

## CHECKLIST OF TREE SPECIES IN URBAN REGIONS OF TIRUNELVELI, TAMIL NADU

\*Ramarajan Sekar<sup>1</sup>, Laxmanan Prakash<sup>2</sup>, S. Darwin Paul Edison<sup>3</sup>, R. Mahesh<sup>4</sup>, K. Petchimuthu<sup>5</sup>  
M.R Sudhakaran<sup>6</sup> and Saravana Gandhi A<sup>7</sup>

<sup>1</sup>Department of Botany, Sri Paramakalyani College, Alwarkuruchi - 627 412

<sup>2</sup>Bandipur Tiger Reserve, Bandipur, Chamarajnagar District, Karnataka - 571 126

<sup>3</sup>Department of Botany, St. John's College, Palayamkottai - 627 002

<sup>4</sup>Department of Botany, S.T. Hindu College, Nagercoil - 629 002

<sup>5</sup>Department of Botany, Sri Kumara Gurupara Swamigal Arts College, Srivaikundam - 628 619

<sup>6</sup>Department of Botany, Sri Paramakalyani College, Alwarkuruchi - 627 412

<sup>7</sup>Department of Botany, Rani Anna Govt. College for Women, Tirunelveli - 629 002

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli - 627 412)

\*Author for Correspondence: [sramabio@gmail.com](mailto:sramabio@gmail.com)

### ABSTRACT

The primary objectives of the urban plantation checklist during January to December 2020, this study aimed to assess and analyze the status of urban trees within a 10-kilometre radius of the center city of Tirunelveli District. A total of 42 families with 133 species and 103 genera were identified. *Azadirachta indica*, *Terminalia catappa*, *Peltophorum pterocarpum* and *Delonix regia* are the most prevalent species in the entire city. This study provides baseline information for urban tree species and also status of native and non-native species.

**Keywords:** Checklist, Urban, Native tree, Tirunelveli

### INTRODUCTION

Cities provide such habitat and a domestic for a developing percentage of the world's population (Seto et al., 2011) and they play a critical function in maintaining ecological, economic and social well-being (Bolund and Hunhammar, 1999). India's foremost financial system has skilled the world's quickest growth, and on the cutting-edge fee of expansion, the city population is expected to attain a startling 60 crore of people (WUP, 2018). Many of the world's largest cities have implemented tree-planting programs based on the alleged environmental and social benefits of urban forests (Stephanie et al., 2013). Recent findings have used the World Health Organization's definition of health to assess the effects of trees in particular, and greenspace in general, on physical, mental, and social well-being (Nesbitt et al., 2017; Van den Bosch and Ode Sang, 2017; Kondo et al., 2018; Wolf et al., 2020). Urban trees play an important role in the ecology of human habitats in many ways including, they filter air, water and sunlight and also provide a shelter for birds and animals to contribute food webs and recreational areas for people (Costanza et al., 1997; Dobbs et al., 2011; McLain et al., 2012; Nowak et al., 2013). Urban forests are effective in mitigating urban pollution (Escobedo et al., 2011), minimize stormwater runoff (Kirnbauer et al., 2013) and shade homes to conserve energy (McPherson and Simpson, 2003) compared to how much attention is given to the forests (Nagendra, 2008).

Urban development eliminates native species and invites non-native species, which may become invaders (Luttge and Buckeridge, 2020) With the disappearance of native species, there has been an increase in human activity (Drayton and Primack, 1996). Non-native tree (NNT) species reduces the local climate (Bowler et al., 2010), reduce native biodiversity, and alter ecosystem functioning in undesirable ways (Cardinale et al., 2012; Gaertner et al., 2011; Gamfeldt et al., 2013).

The scientific evidence from the last two decades has emphasized the crucial necessity of green areas within urban ecological systems. However, urban planners and managers underestimate the role played by

**Research Article (Open Access)**

the trees (Nagendra and Gopal, 2010; Gopal and Nagendra, 2014). The green spaces are then at high risk of experiencing loss, a decline in the area due to demand for urban expansion, and a lack of space for accommodating the existing and growing population (Nagendra et al., 2013; Paul and Nagendra, 2015). Tirunelveli is one of the cities, growing by 1.41% annually. The city has experienced urbanization at a rapid pace, including through unplanned and uncontrolled developments, demographical expansion and other anthropogenic activities. This study was conducted to inventory the urban tree diversity of Tirunelveli city, Tamil Nadu. Further, data generated may help appropriate current tree status, native, non-native tree species details.

