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RESEARCH ARTICLE

SURVEY OF TREES AND SHRUBS IN MARUNGOOR, KANYAKUMARI DISTRICT, TAMIL NADU, SOUTHERN INDIA

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ABSTRACT

India is one of the twelve mega-biodiversity countries in the world, which has very rich floral vegetation with variety of plants of high economic value including plants of medicinal importance. Present survey was conducted in the plant species (Trees and Shrubs) growing in their natural habitats like grounds, roadsides, open land, home gardens. Plant specimens were collected (depending upon their availability) from the area under investigation. These specimens were identified and photographed. Maximum plants have been photographed in their natural habitat whereas others in the laboratory conditions. The present study site had a high species diversity for both tree and shrub species. Probably, the high species diversity for trees and shrubs could be attributed to the many tributaries and streams that empty rich organic content and mineral resources utilized by the species for growth and production. It is therefore recommended that measures to foster partnership between the community and other stakeholders in natural resources conservation in the areas should be encouraged to ensure sustainable natural resources management in the areas.

Keywords: Survey, Marungoor, Kanyakumari.

1. INTRODUCTION

Nature has blessed India with a wealth of medicinal plants, thus being designated as "Medicinal Garden of the World" (1). Since ancient times human health was taken care through traditional plant medicines (2, 3). Indian floral diversity may be due to variety of habitats and variable environmental and geographical conditions (4). Studies of forest flora provide useful information on several aspects related to species diversity like dominant families, life-form status etc. The most dominant life form was trees (36.9%), followed by shrubs (22.7%), grasses (17.1%), herbs (13.6%) climbers (8.5%) and sedges (1.1%) (5). Vegetative survey of Kunckles valley recorded a total of 204 flowering plant species in 70 families. Eighty-nine (44%) species are endemic to Sri Lanka, while 39 (20%) are nationally threatened. Among them 148 trees, shrub species identified are 74 (50%) have not been recorded during previous floral surveys of the Kunckles forest reserve, while 115 (78%) are common to the lowland rain forests of south-western Sri Lanka (6).

2. MATERIALS AND METHODS

2.1. Description of the study area

The present study was carried out in Marungoor Panchayat and Agastheeswnram Taluk of Kanyakurnari District. Marungoor, is a panchayat town near Suchindrum in Kanniyakumari district in the state of Tamil Nadu. The place sprawls over an area of about 10 km^2. Suchindram is about five km south-west of Marungoor. As of 2001 India census, Marungur had a population of 10,096 and most of them are farmers Males constitute 49% of the population and females 51%. Marungur has an average literacy rate of 82%, higher than the national average of 59.5%: male literacy is 85%, and female literacy is 80%. The annual rainfall of this area is low when compared to other areas of the Kanyakumari District. Its latitude and longitude are 8.23738 and 77.33989 respectively.

2.2. Floristic survey

Present survey was conducted in the plant species (Trees and Shrubs) growing in their natural habitats like grounds, roadsides, open land, home gardens. Plant specimens were collected (depending upon their availability) from the area under investigation. These specimens were identified and photographed. Maximum plants have been photographed in their natural habitat whereas others in the laboratory conditions. All species have been designated to their corresponding families. Plant species were also differentiated on the basis of their habit. Herbarium sheets were prepared and documented. Identification was done with the help of different floras Gamble and Fischer (7), Mathew (8), Nair and Henry (9).

3. RESULTS AND DISCUSSION

Total 78 plant species belonging to 43 families and 70 genera were recorded from the study site (Table 1). The most dominant life form was

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shrub (57.5%) followed by trees, (30.8%), and climber (8.97%), herb (2.6%) (Table 2). Out of 78 plants, 75 were angiosperms and three gymnosperms. The contribution of dicotyledons was 89.74% and monocotyledons 10.25% (Table 3). Apocynaceae was the most dominant family with 6 species and 5 genera and other main contributing families were Euphorbiaceae (4 genera and 5 species), Annonaceae (1 genera and 3 species) Bignoniaceae (3 genera and 3 species), Caesalpiniaceae (2 genera and 4 species), Rubiaceae (4 genera and 4 species), Verbenaceae (3 genera and 3 species) (Table 6). Families Araceae, Moraceae, Ulmaceae, Santalaceae, Rosaceae, Punicaceae, Moringaceae, Muntingiaceae, Oxalidaceae, Plantaginaceae, Ranumculaceae, Rhizophoraceae, Sterculiaceae etc., had only one species each (Table 7). In the study area, most dominant life form was shrub generally; the high diversity of shrub is associated with undisturbed tropical areas.

