

Original Research Article

BIODIVERSITY ASSESSMENT OF TREES AND SHRUBS AT TIRUNELVELI'S SCIENCE CENTRE IN SOUTHERN INDIA: A CONSERVATION PERSPECTIVE

ABSTRACT

A comprehensive taxonomical floristic survey conducted at the District Science Centre in Tirunelveli identified 84 species of trees and shrubs, documenting each plant species with detailed information on medicinal uses, family classification, commercial importance, and population count of individual plants. The survey identified 33 families and 68 genera, with Fabaceae being the most dominant family, followed by Rubiaceae, Arecaceae, and Malvaceae. Additionally, the survey highlighted a list of vulnerable, threatened, and endangered tree species such as *Cycasbeddomei* Dyer., *Santalum album* L., emphasizing the need for conservation efforts based on their spatial reach and anthropogenic pressures. These species face various threats, including loss of habitat, agriculture, pollution load, and recreational disturbances, and were assessed according to the IUCN Red List criteria. This study provides valuable insights for botanists, conservationists, and policymakers, promoting sustainable management and protection of plant biodiversity in the region.

Keywords: Tirunelveli Science Centre; Medicinal plants; Conservation of plants; flora diversity.

1. INTRODUCTION

The District Science Centre in Tirunelveli serves as a significant repository of plant biodiversity, encompassing a wide array of tree and shrub species. As an edutainment centre, it combines education and entertainment, attracting tourists and operating under the NCSM network of India. With the support of the local community, the Centre aims to make science and technology more accessible and appealing to the general public, complementing formal science education. This study undertakes a meticulous taxonomical survey of the flora within the Centre, identifying distinct varieties of trees and shrubs to conserve species biodiversity.

Conservation efforts focused on indigenous plants are pivotal for maintaining biodiversity and ensuring the sustainability of ecosystems. Indigenous plants like Neem, Peepul, Coconut, teak and Indian gooseberry naturally adapted to specific regions, fulfil critical roles in local ecosystems by providing habitats and food for wildlife, contributing to soil fertility, and supporting cultural practice. This approach not only aids in preserving diverse tree species but also fosters a thriving community of organisms (Markku, 2008; Gao and Weibang, 2013; Kulak *et al.*; 2022). Cultivating a variety of tree species within a single location enhances ecosystem resilience against environmental changes and creates habitats for a wide range of wildlife, from insects to birds (Chen & Sun, 2018).

Botanical gardens play a crucial role in conservation approaches that involves preserving plants within their native habitats, ensuring their continued survival and their ability to contribute to local ecosystems (Abeli *et al.*, 2020). Botanical gardens serve not only as living showcases of plant diversity but also actively engage in research, conservation breeding programs, and public education, making significant contributions to global conservation initiatives (Ma *et al.*, 2013; Zegeye, 2017; Breman *et al.*, 2021). These efforts are crucial for preserving ecosystem services like clean air, water, and climate regulation, thereby mitigating the threats posed by habitat destruction, climate change, and other environmental challenges.

2. MATERIALS & METHODS

2.1 Study Area

The data collection encompassed the regions within the District Science Centre, situated near the Collector Office in Kokkirakulam, Tirunelveli Corporation, adjacent to the banks of the sacred river Tamiraparani (Figure.1). The study area spans a latitudinal range of 8.7268° N and a longitudinal range of 77.7165° E.

