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RESEARCH ARTICLE

A Study of Plant Diversity and Cultural Documentation in Sri Murguan Temple at Mailam Hill, Tindivanam Taluk, Villupuram District, Tamil Nadu, India

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ABSTRACT

The current study has recorded the plant diversity, conducted a floristic analysis, and examined the vegetative profile in a specific sacred forest located near Sri Murguan temple on Mailam Hill, in Tindivanam Taluk, Villupuram district. The examined site provides a valid rationale and underscores the importance of preserving regional biodiversity. It is crucial to prioritize the promotion of the link between people and nature by instilling the importance of ecosystem services. Sanctity, religious convictions, and societal traditions have a significant impact on promoting the sustainable utilization and preservation of sacred groves. Nevertheless, it is important to acknowledge that significant alterations have occurred in the geographical region of the research site, the composition of plant life, and the process of soil erosion, as well as in customary beliefs and cultural restrictions, during the past few decades. Hence, it is imperative to reconsider the arrangement and purpose of the sacred groves, as well as their ecological importance and future conservation plans.

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Introduction

Sacred groves exemplify the commendable efforts of individuals to preserve indigenous biodiversity. Due to religious observances and cultural customs, these are natural vegetation areas that ancient societies designated and now protect. They are discrete sections of diverse landscapes that encompass trees, other organisms, and geographical characteristics (Kandari et al., 2014). Indian society is comprised of around 40,000 endogamous groupings consisting of castes and clans, which also include 3000 tribal sects (Patwardhan et al., 2021). The concept of sacred groves was incorporated into several cultures, each with their own unique traditions, rites, and rituals, showcasing the diversity of these nations. This phenomenon is appropriately referred to as vernacular conservation. Various populations from the Uttara and Dakshina Kannada districts, southern and northern Kerala, and Tamil Nadu have documented the existence of groves in southern India (Notermans et al., 2016).

Although the trees in the hilly areas seem to be well maintained, there is extensive and troubling evidence of human impact and damage in the lowlands. However, the fact that they still exist demonstrates their ability to anticipate ecological changes and their commitment to conservation. Indeed, people all over the world shared this opinion, though they expressed it in different ways. Consequently, although the gods and methods of devotion differed, the ecological knowledge was evident and uniform (Chu & Karr, 2017).

Various authors have examined the notion of the sacred grove from different perspectives. It provides a comprehensive analysis of the anthropological factors that have marginalized biodiversity protection (Guzmán-Gallegos & Leifsen, 2022; Kopnina, 2012; Setchell et al., 2017). And focused on the cultural connections to conservation were both concise and comprehensive (Infield et al., 2018; Setchell et al., 2017; Winter, 1997). A comprehensive and thorough study of the Indian groves was conducted by UNESCO in 1997, resulting in an authoritative and extensive book (World Heritage Convention, 2013).

Biodiversity refers to the assortment and fluctuation of living organisms from many origins, encompassing terrestrial, marine, and other aquatic habitats, as well as the interconnected ecological systems they form. This encompasses the diversity within species, between species, and of entire ecosystems. Biodiversity, as defined by the Biological Diversity Act of 2002, refers to the complete collection of genes, animals, and ecosystems within a specific geographical area (World Heritage Convention, 2013).

India's biodiversity ranks tenth globally and fourth in Asia. In addition, India possesses over 47,500 plant species and is characterized by sixteen distinct agroclimatic zones, ten vegetative zones, and fifteen biotic areas. Furthermore, it is home to twelve mega-biodiversity hubs, which are among the most significant in the world (Chitale et al., 2014).

India's forest cover occupies 84% of its total land area, which accounts for 19.39% of its entire geographical area. India has tropical forests that cover 10% of its total geographical area (Ghosh, 2014). However, woods are known for their abundant variety of plant and animal species. These forests are encountering significant challenges, including both natural and anthropogenic disruptions (Morris, 2010). Consequently, numerous species have reached the brink of extinction and have subsequently become extinct. The implication is that the species has a limited capacity for natural regeneration (Burgess et al., 2022). Therefore, they require knowledge and understanding of the variety of plant species present. Accurate identification of conservation areas necessitates a comprehensive understanding of the variety and distribution of species and ecosystems (Prabhakaran et al., 2023).

In addition, the intrusion of non-native weeds poses a severe threat to the ecology of certain sacred groves. The proliferation of alien plants such as *Eupatorium odoratum, Lantana camara, Prosopis juliiflora,* and *Hyptis suaveolens* commonly endangers and diminishes our indigenous flora. Disputes among the custodians of the sacred groves have also led to a decline in biodiversity inside certain sacred groves. The current study has recorded the plant variety, conducted a floristic analysis, and analyzed the vegetative profile in a specific sacred grove located at the Sri Murguan temple on Mailam Hill, Tindivanam Taluk, Villupuram district.

Material and Methods

Out of the 5 sacred groves in the Cuddalore, Kallakurichi, and Villupuram districts, I have chosen to research one specific location, which is the Sri Murugan temple in Mailam (Table 1, Fig 1). The study location consisted of two sacred groves from the Cuddalore area, two sacred groves from the Kallakurichi district, and one sacred grove from the Villupuram district of Tamil Nadu. Mailam village is located in the Tindivanam taluk of Villupuram district in the state of Tamil Nadu. It is widely recognized for the Mayilam Lord Murugan

Temple. Mayilam is located 15 kilometers away from Tindivanam and 30 kilometers away from Villupuram and Pondicherry.