**MATERIALS AND METHODS**

**Study area**

Tirunelveli city is situated the headquarters of the Tirunelveli District and bank of river Tamiraparani. Tirunelveli District was formed in 1790 by the East India company, later came under the direct control of the British Crown Queen Victoria. The name Tirunelveli has been composed from the three Tamil words i.e. ‘Thiru – Nel – Veli’ meaning Sacred Paddy Hedge. Tirunelveli city was covered by Palayamkottai, Junction, Vannarpettai, New bus stand and N.G.O Colony.

**Data collection**

Intensive field studies were carried out to record the urban tree species from January to December 2020. The urban trees were estimated within a 10 km radius circle of the city center (Collector office) using QGIS and Google earth software. The trees were identified and authenticated with the help of regional floras (Hooker, 1872-1897; Gamble and Fischer, 1915-1936; Matthew, 1983; Nair and Henry, 1983; Henry et al., 1987; Matthew, 1991) and India Biodiversity Portal. Nomenclature of the species was cross checked in IPNI (The International Plant Names Index) database. The nativity of the invasive species was determined based on the information available in the published kinds of literature.

**RESULTS AND DISCUSSION**

**Status, species richness and diversity**

In total, 133 species of avenue tree species belonging to 103 genera and 42 families were recorded within a 10 km radius circle of the city center of Tirunelveli districts Table 1.

**Table 1: Checklist of tree diversity in Tirunelveli district**

S. No	Family	Species Name	Common Name	Deciduous / Evergreen
1	Anacardiaceae	<i>Lannea coromandelica</i> (Houtt.) Merr.	Indian ash	Deciduous
2	Anacardiaceae	<i>Mangifera indica</i> L.	Mango	Evergreen
3	Annonaceae	<i>Polyalthia longifolia</i> (Sonner.) Thw.	False ashoka	Evergreen
4	Annonaceae	<i>Cananga odorata</i> (Lam.) Hook.f. & Thomson	Perfume tree	Evergreen
5	Annonaceae	<i>Annona squamosa</i> L.	Sugar-apple	Evergreen
6	Apocynaceae	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	Pinwheelflower	Evergreen
7	Apocynaceae	<i>Alstonia scholaris</i> (L.) R.Br.	Scholar Tree	Evergreen
8	Apocynaceae	<i>Wrightia tinctoria</i> (Roxb.) R.Br.	Pala indigo	Deciduous
9	Apocynaceae	<i>Cascabela thevetia</i> (L.) Lippold	Mexican Oleander	Evergreen
10	Apocynaceae	<i>Plumeria alba</i> L.	White Frangipani	Deciduous
11	Apocynaceae	<i>Plumeria pudica</i> Jacq.	Golden Arrow	Deciduous

