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RESEARCH ARTICLE

Survey and documentaiton of plants from Southern Coimbatore

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ABSTRACT

Plants in densely urbanized areas also contribute to environmental protection from several hazards like strong winds, soil and slope erosion, torrential floods, landslides. The floristic documentation was carried out in four regions of Southern Coimbatore. Out of 96, there are 77 are cultivated plants as agricultural crops, ornamental or other consumption purposes and remaining 19 are wild plants around the residing area. This present analysis indicated that documented plant species came under 43 taxonomic families. Highest number of species found in the family Cucurbitaceae (7), Apocynaceae (6) followed by Amaranthaceae, Arecaceae, Fabaceae, Poaceae each with 5 species. It is also revealed that the highest number of Herb habits (37.5%) followed by trees (20.83%) than other habits. Among which most of the plants are used for medicine and domestic consumption. Several plants have been cultivated for ornamental purposes as well. In this survey, no rare status plants have been observed in this study area. Hence it is indicating that the area is completely civilized and the land area around the residence has been anthropogenic impacted. The wild species documented in this area are herbaceous weed plants blooming at every rainy season. Hence the cultivation of trees and protection management has to be initiated to increase the green cover of the study area -Southern Coimbatore to regain the misty, moderate climate as it was one of the identity of Coimbatore. It will definitely improve the ecological services like rainfall, pure air and beauty of nature to enjoy.

Keywords: Cultivated plants, ornamental plants, agriculture plants, wild plants, Southern Coimbatore, flora.

1. INTRODUCTION

Global biodiversity is declining at an accelerating rate, impairing ecosystem functions that are vital to the long survival of human beings. Various actions need to be taken to halt and reverse biodiversity loss, but action thus far has been insufficient. Building conservation research capacity has long been proposed as a key means to support biodiversity conservation. However, an assessment of the status and change of conservation research capacity around the world, as well as its impact on biodiversity conservation is still lacking. Countries must promote their conservation research capacity, and meaningful collaboration among countries is encouraged [1].

Plants diversity also underpins all terrestrial ecosystems and these provide the basic life support system on which all life depends. Wild plants are also vitally important in supporting livelihood for millions of people around the world [2]. Documenting the use of wild plants in this participatory way has several benefits that include: (i) facilitating knowledge transmission from elders to younger generations and between community members; (ii) stimulating local innovation without undermining cultural traditions and local governance mechanisms, and (iii) ensuring that the community can use this diversity to address its own questions, challenges and needs [3].

A survey generally undertaken by botanists or ecologists which requires specialized knowledge. Surveys can be used by government agencies, universities, private companies of the environmental industry and community groups. Surveys are undertaken for various reasons including potentially identifying new or threatened species, identifying morphological changes in a species, expansions in the range of known species [4].

Plants in urban areas provide multiple ecosystem services that they contribute to improving ambient quality and mitigating negative impacts of human presence, beautifying the anthropic environment, and promoting place

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identity and cultural heritage [5]. In recent decades the demand for vegetation survey data has been steadily increasing particularly in applied fields such as biodiversity conservation and environmental monitoring. However, vegetation survey and classification are very important in basic ecological and biodiversity research [6]. The fundamental conservation and related research benefit perceptions make us to do the selected flora documentation with following objectives.

- To survey the plants present in the southern Coimbatore region particularly, Valukupparai, Kanammanayakkanur, Meenakshipuram, Arisipalayam.
- To document the plants including cultivated, ornamental and wild plants
- To document the plants in all above categories with Botanical name, Common name, Family name, predominant plant families and predominant life forms.
- To record the most cultivated plants, preferable plants for ornamentation and distribution of wild plants in selected areas.

2. MATERIALS AND METHODS

2.1. Study area

The Southern Coimbatore villages Vallukkupari, Meenachipuram, Kanammanayakanur, Arisipalayam have abundant natural resources, which include herbs, shrubs, climbers and trees. The present study area is selected to identify the plants used for ornamentation, cultivating commercial crops, medicinal plants, sacred plants, wild varieties of plants are also noted and documented.

