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Floral Diversity on Campus of Sri Parasakthi College, Courtallam, Tamil Nadu, India

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ABSTRACT

On the basis of field survey of plants, it is resulted that 86 species under 40 families, showed their presence in the campus which were collected, identified and listed. Out of 86 species, 63 are trees, 9 species are shrubs and 14 are herbs. The name of the plants with family, local name and medicinal uses, were enumerated. The major resource of traditional medicines is from the nature. In order to maintain the ecological balance and to further sustainable development, plant species of economic and ecological importance are present in the study area. So, these plant species superficially depict the composition of flora of Sri Parasakthi College Campus. However, composition of annual herbaceous flora may vary in different seasons. Therefore, these species can be utilized keeping in view the idea of sustainable development and utilization.

Key words: Field survey, Diversity, College campus

INTRODUCTION

Biodiversity reflects variety and variability within and among living organisms, their associations and habitat-oriented ecological complexes. All types of flora and fauna are elements of biodiversity and influenced by various climatic conditions such as temperature, availability of, moisture in the form of humidity and precipitation, and variation in physiographical conditions – soil, altitude, slope, etc. (Ghildiyal and Juyal, 2012; Arul *et al.*, 2013; Ben *et al.*, 2013; Suba*et al.*, 2014; Sukumaran and Parthipan, 2014).

The great wealth of biological diversity in tropical regions is due to the myriad environmental conditions existing there. Interest in biodiversity has recently increased in response to the damage caused to ecosystems by anthropogenic activities (Merigot*et al.*, 2007). It is well known that floristic composition is determined by environmental factors (Ayyappan and Parthasarathy, 1999); however, the composition influences biodiversity patterns at regional scales and further reflects both anthropogen8c and natural disturbances (Pollock, 1997; Ward, 1998).

Therefore, floristic characteristics and biodiversity patterns are often influenced by environmental factors and anthropogenic disturbances (Hong, 1999; Liu *et al.*, 2009). Conservation of biodiversity is essential for the proper functioning of ecosystems and for the maintenance of the environmental services they provide (Lopez-del-Toro *et al.*, 2010).

However, high rates of tropical deforestation and habitat destruction frequently cause the local extinction of plant and animal species. India, blessed with high biological diversity, is one of the eight hottest hotspots of global biodiversity. Major wilderness area include the Western Ghats, Eastern Ghats, tropical dry evergreen forests of peninsular India and Eastern Himalayas (Parthasarathy*et al.*, 2010; Suba*et al.*, 2014; Sukumaran and Parthipan, 2014).

The present work has been carried out in Sir Parasakthi College Campus for Women, Courtallam to explore the diversity of plants and for sustainable utilization of available plant resources. These findings will pave the way towards sustainable development in this era of indiscriminate collection of plants and their products.

MATERIAL AND METHODS

Description of the study area:

The present study was carried out in Sri Parasakthi College for Women, Courtallam in TenkasiTaluk of Tirunelveli District, Tamil Nadu.

Geographical features of the study area:

Courtallam, Spa of South India is a Panchayat town situated at a mean elevation of 160m (520ft) on the Western Ghats in Tirunelveli District of TamilNadu, India. Many seasonal and few perennial rivers such as the chittar River, the Manimuthar River, the Pachaivar River and the Thamirabarani River originate in this region. The numerous waterfalls and cascades along with the recreational resort in the area have earned it the title the Spa of South India. The falls carry a good amount of water only when there is a rain during monsoon. The season begins from June to September every till year September. The South west monsoon brings in the cold breeze with mild temperature. From October to December, North East monsoon sets over in Tamilnadu and the climate is cold and the rains are very heavy sometimes.

The study area of an Ethnobotanical survey of Medicinal plants was conducted in the college campus and information gathered were written by pen in a record note. Total area of the campus is 18 acres. In the main entrance, there was a oldest and biggest tree of Banyan (Aalam) gives additional prettiness to the campus. All buildings and blocks are surrounded by different types of trees and ornamental plants. Field study was carried out over a period of three months from December 2017 to February 2018.

