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Research Article

Plant Diversity of Tharagumalai Matha Church, Southern Western Ghats, Srivillipudur, Tamilnadu, South India

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Abstract

Plant biodiversity data are prerequisites for the sustainable management of forests. This study was conducted to catalog the plant diversity of Tharagumalai Matha Church in the Southern Western Ghats of Srivillipudur, Tamil Nadu. Documenting the variety of flora is essential for understanding the ecological conditions of the area and provides valuable insights into the economic, medicinal, and cultural significance of plant diversity. As the flora of Tharagumalai Matha Church has not been previously documented, this paper focuses on the plant diversity in the area. The results of the present study at Tharagumalai Matha Church in the Southern Western Ghats of Srivillipudur, Tamil Nadu, identified a total of 122 plant species, encompassing 101 genera across 39 families, including 2 species classified as ferns.

Keywords: Biodiversity, Taxonomy, plants, Tharagumalai Matha Church, Southern Western Ghats, Srivillipudur, Tamilnadu.

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1. INTRODUCTION

Plants play a critical role in shaping ecosystems and supporting human existence. Despite the potential utility of the vast majority of plant species, only a limited number are currently recognized for their applications. Over time, certain species have become widely distributed, while others remain endemic to specific geographical areas. Consequently, a comprehensive understanding of the regional patterns of species variation is essential for the effective and sustainable management of plant resources. According to Pironon Samuel *et al*., (2024) observed to the Economic Botany Data Collection Standards to analyse the utilization of 35,687 plant species across ten categories, including food, materials, fuels, and medicines. The findings revealed a consistent latitudinal trend in the richness of utilised plant species, with higher values observed in tropical regions and a decline towards higher latitudes. However, significant distinctions exist between temperate and tropical environments. Temperate regions are characterized by a greater abundance of vertebrate food, social, and toxic plant species, whereas tropical areas exhibit a higher diversity of species associated with food, materials, and medicinal uses.

Floristic diversity refers to the variety and variability of plants in a given region. Western Ghats is home to a diverse variety of plant species, including many that are found nowhere else in the world. It is estimated that the Western Ghats is home to 5,000-7,000 species of flowering plants, accounting for about 20% of all flowering plant species in India. The entire Western Ghats biogeographic region is a major genetic estate boasting enormous biodiversity of ancient lineage. Nearly 5800 species of flowering plants are found here, of which 56 genera and 2100 species are endemic. The Western Ghats face many threats to biodiversity, including habitat loss and degradation. Forests are overharvested for research purposes, cleared for agriculture, grazing, and timber harvesting, which leads to habitat fragmentation and loss of biodiversity. Local communities and research groups rely on natural resources such as firewood and medicinal plants for their livelihoods, but these resources are being overexploited.

Tharagumalai Madha Church is a modest church located on a hill near Thiruvanamalai and Srivilliputhur in Southern Western Ghats. Access to the church is only via a footpath and trail, as there are no steps leading up to it. The panoramic view of the town from this location is quite impressive, and it is about 3 kilometers from Srivilliputhur. This temple is recognized as one of the prominent religious sites in the Virudhunagar region. It is thought to have been constructed during the Pandya dynasty, rendering it an architectural gem from that historical period. Tharagumalai Madha Church boasts a rich diversity of plant and animal life. Its varied ecosystems provide numerous habitats supporting a wide range of plant species, resulting in a vibrant collection of flora that includes endemic, rare, endangered, and economically significant medicinal plants. This study aims to investigate and record the floristic diversity of Tharagumalai Matha Church, Southern Western Ghats, Srivillipudur, Tamil Nadu, South India.

2. MATERIALS AND METHODS

Field trips were regularly organized throughout the summer, winter, and rainy seasons of 2019-2020. Plant species were gathered during the flowering season, and observations were recorded in a field diary. The collected specimens were identified by consulting the "Flora of the Presidency of Madras" (Gamble, 1935; Gamble & Fischer, 1937) and the "Flora of Tamil Nadu Carnatic" (Matthew, 1981; Matthew, 1982), as well as by comparing them with verified specimens.