**Research Article (Open Access)**

S. No	Family	Species Name	Common Name	Deciduous / Evergreen
12	Apocynaceae	<i>Plumeria rubra</i> L.	Frangipani	Deciduous
13	Aracauriaceae	<i>Araucaria cunninghamii</i> Mudie	Christmas tree	Evergreen
14	Araliaceae	<i>Schefflera actinophylla</i> (Endl.) Harms	Octopus Tree	Evergreen
15	Arecaceae	<i>Areca catechu</i> L.	Areca nut	Evergreen
16	Arecaceae	<i>Caryota urens</i> L.	Fishtail palm	Evergreen
17	Arecaceae	<i>Phoenix sylvestris</i> (L.) Roxb.	Silver date palm	Evergreen
18	Arecaceae	<i>Dyopsis lutescens</i> (H.Wendl.) Beentje & J.Dransf.	Areca palm	Evergreen
19	Arecaceae	<i>Beaucarnea recurvata</i> Lem.	Ponytail palm	Evergreen
20	Arecaceae	<i>Borassus flabellifer</i> L.	Palmyra palm	Evergreen
21	Arecaceae	<i>Cocos nucifera</i> L.	Coconut tree	Evergreen
22	Bignoniaceae	<i>Markhamia stipulata</i> (Wall.) Seem.	Indian trumpet flower	Deciduous
23	Bignoniaceae	<i>Millingtonia hortensis</i> L.f.	Tree jasmine	Deciduous
24	Bignoniaceae	<i>Kigelia africana</i> (Lam.) Benth.	Sausage tree	Evergreen
25	Bignoniaceae	<i>Spathodea campanulata</i> P.Beauv.	Squirt tree	Deciduous
26	Bignoniaceae	<i>Jacaranda mimosifolia</i> D.Don	Blue Jacaranda	Deciduous
27	Bignoniaceae	<i>Tabebuia rosea</i> (Bertol.) Bertero ex A.DC.	Rosy trumpet tree	Deciduous
28	Bignoniaceae	<i>Tecoma stans</i> (L.) Juss. ex Kunth	Yellow elder	Evergreen
29	Boraginaceae	<i>Cordia dichotoma</i> G.Forst.	Clammy cherry	Deciduous
30	Boraginaceae	<i>Cordia sebestena</i> L.	Scarlet Cordia	Deciduous
31	Burseraeae	<i>Commiphora berryi</i> (Arn.) Engler	Indian Balm of Gilead	Deciduous
32	Capparaceae	<i>Crateva adansonii</i> DC. subsp. <i>odora</i> (Buch. - Ham.) Jacobs	Garlic Pear Tree	Deciduous
33	Caricaceae	<i>Carica papaya</i> L.	Pawpaw	Evergreen
34	Casuarinaceae	<i>Casuarina equisetifolia</i> L.	Whistling Pine	Evergreen
35	Clusiaceae	<i>Calophyllum inophyllum</i> L.	Alexandrian laurel ball tree	Evergreen
36	Combretaceae	<i>Terminalia arjuna</i> (Roxb.) Wight & Arn.	Arjun tree	Deciduous
37	Combretaceae	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Baheda	Evergreen
38	Combretaceae	<i>Terminalia catappa</i> L.	Indian-almond	Deciduous
39	Dilleniaceae	<i>Dillenia indica</i> L.	Elephant apple	Evergreen
40	Euphorbiaceae	<i>Phyllanthus acidus</i> (L.) Skeels	Malay gooseberry	Deciduous
41	Euphorbiaceae	<i>Phyllanthus emblica</i> L.	Indian gooseberry	Evergreen
42	Fabaceae	<i>Acacia auriculiformis</i> A. Cunn ex Benth.	Earleaf Acacia	Evergreen
43	Fabaceae	<i>Acacia nilotica</i> (L.) Willd. ex Del. subsp. <i>indica</i> (Benth) Brenan	Babul	Deciduous
44	Fabaceae	<i>Albizia amara</i> (Roxb.) B.Boivin	Bitter Albizia	Deciduous
45	Fabaceae	<i>Dalbergia sissoo</i> DC.	Indian rosewood	Evergreen