2.2. Geographical information of study area

Country	India
State	Tamil nadu
District	Coimbatore (Southern Coimbatore)
Latitude	10.8896°
Longitude	77.00425°
Elevation	314 m/1030.18 feet
Annual rainfall	550mm – 900mm
Temperature	18-30°C during Winter
	25-40°C during Summer

Figure 1. Study area

2.3. Methods of data collection

In this floristic study, the flowering vascular plants of cultivated and wild species have been documented during December 2022 to March 2023 in the Southern Coimbatore city area. Periodical field visits have been carried out for 4 months to the study area at Vallukkuparai, Meenakshipuram, Kanammanayakanur and Arisipalayam located in Southern Coimbatore region. The rural and village people in the area have been enquired to gather the first hand information on the vernacular name of Cultivated, Ornamental and Wild plants and the same are recorded.

Three visits to each zone of the study area were made and plants collected with different life phases are considered for more information. The photos collected from the area have been deliberated for the identification of the same with the help of taxonomists. The identified plant species are traced for their family and common name. The collected information has been tabulated and photographs are documented.

The data is analyzed for the availability of the species for their composition in Southern Coimbatore, family dispersion, and habit status over the cultivated and wild plant species of the study area. Before starting the field work, preliminary information about the geographical area of study, its physiological features, climatic seasons, etc were collected.

3. RESULTS AND DISCUSSION

The survey results provide there are 96 plant species of wild and cultivated plant species in study area (Table 1, 2 & 3). The observed plants have been identified and photographs are hoarded. The documented plant species common name, botanical name, family have been tabulated.

In a previous study, 300 plant species belonging to 206 genera and 72 families have been recorded from the area under study. The monocots were represented by 59 species belonging to 35 genera and 7 families, and dicots contributing 241 species belonging to 169 genera and 65 families. Based on habit classification of the enumerated plants, the majority of species were herbs (176 species) followed by climbers (53 species), trees (39 species) and shrubs (32 species) [7].

In another study, the total area of Karunya university campus constitutes about 0.001770% of the total area of the Western Ghats. If a small part of the Western Ghats is so diverse, then one can imagine the biodiversity of the whole Western Ghats. Identified different trees from 53 genera belonging to 27 families and ornamental plants from 58 genera belonging to 32 families and have studied their properties and uses [8].

Synthesis of ethnomedical uses and modern biological knowledge has been done on 40 medicinal plants used by women in hamlets in and around Anaikatty hills of Coimbatore District, Tamil Nadu. Women in these areas possess a rich knowledge of medicinal plants and still continue the medical tradition of using plants as medicine for themselves, their families and others around them [9]. In the present study, though the information is not collected from the indigenous people but the urban flora distribution has been evaluated and represented.

Table 1. List of Cultivated Plants documented in Southern Coimbatore regions

S. No	Botanical Name	Common Name	Family Name
1.	*Cocos nucifera* L.	Coconut	Arecaceae
2.	*Musa acuminate* Colla.	Banana	Musaceae
3.	*Cucumis sativus* L.	Cucumber	Cucurbitaceae
4.	*Capsicum annuum* L.	Chilli	Solanaceae
5.	*Cucurbita maxima* Lam	Pumpkins	Cucurbitaceae
6.	*Allium cepa* L.	Onion	Liliaceae
7.	*Pennisetum glaucum* L.	Pearl millet	Poaceae
8.	*Artocarpus heterophyllus* Lam.	Jack fruit	Moraceae
9.	*Celosia argentea* L.	Hen's horn flower	Amaranthaceae
10.	*Solanum melongena* L.	Brinjal	Solanaceae
11.	*Moringa oleifera* Lam.	Drum stick	Moringaceae
12.	*Zea mays* L.	Corn	Poaceae
13.	*Solanum torvum* Sw.	Turkey Berry	Solanaceae
14.	*Manilkara zapota* L.	Sapota	Sapotaceae
15.	*Citrus limetta* Risso	Sweet lemon	Rutaceae

16.	*Carica papaya* L.	Papaya	Caricaceae
17.	*Psidium guajava* L.	Guava	Myrtaceae
18.	*Annona squamosal* L.	Sugar-apple	Annonaceae
19.	*Annona reticulate* L.	Custard apple	Annonaceae
20.	*Mangifera indica* L.	Mango	Anacardiaceae
21.	*Abelmoschus esculentus* L.	Ladies Finger	Malvaceae
22.	*Luffa acutangula* L.	Ridege gourd	Cucurbitaceae
23.	*Cissus quadrangularis* L.	Adamant creeper	Vitaceae
24.	*Coriander sativum* L.	Coriander	Apiaceae
25.	*Mentha Spicata* L.	Mint leaf	Lamiaceae
26.	*Punica granatum* L.	Pomegranate	Lythraceae
27.	*Phoenix dactylifera* L.	Date palm	Arecaceae
28.	*Samanea saman* (Jacq.) Merr.	Rain tree	Fabaceae
29.	*Momordica charantia* L.	Bitter melon	Cucurbitaceae
30.	*Coccinia indica* L.	Scarlet gourd	Cucurbitaceae
31.	*Aegle marmelos* L.	Inidan bael	Rutaceae
32.	*Azadirachta indica* A.Juss.	Neem tree	Meliaceae
33.	*Annona muricata* L.	Soursop	Annonaceae
34.	*Lagenaria siceraria* (Molina.)Standl.	Bottle gourd	Cucurbitaceae
35.	*Trichosanthes cucumerina* L.	Snake gourd	Cucurbitaceae
36.	*Phyllanthus acidus* L.	Goose berry	Phyllanthaceae
37.	*Rubus idaeus* L.	Red raspberry	Rosaceae

