***Original Research Article***

# EXPLORING THE BIODIVERSITY OF TREES AND SHRUBS IN SOUTHERN INDIA: A STUDY AT TIRUNELVELI'S SCIENCE CENTRE FOR CONSERVATION AND SUSTAINABILITY



## ABSTRACT

A comprehensive taxonomical floristic survey conducted at the District Science Centre in Tirunelveli identified 84 species of trees and shrubs, meticulously documenting each 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, 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, naturally adapted to specific regions, fulfill 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 *et al*., 2016).

Botanical gardens play a crucial role for conservation approaches involves preserving plants within their native habitats, ensuring their continued survival and their ability to contribute to local ecosystems (Abeli *et al*., 2020; Coelho *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; 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.

The purpose of thesurvey to assessing the conservation status of these plants,identifying species at risk those that are vulnerable, threatened, and endangered. By highlighting the importance of these species and their various applications, this research aims to inform and guide efforts in botanical conservation, sustainable use, and policy formulation. The findings of this survey are intended to support botanists, conservationists, and policymakers in their endeavours to preserve and manage the plant diversity within the District Science Centre, ensuring its continued contribution to ecological stability and community well-being.

## 2. MATERIALS & METHODS

### 2.1 Geography area and site study

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 (Fig.1). The study area spans a latitudinal range of 8.7268° N and a longitudinal range of 77.7165° E.

### 2.2 Methodology

In the present study, field trips were conducted to explore the tree species within the selected area. Standard methodology was employed and recorded on index cards for each species.

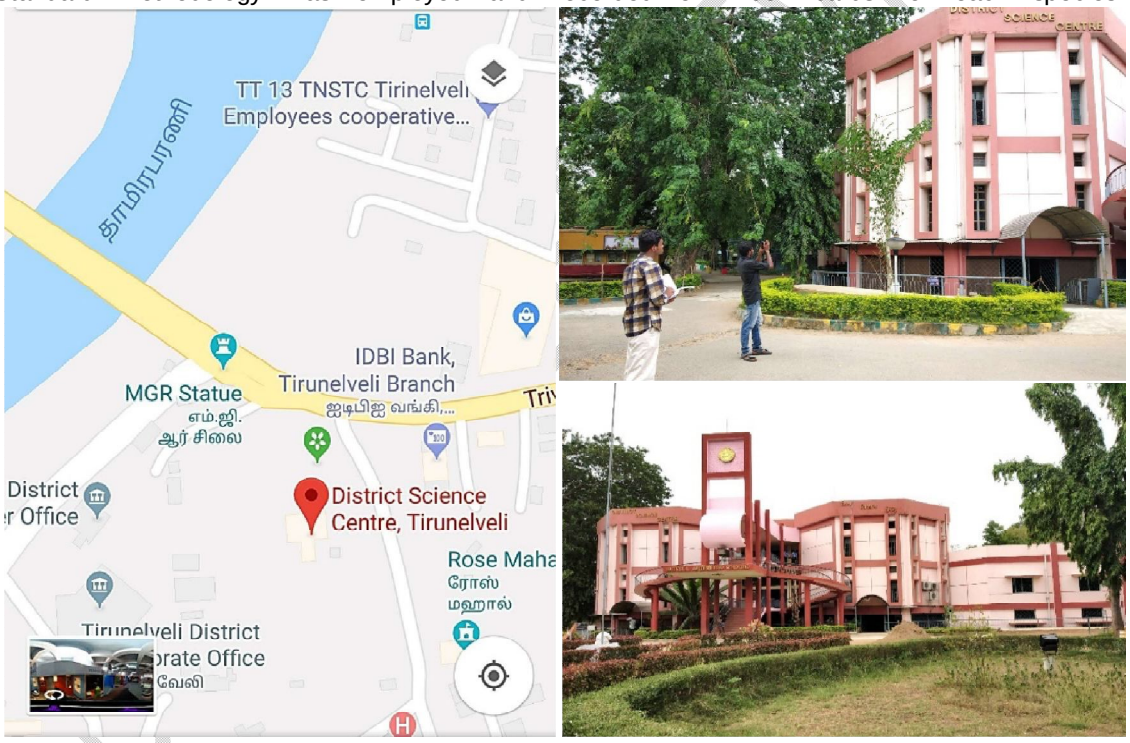


**Fig 1: Geographic Location and site area of the study**

Collected plant specimens were processed at the Botany laboratory of St. Xavier's College (Autonomous), Palayamkottai.The plantidentification 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 meticulously catalogued, 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. 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 (Fig.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.

