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(RESEARCH ARTICLE)



## Herbaceous species diversity in Veerani Aloor, Kanyakumari district, Tamilnadu, South India

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### Abstract

Herbaceous plant species are important components of ecosystems. Herbs are variable in their presence as well as presence of certain chemical compounds in their body system. Floristic studies acquire increasing importance in recent years in response to the need of developing and understand and under developing countries to assess their plant wealth. Total 54 plant species belonging to 20 families and 48 genera were recorded from the study site. Out of 54 plants, 54 were angiosperms. The contribution of dicotyledons was 98% and monocotyledons 2%. Acanthaceae was the most dominant family with 6 species and 6 genera and other main contributing families were Amaranthaceae (7 species and 6 genera), Euphorbiaceae (6 species and 4 genera), Apocynaceae (5 species and 5 genera), Capparaceae (3 species and 3 genera) and Malvaceae (3 species and 3 genera). The most dominant life form was wild (87%) followed by ornamental (12%) and cultivation (2%). The dominance of plants from Poaceae, Euphorbiaceae and Apocynaceae families in the study site, supports the harsh environmental conditions especially the water stress, because these plants have made morphological, anatomical and a physiological modifications to overcome the drought conditions. Dominance of Papilionaceae shows that these areas are nutrient deficient especially nitrogen.

**Keywords:** Angiosperms; Dominance; Cultivation; Herbaceous; Morphological

### 1. Introduction

Herbs are major components of plant diversity and are an important segment of global biodiversity. These are also remarkable for their presence in wide range and for a major source of medicine and aroma for human beings. Herbs are variable in their presence as well as presence of certain chemical compounds in their body system. Among a mega diversity of the plants some herbs are of significant medicinal as well as a source of aromatic values. The composition of herbaceous vegetation varied according to the climate and land use conditions. According to [1], herbs are usually small tender plants, lacking of woody stems above ground. Floristic studies acquire increasing importance in recent years in response to the need of developing and understand and under developing countries to assess their plant wealth [2]. The aim of the present research was to explore and assesses the Plant diversity especially herbaceous plants in Veerani village. This study is helpful to evaluate the plant species diversity in the selected area.

### 2. Material and methods

#### 2.1. Description of the study area

Veerani village area is selected for a present study. It comes under Aloor town panchyat. It is situated just about 8km from Nagercoil municipality. The total area of this village is approximately 80 acres. These areas occupy nearly 800-900

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people. These people mainly depend on construction works, agricultural works for job and income. In olden days these areas are had a thick vegetation and other cultivation. But now a days the vegetation are destroyed by human activities for building houses, schools, temples, ponds, marriage hall and parks. These people destroyed huge amount of trees used for firewood purposes. In recent days they are affected by different climatic factors (i.e.) low rainfall, high temperature and other seasonal variations etc. So naturally the vegetation is slowly destroyed. This study shows the latest survey of herbs in this area.

## 2.2. Floristic survey

Present survey was conducted in the plant species growing in their natural habitats like grounds, roadsides, open land 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 [3-5].

## 3. Results and discussion

Total 54 plant species belonging to 20 families and 48 genera were recorded from the study site (Table 1). Out of 54 plants, 54 were angiosperms. The contribution of dicotyledons was 98% and monocotyledons 2% (Table 2). Acanthaceae was the most dominant family with 6 species and 6 genera and other main contributing families were Amaranthaceae (7 species and 6 genera), Euphorbiaceae (6 species and 4 genera), Apocynaceae (5 species and 5 genera), Capparaceae (3 species and 3 genera), Malvaceae (3 species and 3 genera) (Table-4). The most dominant life form was wild (87%) followed by ornamental (12%) and cultivation (2%) (Table 3).