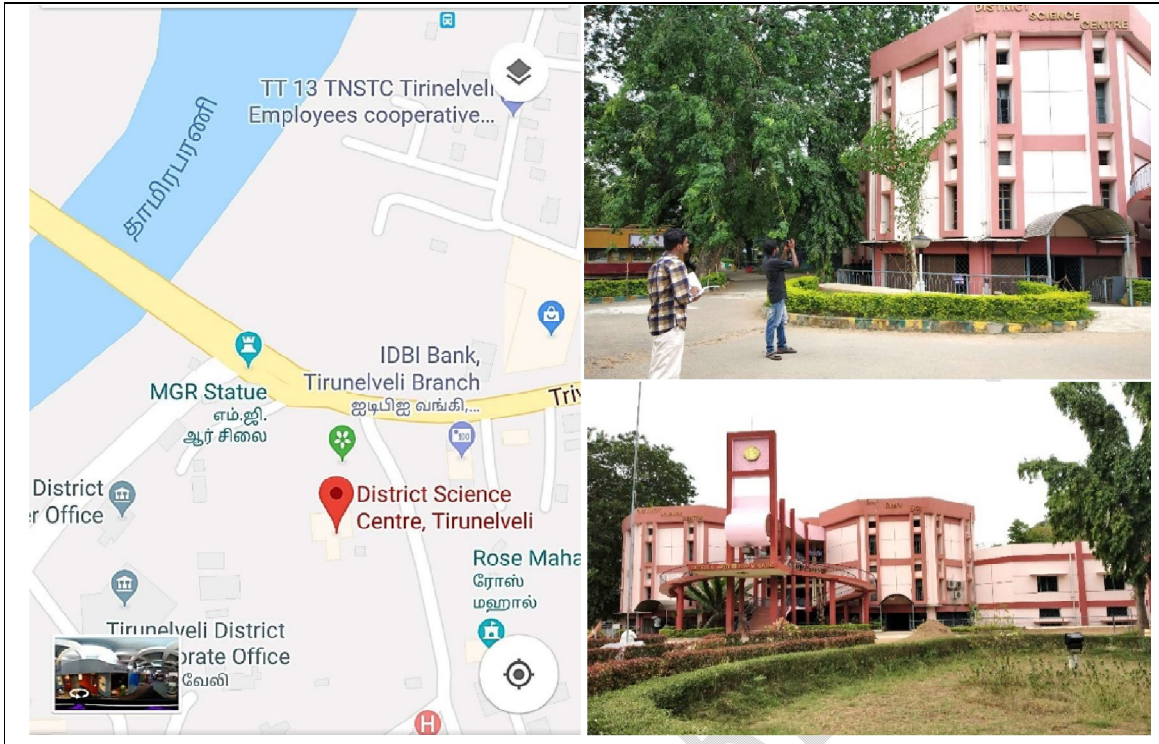


Fig 1: Geographic Location and site area of the study

2.2 Methodology

In the present study, field trips were conducted to explore the tree species within the selected area. **Standard procedure** was employed and recorded on index cards for each species. Collected plant specimens were processed at the Botany laboratory of St. Xavier's College (Autonomous), Palayamkottai. The plant identification was conducted using references such as "Flora of the Presidency of Madras" by Gamble JS (1847-1925), and "The Flora of the Palani Hills, South India" (3 volumes) by Matthew KM (1999).

3. RESULTS AND DISCUSSION

The District Science Centre in Tirunelveli not only serves as an educational and scientific hub but also as a vibrant botanical sanctuary. It is home to an impressive array of flora, with 84 distinct species of trees and shrubs **classified**, representing 33 different plant families. This rich biodiversity offers visitors a unique opportunity to explore and learn about various plant species in their natural habitat (**Rai et al., 2021**). The detailed mapping of trees and shrubs within the campus enhances the educational experience, allowing for a better understanding of plant ecology and the importance of biodiversity conservation (**Figure.2**). The comprehensive list of trees and shrubs provides a valuable resource for researchers, students, and nature enthusiasts interested in studying the region's flora (Table 1).