Table 1. Locations of the visited sacred groves, Tamil Nadu, India

S. No.	Name of the deity	Place	Taluk	District	Location
1	Sembai Aiyanar	Mudanai	Virudhachalam	Cuddalore	11°5709"N 79°3974'"E
2	Mailam Murugan	Mailam	Tindivanam	Villupuram	12°13003"N 79°6149'"E
3	Kollathiamman	Magarur	Kallakurichi	Kallakurichi	11°37'11.16"N 79° 355.79"E
4	Sokkanadhar Meenakshi	Melakurichi	Virudhachalam	Cuddalore	11°34'57.86"N 79° '34.47"E
5	Solaiamman	Palrampattu	Kallakurichi	Kallakurichi	11°48'25.68"N 78°52'10.42"E

Plant diversity

We regularly visit the study locations and document the presence of trees, shrubs, herbs, climbers, and parasites using qualitative methodologies. The field survey was conducted from November 2021 to April 2022. The collection and identification of plants, which included those with flowers or fruits, were conducted using regional flora references (Lucchetti et al., 2019; Shirai et al., 2022; Sullivan & Nazaire, 2022; Waheed et al., 2023; Wäldchen & Mäder, 2018). These sources were consulted to ensure accurate botanical nomenclature for the identified specimens. The revised nomenclature of the families and species is derived from the website "The Plant List" (http://www.theplantlist.org/).

To accurately depict the characteristics of plant species and their relationships, images were captured in their natural habitat using a Redmi Note 9 Pro mobile device equipped with a 48MP quad rear camera. This camera includes features such as ultra-wide angle, super macro, portrait, night mode, 960fps slow-motion, AI scene recognition, pro color, HDR, and pro mode.

Biocultural perspectives

Data regarding the historical context and social makeup were gathered from the revenue officials and the elders in each of the research locations. During the field trips, firsthand observation of the location of the grove and the temple complex helped to document it. However, the religious and cultural practices observed at each location were acquired through interactions with priests, community elders, and devotees. Throughout the duration of the yearly festival, careful observations were conducted to verify the accuracy of the reported facts.

The C.P.R. Environmental Education Centre in Chennai quickly converted the information gathered from conversations, observations, and interviews both formal and informal to the questionnaire forms.