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

Sr. No.	Name of the plants	Wild/ Cultivate/Ornamental	Family	Number of cotyledons
1	<i>Abutilon indicum</i> (L.) Sweet.	Wild	Malvaceae	Dicot
2	<i>Achyranthes aspera</i> L.	Wild	Amaranthaceae	Dicot
3	<i>Aerva lanata</i> (L.) Juss. Ex. Schult.	Wild	Amaranthaceae	Dicot
4	<i>Allamanda cathartica</i> L.	Ornamental	Apocynaceae	Dicot
5	<i>Alternanthera tenella</i> colla	Wild	Amaranthaceae	Dicot
6	<i>Asystasia gangetica</i> (L.) T. Anderson.	Wild	Acanthaceae	Dicot
7	<i>Barleria mysorensis</i> Heyne.	Wild	Acanthaceae	Dicot
8	<i>Barleria lupulina</i> Lindl.	Wild	Acanthaceae	Dicot
9	<i>Boerhaavia diffusa</i> L.	Wild	Nyctaginaceae	Dicot
10	<i>Calotropis gigantea</i> R. Br.	Wild	Apocynaceae	Dicot
11	<i>Cassia occidentalis</i> (L.) Link	Ornamental	Fabaceae	Dicot
12	<i>Catharanthus roseus</i> (L.) G. Don.	Ornamental	Apocynaceae	Dicot
13	<i>Celosia argentea</i> L.	Wild	Amaranthaceae	Dicot
14	<i>Cleome retidosperma</i> DC.	Wild	Capparaceae	Dicot
15	<i>Cleome viscosa</i> L.	Wild	Capparaceae	Dicot
16	<i>Commelina benghalensis</i> Linn.	Wild	Commelinaceae	Monocot
17	<i>Crossandra infundibuliformis</i> (L.) Nees.	Ornamental	Acanthaceae	Dicot
18	<i>Crotalaria juncea</i> L.	Wild	Fabaceae	Dicot
19	<i>Croton hirtus</i> L. Her.	Wild	Euphorbiaceae	Dicot
20.	<i>Croton sparsiflorus</i> morong	Wild	Euphorbiaceae	Dicot
21.	<i>Cyanotis axillaris</i> (L.) D. Don ex Sweet.	Wild	Commelinaceae	Monocot
22.	<i>Duranta plumeri</i> Jacq	Wild	Verbinaceae	Dicot

23.	<i>Euphobia heterophylla</i> L.	Wild	Euphorbiaceae	Dicot
24.	<i>Euphobia hista</i> L.	Wild	Euphorbiaceae	Dicot
25.	<i>Evolvulus alsinoides</i> (L.)	Wild	Convolvulaceae	Dicot
26.	<i>Gamphrena celosioides</i> Mart.	Wild	Amaranthaceae	Dicot
27.	<i>Gardenia gummifera</i> L.F	Ornamental	Rubiaceae	Dicot
28.	<i>Gomphrena globosa</i> L.	Ornamental	Amaranthaceae	Dicot
29.	<i>Gynandropsis pentaphylla</i> (L.) DC.	Wild	Capparaceae	Dicot
30.	<i>Heliotropium indicum</i> L.	Wild	Boraginaceae	Dicot
31.	<i>Hybanthus enneaspermus</i> (L.) F. Muell.	Wild	Violaceae	Dicot
32.	<i>Hyptis suaveolens</i> (L.) poit	Wild	Lamiaceae	Dicot
33.	<i>Indigofera tinctoria</i> L.	Wild	Fabaceae	Dicot
34.	<i>Ipomea carnea</i> Juce.	Wild	Convolvulaceae	Dicot
35.	<i>Jasminum multiflorum</i> (Burm.f.)	Wild	Oleaceae	Dicot
36.	<i>Jatropha gossypifolia</i> Carl Linnaeus.	Wild	Euphorbiaceae	Dicot
37.	<i>Jusficia tranguebariensis</i> L.	Wild	Acanthaceae	Dicot
38.	<i>Justicia gendarussa</i> Burm.fil.	Wild	Acanthaceae	Dicot
39.	<i>Kosteletzkya vitifolia</i> (L.) M. R. Almeida	Wild	Malvaceae	Dicot
40.	<i>Lantana camara</i> L.	Wild	Verbenaceae	Dicot
41.	<i>Malvastrum Coromandelianum</i> (L.) garcke	Wild	Malvaceae	Dicot
42.	<i>Mimosa pudica</i> L.	Wild	Mimosaceae	Dicot
43.	<i>Parthenium hysterophorus</i> L.	Wild	Asteraceae	Dicot
44.	<i>Pavonia hastate</i> Cav.	Wild	Malvaceae	Dicot
45.	<i>Peristrophe bicalyculata</i> (Retz.) Nees.	Wild	Acanthaceae	Dicot
46.	<i>Plumbago zeylanica</i> L.	Wild	Verbenaceae	Dicot
47.	<i>Rauvolfia tetraphylla</i> L.	Wild	Apocynaceae	Dicot
48.	<i>Ricinus communis</i> L.	Wild	Euphorbiaceae	Dicot
49.	<i>Ruellia tuberosa</i> L.	Wild	Acanthaceae	Dicot
50.	<i>Sesamum indicum</i> L.	Cultivation	Pedaliaceae	Dicot
51.	<i>Solanum torvum</i> Sw.	Cultivation	Solanacea	Dicot
52.	<i>Synedrella nodiflora</i> (L.) Gaertn.	Wild	Asteraceae	Dicot
53.	<i>Thevitia peruviana</i> (Bers.) K. Schum	Wild	Apocynaceae	Dicot
54.	<i>Vernonia cinerea</i> (L.)Less.	Wild	Asteraceae	Dicot