Fig 2: Mapping of Trees and Shrubs showing within the campus of District Science Centre, Tirunelveli

Table 1: List of Trees and Shrubs in District Science Centre, Tirunelveli

Code No.	Botanical Name	Family	Vernacular Name
DSC TEN001	<i>Acacia auriculiformis</i> A. Cunn. ex Benth.	Fabaceae	Earleafacasia
DSC TEN002	<i>Adenanthepavonina</i> L.	Fabaceae	Red bead tree
DSC TEN003	<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	Indian bael
DSC TEN004	<i>Ailanthus excels</i> Roxb.	Simaroubaceae	Tree of heaven
DSC TEN005	<i>Albizia lebeck</i> (L.) Benth.	Fabaceae	Siris
DSC TEN006	<i>Alstoniascholaris</i> (L.) R.Br.	Apocynaceae	Devil
DSC TEN007	<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Jack fruit
DSC TEN008	<i>Averrhoa carambola</i> L.	Oxalidaceae	Star pickle
DSC TEN009	<i>Azadirachta indica</i> A.Juss.	Meliaceae	Neem
DSC TEN010	<i>Bambusa arundinacea</i> (Retz.) Willd.	Poaceae	Indian thorny
DSC TEN011	<i>Bauhinia purpurea</i> L.	Fabaceae	Purple butterfly tree
DSC TEN012	<i>Borassus flabellifer</i> L.	Arecaceae	Palmyra palm
DSC TEN013	<i>Caesalpinia pulcherrima</i> (L.) Sw.	Fabaceae	Peacock flower
DSC TEN014	<i>Callistemon lanceolatus</i> (Sm.) Sweet	Myrtaceae	Crimson bottlebrush
DSC TEN015	<i>Caryotaurens</i> L.	Arecaceae	Fishtail palm
DSC TEN016	<i>Cassia fistula</i> L.	Fabaceae	Golden rain
DSC TEN017	<i>Cassia javanica</i> L.	Fabaceae	Pink shower
DSC TEN018	<i>Cassia siamea</i> Lam.	Fabaceae	Iron wood tree
DSC TEN019	<i>Casuarina equisetifolia</i> L.	Casuarinaceae	Whistling pine
DSC TEN020	<i>Ceiba pentandra</i> (L.) Gaertn.	Malvaceae	Silk cotton tree
DSC TEN021	<i>Cocos nucifera</i> L.	Arecaceae	Coconut tree
DSC TEN022	<i>Cordia dichotoma</i> G.Forst.	Boraginaceae	Assyrian plum
DSC TEN023	<i>Couropita guianensis</i> Aubl.	Lecythidaceae	Cannon ball tree
DSC TEN024	<i>Cycas beddomei</i> Dyer	Cycadaceae	-
DSC TEN025	<i>Cycas revolute</i> Thunb.	Cycadaceae	Japanese sago palm
DSC TEN026	<i>Delonix regia</i> (Boj. Ex Hook.) Raf.	Fabaceae	Flame
DSC TEN027	<i>Duranta erecta</i> L.	Verbenaceae	Sky flower
DSC TEN028	<i>Ensetesuperbum</i> (Roxb.) Cheesman	Musaceae	Wild plantain
DSC TEN029	<i>Ervatamiadivaricata</i> (L.) Burkill	Apocynaceae	Crape jasmine
DSC TEN030	<i>Erythrina variegata</i> L.	Fabaceae	Indian coral tree
DSC TEN031	<i>Eucalyptus globulus</i> Labill.	Myrtaceae	Tasmanian blue gum
DSC TEN032	<i>Ficus benghalensis</i> L.	Moraceae	Banyan fig
DSC TEN033	<i>Ficus racemosa</i> L.	Moraceae	Cluster fig
DSC TEN034	<i>Ficus religiosa</i> L.	Moraceae	Peepul
DSC TEN035	<i>Gardenia jasminoides</i> J.Ellis.	Rubiaceae	Cape jasmine
DSC TEN036	<i>Grewia asiatica</i> L.	Malvaceae	Phalsa
DSC TEN037	<i>Guazumaulmifolia</i> Lam.	Sterculiaceae	Bastard cedar
DSC TEN038	<i>Hamelia patens</i> Jacq.	Rubiaceae	Firebush

