<i>Momordica charantia L.</i>	Bitte gourd, Pavarkaai, iraca valli	C	N	N
23	A7.1	<i>Mukia maderaspatana (L.) M.Roem</i>	Madras pea pumpkin, rough bryony, Musumskkai, nagilangiai,	C	N	N
23	A7.1	<i>Trichosanthes cucumerina L.</i>	Snake gourd, Putalangaai, alakaippatal	C	N	N
24	A7.2	<i>Anisochilus carnosus (L.F.) Wall.</i>	Thick leaf lavender, Karpooravalli	H	N	N
24	A7.2	<i>Anisomeles indica (L.) Kuntze</i>	Indian catmint, Malabar catmint, Perum-Thumbai, Kaassi-Thumba	H	N	N
24	A7.2	<i>Anisomeles malabarica (L.) R.Br. ex Sims.</i>	Malabar catmint, Pei-Miratti, Pei-Thumbai	S	N	N
24	A7.2	<i>Leucas aspera (Willd.) Link.</i>	Common leucas, Thumpai	H	N	N
24	A7.2	<i>Ocimum basilicum L.</i>	Basil, sweet basil, Tirunitru thulasi, chankanirakkarantai, chapachavitri	H	N	N
24	A7.2	<i>Ocimum americanum L.</i>	Hoary basil, wild basil, lemon basil, Nai thulasi	H	N	B2
24	A7.2	<i>Plectranthus amboinicus (Lour.) Spreng.</i>	Cuban oregano, indian borage, indian mint, Mexican mint, Mexican oregano, Spanish thyme, Karpuravalli	H	N	N
24	A7.2	<i>Plectranthus barbatus Andrews</i>	Indian coleus	H	N	N
24	A7.2	<i>Ocimum tenuiflorum L.</i>	Holy basil, Krishna Thulasi,.Nallathulasi,	H	N	N
24	A8.1	<i>Cressa cretica L.</i>	Rudravanti, littoral bind weed, Uppugaddi	H	LC	N
25	A8.1	<i>Evolvulus alsinoides L.</i>	Dwarf morning glory, slender Dwarf morning glory, Vishnukranthi	H	N	N
25	A8.1	<i>Ipomoea aquatic Forsskal.</i>	Water morning glory, Sarkaraivalli	H	LC	N
25	A8.1	<i>Ipomoea carnea Jacq. ssp. fistulosa</i>	Bush morning glory	S	N	B2
25	A8.1	<i>Ipomoea obscura (L.) Ker Gawl.</i>	Obscure morning glory, Chirutali, kuruguttai, sirudali	C	N	B4
25	A8.1	<i>Ipomoea pes-caprae (L.) R. Br</i>	Railroad vine, goat's foot vine, Attukkal	C	N	N
25	A8.1	<i>Merremia tridentata (L.) Hallier f.</i>	Arrow leaf morning glory, Tirippanpul, savolikkoti	C	N	N
25	A8.1	<i>Merremia emarginata (Burm. f.) Hallier f.</i>	Kidney leaf plant, Tirippanpul, savolikkoti	C	LC	N
25	A8.2	<i>Artocarpus heterophyllus Lamk.</i>	Jackfruit, jackfruit tree, Palaa	T	N	N
25	A8.2	<i>Ficus benghalensis (L.) Rafin.</i>	Banyan tree, Alai	T	N	N