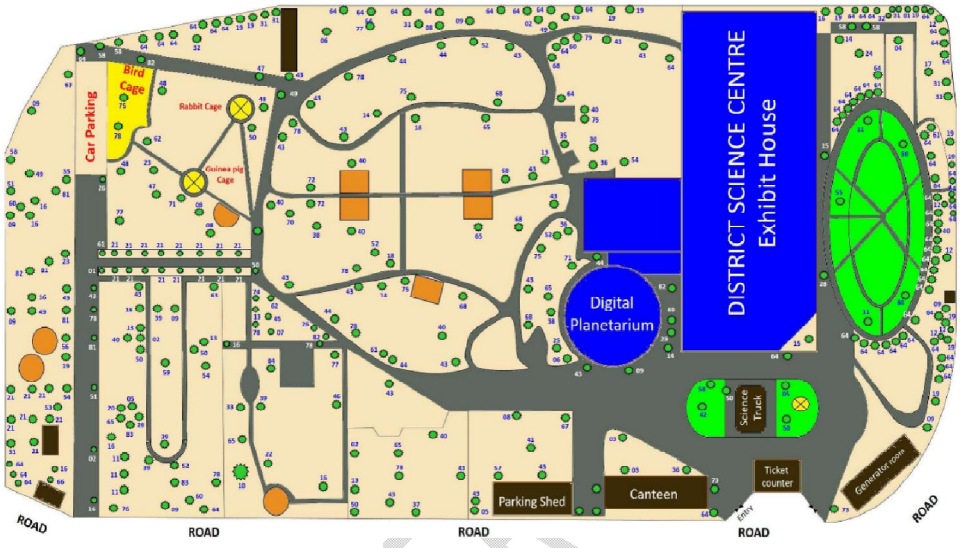


**Table 1: List of Trees and Shrubs in District Science Centre, Tirunelveli**

| Code No. | Botanical Name | Family | Vernacular Name |
|---|---|---|---|
| DSCTEN001 | *Acacia auriculiformis A. Cunn. ex Benth.* | Fabaceae | Earleafacasia |
| DSCTEN002 | *Adenantherapavonina L.* | Fabaceae | Red bead tree |
| DSCTEN003 | *Aegle marmelos (L.) Corrêa* | Rutaceae | Indian bael |
| DSCTEN004 | *Ailanthus excels Roxb.* | Simaroubaceae | Tree of heaven |
| DSCTEN005 | *Albizia lebbeck (L.) Benth.* | Fabaceae | Siris |
| DSCTEN006 | *Alstoniascholaris (L.) R.Br.* | Apocynaceae | Devil |
| DSCTEN007 | *Artocarpus heterophyllus Lam.* | Moraceae | Jack fruit |
| DSCTEN008 | *Averrhoa carambola L.* | Oxalidaceae | Star pickle |
| DSCTEN009 | *Azadirachta indica A.Juss.* | Meliaceae | Neem |
| DSCTEN010 | *Bambusa arundinacea (Retz.) Willd.* | Poaceae | Indian thorny |
| DSCTEN011 | *Bauhinia purpurea L.* | Fabaceae | Purple butterfly tree |
| DSCTEN012 | *Borassus flabellifer L.* | Arecaceae | Palmyra palm |
| DSCTEN013 | *Caesalpinia pulcherrima (L.) Sw.* | Fabaceae | Peacock flower |
| DSCTEN014 | *Callistemon lanceolatus (Sm.) Sweet* | Myrtaceae | Crimson bottlebrush |
| DSCTEN015 | *CaryotaurensL.* | Arecaceae | Fishtail palm |
| DSCTEN016 | *Cassia fistula L.* | Fabaceae | Golden rain |
| DSCTEN017 | *Cassia javanica L.* | Fabaceae | Pink shower |
| DSCTEN018 | *Cassia siamea Lam.* | Fabaceae | Iron wood tree |
| DSCTEN019 | *Casuarina equisetifolia L.* | Casuarinaceae | Whistling pine |
| DSCTEN020 | *Ceiba pentandra (L.) Gaertn.* | Malvaceae | Silk cotton tree |
| DSCTEN021 | *Cocos nucifera L.* | Arecaceae | Coconut tree |
| DSCTEN022 | *Cordia dichotomaG.Forst.* | Boraginaceae | Assyrian plum |