DSC TEN039	<i>Holarrhena pubescens</i> Wall. Ex G.Don	Apocynaceae	Fever pod
DSC TEN040	<i>Ixora coccinea</i> L.	Rubiaceae	Jungle jeranium
DSC TEN041	<i>Ixora parviflora</i> Lam.	Rubiaceae	Small flower ixora
DSC TEN042	<i>Juniperus</i> sp.	Cupressaceae	-
DSC TEN044	<i>Lagerstroemia indica x fauriei</i> 'Natchez'	Lythraceae	Queen of shrubs
DSC TEN043	<i>Lagerstroemia indicia</i> (L.) Pers.	Lythraceae	Queen of shrubs
DSC TEN045	<i>Lawsonia inermis</i> L.	Lythraceae	Henna
DSC TEN046	<i>Madhuca longifolia</i> (J.Koenig ex L.) J.F.Macbr.	Sapotaceae	Indian butter tree
DSC TEN047	<i>Malphigiaemarginata</i> DC.	Malphigiaceae	Barbados cherry
DSC TEN048	<i>Mangifera indica</i> L.	Anacardiaceae	Mango
DSC TEN049	<i>Manilkara zapota</i> (L.) P.Royen	Sapotaceae	Sapota
DSC TEN050	<i>Millingtonia hortensis</i> L.f.	Bignoniaceae	Tree jasmine
DSC TEN051	<i>Mimusopselengi</i> L.	Sapotaceae	Spanish cherry
DSC TEN052	<i>Morinda tinctoria</i> Roxb.	Rubiaceae	Indian mulberry
DSC TEN053	<i>Moringa oleifera</i> Lam.	Moringaceae	Horseradish
DSC TEN054	<i>Murrayakoenigii</i> (L.) Sprengel.	Rutaceae	Curry leaf
DSC TEN055	<i>Mussaendahirsutissima</i> (Hook.f.) Hutch.ex.Gamble.	Rubiaceae	-
DSC TEN056	<i>Neolamarckiacadamba</i> (Roxb.) Bosser	Rubiaceae	Bur flower tree
DSC TEN057	<i>Parkia biglandulosa</i> R.Br.	Fabaceae	Kiboko
DSC TEN058	<i>Peltophorumpterocarpum</i> (DC.) K.Heyne.	Fabaceae	Yellow flame
DSC TEN059	<i>Phoenix dactylifera</i> L.	Arecaceae	Wild dates tree
DSC TEN060	<i>Phyllanthus acidus</i> (L.) Skeels.	Phyllanthaceae	Star gooseberry
DSC TEN061	<i>Phyllanthus emblica</i> L.	Phyllanthaceae	Indian gooseberry
DSC TEN063	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Fabaceae	Madras thorn
DSC TEN064	<i>Polyalthialongifolia</i> (Sonn.) var.pendula	Annonaceae	False ashoka
DSC TEN065	<i>Pongamia pinnata</i> (L.) Panigrahi	Fabaceae	Pongam oil tree
DSC TEN066	<i>Pritchardia pacifica</i> Seem.	Arecaceae	Fiji fan palm
DSC TEN062	<i>Psidium guajava</i> L.	Myrtaceae	Guava tree
DSC TEN067	<i>Pterocarpus santalinus</i> L.f.	Fabaceae	Red sandal wood
DSC TEN068	<i>Pterospermumacerifolium</i> (L.) Willd.	Malvaceae	Bayur tree
DSC TEN069	<i>Ravenalamadagascarensis</i> Sonn.	Strelitziaceae	Traveller's tree
DSC TEN070	<i>Russeliaequisetiformis</i> Schlecht & Cham.	Plantaginaceae	Fire cracker plant
DSC TEN071	<i>Santalum album</i> L.	Santalaceae	Sandal wood
DSC TEN072	<i>Saracaasoca</i> (Roxb.) Willd.	Fabaceae	Ashoka
DSC TEN073	<i>Spathodeacampanulata</i> Beauv.	Bignoniaceae	African tulip tree
DSC TEN074	<i>Sterculia foetida</i> L.	Malvaceae	Hazel sterculia
DSC TEN075	<i>Stereospermumchelonioides</i> DC.	Bignoniaceae	Fragrant padri tree
DSC TEN076	<i>Swietenia mahagoni</i> (L.) Jacq.	Meliaceae	Mahogany
DSC TEN077	<i>Syzygiumcumini</i> (L.) Skeels.	Myrtaceae	Java plum
DSC TEN078	<i>Tabebuia rosea</i> DC.	Bignoniaceae	Pink poui
DSC TEN079	<i>Tamarindus indica</i> L.	Fabaceae	Indian dates
DSC TEN080	<i>Tecoma stans</i> (L.) Juss. ex Kunth	Bignoniaceae	Yellow elder
DSC TEN081	<i>Tectona grandis</i> L.f.	Lamiaceae	Teak
DSC TEN082	<i>Terminalia catappa</i> L.	Combretaceae	Indian almond
DSC TEN083	<i>Thespesia populnea</i> (L.) Sol. ex Corrêa.	Malvaceae	Head ache
DSC TEN084	<i>Vitex altissima</i> L.f.	Lamiaceae	Peacock chaste