Table 2. List of Ornamental Plants documented in Southern Coimbatore regions

S. No	Botanical Name	Common Name	Family Name
1.	*Ixora finlaysoniana*	White jungle flame	Rubiaceae
2.	*Ixora coccinea L.*	jungle geranium	Rubiaceae
3.	*Catharanthus roseus L.*	Periwinkle	Apocynaceae
4.	*Crossandra infundibuliformis* L.	Firecracker flower	Acanthaceae
5.	*Clitoria ternatea* L.	Butterfly pea	Fabaceae
6.	*Cascabela thevetia* L.	Yellow oleander	Apocynaceae
7.	*Lawsonia inermis* L.	Henna tree	Lythraceae
8.	*Chlorophytum comosum* (Thunberg) Jacques	Spider plant	Asparagaceae

9.	*Dieffenbachia amoena*	Dumbcane	Araceae
10.	*Aloe vera* L.	Aloe barbadensis	Asphodelaceae
11.	*Chrysanthemum morifolium* (Ramat.) Hemsl.	Garden mum	Asteraceae
12.	*Plumeria pudica* L.	Bridel bouquet	Apocynaceae
13.	*Hibiscus schizopetalus* (Dyer) Hook.f.	Coral hibiscus	Malvaceae
14.	*Impatiens balsamina* L.	Garden Balsam	Balsaminaceae
15.	*Helianthus annuus* L.	Sun flower	Asteraceae
16.	*Ocimum tenuiflotum* L.	Holy basil	Lamiaceae
17.	*Areca catechu* L.	Betel-nut	Arecaceae
18.	*Bougainvillea spectabilis* Jussieu and Lamarck	papper flower	Nyctaginaceae
19.	*Dracaena marginata* Lam.	Red-stemmed	Asparagaceae
20.	*Dypsis lutescens* (H. Wendl.) Beentje & J. Dransf.	Areca palm	Arecaceae
21.	*Portulaca grandiflora* Hook.	Moss-rose flower	Portulacaceae
22.	*Jasminum auriculatum*	Rotana flower	Oleaceae
23.	*Jasminum officinale* L.	Jasmine	Oleaceae
24.	*Rosa rubiginosa* L.	Sweetbriar rose	Rosaceae
25.	*Piper betle* L.	Betel leaf	Piperaceae
26.	*Nelumbo nucifera* Gaertn.	Lotus	Nelumbonaceae
27.	*Gomphrena globosa* L.	Globe amaranth	Amaranthaceae
28.	*Adenium obesum* (Forssk.) Roem. & Schult.	Desert rose	Apocynaceae
29.	*Vinca rosea* L.	Vibrant eyes	Apocynaceae
30.	*Cochlospermum religiosum* L.	Silk cotton tree	Bixaceae
31.	*Cassia fistula L.*	Golden shower	Fabaceae
32.	*Cassia auriculata* L.	Avaram senna	Fabaceae
33.	*Saraca asoca* (Roxb.) Willd.	Ashoka tree	Fabaceae
34.	*Ravenala Madagascariensis* L.	Travellers tree	Strelitziaceae
35.	*Artocarpus altilis* (Parkinson) Fosberg	Bread fruit	Moraceae
36.	*Spathiphyllum wallisii* Regel	Peace lily	Araceae
37.	*Philodendron ceylon*	Gold satin	Araceae
38.	*Monstera deliciosa* Liebm.	Split-leaf philodendron	Araceae
39.	*Jasminum sambac* L.	Arabian jasmine	Oleaceae
40.	*Phoenix roebelenii* O'Brien	Miniature Date Palm	Arecaceae