Campus biodiversity:

The varied topography, moderate rainfall and favourable agro-climatic conditions are responsible for the high species diversity in the campus. Botanical garden is endowed with some of the rare, endemic and endangered medicinal plants of the Western Ghats. Variety of flora such as trees, shrubs, herbs and parasitic plants in Fauna and Birds, Giant squirrel, Monkey.

Data collection and analysis:

The task of inventorying, the plant diversity of Sri Parasakthi College for Women campus was undertaken systematically and intensively from December 2017 to February 2018, to cover most species in flowering and fruiting stages. Field Observation were made and plants were photographed. Plant species were identified using regional floras (Gamble, 1957).

Methodology was covered in two phases as follows:

Field Survey: The survey was conducted to collect information about the plant species like their identification and documentation in the form of Botanical name and family. The whole campus was visited many times for the collection of plants.

Literature collection: The identification was also done based on literature study (Hooker, 1875).

RESULTS AND DISCUSSION

On the basis of field survey of plants, it is resulted that 86 species under 40 families, showed their presence in the campus which were collected, identified and listed. Out of 86 species, 63 are trees, 9 species are shrubs and 14 are herbs. The name of the plants with family, local name and medicinal uses, are enumerated in Table1, 2 and 3. These results were positively correlated with Anand *et al.* (2006). The major resource of traditional medicines is from the nature. These medicinal plants are subjected to various processes and are then administered to the patient. It may be surprised to

observe that the, modern systems of medicine are only modifications or deviation of these age - old formulation techniques.

The tribal people from the time immemorial have been preserving this folk knowledge in their scripts. But due to the invasion of modern synthetic medicine the new

Table 1. List of plants in College campus

tribal generation doesn't like to practice and use the herbal preparations. Researchers who are working with plants having diverse medicinal properties should search new chemical compounds from uncommon plants in Courtallam hill tracts. This will bring out new lead compounds to treat the ailments faced by mankind nowdays, (Anand *et al.*, 2006).

S.NO	BOTANICAL NAME	FAMILY	HABIT
1.	Abutilon indicum Linn.	Acanthaceae	Herb
2.	Achyranthus aspera Linn.	Amaranthaceae	Herb
3.	Adhatoda vasica Linn.	Acanthaceae	Shrub
4.	Aglaia elaeagnoidea (JUSS) Benth.	Meliaceae	Tree
5.	Albizia amara (Roxb.) Boivin.	Mimosaceae	Tree
6.	Albizia lebbeck (L.) Benth	Mimosaceae	Tree
7.	Albizia odoratissima L.F (Benth)	Mimosaceae	Tree
8.	Alglaia elaeagnoidea var. courtallensis (Juss) Benth.	Meliaceae	Tree
9.	Aloe barbadensis Linn.	Liliaceae	Herb
10.	Altantia monophylla carrea	Rutaceae	Tree
11.	Amaranthus caudatus Linn.	Amaranthaceae	Herb
12.	Annona squamosal Linn.	Annonaceae	Tree
13.	Arecca catechu Linn.	Arecaceae	Tree
14.	Artocarpus heterophyllus Lam.	Moraceae	Tree
15.	Asparagus racemosus Willd.	Liliaceae	Herb
16.	Atalantia monophylla correa.	Rutaceae	Tree
17.	Auraucaria excels (salisbfranco)	Araucariaceae	Tree
18.	Azadirachta indica A. Juss.	Meliaceae	Tree
19.	Barringtonia acutangula Gaertn.	Barringtoniaceae	Tree
20.	Bauhinia tomentosa Linn.	Caesalpeniaceae	Tree
21.	Bauhinia variegate Linn.	Fabaceae	Tree
22.	Bombax ceiba Linn.	Bombacaceae	Tree
23.	Bougainvillaea spectabilis Wild.	Nyctaginaceae	Tree
24.	Butea monosperma (Lam.)Taub.	Leguminosae	Tree
25.	Butea monosperma (Lamk.) taub.	Fabaceae	Tree
26.	Caesalpinia sappan Linn.	Caesalpiniceae	Tree
27.	Calliandra surinamensis Benth.	Fabaceae	Tree
28.	Callistemon citrinus (Curtis) Skeels	Myrtaceae	Tree
29.	Canna indica Linn.	Zinziberaceae	Herb
30.	Careya arborea Roxb.	Lecythidaceae	Tree
31.	Caryota urens Linn.	Areaceae	Tree
32.	Cassia fistula Linn.	Fabaceae	Tree
33.	Cassia siamea (Lam.) Barneby	Leguminosae	Tree
34.	Cassia tora Linn.	Fabaceae	Herb
35.	Cassine glauca (Rottb.) pers	Celastraceae	Tree
36.	Celtis tetrandra Roxb.	Ulmaceae	Tree
37.	Cestrum nocturnum Linn.	Solanaceae	Tree
38.	Cocos nucifera Linn.	Arecaceae	Tree
39.	Coleus forskohlii Auct.	Lamiaceae	Herb