Table 1. List of plant species recorded from the study area.

S. No.	Botanical Name	Family	Habit	Wild / Ornamental /Cultivated
1.	*AcalyphahispidaBurm .f*	Euphorbiaceae	Shrub	Ornamental
2.	*Acantholippiaseriphioides (A. Gray)*	Verbenaceae	Shrub	Ornamental
3.	*Achrussapota L.*	Sapotaceae	Tree	Cultivated
4.	*Adeniumobesum (forssk). Roem. &Schult*	Apocynaceae	Shrub	Ornamental
5.	*AdhathodavasicaNees.*	Acanthaceae	Shrub	Wild
6.	*Allamandacathartica L.*	Apocynaceae	Climber	Ornamental
7.	*Anacardiumoccidentale L.*	Anacardiaceae	Tree	Cultivated
8.	*Annonamuricata L.*	Annonaceae	Shrub	Cultivated
9.	*Annonareticulata L.*	Annonaceae	Shrub	Cultivated
10.	*Annonasquamosa L.*	Annonaceae	Shrub	Cultivated
11.	*Aracauriasps.*	Aracauriaceae	Shrub	Ornamental
12.	*Argyreia nervosa (Burm .f.) Bojer*	Convolvulaceae	Climber	Wild
13.	*Averrhoablimbi L.*	Oxalidaceae	Tree	Cultivated
14.	*Bauhinia vahliiwt&Aron*	Caesalpiniaceae	Shrub	Wild
15.	*Borassusflabellifer .L*	Arecaceae	Tree	Wild
16.	*Calotropisgigantea (Ait.) R. Br*	Asclepiadaceae	Shrub	Wild
17.	*Caralliabracheata (Louro) merr.*	Rhizophoraceae	Shrub	Wild
18.	*Carica papaya L.*	Caricaceae	Tree	Cultivated
19.	*Cassia acacia L.*	Caesalpiniaceae	Shrub	Wild
20.	*Cassia alata L.*	Caesalpiniaceae	Shrub	Wild
21.	*Cassia auriculata Linn.*	Caesalpiniaceae	Shrub	Wild
22.	*Citrus medica L.*	Rutaceae	Shrub	Cultivated
23.	*Clematis recta L.*	Ranunculaceae	Climber	Ornamental
24.	*CoccusnuciferaL.*	Arecaceae	Tree	Cultivated
25.	*Colocasiasps*	Araceae	Shrub	Wild
26.	*Crataevamagna(Lour.) Dc.*	Capparidaceae	Tree	Wild
27.	*Cryptostegiagrandiflora R.Br.*	Apocynaceae	Shrub	Ornamental
28.	*Cycas revolute Thunb.*	Cycadaceae	Tree	Ornamental
29.	*Dichrostachyscinereawight et Arn.*	Mimosaceae	Shrub	Wild
30.	*Dodonaea viscosa Jacq*	Rutaceae	Shrub	Wild
31.	*Duranta erecta L.*	Verbenaceae	Shrub	Ornamental
32.	*FicuscaricaL.*	Moraceae	Tree	Cultivated
33.	*Flacourtiajangomas (Lour.) Rarusch*	Flacourtiaceae	Tree	Cultivated
34.	*GalphimiagracilisBartl.*	Malphigiaceae	Climber	Ornamental
35.	*Gardenia gummifera L.F.*	Rubiaceae	Shrub	Ornamental
36.	*Gliricidiasepium (Jacq.) Kunth ex walp*	Fabaceae	Shrub	Wild
37.	*Hibiscus mutabilis L.*	Malvaceae	Tree	Ornamental
38.	*Hibiscus rosasinensis L.*	Malvaceae	Shrub	Ornamental
39.	*Ixoracocinea L.*	Rubiaceae	Shrub	Ornamental
40.	*Jatrophagossipifolia L.*	Euphorbiaceae	Shrub	Wild
41.	*JatrophaintegrimmaJacq.*	Euphorbiaceae	Shrub	Ornamental
42.	*Klienhofia hospitaL.*	Sterculiaceae	Tree	Wild
43.	*Kopsiafruticosa A.D.C*	Apocynaceae	Shrub	Ornamental