25	A8.2	<i>Ficus elastica</i> Roxb. ex Hornem	Rubber tree, rubber plant, indian rubber tree, indian rubber bush	T	N	N
26	A8.2	<i>Ficus hispida</i> L.	Hairy fig, devil fig, opposite leaved fig tree, rough leaved fig, Peyatthi	T	N	N
26	A8.2	<i>Ficus racemosa</i> L.	Cluster fig, Atti	T	N	N
26	A8.2	<i>Ficus religiosa</i> L.	Peepal, holy fig tree, peepul, sacred fig tree, Arasa maram, pippalam	T	N	N
26	A8.2	<i>Ficus benjamina</i> L.	Weeping Fig, benjamin tree, golden fig, Java fig, tropic-laurel, Chinese banyan, nintamaravakai, vella	T	N	N
26	A8.2	<i>Morus alba</i> L.	White Mulberry, Russian Mulberry, Silkworm Mulberry, Kambli chedi	T	N	N
26	A8.3	<i>Gmelina arborea</i> var. <i>glaucescens</i> C.B.Clarke.	Gamhar, Kumalaamaram	T	N	N
26	A8.3	<i>Gmelina asiatica</i> Linn (G. <i>parvifolia</i> Roxb.)	Asian bushbeech, Asiatic beechberry, badhara bush, oval leafed gmelina, Mulkumizh	T	N	N
26	A8.3	<i>Tectona grandis</i> (L.f.) Lam.	Teak, Tekku	T	N	N
26	A8.3	<i>Clerodendrum inerme</i> or <i>Volkameria inermis</i> (L.) Gaertn	Glory bower, indian privet, seaside clerodendrum, wild jasmine, sorcerers bush, Sankamkuppai, Coraputpam, Kuyapaciyam, Piccu-Vilatti	S	N	N
26	A8.3	<i>Duranta erecta</i> L.	Skyflower, golden dew drop, pigeon berry, Aahaya-Poo	S	N	N
27	A8.3	<i>Lantana camara</i> L.	Lantana, Unnichedi	S	N	B2
27	A8.3	<i>Vitex negundo</i> L.	Chaste tree, Nocchi	T	No	N
27	A8.3	<i>Lippia nodiflora</i> (L.) Greene.	Frog fruit, turkey tangle, creeping lip plant, lippie, Poduthuvalai ; Poduthalai	H	LC	N
27	A9.1	<i>Achyranthes aspera</i> L.	Prickly chaff flower, chaff-flower, crocus stuff, crokars staff, devil's horsewhip, Nayuruvi, Shiru-kadaladi	H	N	N
27	A9.1	<i>Aerva lanata</i> (L.) JUSS. EX SCHULT.	Mountain knot grass, Ciru-pulai / ulinai	H	N	N
27	A9.1	<i>Alternanthera sessilis</i> (L.) R. Br. ex Sweet.	Sessile joyweed, dwarf copperleaf, joyweed, Ponnanganni	H	LC	N
27	A9.1	<i>Amaranthus spinosus</i> L.	Prickly amaranth, edlebur needle burr, spiny amaranth, thorny amaranth, Mullukkeerai	H	N	N
27	A9.1	<i>Amaranthus viridis</i> L.	Green amaranth, pigweed, prince of wales feather, slender amaranth, tropical green amaranth, Kuppai-k-kirai	H	N	N
27	A9.1	<i>Suaeda monoica</i> Forssk. ex J. F. Gmelin	South Indian seep weed, Umarinandi, karuvumari	S	N	N
27	A9.2	<i>Acorus calamus</i> L.	Sweet flag, calamus, flagroot, sweet cane, sweet grass, sweet root, sweet rush, Vasambu, pullai-valathi	H	LC	N
28	A9.2	<i>Caladium rosebud</i> K.van Bourgondien.	Angel wings, heart of jesus, elephant ear	H	N	N
28	A9.2	<i>Caladium bicolor</i> K.van Bourgondien.	Fancy leaf caladium, artist pallet, caladium, elephant's ear, heart of jesus	H	N	B2
28	A9.2	<i>Colocasia esculenta</i> L. var. <i>acris</i> (R.Br.). A.F.Hill.	Taro, cocoyam, green taro, aivi, dasheen, Sempu, shamakkilangu	H	LC	N
28	A9.2	<i>Epipremnum aureum</i> (Linden & André) G.S.Bunting	Money plant, golden pothos, Ceyloncreeper, hunter's robe, ivy arum, silver vine	C	N	N
28	A9.2	<i>Epipremnum pinnatum</i> (L.) Engl.	Centipede tongavine, dragon tail plant	C	N	N
28	A9.3	<i>Aegle marmelos</i> L. B.R. Zate.	Bel, beli fruit, Bengal quince, stone apple, wood apple, Vilvam	T	N	N
28	A9.3	<i>Atalantia monophylla</i> (Roxb.) A. DC.	Indian atalantia	T	N	N
28	A9.3	<i>Citrus limon</i> (L.) Burm.f.	Lemon, Elumicchai	T	N	N
28	A9.3	<i>Citrus maxima</i> (Burm.) Merr.	Pomelo, Chinese grapefruit, pompelmous, shaddock, Metukku, pampalimacu, pommacu	T	N	N
28	A9.3	<i>Limonia acidissima</i> L.	Wood apple	T	N	N
29	A9.3	<i>Murraya koenigii</i> (L.) Spreng.	Curry leaf, Karivepillai	T	N	N