	1. Continued		
S.NO	BOTANICAL NAME	FAMILY	HABIT
40.	Croton bonplandianum Baill.	Euphorbiaceae	Herb
41.	Cynodon dactylon (Linn.) Pers.	Poaceae	Herb
42.	Delonix regia (Boj.ex Hook.) Raf.	Caesalpineaceae	Tree
43.	Elaeodendron glaucum (Rottb.) pers. Syn. Cassine glauca (Rottb.) pers.	Celastraceae	Tree
44.	Emblica officinalis Gaertn.	Euphorbiaceae	Tree
45.	Erythrina superos (Syn. E. indica)	Fabaceae	Tree
46.	Eucalyptus globulus Labill.	Myrtaceae	Tree
47.	<i>Eugenia jambolana</i> Lam. <i>Syn. Eugenia cumini</i> (Linn.) Druce	Myrtaceae	Tree
48.	Euphorbia hitra Linn.	Euphorbiaceae	Herb
49.	Ficus benghalensis Linn.	Moraceae	Tree
50.	Ficus benjamina Linn.	Moraceae	Tree
51.	Ficus hispida L.	Moraceae	Tree
52.	Ficus racemosa Linn.	Moraceae	Tree
53.	Ficus religiosa L.	Moraceae	Tree
54.	Garcinia indica Linn.	Clusiaceae	Tree
55.	Garcinia mongostana Linn (G.indica)	Clusiaceae	Tree
56.	Holopetelea integrifolia (Roxb.) planch	Ulmaceae	Tree
57.	Ixora pavetta Andr.	Rubiaceae	Tree
58.	Jatropha curcus	Euphorbiceae	Shrub
59.	Madhuca Longifolia (J. koening) J.F. Macler. (syn. Bassia latifolia)	Sapotaceae	Tree
60.	Mallotus philippensis Lam. Mull Arg.	Euphorbiaceae	Tree
61.	Mangifera indica Linn.	Anacardiaceae	Tree
62.	Mimusops elengi Linn.	Sapotaceae	Tree
63.	Morinda tinctoria Roxb.	Rubiaceae	Shrub
64.	Morus alba Linn.	Moraceae	Tree
65.	Muntingia calabura Linn.	Muntinginaceae	Tree
66.	Nerium indicum Mill.	Apocynaceae	Shrub
67.	Nyctanthes arbortristis Linn.	Oleaceae	Shrub
68.	Parthenium hysterophorus Linn.	Asteraceae	Herb
69.	Phoenix sylvestris Linn.	Arecaceae	Tree
70.	Phyllanthus niruri (sensu) Hook. F.	Euphorbiaceae	Herb
71.	Plumeria alba var. white Linn.	Apocyanaceae	Tree
72.	Plumeria rubra var. scarlet Linn.	Apocyanaceae	Tree
73.	Polyalthia longifolia (Benth)	Annonaceae	Tree
74.	Psidium guajava Linn.	Myrtaceae	Tree
75.	Sapindus emarginatus vahl.	sapindaceae	Tree
76.	Spathodea campanulata	Bignoniaceae	Tree
76. 77.	Sterospermum chelonoides Dc.	Bignoniaceae	Tree
77. 78.	Sterospermum chelonoldes DC. Streblus asperlour	Moraceae	Shrub
78. 79.	Strebius asperiour Strychnos nuxvomica Linn.		Tree
	-	Loganiaceae	
80.	Strychnos potatorum Linn.	Loganiaceae	Tree
81.	Syzygium jambolanum (L.) Alston	Myrtaceae	Tree
82.	Terminalia arjuna (Roxb.) Wight & Arn.	Combretaceae	Tree
83.	Tridax procumbens Linn.	Asterceae	Herb
34.	Vitex trifolia	Verbenaceae	Shrub
85.	Ziziphus grinervia Retz. (wild)	Rhamnaceae	Shrub
86.	Ziziphus xylopyrus Retz. (wild)	Rhamnaceae	Shrub