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|---|---|---|---|
| DSCTEN023 | *Couroupita guianensis Aubl.* | Lecythidaceae | Cannon ball tree |
| DSCTEN024 | *Cycas beddomei Dyer* | Cycadaceae | - |
| DSCTEN025 | *Cycas revolute Thunb.* | Cycadaceae | Japanese sago palm |
| DSCTEN026 | *Delonix regia (Boj. Ex Hook.) Raf.* | Fabaceae | Flame |
| DSCTEN027 | *Durantaerecta L.* | Verbenaceae | Sky flower |
| DSCTEN028 | *Ensetesuperbum (Roxb.) Cheesman* | Musaceae | Wild plantain |
| DSCTEN029 | *Ervatamiadivaricata (L.) Burkill* | Apocynaceae | Crape jasmine |
| DSCTEN030 | *Erythrina variegata L.* | Fabaceae | Indian coral tree |
| DSCTEN031 | *Eucalyptus globulus Labill.* | Myrtaceae | Tasmanian blue gum |
| DSCTEN032 | *Ficus benghalensis L.* | Moraceae | Banyan fig |
| DSCTEN033 | *Ficus racemosa L.* | Moraceae | Cluster fig |
| DSCTEN034 | *Ficus religiosa L.* | Moraceae | Peepul |
| DSCTEN035 | *Gardenia jasminoidesJ.Ellis.* | Rubiaceae | Cape jasmine |
| DSCTEN036 | *Grewia asiatica L.* | Malvaceae | Phalsa |
| DSCTEN037 | *Guazumaulmifolia Lam.* | Sterculiaceae | Bastard cedar |
| DSCTEN038 | *Hamelia patens Jacq.* | Rubiaceae | Firebush |
| DSCTEN039 | *Holarrhena pubescens Wall. Ex G.Don* | Apocynaceae | Fever pod |
| DSCTEN040 | *Ixora coccinea L.* | Rubiaceae | Jungle jeranium |
| DSCTEN041 | *Ixora parviflora Lam.* | Rubiaceae | Small flower ixora |
| DSCTEN042 | *Juniperus sp.* | Cupressaceae | - |
| DSCTEN044 | *Lagerstroemia indica x fauriei 'Natchez'* | Lythraceae | Queen of shrubs |
| DSCTEN043 | *Lagerstroemia indicia (L.) Pers.* | Lythraceae | Queen of shrubs |
| DSCTEN045 | *Lawsonia inermis L.* | Lythraceae | Henna |
| DSCTEN046 | *Madhuca longifolia (J.Koenig ex L.) J.F.Macbr.* | Sapotaceae | Indian butter tree |
| DSCTEN047 | *Malphigiaemarginata DC.* | Malphigiaceae | Barbados cherry |
| DSCTEN048 | *Mangifera indica L.* | Anacardiaceae | Mango |
| DSCTEN049 | *Manilkara zapota (L.) P.Royen* | Sapotaceae | Sapota |
| DSCTEN050 | *Millingtonia hortensis L.f.* | Bignoniaceae | Tree jasmine |
| DSCTEN051 | *Mimusopselengi L.* | Sapotaceae | Spanish cherry |
| DSCTEN052 | *Morinda tinctoria Roxb.* | Rubiaceae | Indian mulberry |
| DSCTEN053 | *Moringa oleifera Lam.* | Moringaceae | Horseradish |
| DSCTEN054 | *Murrayakoenigii (L.) Sprengel.* | Rutaceae | Curry leaf |
| DSCTEN055 | *Mussaendahirsutissima (Hook.f.) Hutch.ex.Gamble.* | Rubiaceae | - |
| DSCTEN056 | *Neolamarckiacadamba (Roxb.) Bosser* | Rubiaceae | Bur flower tree |
| DSCTEN057 | *Parkia biglandulosa R.Br.* | Fabaceae | Kiboko |
| DSCTEN058 | *Peltophorumpterocarpum (DC.) K.Heyne.* | Fabaceae | Yellow flame |
| DSCTEN059 | *Phoenix dactylifera L.* | Arecaceae | Wild dates tree |
| DSCTEN060 | *Phyllanthus acidus (L.) Skeels.* | Phyllanthaceae | Star gooseberry |
| DSCTEN061 | *Phyllanthus emblica L.* | Phyllanthaceae | Indian gooseberry |
| DSCTEN063 | *Pithecellobium dulce (Roxb.) Benth.* | Fabaceae | Madras thorn |
| DSCTEN064 | *Polyalthialongifolia (Sonn.) var.pendula* | Annonaceae | False ashoka |
| DSCTEN065 | *Pongamia pinnata (L.) Panigrahi* | Fabaceae | Pongam oil tree |
| DSCTEN066 | *Pritchardia pacifica Seem.* | Arecaceae | Fiji fan palm |
| DSCTEN062 | *Psidium guajava L.* | Myrtaceae | Guava tree |
| DSCTEN067 | *Pterocarpus santalinusL.f.* | Fabaceae | Red sandal wood |
| DSCTEN068 | *Pterospermumacerifolium (L.) Willd.* | Malvaceae | Bayur tree |
| DSCTEN069 | *Ravenalamadagascarensis Sonn.* | Strelitziaceae | Traveller's tree |
| DSCTEN070 | *Russeliaequisetiformis Schlecht& Cham.* | Plantaginaceae | Fire cracker plant |
| DSCTEN071 | *Santalum album L.* | Santalaceae | Sandal wood |
| DSCTEN072 | *Saracaasoca (Roxb.) Willd.* | Fabaceae | Ashoka |
| DSCTEN073 | *SpathodeacampanulataBeauv.* | Bignoniaceae | African tulip tree |
| DSCTEN074 | *Sterculia foetida L.* | Malvaceae | Hazel sterculia |
| DSCTEN075 | *Stereospermumchelonoides DC.* | Bignoniaceae | Fragrant padri tree |