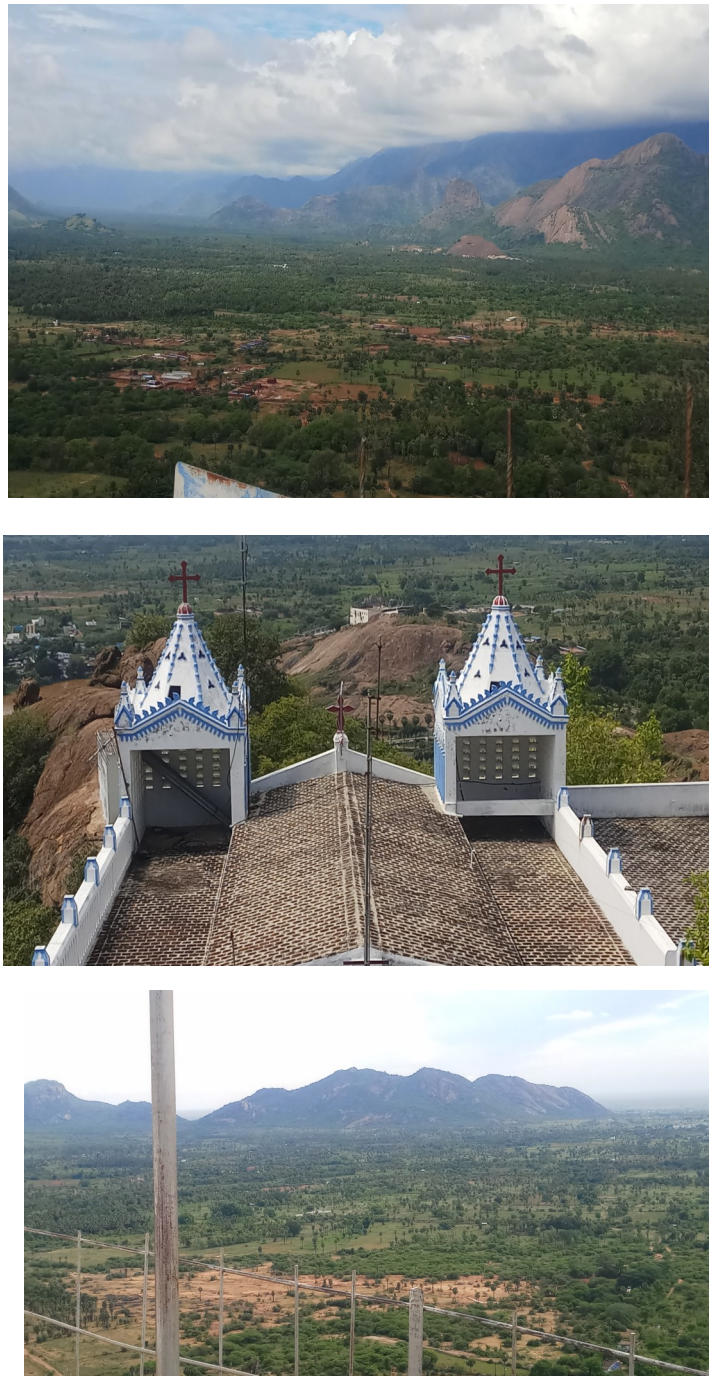

Fig.1 : Study area

3. RESULTS AND DISCUSSION

The global decline in biodiversity poses a significant risk to the health of our planet, as highlighted by Díaz et al. (2019). Forests are unique ecosystems that host a diverse array of plant species. The plant diversity found in forests is astonishing, with each species playing a specific role in the functioning of the ecosystem. From towering trees to delicate ferns, forests are teeming with life in various shapes, sizes, and colors. In this study area of Madha Church surround the forest area observed that identified a total of 122 species across 111 genera and 39 families. The Fabaceae family had the highest representation with 13 species, and followed by Lamiaceae 11 and Malvaceae 10 species. Two interesting ferns like as Cheilanthes mysurensis Wall. ex Hook. and *Actiniopteris radiata* (Sw.) Link are identified. Herbs constituted the majority of the plant habits, making up more than 80% of the total and followed by shrubs, and climbers. Anil Sharma et al., (2023) observed that highest number of species in Fabaceae (31 species) family followed by Apocynaceae (15 species), Malvaceae (12 species), and Anacardiaceae (10 species). Previous studies, according to Gurusamy Manikandan *et al*., (2022) observed that a total of comprised of 127 species are belonging to 42 families and 100 genera in the medicinal floristic diversity of foothills of Pilavakkal dam in the Southern Western Ghats. The conclusion of the present study is the identification of the plant diversity of Madha Church in Srivillipudur, the Southern Western Ghats. The plant diversity provides food and medicine, helps combat climate change, and enriches our cultural and aesthetic experiences.