S.NO	BOTANICAL NAME	FAMILY	VERNACULAR NAME
1	Abutilon indicum L.	Malvaceae	Thuthi
2	AcalyphaindicaL.	Euphorbiaceae	Kuppaimeni
3	Achyranthesaspera L.	Amaranthaceae	Naaiuruvi
4	Aervalanata L.	Amaranthaceae	Sirukanpeezhai
			Aanaikatrazhai
5	Agave Americana L.	Asparagaceae	
6	Aloe vera (L.) Burm.f.	Asphodelaceae	Sotrukkatrazhai
7	Azadirachtaindica A. Juss.	Meliaceae	Vembu
8	BassialantifoliaRoxb.	Sapotaceae	Iluppaimaram
9	Bauhinia tomentosa L.	Fabaceae	Thiruvaachi
10	Boerhaavia diffusa L.	Nyctaginaceae	Mookurataikeerai
11	Capsicum annuumL.	Solanaceae	Green chilly
12	Cardiospermum halicacabum L.	Sapindaceae	Mudakkaruthan
13	Cassia fistula L.	Fabaceae	Sarakkondrai
14	Ceibapentandra L.	Malvaceae	Ilavam
15	<i>Celosia cristata</i> (L.) Kuntze	Amaranthaceae	Kozhikondai poo
16	Citrus medica L.	Rutaceae	Elumichai
17	Cleome gynandra L.	Cleomaceae	Kattukadugu
18	Clitoriaternatea L.	Fabaceae	Sangu poo
19	Coccinia grandis Wight & Arn.	Cucurbitaceae	Kovaikaai
20	Crossandra infundibuliformis(L.) Nees.	Acanthaceae	Kanakambaram
21	Cynodondactylon L.	Poaceae	Arugampul
22	Delonix regia(Boj. Ex Hook.) Raf.	Fabaceae	Poomaram, Vaathanaayan
23	<i>Eclipta prostrata</i> (L.) L.	Asteraceae	Karisalankanni
24	Eucalyptus globulusLabill.	Myrtaceae	Neelagiri
25	Euphorbia heterophylla L.	Euphorbiaceae	Paalperukki
26	Euphorbia hirta L.	Euphorbiaceae	Ammampacharisi,
27	Euphorbia tirucalli L.	Euphorbiaceae	Kalli
28	Ficus benghalensis L.	Moraceae	Aalam
29	Ficus religiosa L.	Moraceae	Arasam
30	Gomphrena globosa L.	Amaranthaceae	Vaadamalli
31	Ixora coccinea L.	Rubiaceae	Idlypoo
32	Jasminum sambac Ait.	Oleaceae	Malligai
33	Jatropha gossypifolia L.	Euphorbiaceae	Kattuaamanakku
34	Justicia adhatodaL.	Acanthaceae	Adathoda
35	Lantana camara L.	Verbenaceae	Ounnichedi
36	Lawsonia inermis L.	Lythraceae	Marthaani, Maruthondri
37	Leucas aspera (Willd.) Link.	Lamiaceae	Thumbai
38	Madhuca longifolia (J.Konig) J.F.Macbr.	Sapotaceae	Naattuiluppai
39	Mangifera indica L.	Anacardiaceae	Маа
40	Mirabilis jalapa L.	Nyctaginaceae	Anthimalli
41	Morinda tinctoria L.	Rubiaceae	Nunaa
42	Moringa oleifera Lam.	Moringaceae	Murungai
43	Murraya koenigii(L.) Sprengel	Rutaceae	Karuvepilai
44	Nerium oleander L.	Apocynaceae	Arali
45	Ocimum sanctum L.	Laminaceae	Thulasi
46	Partheniumhysterophorus L.	Asteraceae	Kenathuppoondu