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|---|---|---|---|
| DSCTEN076 | *Swietenia mahagoni (L.) Jacq.* | Meliaceae | Mahogany |
| DSCTEN077 | *Syzygiumcumini (L.) Skeels.* | Myrtaceae | Java plum |
| DSCTEN078 | *Tabebuia rosea DC.* | Bignoniaceae | Pink poui |
| DSCTEN079 | *Tamarindus indica L.* | Fabaceae | Indian dates |
| DSCTEN080 | *Tecoma stans (L.) Juss. ex Kunth* | Bignoniaceae | Yellow elder |
| DSCTEN081 | *Tectona grandis L.f.* | Lamiaceae | Teak |
| DSCTEN082 | *Terminalia catappaL.* | Combretaceae | Indian almond |
| DSCTEN083 | *Thespesia populnea (L.) Sol. ex Corrêa.* | Malvaceae | Head ache |
| DSCTEN084 | *Vitex altissima L.f.* | Lamiaceae | Peacock chaste |

Among the notable families are Fabaceae, with the maximum representation of 15 species that followsMoraceae and Malvaceae (Fig. 3). The flora includes the root of *Acacia auriculiformis* is utilized for alleviating aches and pains, while Neem is known for its applications in treating eczema. Species such as *Aegle marmelos* and *Ailanthus excelsa* serve medicinal purposes such as treating chronic diarrhea 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).