Table 3. List of Wild Plants documented in Southern Coimbatore regions

S. No	Botanical Name	Common Name	Family Name
1.	*Datura metal* L.	Angel's trumpet	Solanaceae
2.	*Calotropis gigantea* L.	Giant milkweed	Apocynaceae
3.	*Cleome viscosa* L.	Asian spider flower	Cleomaceae
4.	*Euphorbia hirta* L.	Asthma plant	Euphorbiaceae
5.	*Centella asiatica* L.	Pennywort	Apiaceae
6.	*Leucas aspera* (Willd.)	Thumbai	Lamiaceae
7.	*Jatropha gossypiifolia* L.	Bellyache bush	Euphorbiaceae
8.	*Aira caryophylla* L.	Silver hairgrass	Poaceae
9.	*Abutilon indicum* L.	Monkey bush	Malvaceae
10.	*Cyanodon dactylon* L.	Bermuda grass	Poaceae
11.	*Phyllanthus amarus* Schumach. & Thonn.	Gale of the wind	Phyllanthaceae
12.	*Amaranthus viridis* L.	Slender amaranth	Amaranthaceae
13.	*Digera muricata* L.	False amaranth	Amaranthaceae
14.	*Ceiba pentandra* L.	Cotton tree	Malvaceae
15.	*Chloris barbata* Sw.	Swollen finger grass	Poaceae
16.	*Tridax brocumbens* L.	Coat buttons	Asteraceae
17.	*Opuntia ficus-indica* L.	Prickly pear	Cactaceae
18.	*Aerva lanata* L.	Mountain knotgrass	Amaranthaceae
19.	*Malpighia emarginata* DC.	Barbados cherry	Malpighiaceae

Table 4. Number of documented Plants in each area

S.No	Selected Areas	Cultivated Plants	Ornamental Plants	Wild Plants
1.	Valukkuparai	20	7	5
2.	Arisipalayam	6	10	6
3.	Meenatchipuram	4	8	4
4.	Kannammanayakkanur	7	15	4
	Total	**37**	**40**	**19**

The categorized plants distributed in four regions of Southern Coimbatore have been presented in Table 4. Totally 37 plant species are noted down as cultivated particularly for agriculture purposes, 40 species are cultivated for ornamental purposes. In perception of cultivation in Southern Coimbatore for various purposes including agriculture, ornamental and home garden, it is as 77plant species. The wild plant species documented in bare land of the selected Southern Coimbatore region is 19 plant species. A maximum of 20 plant species has been observed in Valukkuparai village

under cultivated category. This village is more prone for agriculture due to its all resources like good soil and water availability. Kannammanayakkanur is the developing area where the residential area has been increasing from the last five years. People like to afford ornamental plant species for aesthetic value and home remedy. Highly 15 ornamental species have been recorded in this area. Small areas between the buildings or bare land present nearby residents are observed to document the wild plant species. Here each area commonly has 5 to 6 wild species. Most of them are repeatedly seen in most of the studied areas.

Preparation of the flora of smaller areas (such as districts, protected areas, unexplored areas, etc.) is a pre-requisite for the revision of the flora of a vast country like India. It has been estimated that about 48,000 species of plants, representing 10% of the world flora, are contained within the country — which is also the homeland of 167 important cultivated plant species, and 320 species of wild relatives of domesticated crops [10].

This present analysis indicated that the documented plant species comes under 43 taxonomic families (Table 5). Highest number of species found in the family Cucurbitaceae (7), Apocynaceae (6) followed by Amaranthaceae, Arecaceae, Fabaceae, Poaceae each with 5 species. The plants that come under these families scrutinized based on habit, habit of documented plants are maximally recorded as Herbs (37.5%) followed by trees (20.83%) in overall three categories (Table 6). The creeper is recorded only 1 in this study. There are no new records other than common wild species found in south India. Equally shrubs and large trees are distributed in this area (18 and 20 respectively).