**Research Article (Open Access)**

S. No	Family	Species Name	Common Name	Deciduous / Evergreen
46	Fabaceae	<i>Pterocarpus marsupium</i> Roxb.	Malabar kino tree	Evergreen
47	Fabaceae	<i>Adenantha pavonina</i> L.	Coral wood	Evergreen
48	Fabaceae	<i>Butea monosperma</i> (Lam.) Taub.	Flame of the Forest	Deciduous
49	Fabaceae	<i>Cassia fistula</i> L.	Indian laburnum	Deciduous
50	Fabaceae	<i>Cassia roxburghii</i> DC.	Red Cassia	Evergreen
51	Fabaceae	<i>Hardwickia binata</i> Roxb.	Indian Black Wood	Deciduous
52	Fabaceae	<i>Pterocarpus santalinus</i> L.f.	Red sandalwood	Deciduous
53	Fabaceae	<i>Saraca asoca</i> (Roxb.)Willd.	Ashok tree	Evergreen
54	Fabaceae	<i>Sesbania grandiflora</i> (L.) Pers.	Vegetable hummingbird	Deciduous
55	Fabaceae	<i>Albizia lebbek</i> (L.) Benth.	Lebbek tree	Deciduous
56	Fabaceae	<i>Albizia saman</i> (Jacq.) Merr.	Rain tree	Evergreen
57	Fabaceae	<i>Delonix elata</i> (L.) Gamble	White Gul Mohur	Deciduous
58	Fabaceae	<i>Leucaena leucocephala</i> (Lam.) de Wit	Wild tamarind	Deciduous
59	Fabaceae	<i>Prosopis juliflora</i> (Sw.) Dc.	Mesquite	Evergreen
60	Fabaceae	<i>Gliricidia sepium</i> (Jacq.) Kunth ex Walp.	Quickstick	Deciduous
61	Fabaceae	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Madras Thorn	Evergreen
62	Fabaceae	<i>Acacia leucophloea</i> (Roxb.) Willd.	White Bark Acacia	Deciduous
63	Fabaceae	<i>Bauhinia acuminata</i> L.	White orchid-tree	Evergreen
64	Fabaceae	<i>Bauhinia purpurea</i> L.	Orchid tree	Deciduous
65	Fabaceae	<i>Bauhinia tomentosa</i> L.	Yellow bell orchid tree	Deciduous
66	Fabaceae	<i>Dalbergia latifolia</i> Roxb.	Indian rosewood	Evergreen
67	Fabaceae	<i>Erythrina stricta</i> Roxb.	Indian Coral tree	Deciduous
68	Fabaceae	<i>Pongamia pinnata</i> (L.) Pierre	Indian beech	Evergreen
69	Fabaceae	<i>Senna siamea</i> (Lam.) H.S.Irwin & Barneby	Siamese cassia	Evergreen
70	Fabaceae	<i>Delonix regia</i> (Boj. ex Hook) Rafin.	Royal poinciana	Deciduous
71	Fabaceae	<i>Tamarindus indica</i> L.	Indian date	Evergreen
72	Fabaceae	<i>Parkinsonia aculeata</i> L.	Palo verde	Evergreen
73	Fabaceae	<i>Peltophorum pterocarpum</i> (DC.) K.Heyne	Copperpod	Evergreen
74	Laminaceae	<i>Vitex altissima</i> L.f.	-	Evergreen
75	Lecythidaceae	<i>Couropita guianensis</i> Aubl.	Cannonball tree	Evergreen
76	Lythraceae	<i>Lagerstroemia indica</i> L.	Bonnet Flower	Evergreen
77	Lythraceae	<i>Lagerstroemia reginae</i> Roxb.	Queen Of Flowers	Evergreen
78	Lythraceae	<i>Lagerstroemia speciosa</i> (L.) Pers.	Pride of India	Evergreen
79	Magnoliaceae	<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Champak	Evergreen
80	Malpighiaceae	<i>Malpighia emarginata</i> DC.	Acerola cherry	Evergreen