Ionidium suffruticosum (L.) Gin

Wrightia tinctoria R. Br

Cheilanthes mysurensis Wall. ex Hook.

Sacred trees

Table-1: Total number of species, genus and family present in the area

Sl.No.	Species Name	Family	Habit type	Total species
1	*Abutilon indicum* (Link) sweet	Malvaceae	Shrub	10
2	*Corchorus olitorius* L	Malvaceae	Herb	
3	*Corchorus trilocularis* L.	Malvaceae	Herb	
4	*Melhania incana* Heyne ex wight al Arn	Malvaceae	Herb	
5	*Pavonia odorata* Ca	Malvaceae	shrub	
6	*Pavonia zeylanica* (L.)	Malvaceae	Shrub	
7	*Sida acuta* Burm.f.	Malvaceae	Herb	
8	*Triumfetta rhomboidea* L.	Malvaceae	Herb	
9	*Thespesia populnea* (L.) sol. ex correa	Malvaceae	Tree	
10	*Helicteres isora* L.	Malvaceae	Trees	
11	*Aristolochia indica* Linn	Aristolochiaceae	Twining herb	1
12	*Leptadenia reticulata* (Retz.) Wight & Arn	Apocynaceae	Twining Shrub	8
13	*Calotropis gigantean* (L.)	Apocynaceae	Shrub	
14	*Wrightia tinctoria* R. Br	Apocynaceae	Tree	
15	*Pergularia daemia* (Forsskal) Chiov.	Apocynaceae	Twining Shrub	
16	*Oxystelma esculentum* (L.f.)Sm	Apocynaceae	Climber	
17	*Holarrhena antidysenterica* Wallich ex A.DC.,	Apocynaceae	Shrub	
18	*Thevetia peruviana* L.	Apocynaceae	Tree	
19	*Nerium oleander* L.	Apocynaceae	Shrub	
20	*Tylophora indica* (Burm. f) Merr	Asclepidaceae	Climbing Undershrub	3
21	*Daemia extensa* (Jacq.) R.Br. Ex schult	Asclepiadaceae	climber	
22	*Gymnema sylvestre* (Retz.) R.Br. ex Roemer & Schultes	Asclepiadaceae	climber	
23	*Xanthium indicum* J. Koenig	Asteraceae	A gregarious shrub	6
24	*Xanthium strumarium* L.	Asteraceae	Herb	
25	*Eclipta alba* (E. alba) (L.) Hassk.	Asteraceae	Herb	
26	*Parthenium hysteron* Phorus L.	Asteraceae	herb	
27	*Tridax procumbens* L	Asteraceae	Herb	
28	*Vernonia cinerea* (L.)	Asteraceae	Herb	
29	*Amischophacelus axillaris* (L.) R.S.Rao & Kammathy	Commelinaceae	Herb	1
30	*Alternanthera pungens* Kunth	Amaranthaceae	Herb	6
31	*Achyranthes aspera* Blume	Amaranthaceae	Herb	
32	*Aerva lanata* (L.) A. L. Juss.,	Amaranthaceae	Herb	
33	*Digera muricata* (L.) Mart	Amaranthaceae	Herb	
34	*Gomphrena celosioides* Mart.	Amaranthaceae	Herb	
35	*Gomphrena globosa* L.	Amaranthaceae	Herb	
36	*Argemone mexicana* L.	Papaveraceae	Herb	1

Table-1: Total number of species, genus and family present in the area (*Continue..)*