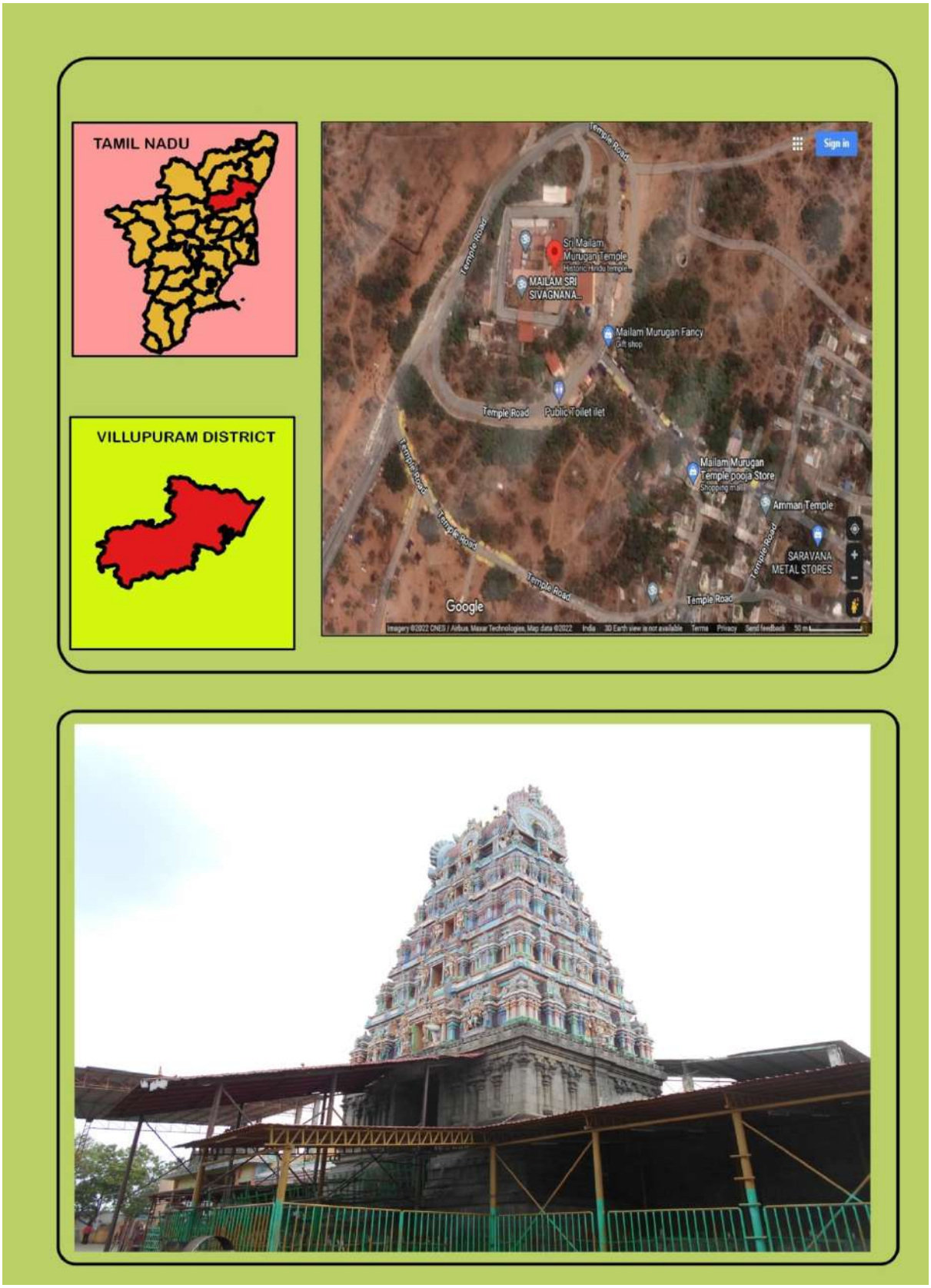


Fig 1. Map shows the Mailam Hill and Lord Murugan Temple, Villupuram district

Results

Characteristics of the study site

Mailam village is located in the Tindivanam taluk of Villupuram district in the state of Tamil Nadu. It is renowned for the Mayilam Lord Murugan Temple. Mayilam is located 15 kilometers away from Tindivanam and 30 kilometers away from Villupuram and Pondicherry. The geographical coordinates are latitude 12°1300'3"N and longitude 79°6149"E.

The temple, situated atop a modest elevation, is connected to a settlement on the Coromandel Coast (Fig 1). Bomayapalaiyam is a location in close proximity to Pondicherry, where the Vera Saiva Mutt is situated. The term "bomma" or "bomme" is derived from the word "brhmana," which is in line with its meaning. The village was transformed into a settlement exclusively inhabited by Brahmans, as evidenced by the sthala purna, which also refers to Bomayapalaiyam as Brahmapuram.

The mythology of this sacred place begins with the cessation of Surapadma's tyrannical reign and his heartfelt plea to the Lord to accept him as his divine vehicle. According to the sthalapurana, Surapadma, although using all his strength and employing the tactics of Asuramayopaya, was ultimately defeated by Muruga. As he faced the possibility of being killed, he implored the Lord to embrace him as his instrument, vowing unwavering loyalty in his service.

The Lord, who took the form of a peacock (Mayil in Tamil) and appeared on the shores of Varaha close to Mayilamalai, gave him the order to meditate without ceasing. He nodded and endured his plea to the Lord to live forever on the same hill.

Mayilamalai and the surrounding area, known as Mayilam for short, came into being due to a specific purpose and were thereafter established. The temple on the hill was constructed by Pommayapuram, a Mathadhipathi, with large grandeur and impressive maintenance. The Mutt, located at the base of the hill, is efficiently overseeing the maintenance of the temple, offering various amenities to the traveling public. The 2.5-hectare section of this grove is specifically devoted to Lord Murugan. While Mailam is not currently classified as one of the Arupadai Veedu temples, it is widely renowned as a Murugan temple. Nevertheless, the temple's most captivating aspect lies in its true nature as a Siva temple, with Viswanathar and Visalakshi serving as the primary deities. The Shree Bala Siddhars Agni theertha kulam, a small pond, is over 1000 years old and is located near the hill entrance for water storage purposes.

Religious importance

At this study site, the Lord Murugan temple conducts regular poojas every day of the week, from Monday to Sunday. Annually, in the month of Panguni (March–April), the renowned temple festival known as Panguni Utthira (Tiruvizha) features a grand automobile procession. The festival of Thai Poosam, which takes place throughout the months of January and February, is celebrated over a period of six days. During Thai Poosam and Panguni Utthira, devotees carry Kavadis and Palkudams, which include piercing their bodies, at the study location (Fig 2). The festival is characterized by the commemoration of customary folk arts, including Karakattam and koothu (street play). Firecrackers are ignited during the nocturnal procession of the deity. Additionally, there are several notable festivals, such as Cithirai Chitra Paurnami, Vaikasi Visakam, Aipasi Kanda Sashti, Aani-Annabhishekam, and Tiru Karthigai, that are celebrated by devotees at the study site. The Oorani pongal festival is observed by the female residents of the region (Fig 2). Regular ceremonies for tonsure and ear piercing are conducted for youngsters at this location. Additionally, a recent wedding ceremony was held at the Mailam Lord Murugan temple. Married women and men engage in a religious tradition here by tying a long cloth with a stone to a tree, specifically the *Ficus religiosa* and *Nerium oleander* trees, in hopes of conceiving children. In collaboration with the nearby village community, the Srimath Sivagnana Balaya Swamigal Mutt

management and the Tamil Nadu government's Hindu religious and charitable endowments department manage the temple.