Among the notable families are Fabaceae, with the maximum representation of 15 species that follow Moraceae and Malvaceae (Figure. 3). The flora includes the root of *Acacia auriculiformis* A. Cunn. ex Benth, which is utilized for alleviating aches and pains, at the same time Neem is known for its applications in treating eczema. Species such as *Aegle marmelos* (L.) Corrêa and *Ailanthus excels* Roxb. serve medicinal purposes such as treating Diarrhoea and acting as a fever tonic, respectively.

Each species in the collection offers unique medicinal properties, contributing to the biodiversity and therapeutic resources of the region (Table 2).

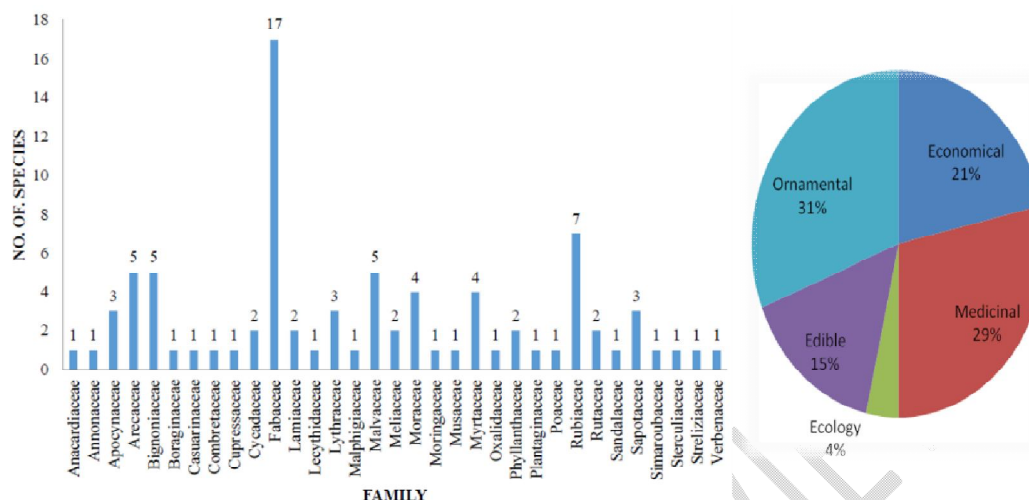


Fig 3: Family-wise screening of species diversity and its commercial importance

Table 2: Medicinal Uses of Trees and Shrubs in District Science Centre, Tirunelveli