44.	*Lagerstroemiaindica L.*	Lythraceae	Shrub	Ornamental
45.	*Lantana camara Linn.*	Verbenaceae	Shrub	Ornamental
46.	*Mangiferaindica L.*	Anacardiaceae	Tree	Cultivated
47.	*Melastomamalabathricum (L.) smith*	Melastomaceae	Shrub	Ornamental
48.	*Millingtonia hortensis L.*	Bignoniaceae	Tree	Ornamental
49.	*Moringaoleifera Lam.*	Moringaceae	Tree	Cultivated
50.	*Moullava spicata (Dalzell) Nicolson*	Fabaceae	Climber	Wild
51.	*Muntingiacalabura L.*	Muntinginaceae	Tree	Wild
52.	*Musa paradisiaca L.*	Musaceae	Shrub	Cultivated
53.	*Mussanda erythrophylla (Schumdch)*	Rubiaceae	Shrub	Ornamental
54.	*MyristicafragransHoult*	Myrtaceae	Tree	Wild
55.	*Nyctanthusarboretristis L.*	Nyctaginaceae	Shrub	Wild
56.	*Oxystelmasecamone L.*	Asclepidaceae	Climber	Wild
57.	*Phyllanthusemblica L.*	Euphorbiaceae	Tree	Wild
58.	*Pisonia alba span.*	Nyctaginaceae	Shrub	Ornamental
59.	*PlumeriapudicaJacq*	Apocynaceae	Shrub	Ornamental
60.	*Plumeriarubra L.*	Apocynaceae	Shrub	Ornamental
61.	*Podranearicasoliana (Tanf.)*	Bignoniaceae	Tree	Ornamental
62.	*Pouteria campechiana(kunth) Baehni*	Sapotaceae	Tree	Cultivated
63.	*Psidiumguajava L.*	Myrtaceae	Tree	Cultivated
64.	*Punicagranatum L.*	Punicaceae	Shrub	Cultivated
65.	*Quisqualisindica L.*	Combretaceae	Climber	Ornamental
66.	*RavanalamadacascariensisSonn.*	Musaceae	Tree	Ornamental
67.	*RhondeletiacalophyllaStandl.*	Rubiaceae	Shrub	Wild
68.	*RicinuscommunisL.*	Euphorbiaceae	Shrub	Wild
69.	*Rosa sps*	Rosaceae	Shrub	Ornamental
70.	*Santalum album L.*	Santalaceae	Tree	Cultivated
71.	*Syzygium samarangens (Blume) Merr. & Perry*	Myrtaceae	Shrub	Wild
72.	*Syzygium jambolanum L.*	Myrtaceae	Tree	Wild
73.	*Tecomastans L.*	Bignoniaceae	Tree	Ornamental
74.	*Terminaliacatasppa L.*	Combretaceae	Tree	Cultivated
75.	*Thujaoccidentalis L.*	Cupressaceae	Tree	Ornamental
76.	*ThunbergiagrandifloraRoxb*	Acanthaceae	Shrub	Ornamental
77.	*ToreniafalconeriiL.*	Plantaginaceae	Shrub	Ornamental
78.	*Tremaorientalis (L.) Blume*	Ulmaceae	Shrub	Wild

Table 2. Habit wise distribution of plant species in the study area.