Fig 2. Traditional Culture of Pilgrimage of Lord Murugan Temple, Mailam hill, Villupuram district

A total of 86 species were found in the study location, as shown in Table 2. These species were classified into 79 different genera and 37 families. The Mailam hills exhibit a wide range of habit diversity, comprising 21 herb species, 20 shrub species, 40 tree species, 4 climber species, and a solitary parasite species (Fig 3 & Fig 4).

The *Fabaceae* family comprises 16 species, while *Apocynaceae* has 7 species, and both *Malvaceae* and *Rubiaceae* have 4 species apiece. The four species that each family consists of are: *Arecaceae, Euphorbiaceae, Lamiaceae,* and *Rutaceae*. The families present in each species are: *Acanthaceae, Amaranthaceae, Anacardiaceae, Annonaceae, Asteraceae, Bignoniaceae, Cleomaceae, Meliaceae, Molluginaceae, Moraceae, Myrtaceae, Poaceae, Sapindaceae, and Solanaceae. The plants that were seen and named at the study site belong to the following families: Asparagaceae, Boraginaceae, Calophyllaceae, Combretaceae, Convolvulaceae, Cornaceae, Lauraceae, Moringaceae, Oleaceae, Salicaceae, Sapotaceae, Ulmaceae, Verbenaceae, Vitaceae,* and *Zygophyllaceae* (Fig 5, Table 2).

Analysis of disruptions

Permanent structures are currently being built within the study site to accommodate visitors. The Mailam Hill (grove) serves as an unrestricted grazing ground for the people, as the study area lacks any form of enclosure or boundary. The substantial increase in visitors to Mailam Hill has necessitated the construction of new concrete roads and facilities. The local community freely gathers the fallen branches and other deceased wood from the grove without any limitations. The Mailam Hill is currently experiencing unregulated grazing, leading to the extinction of several endangered species. The grove has also transformed into a repository for discarded plastic items. The research site was found to be predominantly occupied by invasive plants such as *Prosopis juliflora* and *Lantana camera*. There are signs that these alien species will imminently dominate the research location, leading to a severe decline in the indigenous species.

Conversation

Sacred groves refer to patches of land inhabited by diverse plant species that are specifically dedicated to local deities and ancestor spirits. The local populations protect these groves through social taboos and customs that combine spiritual and ecological principles. These can be found dispersed throughout nearly every village in India. The preservation of sacred groves is a crucial component of biodiversity management. Belief systems and ecological services serve to safeguard these vulnerable ecosystems. Certain groves serve as reservoirs for uncommon and indigenous flora, housing rare, endemic, endangered, and threatened species. These groves also have a significant impact on replenishing the aquifer, thereby aiding in water management. Nevertheless, as a result of a decline in the threshold belief system and human-induced pressure, there is a steady decrease in the size of the groves. Hence, considering both cultural and ecological significance, the World Protection Union (WPU) has modified its approach to biodiversity protection by focusing on participatory management initiatives. The purpose of this is to accomplish the preservation of biodiversity at the local level (UNESCO, 1996).