**Note : family distribution in Parangipettai**

A1	(A1.1) Fabaceae
A2	(A2.1) Poaceae
A3	(A3.1) Apocynaceae
A4	(A4.1)Caesalpiniaceae / (A4.2) Asteraceae
A5	(A5.1)Euphorbiaceae
A6	(A6.1) Solanaceae / (A6.2) Malvaceae/ (A6.3) Acanthaceae
A7	(A7.1) Cucurbitaceae/ (A7.2) Lamiaceae
A8	(A8.1) Convolvulaceae / (A8.2) Moraceae / (A8.3) Verbanaceae
A9	(A9.1) Amaranthaceae / (A9.2) Araceae / (A9.3) Rutaceae
A10	(A10.1) Arecaceae / (A10.2) Asparagaceae / (A10.3) Phyllanthaceae

A11	(A11.1) Boraginaceae / (A11.2) Myrtaceae / (A11.3) Oleaceae
A12	(A12.1) Annonaceae / (A12.2) Asclepiadaceae / (A12.3) Combretaceae / (A12.4) Commelinaceae / (A12.5) Lythraceae / (A12.6) Mimosaceae / (A12.7) Nyctaginaceae / (A12.8) Rhamnaceae / (A12.9) Rubiaceae
A13	(A13.1) Anacardiaceae / (A13.2) Bignoniaceae / (A13.3) Bombacaceae / (A13.4) (A13.5) Cleomaceae / (A13.6) Cyperaceae / (A13.7) Meliaceae / (A13.8) Menispermaceae / (A13.9) Nymphaeaceae / (A13.10) Pedaliaceae / (A13.11) Rhizophoraceae / (A13.12) Sapindaceae / (A13.13) Sapotaceae
A14	(A14.1) Agavaceae / (A14.2) Aizoaceae / (A14.3) Aponogetonaceae / (A14.4) Aristolochiaceae / (A14.5) Asphodelaceae / (A14.6) Cactaceae / (A14.7) Cannaceae / (A14.8) Capparaceae / (A14.9) Caricaceae / (A14.10) Casuarinaceae / (A14.11) Chenopodiaceae / (A14.12) Clusiaceae / (A14.13) Juncaceae / (A14.14) Liliaceae / (A14.15) Linderniaceae / (A14.16) Lorantheaceae / (A14.17) Marsileaceae / (A14.18) Moringaceae / (A14.19) Muntingiaceae / (A14.20) Musaceae / (A14.21) (A14.22) Nelumbonaceae / (A14.23) Pandanaceae / (A14.24) Paparaceae / (A14.25) Passifloraceae / (A14.26) Pontederiaceae / (A14.27) Portulacaceae / (A14.28) Primulaceae / (A14.29) Rosaceae / (A14.30) Salvadoraceae / (A14.31) Salviniaceae / (A14.32) Scrophulariaceae / (A14.33) Sterculiaceae / (A14.34) Tiliaceae / (A14.35) Typhaceae / (A14.36) Violaceae / (A14.37) Vitaceae / (A14.38) Zygophyllaceae

Note : Invasive species distribution in Parangipettai	
B1	Australia
B2	Europe, America/Mexico/West Indies/Brazil/Peru
B3	Madagascar
B4	Mediterranean Area and Africa
B5	West Asia