Table 5. Family Distribution of Documented Plants

S. No	Family Name	No. of Plants
1.	Acanthaceae	1
2.	Amaranthaceae	5
3.	Anacardiaceae	1
4.	Annonaceae	3
5.	Apiaceae	2
6.	Apocynaceae	6
7.	Araceae	4
8.	Arecaceae	5
9.	Asparagaceae	2
10.	Asphodelaceae	1
11.	Asteraceae	3
12.	Balsaninaceae	1
13.	Bixaceae	1
14.	Cactaceae	1
15.	Caricaceae	1
16.	Cleomaceae	1
17.	Cucurbitaceae	7
18.	Euphorbiaceae	2
19.	Fabaceae	5
20.	Lamiaceae	3
21.	Liliaceae	1
22.	Lythraceae	2
23.	Malpighiaceae	1
24.	Malvaceae	4
25.	Meliaceae	1
26.	Moraceae	2
27.	Moringaceae	1
28.	Musaceae	1
29.	Myrtaceae	1
30.	Nelumbonaceae	1
31.	Nyctaginaceae	1
32.	Oleaceae	3
33.	Phyllanthaceae	2
34.	Piperaceae	1
35.	Poaceae	5
36.	Portulacaceae	1
37.	Rosaceae	2
38.	Rubiaceae	2
39.	Rutaceae	2
40.	Sapotaceae	1
41.	Solanaceae	4
42.	Strelitziaceae	1
43.	Vitaceae	1

Table 6. Distribution of Habit of Documented Plants

S. No	Habit	No. of Plants	Percentage
1	Herb	**36**	**37.5**
2	Shrub	18	18.75
3	Tree	20	20.83
4	Small tree	8	8.33
5	Climber	13	13.54
6	Creeper	1	1.04
	Total	**96**	**100**

4. CONCLUSION

Plants are an essential resource for human wellbeing. In order to conserve these resources, the floras are considerate to recognize the diversity and prominence of floristic information and serve as baseline figures. It is being used by botanists, horticulturalists and forest managers who have a direct interest in floristic data. This type of studies will also provide evidence in the process of eradicating the plants that are toxic invasive which are highly disturbs native ecosystems. Due to civilization, the core environmental changes have been observed in cities where documentation of cultivated and wild species has yet to be done for future studies over the seasonal changes and study of relationship between humans and plants in recent scenarios.

REFERENCES

1. Lu Zhang, Li Yang, Colin A. Chapman, Carlos A. Peres, Tien Ming Lee and Peng-Fei Fan (2023). Growing disparity in global conservation research capacity and its impact on biodiversity conservation. *One Earth* 6: 147–157.
2. Sara Oldfield and Martin Jenkins. Wild flora for improved rural livelihoods Case studies from Brazil, China, India and Mexico. Published by: Botanic Gardens Conservation International, Descanso House, 199 Kew Road, Richmond, Surrey, TW9 3BW, UK, (2012).
3. Platform for Agrobiodiversity Research (PAR). Assessing Agro biodiversity: A Compendium of Methods; Mijatović, D., Hodgkin, T., Eds.; Platform for Agrobiodiversity Research: Rome, Italy, (2018).
4. Canhos, D.A.L., Sousa-Baena M.S., de Souza, S., Maia, L.C., Stehmann, J.R., Canhos, V.P., Renato De Giovanni, Maria B. M. Bonacelli, Wouter Los, A. Townsend Peterson. (2015). The Importance of Biodiversity E-infrastructures for Megadiverse Countries. PLoS Biol 13(7): e1002204.
5. Silvia Fineschi and Francesco Loreto, (2020). A Survey of Multiple Interactions between Plants and the Urban Environment, *Frontiers in Forests and Global change,* 3(30): 1-19.
6. Whittaker, R.J. (2010). Meta-analyses and mega-mistakes: calling time on meta-analysis of the species richness-productivity relationship. *Ecology* 91: 2522– 2533.
7. Jayanthi Palanisamy and Rajendran Arumugam (2014). Phytodiversity in the Madukkarai Hills of South Western Ghats. *Check List,* 10(4): 883–892.
8. Philomena George, Chetan Arekar and Subhashini, D., (2011). Biodiversity survey of trees and ornamental plants in Karunya University, Coimbatore, India. *International Journal of Biodiversity and Conservation,* 3(9): 431-443.
9. Bhanumathi Natarajan, Berit Smestad Paulsen and Pushpangadan P. (1999). An Ethnopharmacological Study from The Coimbatore District, Tamil Nadu, India: Traditional Knowledge Compared with Modern Biological Science. *Pharmaceutical Biology*, 37(5): 378–390.
10. Palanisamy, N. K., Ferina, N., Amirulhusni, A. N., Mohd-Zain, Z., Hussaini, J., Ping, L. J., and Durairaj, R. (2014). Antibiofilm properties of chemically synthesized silver nanoparticles found against *Pseudomonas aeruginosa. Journal of nanobiotechnology,* 12(1): 1-7.