37	*Albizia amara* (Roxb.) Boivin	Fabaceae	Tree	13
38	*Mimosa pudica* L.	Fabaceae	Herb	
39	*Clitoria ternatea* L.	Fabaceae	Herb	
40	*Crotalaria retusa* L.	Fabaceae	Herb	
41	*Desmodium gangeticum* L.	Fabaceae	Herb	
42	*Delonix regia* (Bajex Hook) Raf	Fabaceae	Tree	
43	*Indigofera linifolia* L.	Fabaceae	Herb	
44	*Pongamia pinnata* (L.)	Fabaceae	Tree	
45	*Prosopis juliflora* (SW) DC.	Fabaceae	Tree	
46	*Tephrosia candida* Dc	Fabaceae	Herb	
47	*Tephrosia purpurea* (L.) Pers	Fabaceae	Herb	
48	*Tamarindus indica* L.	Fabaceae	Tree	
49	*Bauhinia variegata* L.	Fabaceae - Caesalpin-ioideae L	Trees	
50	*Anisomeles malabarica* (L.)	Lamiceae	Herb	11
51	*Coleus amboinicus* Benth/Plectranthus amboinicus (Lour.) Spreng	Lamiceae	Herb	
52	*Ocimum tenuiflorum* L.	Lamiceae	Herb	
53	*Leucas aspera* (Willd.) Link	Lamiaceae		
54	*Leucus martinicensis* (Jacq.) R.Br	Lamiaceae	Herb	
56	*Mentha piperita* L.	Lamiaceae	Herb	
57	*Tectona grandis* L. F	Lamiaceae	Tree	
58	*Ocimum tenuiflorum* L.	Lamiaceae	Herb	
59	*Apluda mutica* L.	Poaceae	Herb	7
60	*Aristida purpurea* Nutt.	Poaceae	Herb	
61	*Cynodon dactylon* (L.) Pers	Poaceae	Herb	
62	*Dactyloctenium aegyptium* (L.) willd	Poaceae	Herb	
63	*Eragrostis tenella* (L.)	Poaceae	Herb	
64	*Saccharum spontaneum* L.	Poaceae	Herb	
65	*Setaria barbata* (Lam.) Kunth	Poaceae	Herb	
66	*Boerhaavia diffusa* L.	Nyctaginaceae	Herb	1
67	*Cassia auriculata* L.	Caesalpiniaceae	Herb	2
68	*Cassia obtusa* (Roxb.) Wight & Arn	Caesalpiniaceae	Herb	
69	*Cardiospermum halicacabum* Linn	Sapindaceae	climber	1
70	*Plumbago zeylanica* L.	Plumbaginaceae	Herb	1
70	*Portulaca tuberosa* L.	Portulacaceae	Small herb (thamarai)	1
71	*Cissus quadarangularis* L.	Vitaceae	climber	1

Table-1: Total number of species, genus and family present in the area (*Continue..)*

72	*Rivea hypocrateriformis* (Desr.) Choisy	Convolvulaceae	climber	3
73	*Evolvulus alsinoides* (Linn.)Linn	Convolvulaceae	Herb	
74	*Ipomea pestigridis* L.	Convolvulaceae	climber	
75	*Cleome viscosa* L.	Cleomaceae	herb	2
76	*Cleome gynandra* L.,	Cleomaceae	Herb	
77	*Coccinia grandis* (L.) J. Voigt,	Cucurbitaceae	Herb	4
78	*Corallocarpus epigaeus* (Rotter) C.B. Clarke,	Cucurbitaceae	Climber	
79	*Citrullus lanatus* (Thunb.) Matsum & Nakai	Cucurbitaceae	Climber	
80	*Mukia maderaspatana* (L.)M. Roem	Cucurbitaceae	Herb	
81	*Curculigo orchioides* Gaert.,	Hypoxidaceae	Herb	1
82	*Croton sparsiflorus* Baill	Euphorbiaceae	Herb	9
83	*Euphorbia antiquorum* L.	Euphorbiaceae	Shrub	
84	*Euphorbia hirta* L.	Euphorbiaceae	Herb	
85	*Euphorbia retusa* Forssk	Euphorbiaceae	Herb	
86	*Euphorbia trigona* Mill.	Euphorbiaceae	Shrub	
87	*Jatropha curcus* L.	Euphorbiaceae	Shrub	
88	*Jatropha gossypifolia* L.	Euphorbiaceae	Shrub	
89	*Phyllanthus amarus* L.	Euphorbiaceae	Herb	
90	*Bridelia retusa* (L.) A.Juss	Euphorbiaceae	Trees	
91	*Cyprus rotundus* L.,	Cyperaceae	Herb	3
92	*Cyperus odoratus* L.	Cyperaceae	Herb	
93	*Kyllinga brevifolia* (Rottb.)	Cyperaceae	Herb	
94	*Datura metel* L.	Solanaceae	Shrub	4
95	*Physalis minima* L.	Solanaceae	Herb	
96	*Solanum trilobatum* L.	Solanaceae	Herb	
97	*Withania somnifera* (L.) Dunal	Solanaceae	Herb	
98	*Ficus religiosa* L.	Moraceae	Tree	1
99	*Gynandra pentaphylla* L.	Capparaceae	Herb	1
100	*Ionidium suffruticosum* (L.) Ging	Violaceae	Herb	1
101	*Azadirachta indica* A. Juss	Meliaceae	Tree	1
102	*Justicia procumbens* L.	Acanthaceae	Herb	3
103	*Justicia simplex* D.Don	Acanthaceae	Herb	
104	*Peristrophe bicalyculata* (Retz.) Nees	Acanthaceae	Herb	
105	*Lantana camera* L.	Verbenaceae	Shrub	2