Habits	No. of species	No. of species
Climber	7	8.97%
Shrub	44	56.41%
Trees	27	34.61%

Table 3. Cotyledon wise distribution

S. No.	Presence of cotyledonous	No. of Plants	Percentage
1.	Dicot	70	89.74%
2.	Monocot	8	10.25%

Table 4. Percentage of plant species under wild/cultivated and ornamental categories.

Nature of plants	No. of species	Percentage
Wild	27	35.52%
Cultivated	19	24.35%
Ornamental	32	42.10%

Table 5. Economic uses of plants

Edible	Fruit Yield	Timber Yield	Oil Yield	Medicinal Used
5	4	4	3	7

Table 6. Dominant families observed during the study period

S. No	Families	No. of plants
1	Apocynaceae	5
2	Euphorbiaceae	4
3	Rubiaceae	4
4	Bignoniaceae	3
5	Verbenaceae	3
6	Annonaceae	3
7	Acanthaceae	2
8	Anacardiaceae	2
9	Arecaceae	2
10	Asclepidaceae	2
11	Caesalpinaceae	2
12	Combretaceae	2
13	Fabaceae	2

14	Musaceae	2
15	Nyctaginaceae	2
16	Rutaceae	2
17	Sapotaceae	2

Table 7. Family wise distribution of plant species in the study area

Sl. No.	Family	Genus	Species
1.	Acanthaceae	2	2
2.	Anacardiaceae	2	2
3.	Annonaceae	1	3
4.	Apocynaceae	5	6
5.	Aracariaceae	1	1
6.	Araceae	1	1
7.	Arecaceae	2	2
8.	Asclepidaceae	2	2
9.	Bignoniaceae	3	3
10.	Caricaceae	1	1
11.	Caesalpiniaceae	2	4
12.	Capparidaceae	1	1
13.	Combretaceae	2	2
14.	Convolvulaceae	1	1
15.	Cupressaceae	1	1
16.	Cycadaceae	1	1
17.	Euphorbiaceae	4	5
18.	Fabaceae	2	2
19.	Flacourtiaceae	1	1
20.	Lythraceae	1	1
21.	Malvaceae	1	2
22.	Malphigiaceae	1	1
23.	Melastomaceae	1	1
24.	Mimosaceae	1	1
25.	Moraceae	1	1
26.	Moringaceae	1	1
27.	Muntingiaceae	1	1
28.	Musaceae	2	2
29.	Myrtaceae	2	2
30.	Nyctaginaceae	2	2
31.	Oxalidaceae	1	1
32.	Punicaceae	1	1
33.	Plantaginaceae	1	1
34.	Ranunculaceae	1	1
35.	Rosaceae	1	1
36.	Rhizophoraceae	1	1
37.	Rubiaceae	4	4
38.	Rutaceae	2	2
39.	Santalaceae	1	1
40.	Sapotaceae	2	2
41.	Sterculiaceae	1	1
42.	Ulmaceae	1	1
43.	Verbenaceae	3	3

Plants like *Anacardium occidentale, Mangifera indica, Adhathoda vasica, Calotropis procera, Millingtonia hortensis, Tecoma stans, Cassia auriculata, Quisqualis indica, Phyllanthus emblica, Ricinus communis, Hibiscus rosasinensis, Ficus carica, Moringa oleifera, Musa paradisiaca, Rosa sps, Ixora cocinea, Lantana camara* are abundantly found in the study area. Dominance of Apocynaceae shows that these areas are nutrient deficient especially nitrogen. Among the plant species, 27 were wild / naturalized, 19 are cultivated and 32 are ornamental (Table 4). The most diverse families in the study area include Apocynaceae, Euphorbiaceae, Rubiaceae, Bignoniaceae. Some number of exotic floras was reported from the study area which includes *Annona squamosa, Psidium guajava, Punica granatum, Lantana camara.*