Table . 2. Survey of Plants in the College Campus

S.NO	BOTANICAL NAME	FAMILY	VERNACULAR NAME
47	Phoenix pusillaRoxb.	Arecaceae	Kaatueechamaram
48	Psidiumguajava L.	Myrtaceae	Коіуа
49	Pongamia pinnata (L.) Merr.	Fabaceae	Pungamaram
50	Prunus amygdalus Stokes.	Rosaceae	Baadam, Vaathmai
51	Ricinus communis L.	Euphorbiaceae	Aamanakku
52	Samanea samanF.Muell.	Fabaceae	Thoongumoonjimaram
53	Sansevieria roxburghiana Sch.	Asparagaceae	Marul
54	Sarcostemma intermedium Decne.	Asclepiadaceae	Kodikalli
55	Sida acuta Burmf.	Malvaceae	Aruvaamanaipoondu
56	Sida cordifolia L.	Malvaceae	Nilathuthi
57	Solanum nigrum L.	Solanaceae	Manathakkali
58	Solanum trilobatum L.	Solanaceae	Thoothuvali
59	Syzygium cumini(L.) Skeels.	Myrtaceae	Naaval
60	Thespesia populnea Soland. Ex Correa.	Malvaceae	Poovarasu
61	Tribulus terrestris L.	Zygophyllaceae	Nerunjil

 Table . 2. Survey of Plants in the College Campus

The plant diversity is the functional and structural unit of the biotic components of ecosystem and is subjected to change due to the interaction of biotic and abiotic factors of the environment (Kumar *et al.*, 2016). On the basis of field survey of campus plants, 63 species were of trees and 14 and 9 shrubs were of herbs and shrubs.

In order to maintain the ecological balance and to further sustainable development, plant species of economic and ecological importance are present in the study area. So, these plant species superficially depict the composition of flora of Sri Parasakthi College Campus. However, composition of annual herbaceous flora may vary in different seasons. Therefore, these species can be utilized keeping in view the idea of sustainable development and utilization.