**Table 2** Cotyledon wise distribution

Sr. No.	Presence of cotyledons	Number of plants	Percentage (%)
1	Dicots	52	96
2	Monocots	2	4

**Table 3** Percentage of plant species under wild/cultivated, ornamental categories

Sr. No.	Nature of plants	Number of species	Percentage (%)
1	Wild	47	87
2	Ornamental	6	12
3	Cultivated		2

**Table 4** Dominant and least family

Sr. No.	Family	Number of plants
1	Acanthaceae	8
2	Amaranthaceae	7
3	Euphorbiaceae	6
4	Apocynaceae	5
5	Capparaceae	3
6	Fabaceae	3
7	Malvaceae	3
8	Verbenaceae	3
9	Asteraceae	3
10	Polygonaceae	1
11	Nyctaginaceae	1
12	Rubiaceae	1
13	Boraginaceae	1
14	Violaceae	1
15	Lamiaceae	1
16	Oleaceae	1
17	Mimosaceae	1
18	Pedaliaceae	1
19	Convolvulaceae	2
20	Commelinaceae	2

A number of workers have drawn attention towards the threatened plants of India from time to [8]. In the recent years an increasing attention has been paid on the conservation of rare and threatened species especially on medicinal plants through ex-situ and in-situ practices. The indigenous knowledge is an important tool for study of natural resources that has enormous potential to facilitate development process in cost-effective and sustainable ways. In governs almost all important productive resource sectors and revolves around traditional values of resource use. The local inhabitants and the forest dwellers have their own knowledge about the utilization and conservation of plant which passes from generation to generation so it is important to record such knowledge from these people for proper assessment and conservation to the benefit of mankind.

Conservation of natural resources is a matter of vital interest to man from ancient time India is playing an important role in the conservation of biological diversity and sustainable development through its own biological diversity act and rules. The biodiversity has become such an important challenge to the whole world that it has invented attention from various disciplines, people as well as all quarters of the world. There is a strong need to conserve over exploited species due to large scale of their uses and collection from natural habitats. It is showed that documenting indigenous knowledge through ethno botanical studies is important for the conservation of biological and cultural diversities. This makes a great threat to the survival of many wild species and the ecosystems which are of great economic value to the mankind.

The herb community of tropical forests is very little known, with few studies addressing its structure quantitatively. Even with this scarce body of information, it is clear that the herbs are a rich group, comprising 14 to 40% of the species found in total species counts in tropical forests. This stratum remains an underappreciated aspect of forest ecosystems. The documentation and classification of this unique and often neglected vegetation community may enable efforts to be made for biological conservation [9]. The problem is that due to over collection and climate change several species are

fast disappearing. The dominance of families of Poaceae, Fabaceae, Cyperaceae, and Malvaceae in all study areas reflects that these families are the most frequent in Savanna herbaceous vegetation in West Africa. The Poaceae family is well represented, as grasses are the largest family of vascular plants in Savannas. The difference in herbaceous vegetation composition is related to the dual effect of climate and land use conditions. Climate conditions explain the difference in species composition between different climate zones.

Land use causes differences in species composition within a climate zone. Indeed, human disturbances influence composition and distribution of plant species. Patterns of species richness and cover are determined by multiple environmental factors (climate change and human activities). Generally, local species richness and diversity of Savanna ecosystems are maintained by dynamic interactions between local colonization from species pools at larger spatial scales and local extinction due to competitive exclusion. The frequency of herbaceous species is more influenced by the interaction between climatic conditions and land use regimes than their separate effects. In fact, the distribution of herbaceous species is principally affected by climate, which determines geographical affinity and land use, which affects the spatial heterogeneity of vegetation and influences ecosystem processes. This results in the fact that a species which is the most frequent under a given climate and land use condition becomes rare under other climate and land use conditions.

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#### 4. Conclusion

At present time, several of the important plant species are on verge of depletion, therefore such type of studies shall be paid serious attention for future prospects and to understand the use pattern in terms of sustainability and conservation. Sustainability of forest ecosystem is an essential component of the environmental conservation efforts and any degradation of forest. It is also observed that successful strategies for management of useful species would be beneficial for future prospects.

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#### Compliance with ethical standards

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##### *Disclosure of conflict of interest*

We declare that we have no conflict of interest.

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