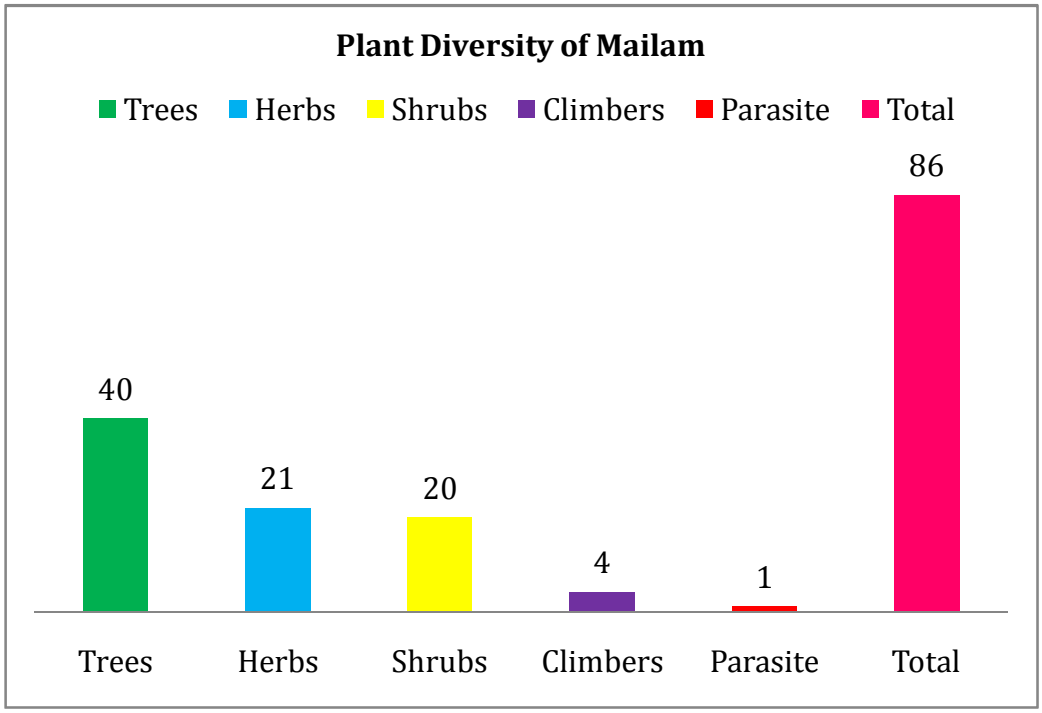


Fig 3. Plant Diversity of Mailam Hill region, Villupuram district

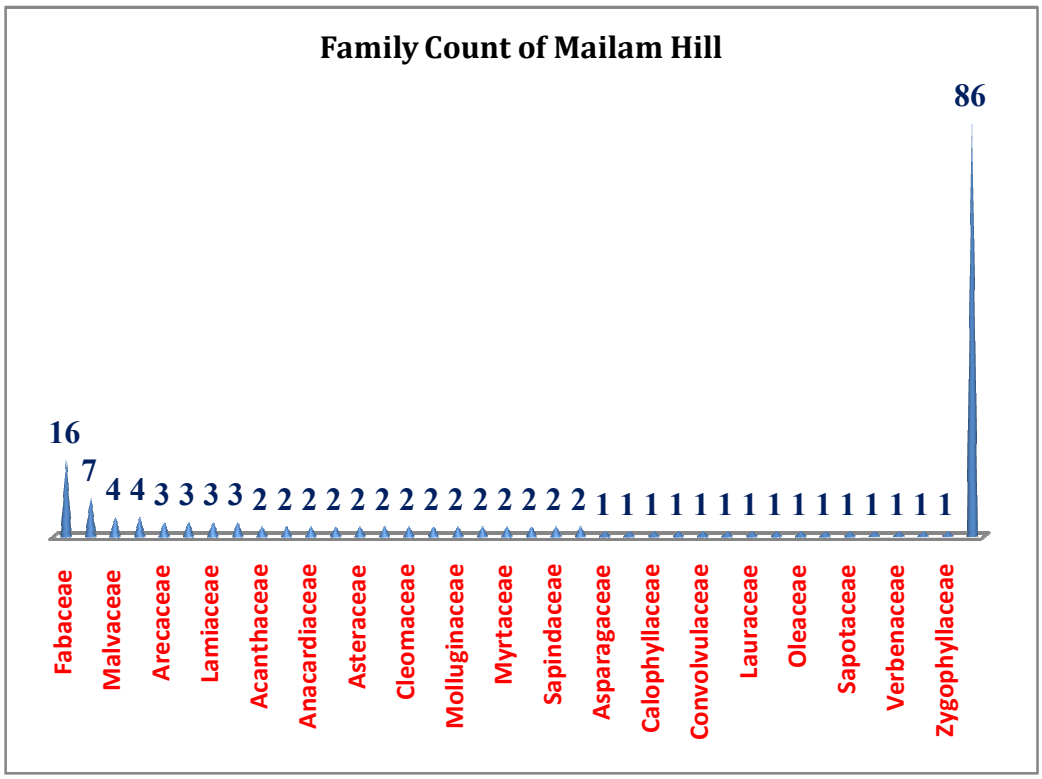


Fig 4. Family wise floral distribution in the Mailam Hill, Villupuram district

Table 2. List of the Plants diversity of Mailam Hill, Villupuram district

S.No.	Botanical Name	Life Form	Family	Common Name	Tamil Name
1	*Abutilon indicum* (L.) Sweet	Shrub	Malvaceae	Indian Mallow,	Tutti
2	*Acacia leucophloea* (Roxb.) Willd.	Tree	Fabaceae	White babul	Velvelam
3	*Acalypha indica* L.	Herb	Euphorbiaceae	Indian Acalypha	Kuppaimeni
4	*Achyranthes aspera L.*	Herb	Amaranthaceae	Prickly Chaff Flower	Naaiyuruvi
5	*Aerva lanata* (L.) Juss.	Herb	Amaranthaceae	Polpala	Ciru-pula
6	*Alangium salviifolium* (L.f.) Wangerin	Tree	Cornaceae	Sage leaved alangium	Eralincil
7	*Albizia amara* (Roxb.) B.Boivin	Tree	Fabaceae	Bitter albizia	Usilai
8	*Albizia lebbeck* (L.) Benth.	Tree	Fabaceae	Lebbek tree	Vaagai
9	*Albizia saman* (Jacq.) Merr.	Tree	Fabaceae	Rain Tree	Thoongumoonji maram
10	*Anisomeles malabarica* (L.) R.Br.	Shrub	Lamiaceae	Malabar catamint	Peimiratti
11	*Annona squamosa* L.	Tree	Annonaceae	Custard apple	Seetha pazham
12	*Apluda mutica* L.	Herb	Poaceae	Mauritian Grass	Moongil pul
13	*Asparagus racemosus* Willd.	Climber	Asparagaceae	Spiny Asparagus	Thaneervitaan Kizhangu
14	*Atalantia monophylla* DC.	Tree	Rutaceae	Wild lime tree	Kattu Elumeachi
15	*Azadirachta indica* A.Juss.	Tree	Meliaceae	Indian Lilac	Vembu
16	*Barleria prionitis* L.	Shrub	Acanthaceae	Porcupine Flower	Kaattu kanagaambaram
17	*Bauhinia racemosa* Lam.	Tree	Fabaceae	Burmese Silk Orchid	Aatthi
18	*Blepharis maderaspatensis* (L.) B.Heyne ex Roth	Herb	Acanthaceae	Creeping Blepharis	Kooravaalchedi
19	*Borassus flabellifer* L.	Tree	Arecaceae	Palmyra palm	Talam
20	*Calophyllum inophyllum* L.	Tree	Calophyllaceae	Alexandrian laurel	Punnai
21	*Calotropis gigantea* (L.) Dryand.	Shrub	Apocynaceae	Crown Flower	Erukku
22	*Cardiospermum halicacabum* L.	Climber	Sapindaceae	Balloon vine heart seed	Mudakattan
23	*Carissa spinarum* L.	Shrub	Apocynaceae	Wild Karanda	Sirukilaa
24	*Carmona retusa* (Vahl) Masam.	Shrub	Boraginaceae	Philippine tea	Kurangu Vethilai
25	*Caryota urens* L.	Tree	Arecaceae	Indian sago palm	Koonthal Panai
26	*Cascabela thevetia* (L.) Lippold	Shrub	Apocynaceae	Yellow Oleander	Manjal Arali
27	*Cassytha filiformis* L.	Parasites	Lauraceae	Love Vine	Erumai-k-korran
28	*Catharanthus roseus* (L.) G.Don	Herb	Apocynaceae	Madagascar Periwinkle	Nithyakalyaani
29	*Catunaregam spinosa* (Thunb.) Tirveng.	Shrub	Rubiaceae	Common emetic nut	Attadikaarai
30	*Chloris barbata* Sw.	Herb	Poaceae	Swollen windmill grass	Chevvarakupul
31	*Cissus quadrangularis* L.	Climber	Vitaceae	Edible vine	Pirandai
32	*Citrus medica* L.	Tree	Rutaceae	Citron	Kattu naarthai