Code No.	Botanical Name	Useful part	Medicinal uses
DSCTEN001	<i>Acacia auriculiformis</i> A. Cunn. ex Benth.	Root	Aches and pains
DSCTEN002	<i>Adenanthera pavonina</i> L.	Seed	Anti-inflammatory
DSCTEN003	<i>Aegle marmelos</i> (L.) Corrêa	Fruit	Chronic diarrhea
DSCTEN004	<i>Ailanthus excels</i> Roxb.	Bark	Fever and tonic
DSCTEN005	<i>Albizia lebbek</i> (L.) Benth.	Bark	Anti-allergic activity
DSCTEN006	<i>Alstonia scholaris</i> (L.) R.Br.	Bark	Diarrhea and indigestion remedy
DSCTEN007	<i>Artocarpus heterophyllus</i> Lam.	Leaves	Reduce high blood sugar
DSCTEN008	<i>Averrhoa carambola</i> L.	Leaves	Leprosy; skin ulcers and fever
DSCTEN009	<i>Azadirachta indica</i> A.Juss.	Root	Eczema
DSCTEN010	<i>Bambusa arundinacea</i> (Retz.) Willd.	Bark	Diarrhea
DSCTEN011	<i>Bauhinia purpurea</i> L.	Leaf stalk	Hiccough and gastric reflux
DSCTEN012	<i>Borassus flabellifer</i> L.	Leaves	Malaria and menstrual flow
DSCTEN013	<i>Caesalpinia pulcherrima</i> (L.) Sw.	Flower and fruit	Anti-bacterial & fungal activity
DSCTEN014	<i>Callistemon lanceolatus</i> (Sm.) Sweet	Flower	Gastric ulcer
DSCTEN015	<i>Caryotaurens</i> L.	Leaves	Skin disorders
DSCTEN016	<i>Cassia fistula</i> L.	Root	Fever
DSCTEN017	<i>Cassia javanica</i> L.	Bark	Relieve ailments
DSCTEN018	<i>Cassia siamea</i> Lam.	Twigs; root	Anti-bacterial agent
DSCTEN019	<i>Casuarina equisetifolia</i> L.	Bark	Diuretic
DSCTEN020	<i>Ceiba pentandra</i> (L.) Gaertn.	Fruit	Hypoglycemic; Antidermatophytic
DSCTEN021	<i>Cocos nucifera</i> L.	Leaves	Anthelmintic; astringent
DSCTEN022	<i>Cordia dichotoma</i> G.Forst.	Leaves	Skin infections
DSCTEN023	<i>Couroupita guianensis</i> Aubl.	Flowers	Rheumatoid arthritis
DSCTEN024	<i>Cycas beddomei</i> Dyer	Leaves	Cancer and hepatoma
DSCTEN025	<i>Cycas revolute</i> Thunb.	Leaves	Diabetes
DSCTEN026	<i>Delonix regia</i> (Boj. Ex Hook.) Raf.	Fruit	Insecticide
DSCTEN027	<i>Duranta erecta</i> L.	Fruit	Diabetes and Leucorrhea
DSCTEN028	<i>Ensetes superbum</i> (Roxb.) Cheesman	Leaves	Anti-inflammatory action
DSCTEN029	<i>Ervatamia divaricata</i> (L.) Burkill	Bark and Root	Fever and Livialiment
DSCTEN030	<i>Erythrina variegata</i> L.	Leaves	Sore throat; Sinusitis and colds
DSCTEN031	<i>Eucalyptus globulus</i> Labill.	Leaves and bark	Diarrhea and Polyuria
DSCTEN032	<i>Ficus benghalensis</i> L.	Fruit	Constipation
DSCTEN033	<i>Ficus racemosa</i> L.	Leaves	Inflammatory disorders