**Research Article (Open Access)**

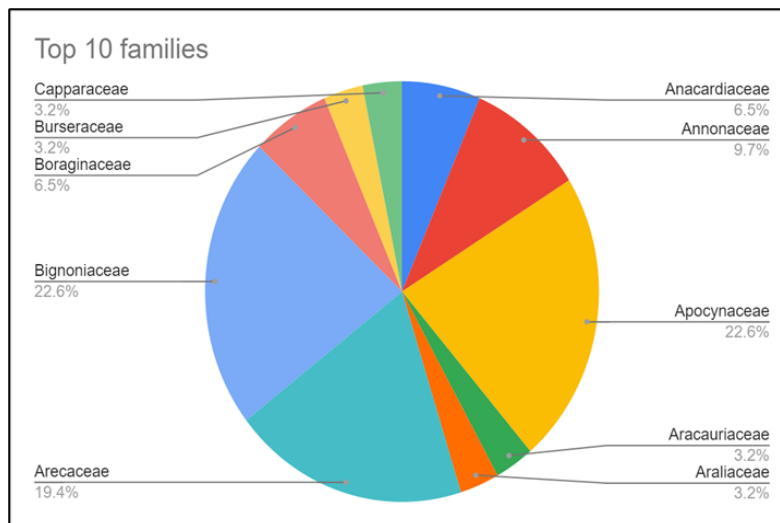
S. No	Family	Species Name	Common Name	Deciduous / Evergreen
81	Malvaceae	<i>Hibiscus tiliaceus</i> L.	Beach hibiscus	Deciduous
82	Malvaceae	<i>Thespesia populnea</i> (L.) Soland ex Correa	Portia tree	Deciduous
83	Malvaceae	<i>Guazuma ulmifolia</i> Lam.	West Indian elm	Evergreen
84	Malvaceae	<i>Bombax ceiba</i> L.	Cotton tree	Deciduous
85	Malvaceae	<i>Adansonia digitata</i> L.	Baobab	Deciduous
86	Meliaceae	<i>Azadirachta indica</i> A. Juss.	Neem Tree	Deciduous
87	Meliaceae	<i>Melia azedarach</i> L.	Chinaberry	Deciduous
88	Meliaceae	<i>Swietenia mahagoni</i> (L.) Jacq.	Mahogany	Evergreen
89	Moraceae	<i>Ficus racemosa</i> L.	Cluster Fig	Evergreen
90	Moraceae	<i>Artocarpus heterophyllus</i> Lam.	Jackfruit	Evergreen
91	Moraceae	<i>Ficus amplissima</i> J.E. Smith	Indian Bat tree	Evergreen
92	Moraceae	<i>Ficus benghalensis</i> L.	Indian banyan	Evergreen
93	Moraceae	<i>Ficus religiosa</i> L.	Sacred fig	Evergreen
94	Moraceae	<i>Artocarpus altilis</i> (Parkinson ex F.A.Zorn) Fosberg	Breadfruit	Evergreen
95	Moraceae	<i>Ficus tsjahela</i> Burm.f.	Bearded fig-tree	Evergreen
96	Moraceae	<i>Ficus elastica</i> Roxb. ex Hornem.	Indian rubber tree	Evergreen
97	Moraceae	<i>Ficus benjamina</i> L.	Weeping fig	Evergreen
98	Moringaceae	<i>Hyperanthera pterygosperma</i> (Gaertn.) Oken	Drumstick tree	Evergreen
99	Muntingiaceae	<i>Muntingia calabura</i> L.	Singapore cherry	Evergreen
100	Musaceae	<i>Ensete superbum</i> (Roxb.) Cheesman	Rock Banana	Evergreen
101	Musaceae	<i>Ravenala madagascariensis</i> Sonn.	Traveller's tree	Evergreen
102	Myrtaceae	<i>Callistemon citrinus</i> (Curtis) Skeels	bottlebrush	Evergreen
103	Myrtaceae	<i>Eucalyptus globulus</i> Labill.		Evergreen
104	Myrtaceae	<i>Eucalyptus tereticornis</i> Sm.	Forest red gum	Evergreen
105	Myrtaceae	<i>Syzygium cumini</i> (L.) Skeels	Jamun	Evergreen
106	Myrtaceae	<i>Psidium guajava</i> L.	Guava	Deciduous
107	Nyctaginaceae	<i>Pisonia grandis</i> R. Br.	Bird-catcher tree	Evergreen
108	Nyctanthaceae	<i>Nyctanthes arbor-tristis</i> L.	Night-flowering jasmine	Evergreen
109	Oxalidaceae	<i>Averrhoa carambola</i> L.	Star fruit	Evergreen
110	Poaceae	<i>Bambusa bambos</i> (L.) Voss	Indian thorny bamboo	Evergreen
111	Poaceae	<i>Bambusa vulgaris</i> Schrad.	Golden bamboo	Evergreen
112	Rhamnaceae	<i>Ziziphus jujuba</i> Mill.	Indian jujube	Evergreen
113	Rubiaceae	<i>Guettarda speciosa</i> L.	Beach Gardenia, zebra wood	Evergreen
114	Rubiaceae	<i>Morinda citrifolia</i> L.	Great Morinda	Evergreen