Most plant species in the study area are considerable ecological and economic importance and useful as bioresources to wild fauna and human beings. Of the total 27 wild / naturalized plant species, most are useful as edible fruits, timbers, fuel wood etc (Table 5). Ecologically, the non woody species provide fleshy fruit resources to faunas indicating the extent of the faunal dependence of plants for various ecological processes. Some of the wild / naturalized edible fruits trees are *Annonasquamosa, Annona muricata, Annona reticulata, Anacardium occidentale, Mangifera indica, Ficus carica, Cocos nucifera, Musa paradisiaca, Carica papaya, Pouteria campechiana, Averrhoa blimbi, Borassus flabellifer, Terminalia catappa, Achras sapota.* Growing medicinal plants is a great way to ensure good health. These plants are recommended for their wide range of health benefits and basic healthing properties. The medicinally important species are *Adhathoda vasica, Annona muricata, Annona reticulata, Annona squamosa, Carica papaya, ficus carica, Myristica fragrans.* Timber yielding plants like *Borassus flabellifer, Coccus nucifera, Mangifera indica, Santalum album and oil yielding plants are Coccus nucifera, Riccinus communis, Borassus flabellifer.* There are 14 fruit yielding trees, 7 medicinal plants, 5 edible trees, 4 timber yielding trees and 3 oil yielding trees.

The Apocynaceae were observed to be the most prevalent family. This may be due to their fast germination ability, associated with symbiotic properties which have enabled species to easily establish within habitat types. This finding was in line with the works of Deka *et al.* (10), on vegetative assessment of tree species and shrubs indicating that legumes were the prominent species recorded in the study area. Moraceae, Meliaceae and Papilionaceae also their ability to produce numerous seeds which was eventually establish at suitable sites. This result was confirmed by Khan *et al.* (11) while working on regeneration and survival of tree seedlings in tropical forests. The reasons for the low number of species observed in some families could be attributed to diseases and browsing by

herbivores which resulted in poor growth and establishment and perhaps seeds need scarification treatment before germination. Similar results were reported by Coley and Barone (12) on herbivory and plant defences on herbivores. The low number of species could also be attributed to anthropogenic activities which affected species growth and production. Similar findings have been reported by Sumina (13) on plant communities on anthropogenically disturbed sites in Chukotka Peninsula.

The present study site had a high species diversity for both tree and shrub species. Probably, the high species diversity for trees and shrubs could be attributed to the many tributaries and streams that empty rich organic content and mineral resources utilized by the species for growth and production. Giliba *et al.* (14) reported similar findings on woodland of Bereku Forest Reserve in Tanzania. Some of the rare trees and shrubs species in the area observed during survey, Such as Crataeva magna, Averrhoa blimbi, Borassus flabellifer, Clematis recta, Hibiscis mutabilis, Klienhofia hospita, Moullava speicata, Oxystelma secamone, Pouteria compechiana etc.,

The dominance of this family could be as a result of habitat adaptation and favourable environmental conditions which encourage pollination, dispersal and eventual establishment of species. Similar situations were reported by Pausas and Austin (15) on species richness in relation to environment. Austin *et al* (16) found that edaphic parameter (soil nutrients) played a major role in species richness and establish-ment in an ecosystem. The reasons for the poor establishment of some families which showed lowest species may be attributed to competition for nutrients, limited light by canopy trees and destruction of undergrowth during tree snapped and logged on the forest floor. Egbe *et al.* (17) mentioned similar reports in a disturbed and natural regeneration forest in Korup. National Park and Coley and Barone (12) also recorded anthropogenic activities affecting growth and distribution of species.

4. CONCLUSION

Human activities including unsustainable resources exploitation in communities has greatly depleted the resources base of the community forest. However, tree species had the highest population density in the study area followed by the shrubs species. It is therefore recommended that measures to foster partnership between the community and other stakeholders in natural resources conservation in the areas should be encouraged to ensure sustainable natural resources management in the areas. Furthermore, public enlightenment on the need for sustainable natural resources exploitation should be intensified in the area to raise the level of awareness of the locals; also there is need for the provision of alternative means of livelihood for the local populace to reduce their rate of dependence on the available resources of the forest. Finally, afforestation and re-afforestation programs should be timely carried out to rehabilitate the degraded ecosystem.

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