DSC TEN034	<i>Ficus religiosa</i> L.	Leaves	Fever and Kidney problems
DSC TEN035	<i>Gardenia jasminoides</i> J. Ellis.	Fruit juice	Anti-inflammatory agent
DSC TEN036	<i>Grewia asiatica</i> L.	Seeds	Dysentery; colds
DSC TEN037	<i>Guazuma ulmifolia</i> Lam.	Leaves	Sores; rashes; Anti-inflammatory
DSC TEN038	<i>Hamelia patens</i> Jacq.	Bark	Diarrhea; piles
DSC TEN039	<i>Holarrhena pubescens</i> Wall. Ex G. Don	Bark	Anthelmintic
DSC TEN040	<i>Ixora coccinea</i> L.	Root	Astringent; Antiseptics
DSC TEN041	<i>Ixora parviflora</i> Lam.	Leaves	Diabetes
DSC TEN042	<i>Juniperus</i> sp.	Fruit	Urinary tract infections (UTI)
DSC TEN043	<i>Lagerstroemia indicia</i> (L.) Pers.	Flower	Common colds
DSC TEN044	<i>Lagerstroemia indica x fauriei</i> 'Natchez'	Flower	Ornamental value
DSC TEN045	<i>Lawsonia inermis</i> L.	Leaves	Dandruff; Scabies; Eczema
DSC TEN046	<i>Madhuca longifolia</i> (J. Koenig ex L.) J.F. Macbr.	Flower; oil	Skin disease and body pain
DSC TEN047	<i>Malphigia emarginata</i> DC.	Fruits	Liver ailments and Diarrhea
DSC TEN048	<i>Mangifera indica</i> L.	Leaves	Diabetes
DSC TEN049	<i>Manilkara zapota</i> (L.) P. Royen	Fruit	Anti-oxidant
DSC TEN050	<i>Millingtonia hortensis</i> L.f.	Leaves	Anti-pyretic; Asthma
DSC TEN051	<i>Mimusops elengi</i> L.	Seeds	Astringent
DSC TEN052	<i>Morinda tinctoria</i> Roxb.	Leaves	Scabies; itching and hip pain
DSC TEN053	<i>Moringa oleifera</i> Lam.	Leaves and Fruit	Antioxidant
DSC TEN054	<i>Murrayakoenigii</i> (L.) Sprengel.	Leaves	Cures liver dysfunctions
DSC TEN055	<i>Mussaenda hirsutissima</i> (Hook. f.) Hutch. ex. Gamble.	Leaves	Anti-inflammatory
DSC TEN056	<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Dry leaves	Bubo and Hydrocele
DSC TEN057	<i>Parkia biglandulosa</i> R.Br.	Leaves	Parasitic infections
DSC TEN058	<i>Peltophorum pterocarpum</i> (DC.) K. Heyne.	Leaves	Intestinal problems
DSC TEN059	<i>Phoenix dactylifera</i> L.	Gum	Diarrhea
DSC TEN060	<i>Phyllanthus acidus</i> (L.) Skeels.	Leaves	Sciatica and Rheumatism
DSC TEN061	<i>Phyllanthus emblica</i> L.	Fruits	Controls Hair loss
DSC TEN062	<i>Psidium guajava</i> L.	Fruits & Leaves	Immune booster
DSC TEN063	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Bark	Chronic diarrhea
DSC TEN064	<i>Polyalthia longifolia</i> (Sonn.) var. pendula	Leaves	Skin diseases and Fever
DSC TEN065	<i>Pongamia pinnata</i> (L.) Panigrahi	Oil & Leaves	Rheumatism & Colds-Coughs.
DSC TEN066	<i>Pritchardia pacifica</i> Seem.	Leaves	Aches and pains
DSC TEN067	<i>Pterocarpus santalinus</i> L.f.	Wood	Economic value- Timber
DSC TEN068	<i>Pterospermum acerifolium</i> (L.) Willd.	Flowers & Leaves	Anti-inflammatory
DSC TEN069	<i>Ravenala madagascarensis</i> Sonn.	Leaves	Ornamental
DSC TEN070	<i>Russelia equisetiformis</i> Schlecht & Cham.	Leaves	Treats Malarial; Cancer
DSC TEN071	<i>Santalum album</i> L.	Wood	Common colds
DSC TEN072	<i>Saraca asoca</i> (Roxb.) Willd.	Bark	Uterine fibroids
DSC TEN073	<i>Spathodea campanulata</i> Beauv.	Bark	Ulcer; Skin disease
DSC TEN074	<i>Sterculia foetida</i> L.	Bark	Diaphoretic and diuretic
DSC TEN075	<i>Stereospermum chelonoides</i> DC.	Root & Bark	Diuretic and Cardiac tonic
DSC TEN076	<i>Swietenia mahagoni</i> (L.) Jacq.	Bark	Amoebiasis and Anemia
DSC TEN077	<i>Syzygium cumini</i> (L.) Skeels.	Fruit	Hyperglycemia
DSC TEN078	<i>Tabebuia rosea</i> DC.	Leaves	Fever and Pains
DSC TEN079	<i>Tamarindus indica</i> L.	Fruit	Gallbladder problems
DSC TEN080	<i>Tecoma stans</i> (L.) Juss. ex Kunth	Flower & Leaves	Diabetes and Diuretic
DSC TEN081	<i>Tectona grandis</i> L.f.	laxative	Gravid uterus
DSC TEN082	<i>Terminalia catappa</i> L.	Leaves	Liver diseases