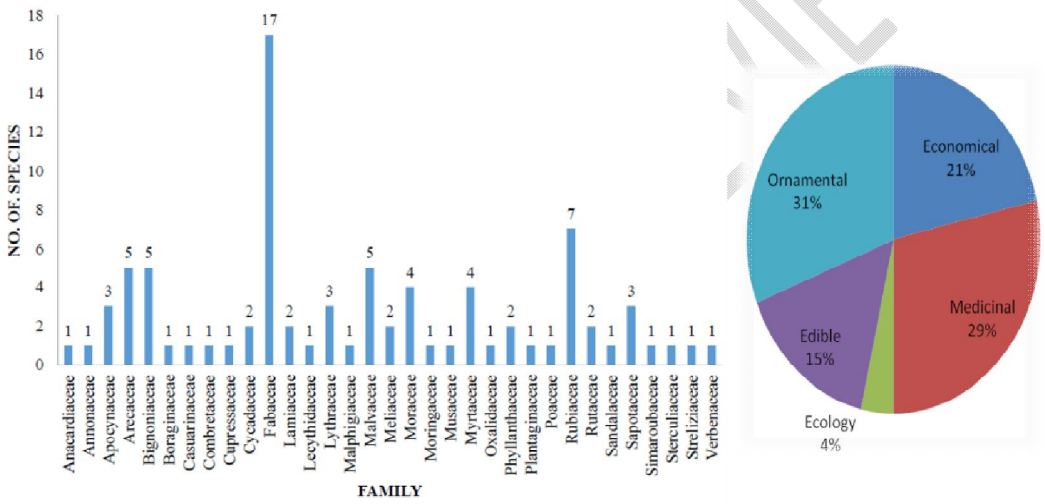


**Fig 3: Family-wise screening of species diversity and its commercial importance**

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

| Code No. | Botanical Name | Useful part | Medicinal uses |
|---|---|---|---|
| DSCTEN001 | *Acacia auriculiformis A. Cunn. ex Benth.* | Root | Achesand pains |
| DSCTEN002 | *Adenantherapavonina L.* | Seed | Anti-inflammatory |
| DSCTEN003 | *Aegle marmelos (L.) Corrêa* | Fruit | Chronic diarrhea |
| DSCTEN004 | *Ailanthus excels Roxb.* | Bark | Feverandtonic |
| DSCTEN005 | *Albizia lebbeck (L.) Benth.* | Bark | Anti-allergicactivity |
| DSCTEN006 | *Alstoniascholaris (L.) R.Br.* | Bark | DiarrheaandIndigestionremedy |
| DSCTEN007 | *Artocarpus heterophyllus Lam.* | Leaves | Reducehighblood sugar |
| DSCTEN008 | *Averrhoa carambola L.* | Leaves | Leprosy;skinulcersand fever |
| DSCTEN009 | *Azadirachta indica A.Juss.* | Root | Eczema |
| DSCTEN010 | *Bambusa arundinacea (Retz.) Willd.* | Bark | Diarrhea |
| DSCTEN011 | *Bauhinia purpurea L.* | Leaf stalk | Hiccoughand gastricreflux |
| DSCTEN012 | *Borassus flabellifer L.* | Leaves | MalariaandMenstrualflow |
| DSCTEN013 | *Caesalpinia pulcherrima (L.) Sw.* | Flower and fruit | Anti-bacterial&fungalactivity |
| DSCTEN014 | *Callistemon lanceolatus (Sm.) Sweet* | Flower | Gastric ulcer |
| DSCTEN015 | *CaryotaurensL.* | Leaves | Skindisorders |
| DSCTEN016 | *Cassia fistula L.* | Root | Fever |
| DSCTEN017 | *Cassia javanica L.* | Bark | Relievealiments |
| DSCTEN018 | *Cassia siamea Lam.* | Twigs; root | Anti-bacterialagent |