33	*Cleome gynandra* L.	Herb	Cleomaceae	Spider Whisker	Kattu Kadugu
34	*Cleome viscosa* L.	Herb	Cleomaceae	Wild Mustard	Naikadugu
35	*Cocos nucifera* L.	Tree	Arecaceae	Coconut tree	Thengai
36	*Convolvulus arvensis* L.	Herb	Convolvulaceae	Bindweed	Bhoomi Chakra Poondu
37	*Croton bonplandianus* Baill.	Herb	Euphorbiaceae	Ban tulsi	Aathuppoondu
38	*Datura metel* L.	Shrub	Solanaceae	Datura	Oomatthai
39	*Dodonaea viscosa* (L.) Jacq.	Tree	Sapindaceae	Hopseed bush	Viraali
40	*Erythrina variegata* L.	Tree	Fabaceae	Indian coral tree	Kalyana murungai
41	*Eucalyptus globulus* Labill.	Tree	Myrtaceae	Blue gum	Thaila maram
42	*Ficus benghalensis* L.	Tree	Moraceae	Banyan Tree	Alamaram
43	*Ficus religiosa* L.	Tree	Moraceae	Peepal tree	Arasu
44	*Flacourtia indica* (Burm. f.) Merr.	Shrub	Salicaceae	Governor's Plum	Katukalai
45	*Glinus oppositifolius* (L.) Aug.DC.	Herb	Molluginaceae	Indian Chickweed	Tiray
46	*Gmelina asiatica L.*	Shrub	Lamiaceae	Asian Bushbeech	Kadambal
47	*Holoptelea integrifolia* Planch.	Tree	Ulmaceae	Jungle cork tree	Aya maram
48	*Indigofera tinctoria* L.	Herb	Fabaceae	Ceylon Indigo	Avuri
49	*Ixora coccinea* L.	Shrub	Rubiaceae	Sacred Ixora	Idly Poo
50	*Jasminum angustifolium* (L.) Willd.	Climber	Oleaceae	Wild Jasmine	Kattumalligai
51	*Jatropha gossypiifolia* L.	Shrub	Euphorbiaceae	Barbados Nut	Vellaikaattukottai
52	*Kigelia africana*	Tree	Bignoniaceae	Common Sausage Tree	Yanai Pudukku
53	*Lannea coromandelica* (Houtt.) Merr.	Tree	Anacardiaceae	Wodier	Oti
54	*Lantana camera L.*	Shrub	Verbenaceae	Lantana weed	Unni Chedi
55	*Leucaena leucocephala* (Lam.)de Wit	Tree	Fabaceae	Wild tamarind	Periya-takarai
56	*Mangifera indica* L.	Tree	Anacardiaceae	Mango	Mamaram
57	*Melia dubia* Cav.	Tree	Meliaceae	Malabar Neemwood	Malaivembu
58	*Millingtonia hortensis* L. fil.	Tree	Bignoniaceae	Indian Cork Tree	Mara malli
59	*Mimusops elengi* L.	Tree	Sapotaceae	Asian bullet wood	Magizhamaram
60	*Mollugo pentaphylla* L.	Herb	Molluginaceae	Five Leaved Carpetweed	Seeragappoondu
61	*Morinda pubescens* J.E.Smith	Tree	Rubiaceae	Indian Mulberry	Nuna
62	*Moringa oleifera* Lam.	Tree	Moringaceae	Drum stick tree	Murungamaram
63	*Murraya koenigii* (L.) Spreng.	Tree	Rutaceae	Curry leaf tree	Karuveppilai
64	*Nerium oleander* L.	Shrub	Apocynaceae	Oleander	Chevarali
65	*Parthenium hysterophorus* L.	Herb	Asteraceae	Carrot Grass	Malli Kizhangu pul
66	*Pavonia zeylanica* Cav.	Shrub	Malvaceae	Ceylon Swamp Mallow	Chirtamutti
67	*Peltophorum pterocarpum* (DC.) K.Heyne	Tree	Fabaceae	Copperpod	Perungondrai
68	*Physalis minima* L.	Herb	Solanaceae	Little Gooseberry	Sodakku thakkaali
69	*Pithecellobium dulce* (Roxb,) Benth.	Tree	Fabaceae	Madras thorn	Kodukkapuli