**Research Article (Open Access)**

S. No	Family	Species Name	Common Name	Deciduous / Evergreen
115	Rubiaceae	<i>Morinda pubescens</i> Sm.	Morinda tree	Evergreen
116	Rubiaceae	<i>Neolamarkia cadamba</i> (Roxb.) Bosser	Burflower-tree	Evergreen
117	Rutaceae	<i>Murraya koenigii</i> (L.) Spreng.	Curry tree	Evergreen
118	Rutaceae	<i>Aegle marmelos</i> (L.) Correa	Bael	Evergreen
119	Rutaceae	<i>Citrus aurantiifolia</i> (Christm.) Swingle	Common lime	Evergreen
120	Rutaceae	<i>Murraya koenigii</i> (L.) Spreng.	Orange jessamine	Evergreen
121	Santalaceae	<i>Santalum album</i> L.	Sandal tree	Evergreen
122	Sapindaceae	<i>Filicium decipiens</i> (Wight & Arn.) Thw.	Fern Tree	Evergreen
123	Sapindaceae	<i>Harpullia arborea</i> (Blanco) Radlk.	Mogum-mogum	Evergreen
124	Sapotaceae	<i>Mimusops elengi</i> L.	Spanish cherry	Evergreen
125	Sapotaceae	<i>Madhuca longifolia</i> (J.Koenig ex L.) J.F.Macbr.	Mahua	Deciduous
126	Sapotaceae	<i>Manilkara zapota</i> (L.) P.Royen	Chikoo	Evergreen
127	Simaroubaceae	<i>Simarouba amara</i> Aubl.	Paradise-tree	Evergreen
128	Simaroubaceae	<i>Ailanthus excelsa</i> Roxb.	Indian Tree of Heaven	Deciduous
129	Ulmaceae	<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Indian Elm	Evergreen
130	Verbenaceae	<i>Tectona grandis</i> L.f.	Teak	Deciduous
131	Verbenaceae	<i>Duranta erecta</i> L.	Golden Dewdrop	Evergreen
132	Verbenaceae	<i>Vitex negundo</i> L.	Chinese chastetree	Evergreen
133	Verbenaceae	<i>Gmelina arborea</i> Roxb.	Beechwood	Deciduous

**Status of Family**

Of the 42 families of avenue tree species recorded in the study area, Fabaceae contributed the predominant family with 32 species, followed by Moraceae (9 species) (Figure 1).



**Figure 1: Top 10 dominant families of the avenue tree species recorded from the study area**

### Status of Geographic origin

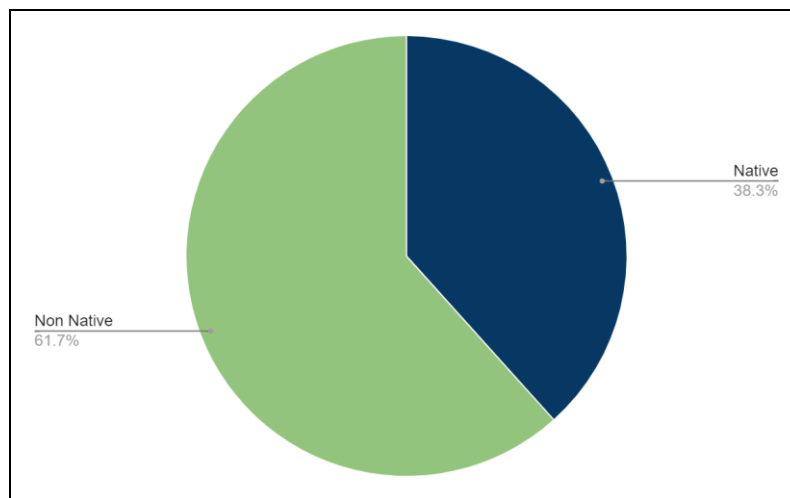
The urban tree species recorded in this study are categorized based on their Geographic origin. A total of 21 geographical origins/regions are considered for analysis (Table 2). The Indian subcontinent contributed 20.30 % of alien tree species followed by South and South-East Asian elements contributed 18.80 %.

**Table 2: Origin of the urban tree recorded in Tirunelveli city**

Origin country	Number of Species	Percentage
Indian subcontinent	27	20.30
South and Southeast Asia	25	18.80
Indian subcontinent and Southeast Asia	24	18.05
Australia and southeast Asia	9	6.77
Mexico, Central America and the Caribbean	7	5.26
Tropical Africa	6	4.51
Tropical America	6	4.51
Madagascar and South India	3	2.26
Mexico	3	2.26
Mexico and Central America	3	2.26
Tropical Asia	3	2.26
Tropical Asia and the Pacific	3	2.26
Tropical Southeastern Asia	3	2.26
Indomalaya, New Guinea and Northern Australia	2	1.50
Southern Florida	2	1.50
Tropical America and West Indies	2	1.50
Central America	1	0.75
China and tropical Asia	1	0.75
Madagascar	1	0.75
Native of Tropical America	1	0.75
Tropical America and Pacific	1	0.75

### Status of Native and Non-Native Species

The assessment of tree species characters of the 133 species reported within the city of the urban area showed among the total species, 51 species reported as native species and shared 38.3% while 82 species (43.24%) are non-native in nature (Figure 2). These include *Annona squamosa*, *Acacia auriculiformis*, *Prosopis juliflora*, *Tamarindus indica*, *Tecoma stans*, *Leucaena leucocephala*, *Borassus flabellifer*, *Senna siamea*, *Delonix regia* and *Eucalyptus tereticornis* etc. *Acacia auriculiformis* was introduced to India in 1946, the purpose of reforestation of degraded forests, afforestation of grasslands and avenue planting (Kushalapa, 1991). *Leucaena leucocephala* and *Prosopis juliflora* are small fast-growing trees and used fodder and firewood (Raizda and Chatterji, 1954).