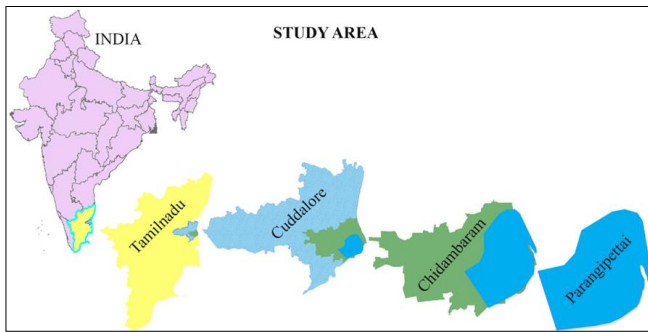


Fig 1: floral distribution area, Parangipettai, CD, TN, IND

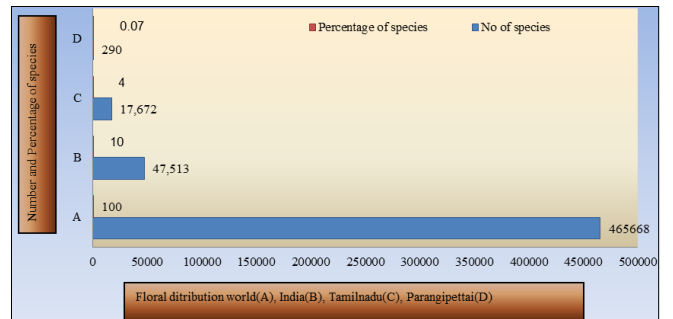


Fig 3: Number and percentage distribution of flora in World, India, Tamilnadu, and Parangipettai

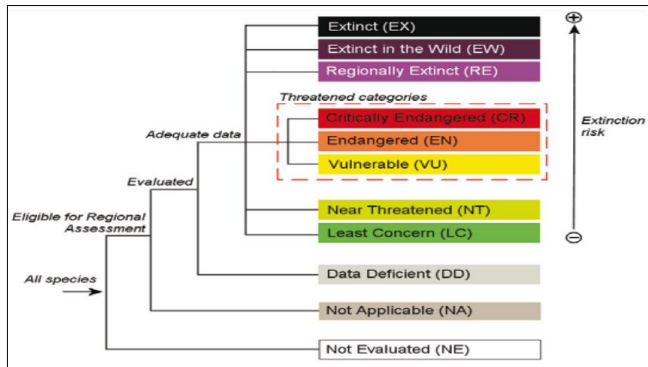


Fig 2: IUCN red list categories and criteria (Bland et al., 2017) [2]



Fig 4: Percentage of floral family distribution in Parangipettai

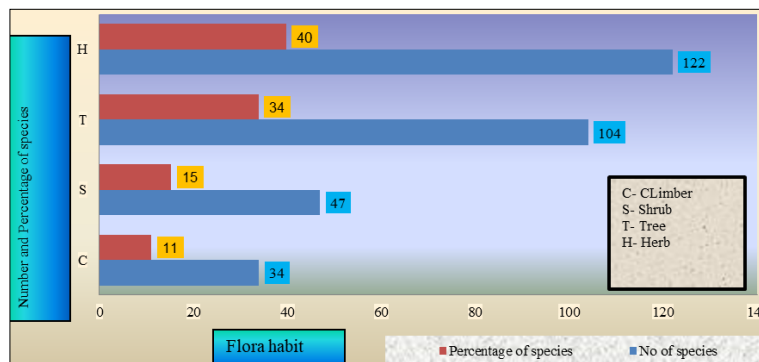
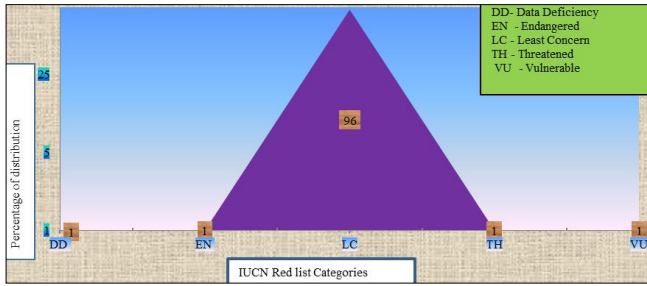
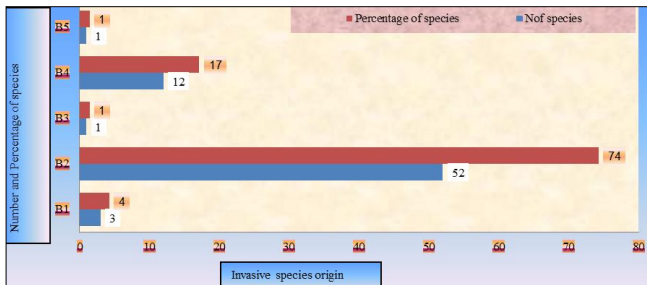