A higher proportion of the exotic flora of the college campus is represented by ornamental plants, which include Allamanda cthartica, Asparagus racemosus, Bougainvillea spectabilis, Callistemon lanceolatus, Catharanthus roseus, Coleus blumei, Delonix regia, Jatropha gossypifolia, Lantana camara, Lawsonia inermis, Plumeria rubra, Quisqualis indica, Enterolobium saman, and Tecoma stans. These plant species had been planted for the ornamentation of the college campus. Several of the exotics are edible fruit-producing plants of the college campus. These are represented by Annona squamosal, Manilkara zapota, Pisidum guajava, Punica granatum and Ziziphus jujube. Our results are in accordance with Parthipan et al., 2016. Several of the exotics are weeds. These include Ageratum eonyzoides, Amarathusspinosus, Cassia occidentalis, corchorus acutangulus, Croton cynodondactylon, *Cyperusrotundus*, bonplandianum, Eclipta prostrata, euphoriba hitra, euphorbia thymifolia, Parthenium hysterophorus, Stylosanthes fruticosa and Tridax procumbents (Table 1). These exotic floras are naturalized to Indian conditions and hence grow successfully without any human assistance. Of the total plant species reported from the campus of Sri Parasakthi college campus, Parthenium hysterophorus was observed to be harmful to native flora. This American flora has spread very fast in the last couple of decades in the campus, infesting all types of terrestrial habitats and posing a threat to the biodiversity of the campus.

Exotics are referred to as biological pollutants due to their destructive effects on natural and man-managed ecosystems (Westbrooks, 1991). Serious ecological effects of the fast-spreading introduced flora have been reported (Di Castri *et al.*, 1990; D' Antonio and Vitousek, 1992; Hobbs and Huenneke, 1992; Punalekar *et al.*, 2010) and non-indigenous plant species are considered a major threat to biodiversity (Mooney, 1988; Lodge, 1993; Huston, 1994; McGeoch *et al.*, 2006 and Arul *et al.*, 2013).

Many species of plants enumerated in the campus are medicinally valuable resources. The important medicinal plants growing in the campus of Sri Parasakthi College include *Abutilon indicum, Achyranthe* saspera, Adhatoda zeylanica, Albizia lebbeck, Azadirachtaindica, Bauhinia purpurea, Boerhaviadiffusa, Calotropis gigantean, Cassia fistula. C. occidentalis, Clerodendrum inermis, Coccinia grandis, Commelina benghalensis, Cynodon dactylon, Datura metel, Ficus religiosa, Oscium canum, Oldenlandia corymbosa, Pongamia pinnata, Sida acuta, Solanum nigtum, S .trilbatum, Tephrosia purpurea, Terminalia cataba, Trianthema portulacastrum, and Tribulus terrestris. Albizia lebbeck, Azadirachta indica, Tamarindus indica, and Tectona grandis, Sweitenia mahoghani, and *Syzygium cuminii* are the important timber-yielding tree species (Table1).

Even though the floras of the present study area have moderate floral diversity. The main reason behind this was may be due to many anthropogenic activities made in the campus such as construction of new buildings and undisturbed area of the campus was converted in to the new playground. So this is the right time to the floristic studies in the campus are considered as the backbone of the assessment of phytodiversity, conservation, management and sustainable utilization (Jayanthi and Rajendran, 2013). The campus flora of an institution is a unique opportunity as an outdoor botanical and ecological learning for the campus community. Our results are positively correlated with Sarasabai *et al.*, 2015.

In the large plant kingdom, some of the plants are having the potential to cure different human diseases and disorders, these plants are called medicinal plants. This study focuses on the traditional wisdom about medicinal plants which are still as important and effective primary source for the health of the people as it was in earlier times. The documentation is confined within college campus. The data shows that maximum medicinal plant species.Similar results have also reported by Tirkey 2006, Jain *et al.* 2006, Kala 2009. The plant species studied have various antibacterial, insecticidal, antiseptic, analgesic properties which are useful in treatment of various skin diseases, allergic reactions and Diarrhea treatment.

In conclusion, the natural beauty of Sir Parasakthi College Campus, with its native plant diversity, introduced ornamentals and cultivated plant species with great aesthetic value, ecological uniqueness and resources importance. Thus, taking a walk around the campus would enrich the botanical knowledge, ecological consciousness and conservation values, not only of the academia but also the common people. The Sri Parasakthi College Campus environment, with its diversity of native plant species and the beautiful, cultivated ornamental plants, provides a unique opportunity for learning as an outdoor classroom exercise.

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