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|---|---|---|---|
| DSCTEN019 | *Casuarina equisetifolia L.* | Bark | Diuretic |
| DSCTEN020 | *Ceiba pentandra (L.) Gaertn.* | Fruit | Hypoglycemic;Antidermatophytic |
| DSCTEN021 | *Cocos nucifera L.* | Leaves | Anthelmintic;astringent |
| DSCTEN022 | *Cordia dichotomaG.Forst.* | Leaves | Skininfections |
| DSCTEN023 | *Couroupita guianensis Aubl.* | Flowers | Rheumatoidarthritis |
| DSCTEN024 | *Cycas beddomei Dyer* | Leaves | Cancerandhepatoma |
| DSCTEN025 | *Cycas revolute Thunb.* | Leaves | Diabetes |
| DSCTEN026 | *Delonix regia (Boj. Ex Hook.) Raf.* | Fruit | Insecticide |
| DSCTEN027 | *Durantaerecta L.* | Fruit | DiabetesandLeucorrhea |
| DSCTEN028 | *Ensetesuperbum (Roxb.) Cheesman* | Leaves | Anti-inflammatoryaction |
| DSCTEN029 | *Ervatamiadivaricata (L.) Burkill* | Bark and Root | Feverand Liveraliment |
| DSCTEN030 | *Erythrina variegata L.* | Leaves | Sorethroat;Sinusitisand colds |
| DSCTEN031 | *Eucalyptus globulus Labill.* | Leaves and bark | DiarrheaandPolyuria |
| DSCTEN032 | *Ficus benghalensis L.* | Fruit | Constipation |
| DSCTEN033 | *Ficus racemosa L.* | Leaves | Inflammatorydisorders |
| DSCTEN034 | *Ficus religiosa L.* | Leaves | FeverandKidney problems |
| DSCTEN035 | *Gardenia jasminoidesJ.Ellis.* | Fruit juice | Anti-inflammatory agent |
| DSCTEN036 | *Grewia asiatica L.* | Seeds | Dysentery;colds |
| DSCTEN037 | *Guazumaulmifolia Lam.* | Leaves | Sores;rashes; Anti-inflammatory |
| DSCTEN038 | *Hamelia patens Jacq.* | Bark | Diarrhea;piles |
| DSCTEN039 | *Holarrhena pubescens Wall. Ex G.Don* | Bark | Anthelmintic |
| DSCTEN040 | *Ixora coccinea L.* | Root | Astringent;Antiseptics |
| DSCTEN041 | *Ixora parviflora Lam.* | Leaves | Diabetes |
| DSCTEN042 | *Juniperus sp.* | Fruit | Urinarytract infections(UTI) |
| DSCTEN043 | *Lagerstroemia indicia (L.) Pers.* | Flower | Common colds |
| DSCTEN044 | *Lagerstroemia indica x fauriei 'Natchez'* | Flower | Ornamentalvalue |
| DSCTEN045 | *Lawsonia inermis L.* | Leaves | Dandruff;Scabies;Eczema |
| DSCTEN046 | *Madhuca longifolia (J.Koenig ex L.) J.F.Macbr.* | Flower; oil | Skindiseaseandbodypain |
| DSCTEN047 | *Malphigiaemarginata DC.* | Fruits | LiverAliments and Diarrhea |
| DSCTEN048 | *Mangifera indica L.* | Leaves | Diabetes |
| DSCTEN049 | *Manilkara zapota (L.) P.Royen* | Fruit | Anti-oxidant |
| DSCTEN050 | *Millingtonia hortensis L.f.* | Leaves | Anti-pyretic;Asthma |
| DSCTEN051 | *Mimusopselengi L.* | Seeds | Astringent |
| DSCTEN052 | *Morinda tinctoria Roxb.* | Leaves | Scabies;itching and hip pain |
| DSCTEN053 | *Moringa oleifera Lam.* | Leaves and Fruit | Antioxidant |
| DSCTEN054 | *Murrayakoenigii (L.) Sprengel.* | Leaves | Curesliver dysfunctions |
| DSCTEN055 | *Mussaendahirsutissima(Hook.f.) Hutch.ex.Gamble.* | Leaves | Anti-inflammatory |
| DSCTEN056 | *Neolamarckiacadamba (Roxb.) Bosser* | Dry leaves | Buboesand Hydrocele |
| DSCTEN057 | *Parkia biglandulosa R.Br.* | Leaves | Parasiticinfections |
| DSCTEN058 | *Peltophorumpterocarpum (DC.) K.Heyne.* | Leaves | Intestinalproblems |
| DSCTEN059 | *Phoenix dactylifera L.* | Gum | Diarrhea |
| DSCTEN060 | *Phyllanthus acidus (L.) Skeels.* | Leaves | Sciatica andRheumatism |
| DSCTEN061 | *Phyllanthus emblica L.* | Fruits | ControlsHairloss |
| DSCTEN062 | *Psidium guajava L.* | Fruits&Leaves | Immunebooster |
| DSCTEN063 | *Pithecellobium dulce (Roxb.) Benth.* | Bark | Chronic diarrhea |
| DSCTEN064 | *Polyalthialongifolia (Sonn.) var.pendula* | Leaves | Skindiseasesand Fever |
| DSCTEN065 | *Pongamia pinnata (L.) Panigrahi* | Oil & Leaves | Rheumatism&Colds-Coughs. |
| DSCTEN066 | *Pritchardia pacifica Seem.* | Leaves | Achesand pains |
| DSCTEN067 | *Pterocarpus santalinusL.f.* | Wood | Economicvalue- Timber |
| DSCTEN068 | *Pterospermumacerifolium (L.) Willd.* | Flowers&Leaves | Anti inflammatory |