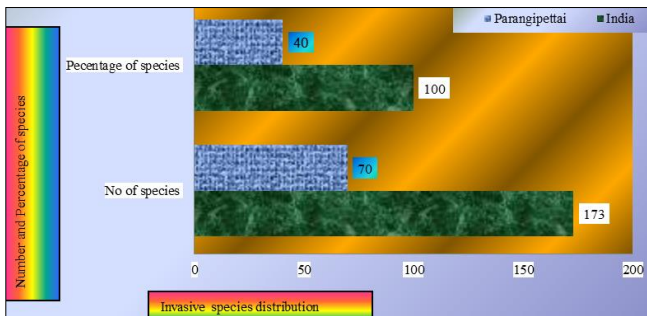
Fig 5: Number and Percentage wise distribution of habit in Parangipettai



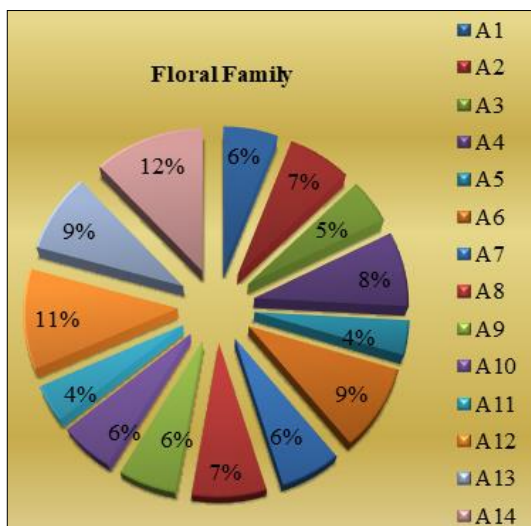
**Fig 6:** Percentage of floral distribution according to IUCN red list categories in Parangipettai



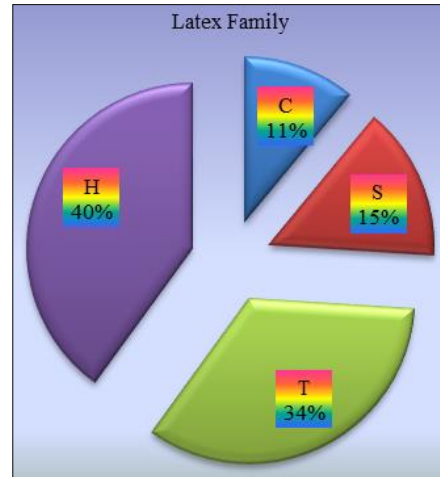
**Fig 7:** Invasive species origin distribution in Parangipettai



**Fig 8:** Comparison of Invasive species distribution in India and Parangipettai



**Fig 9:** Floral family wise distribution in Parangipettai



**Fig 10:** Latex producing family wise distribution in Parangipettai

**5. Conclusion**

Parangipettai is one of the important coastal areas in South India as it contains IUCN red list categories that may be depleted due to the natural calamities, invasive species and anthropogenic activities. Care must be taken to protect these rare species and also to control the spreading of alien species in this region. The study will be useful to identify the flora and it will be helpful for field visitors, book and guide makers, local people, forest department, NGO, policymakers, urban developers, researchers and government authority to know the status of floral distribution and diversity in this coastal region. This work will also be useful to compare the distribution of species with post-tsunami, industrialization, urbanization and human exploitation.

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