Table-1: Total number of species, genus and family present in the area

106	*Stachytarpheta jamaicensis* (L.) Vahl	Verbaenaceae	Herb	
107	*Lawsonia inermis* L.	Lythraceae	Shrub	1
108	*Mollugo nudicaulis* Lam.	Molluginaceae	Herb	2
109	*Mollugo pentaphylla* L.	Molluginaceae	Herb	
110	*Oldenlandia umbellate* L.	Rubiaceae	Herb	2
111	*Spermacoce hispida* L.	Rubiaceae	Herb	
112	*Opuntia littoralis* Mill.	Cactaceae	Herb	1
113	*Opuntia dillenii* (Ker Gawl.) Haw.	Cactaceae	Herb	1
114	*Pedalium murex* L	Pedaliaceae	Herb	1
115	*Tecoma stans* (L.) Juss. Ex kunth	Bignoniaceae	Tree	1
116	*Trianthema decandra* L. MANT	Aizoaceae	Herb	2
117	*Trianthema Portulacastrum* L.	Aizoaceae	Herb	
118	*Tribulus terrestris* L	Zygophyllaceae	Herb	1
119	*Ziziphus mauritiana* Lam.	Rhamnaceae	Herb	1
120	*Cheilanthes mysurensis* Wall. ex Hook.	Adiantaceae	Herb	1
121	*Actiniopteris radiata* (Sw.) Link	Actiniopteridaceae	Herb	1
122	*Lawsonia inermis* L.	Lythraceae	shrub	1

Table-2 : Total Number of family, genus and species

Sl. No	Family	Genus	species	Habit types		
				Trees	Shrubs	Herbs
1	Malvaceae	8	10	2	3	5
2	Aristolochiaceae	**1**	**1**	**-**	**-**	**1**
3	Apocyanace	**8**	**8**	**2**	**2**	**4 (climbers)**
4	Asclepidaceae	**3**	**3**	**-**	**-**	**3(climbers)**
5	Asteraceae	**5**	**6**	**-**	**1**	**5**
6	Commelinaceae	**1**	**1**	**-**	**-**	**1**
7	Amaranthaceae	**5**	**6**	**-**	**-**	**6**
8	Papaveraceae	**1**	**1**	**-**		**1**
9	Fabaceae	**12**	**13**	**6**	**-**	**7**
10	Lamiaceae	**8**	**11**	**1**	**-**	**10**
11	Poaceae	**7**	**7**	**-**	**-**	**7**
12	Nyctaginaceae	**1**	**1**	**-**	**-**	**1**
13	Caesalpiniaceae	**1**	**2**	**-**	**-**	**2**
14	Sapindaceae	**1**	**1**	**-**	**-**	**1climber**
15	Plumbaginaceae	**1**	**1**	**-**	**-**	**1**
16	Portulacaceae	**1**	**1**	**-**	**-**	**1**
17	Vitaceae	**1**	**1**	**-**	**-**	**1**

18	Convolvulaceae	3	3	-	-	3
19	Cleomaceae	1	2	-	-	2
20	Cucurbitaceae	4	4	-	-	4
21	Hypoxidaceae	1	1	-	-	1
22	Euphorbiaceae	5	9	1	4	4
23	Cyperaceae	3	3	-	-	3
24	Violaceae	1	1	-	-	1
25	Meliaceae	1	1	1	-	-
26	Acanthaceae	2	3	-	-	3
27	Verbenaceae	2	2	1	-	1
28	Lythraceae	1	1	1	-	
29	Molluginaceae	1	2	-	1	1
30	Rubiaceae	2	2	-	-	2
31	Cactaceae	1	2	-	-	2
32	Pedaliaceae	1	1	-	-	1
33	Bignoniaceae	1	1	1	-	
34	Aizoaceae	1	2	-	-	2
35	Zygophyllaceae	1	1	-	-	1
36	Rhamnaceae	1	1	-	-	1
37	Lythraceae	1	1	-	1	
38	Adiantaceae	1	1	-	-	1
39	Actiniopteridaceae	1	1	-	-	1

5. ACKNOWLEDGEMENT
None.

6. CONFLICT OF INTEREST
None.

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