**Figure 2: Status of native and non-native tree species**

## CONCLUSION

The study focused on the checklist of tree species in the urban region in Tirunelveli, India. Basically, this city under the river, agricultural habitat and adjacent lands area and Tamil literature is classified Marutham thinai. Its common tree like *Terminalia arjuna*, *Syzygium cumini* and *Madhuca longifolia* etc. In the course of time, the urban area development has removed the natural vegetation that may be there and planted a lot of new trees. For example, twenty years ago, Arjuna trees were abundant on both sides of the road, but later due to the widening of the road, all these trees were removed. Our result suggested that planting native plants to maximize the ecological benefits, support faunal diversity and all factors of the ecosystem. The checklist is current status of urban tree plantation.

## ACKNOWLEDGEMENT

The authors are thankful to Sri Paramakalyani College, Alwarkurichi Management for encouragement and support.

## REFERENCES

- Bolund P and Hunhammar S (1999).** Ecosystem services in urban areas. *Ecological Economics*, 29, 293–301.
- Bowler DE, Buyung-Ali L, Knight TM and Pullin AS (2010).** Urban greening to cool towns and cities: A systematic review of the empirical evidence. *Landscape and Urban Planning*, 97, 147–155.
- Cardinale BJ, Duffy JE, Gonzalez, A, Hooper DU, Perrings C, Venail P, Narwani A, Mace GM, Tilman D, Wardle DA, Kinzig AP, Daily GC, Loreau M, Grace JB and Larigauderie A (2012).** Biodiversity loss and its impact on humanity. *Nature*, 486, 59–67.
- Costanza R, D'Arge R, De Groot R, Farber S, Grasso M, Hannon B, Limburg K, Naeem S, O'Neill RV, Paruelo J, Raskin RG, Sutton P and Van Den Belt M (1997).** The value of the world's ecosystem services and natural capital. *Nature*, 387, 253–260.
- Dobbs C, Escobedo FJ and Zipperer WC (2011).** A framework for developing urban forest ecosystem services and goods indicators. *Landscape and Urban Planning*, 99, 196–206.
- Drayton B, and Primack RB (1996).** Plant species lost in an isolated conservation area in metropolitan Boston from 1894 to 1993. *Conservation Biology*, 10(1) 30–39.
- Escobedo FJ, Kroeger T and Wagner JE (2011).** Urban forests and pollution mitigation: Analyzing ecosystem services and disservices. *Environmental Pollution*, 159, 2078–2087.