70	*Polyalthia longifolia* (Sonn.) Thwaites	Tree	Annonaceae	False Ashok	Nettilinkam
71	*Pongamia pinnata* (L.) Pierre	Tree	Fabaceae	Indian beech tree	Ponga Maram
72	*Prosopis juliflora* (Sw.) Dc.	Tree	Fabaceae	South West Thorn	Vaelikaruvai
73	*Senna auriculata* (L.) Roxb.	Shrub	Fabaceae	Styptic weed	Aavaram
74	*Senna occidentalis* (L.) Link	Shrub	Fabaceae	Coffee-senna	Paayavarai
75	*Sida acuta* Burm.f.	Herb	Malvaceae	Morning mallow	Arivalmukkan
76	*Spermacoce hispida* L.	Herb	Rubiaceae	Shaggy button weed	Nattai-churi
77	*Syzygium cumini* (L) Skeels	Tree	Myrtaceae	Black Jaman	Naval
78	*Tabernaemontana divaricata* (L.) R.Br. ex Roem. & Schult.	Shrub	Apocynaceae	Crepe jasmine	Nandiyavattai
79	*Tamarindus indica* L.	Tree	Fabaceae	Tamarind	Puli
80	*Tephrosia purpurea (L.) pers.*	Herb	Fabaceae	Common Tephrosia	Kattukolingi
81	*Terminalia catappa* L.	Tree	Combretaceae	Indian Almond tree	Nattu-vadumai
82	*Thespesia populnea* (L.) Soland. ex Correa	Tree	Malvaceae	Indian tulip tree	Puvarasu
83	*Tribulus terrestris* L.	Herb	Zygophyllaceae	Bullhead	Nerinji
84	*Tridax procumbens* L.	Herb	Asteraceae	Coat-button	Kenathuppoondu
85	*Vitex negundo* L.	Shrub	Lamiaceae	Common Chaste Tree	Nocchi
86	*Wrightia tinctoria* R.Br	Tree	Apocynaceae	Dyer's Oleander	Veppalai

Discussion

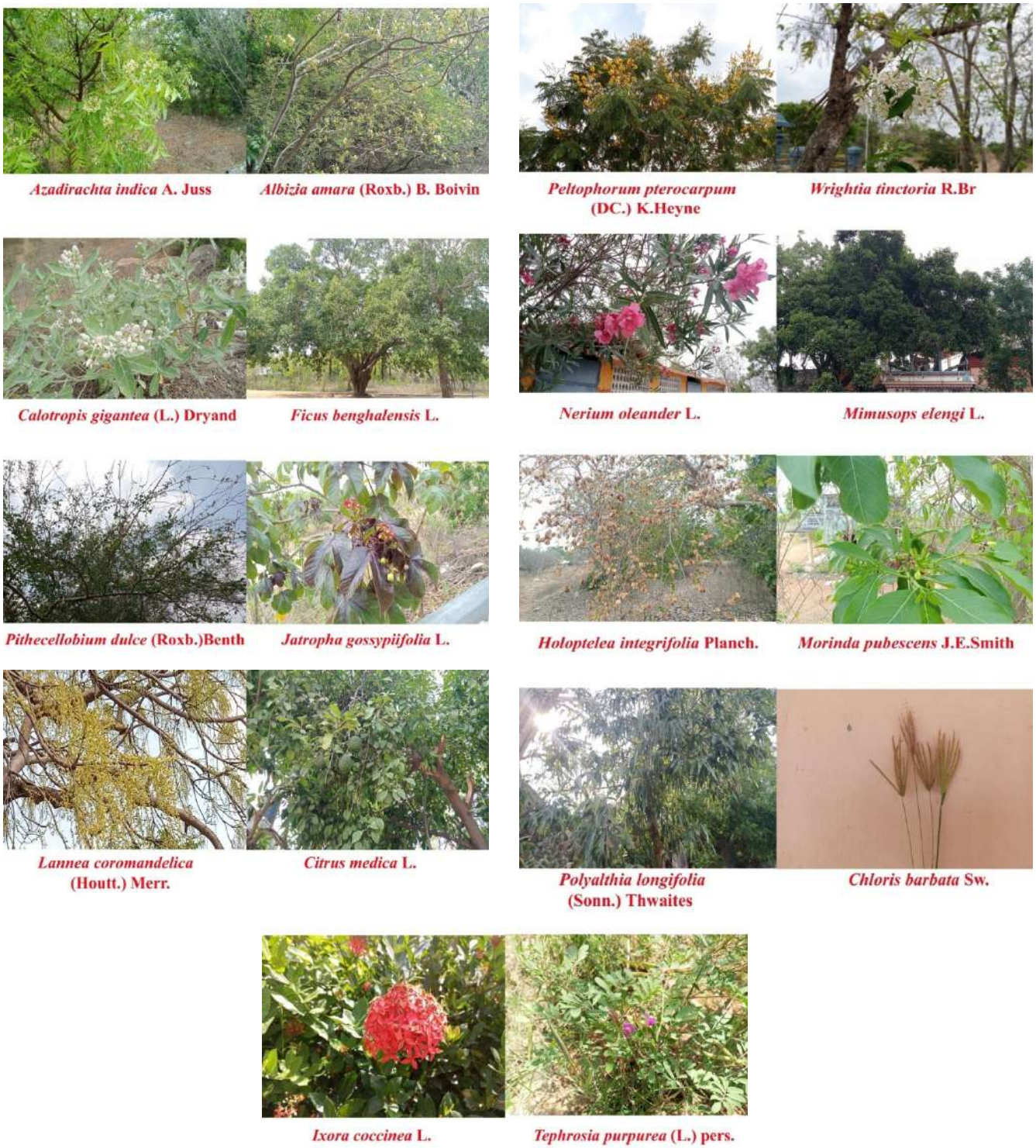
The Coromandel Coast of India is home to several tropical dry evergreen forest (TDEF) sites, which are consistently preserved as sacred forests. Researchers like Anbarashan & Parthasarathy, 2013; Parthasarathy et al., 2008; Venkateswaran & Parthasarathy, 2003 have all conducted various research studies on the plant biodiversity of these forests. Nevertheless, there is still a lack of comprehensive documentation and research about social and biodiversity values. In order to address this scientific knowledge deficit, the current study was conducted in a tiny hilltop sacred grove located in the Villupuram districts of Tamil Nadu. The plant variety was documented at the study sites.