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|---|---|---|---|
| DSCTEN069 | *Ravenalamadagascarensis Sonn.* | Leaves | Ornamental |
| DSCTEN070 | *Russeliaequisetiformis Schlecht& Cham.* | Leaves | TreatsMalarial; Cancer |
| DSCTEN071 | *Santalum album L.* | Wood | Common colds |
| DSCTEN072 | *Saracaasoca (Roxb.) Willd.* | Bark | Uterinefibroids |
| DSCTEN073 | *SpathodeacampanulataBeauv.* | Bark | Ulcer;Skin disease |
| DSCTEN074 | *Sterculia foetida L.* | Bark | Diaphoreticand diuretic |
| DSCTEN075 | *Stereospermumchelonoides DC.* | Root & Bark | Diureticand Cardiac tonic |
| DSCTEN076 | *Swietenia mahagoni (L.) Jacq.* | Bark | Amoebiasis and Anemia |
| DSCTEN077 | *Syzygiumcumini (L.) Skeels.* | Fruit | Hyperglycemia |
| DSCTEN078 | *Tabebuia rosea DC.* | Leaves | Feverand Pains |
| DSCTEN079 | *Tamarindus indica L.* | Fruit | Gallbladderproblems |
| DSCTEN080 | *Tecoma stans (L.) Juss. ex Kunth* | Flower &Leaves | DiabetesandDiuretic |
| DSCTEN081 | *Tectona grandis L.f.* | laxative | Graviduterus |
| DSCTEN082 | *Terminalia catappaL.* | Leaves | Liverdiseases |
| DSCTEN083 | *Thespesia populnea (L.) Sol. ex Corrêa.* | Bark | Anti-bacterial–Fungal agent |
| DSCTEN084 | *Vitex altissima L.f.* | Leaves | Ulcerand allergic |

**Table 3: Listof Vulnerable,ThreatenedandEndangeredTreesinDistrict Science Centre, Tirunelveli**

| Code | Botanicalname | Family | IUCNStatus |
|---|---|---|---|
| DSCTEN024 | CycasbeddomeiDyer. | Cycadaceae | Endangered |
| DSCTEN067 | PterocarpussantalinusL.f. | Fabaceae | NearThreatened |
| DSCTEN071 | SantalumalbumL. | Santalaceae | Vulnerable |
| DSCTEN072 | Saracaasoca (Roxb.)Willd. | Fabaceae | Vulnerable |
| DSCTEN076 | Swieteniamahagoni(L.)Jacq. | Meliaceae | Endangered |

This extensive collection not only supports the ecological balance but also serves educational and medicinal purposes. The presence of diverse species like the Peacock chaste tree (*Vitex altissima*), Indian almond (*Terminalia catappa*) and Sandal wood (*Santalum album)*underlines the Centre's role in preserving both common, rare and vulnerable botanical varieties (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 lebbeck*, effective against allergies, and *Alstoniascholaris*, used for diarrhea and indigestion remedies, contribute significantly to the Centre's collection. Other species like *Casuarina equisetifolia* (Whistling pine) and *Azadirachta indica* 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* (Flame tree) 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 to come.

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