- Gaertner M, Richardson DM and Privett SDJ (2011).** Effects of alien plants on ecosystem structure and functioning and implications for restoration: Insights from three degraded sites in South African fynbos. *Environmental Management*, 48, 57–69.
- Gamble JS (1915–1936).** Flora of Presidency of Madras. 3 Vols. Adlard & Sons Ltd., London.
- Gamfeldt L, Snäll T, Bagchi R, Jonsson M, Gustafsson L, Kjellander P, Ruiz-Jaen MC, Fröberg M, Stendahl J, Philipson CD, Mikusiński G, Andersson E, Westerlund B, Andrén H and Moberg F (2013).** Higher levels of multiple ecosystem services are found in forests with more tree species. *Nature Communications*, 4, 1340.
- Gopal D and Nagendra H (2014).** Vegetation in Bangalore’s slums: Boosting livelihoods, well-being and social capital. *Sustainability*, 6, 2459–2573.
- Henry AN, Kumari GR and Chitra V (1987).** Flora of Tamil Nadu, India. Ser. 1: Analysis. Vol. 2. Botanical Survey of India, Coimbatore.
- Hooker JD (1872–1897).** The flora of British India, Vols. 1–7. Reeve & Co., London.
- Kirnbauer MC, Baetz BW and Kenney WA (2013).** Estimating the stormwater attenuation benefits derived from planting four monoculture species of deciduous trees on vacant and underutilized urban land parcels. *Urban Forestry and Urban Greening*, 12, 401–407.
- Kondo MC, Fluehr JM, McKeon T and Branas CC (2018).** Urban green space and its impact on human health. *International Journal of Environmental Research and Public Health*, 15 445.
- Kushalapa KA (1991).** ACIAR Proceeding series 35: 189–193. In: Advances in tropical Acacia research. Proceedings of an international workshop held in Bangkok, Thailand, 11–15 February 1991.
- Luüttge U and Buckeridge M (2020).** Trees: structure and function and the challenges of urbanization. *Trees*. <https://doi.org/10.1007/s00468-020-01964-1>.
- Matthew KM (1983).** The flora of Tamil Nadu Carnatic, Vol. 3 (part 1–3). The Rapinat Herbarium, St. Joseph's College, Tiruchirappalli.
- Matthew KM (1991).** An excursion flora of Central Tamil Nadu. Thiruchirappalli, Rapinat *Herbarium*. 682 p.
- McLain R, Poe M, Hurley PT, Lecompte-Mastenbrook J and Emery MR (2012).** Producing edible landscapes in Seattle's urban forest. *Urban Forestry & Urban Greening*, 11, 187–194.
- McPherson EG and Simpson JR (2003).** Potential energy savings in buildings by an urban tree planting programme in California. *Urban Forestry and Urban Greening*, 2, 73–86.
- Nagendra H (2008).** Do parks work? Impact of protected areas on land cover clearing. *Ambio*, 330–337.
- Nagendra H and Gopal D (2010).** Street trees in Bangalore—Density, diversity, composition and distribution. *Urban Forestry & Urban Greening*, 9, 129–137.
- Nagendra H, Lucas R, Honrado JP, Jongman RHG, Tarantino C, Adamo M and Mairota P (2013).** Remote sensing for conservation monitoring: Assessing protected areas, habitat extent, habitat condition, species diversity and threats. *Ecological Indicators* 33, 45–59.
- Nair NC and Henry AN (1983).** Flora of Tamil Nadu, India, Ser. 1–3: Analysis Vol. 1. *Botanical Survey of India*, Coimbatore.
- Nesbitt L, Hotte N, Barron S, Cowan J and Sheppard SRJ (2017).** The social and economic value of cultural ecosystem services provided by urban forests in North America: a review and suggestions for future research. *Urban Forestry & Urban Greening*, 25, 103–111.
- Nowak DJ, Hoehn RE, Bodine AR, Greenfield EJ and O’Neil-Dunne J (2013).** Urban forest structure, ecosystem services and change in Syracuse, NY. *Urban Ecosystems*, 1-23.
- Paul S and Nagendra H (2015).** Vegetation change and fragmentation in the megacity of Delhi: Mapping 25 years of change. *Applied Geography* 58, 153–166.
- Raizda MB and Chatterji RN (1954).** A diagnostic key to the various forms of introduced Mesquite (*Prosopis juliflora* DC). *Indian Forester*, 80 675–680.
- Seto KC, Fragkias M, Güneralp B and Reilly MK (2011).** A meta-analysis of global urban land expansion. *PLoS ONE* 6(8), e23777.

**Stephanie P, Thomas G, Diane EP, Sassan S and Jean-Daniel S (2013).** Urban tree planting programs, function or fashion? Los Angeles and urban tree planting campaigns. *Geo Journal*, **78**, 475–493.

**The International Plant Names Index (2012).** Published on the Internet <http://www.ipni.org> [accessed 18 October 2018].

**The Plant List (2018).** Version 1.1. Published on the Internet; <http://www.theplantlist.org/> (accessed 18 October).

**Van den Bosch M and Ode Sang A (2017).** Urban natural environments as nature-based solutions for improved public health – A systematic review of reviews. *Environmental Research* **158**, 373–384.

**Wolf KL, Lam ST, McKeen JK, Richardson GRA, Van den Bosch M and Bardekjian AC (2020).** Urban trees and human health: a scoping review. *International Journal of Environmental Research and Public Health* **17** 4371.

**Copyright:** © 2022 by the Authors, published by Centre for Info Bio Technology. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY-NC) license [<https://creativecommons.org/licenses/by-nc/4.0/>], which permit unrestricted use, distribution, and reproduction in any medium, for non-commercial purpose, provided the original work is properly cited.