The Mailam Lord Murugan temple is a very ancient temple located in Tamil Nadu. The temple was built on land dedicated by a group of ascetics known as Sithaars (Kuravar) before the 5th century A.D. This study represents groundbreaking research on the floral diversity and conservation efforts surrounding the Lord Murugan temple located at Mailam Hill.

The research region was found to include a total of 86 plant species, belonging to 79 genera and 37 families. Compared to other studies conducted in India, the number of species, genera, and families varied. The highest number was found in Malliganatham, with 260 species, 176 genera, and 62 families (Parthasarathy et al., 2008). Vamban had 224 species, 175 genera, and 63 families (John Britto et al., 2001). The lowest numbers were recorded in the TDEFs of peninsular India, with 35 species, 32 genera, and 22 families (Sharma et al., 2014; Yimam et al., 2022).

Therefore, it is crucial to conduct a thorough evaluation of the variety of plant species in a given area, both at a local and regional scale. This assessment allows us to get insights into the current state of biodiversity and develop efficient conservation strategies (Coelho et al., 2020; Corlett, 2016; Hoffmann, 2022; Niesenbaum, 2019).

Fig 3. Image shows plant diversity in Mailam Hill region, Villupuram district



The *Fabaceae* family is the most prevalent, consisting of 16 species, followed by *Apocynaceae* with 7 species, and *Malvaceae* and *Rubiaceae* with 4 species each. Each family has three species: *Arecaceae, Euphorbiaceae,* and *Rutaceae*. Each family consists of the following two species: *Acanthaceae, Amaranthaceae, Anacardiaceae, Annonaceae, Asteraceae, Bignoniaceae, Cleomaceae, Lamiaceae, Meliaceae, Molluginaceae, Moraceae, Poaceae, Sapindaceae, and Solanaceae*. A comparable number of plant species were documented in the Kolli hills of the Eastern Ghats (Francis Xavier et al., 2011; Sureshkumar et al., 2020), as well as in other tropical forests (Dick & Kress, 2009; Pillay et al., 2022; Subashree et al., 2021). Furthermore, our observation aligns with the fact that the *Fabaceae* family is the most prevalent in the Salem district.

Conclusion

The current research aims to estimate floristic diversity in order to assess the current state of floral cover and develop appropriate conservation management measures, both at the local and regional levels. It is imperative to raise awareness among the local inhabitants living on the outskirts of the forest regarding the significance of preserving the variety and abundance of plant life.

The active involvement of individuals is essential for effectively managing biotic resources and restoring deteriorated groves. The conventional methods prioritize the prudent utilization of the existing resources. Nevertheless, the recent conservation programs prioritize contemporary approaches to forest management. To ensure the conservation of these groves, it is necessary for the government to take action and enact legislation. Laws should strictly forbid the unchecked expansion of infrastructure facilities close to the trees. Hence, it is imperative to strike a balance between conventional approaches and contemporary management methodologies. Significant attention should be directed towards the significance of woody life forms and their functional ecology, specifically in the context of reproductive biology.

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Conflict of interest

All authors declare that there is no conflict of interest in this work.

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