DSCTEN083	<i>Thespesia populnea</i> (L.) Sol. ex Corrêa.	Bark	Anti-bacterial–Fungal agent
DSCTEN084	<i>Vitex altissima</i> L.f.	Leaves	Ulcerand allergic

Table 3: Listof Vulnerable,ThreatenedandEndangeredTreesinDistrict Science Centre, Tirunelveli

Code	Botanicalname	Family	IUCNStatus
DSCTEN024	<i>Cycasbeddomei</i> Dyer.	Cycadaceae	Endangered
DSCTEN067	<i>Pterocarpussantalinus</i> L.f.	Fabaceae	NearThreatened
DSCTEN071	<i>Santalumalbum</i> L.	Santalaceae	Vulnerable
DSCTEN072	<i>Saracaasoca</i> (Roxb.)Willd.	Fabaceae	Vulnerable
DSCTEN076	<i>Swieteniamahagoni</i> (L.)Jacq.	Meliaceae	Endangered

This extensive collection not only supports the ecological balance but also serves educational and medicinal purposes (Chen *et al.*, 2016). The presence of diverse species like the Peacock chaste tree (*Vitex altissima*L.f.), Indian almond (*Terminalia catappa* L) and Sandalwood (*Santalum album* L.) underlines the Centre's role in preserving both common, rare and vulnerable botanical varieties (Coelho *et al.*, 2020) (Table 3). The medicinal uses range from anti-inflammatory and antibacterial agents to treatments for diabetes and skin disorders, highlighting the practical applications of these plants in traditional medicine. Additionally, trees like *Albizia lebbbeck*(L.) Benth. effective against allergies, and *Alstoniascholaris* (L.) R.Br. used for diarrhea and indigestion remedies, contribute significantly to the Centre's collection. Other species like *Casuarina equisetifolia* L.(Whistling pine) and *Azadirachta indica*A.Juss. also show significant presence. Economically valuable species such as *Cocos nucifera* (Coconut tree) being the most abundant at 23 individuals and other ornamental plants like *Delonix regia*(Boj. Ex Hook.) Raf. ensure that the Centre is not only a repository of medicinal plants but also a vital green space that supports ecological balance and educational opportunities.

4. CONCLUSION

In conclusion, our comprehensive floristic survey at the District Science Centre in Tirunelveli has meticulously documented and catalogued 84 distinct species of trees and shrubs, representing 33 different families. This significant finding underscores the Centre's unique role as both an educational institution and a crucial botanical repository, where the rich diversity of plant life is both studied and preserved. The survey has deepened our understanding of the local flora, providing critical insights into the ecological roles and medicinal uses of these species, many of which are integral to the region's natural heritage. By systematically inventorying these species, our research serves as a valuable resource for ongoing and future conservation efforts, offering a scientific basis for protecting and managing these important plant populations. Moreover, this study emphasizes the urgent need for biodiversity preservation, which is essential not only for maintaining ecological stability but also for supporting the health and well-being of the local community. The findings highlight the interconnectedness of education, conservation, and community well-being, making a strong case for continued efforts to safeguard the botanical diversity of the District Science Centre for generations.

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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