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Bhuvaneswari Manoharan
Department of Botany, Vivekanandha College of Arts and Sciences for Women, Elayampalayam, Tiruchengode, Tamil Nadu, India

Ravinder Singh Chinnappan
Department of Botany, Vivekanandha College of Arts and Sciences for Women, Elayampalayam, Tiruchengode, Tamil Nadu, India

Corresponding Author:
Ravinder Singh Chinnappan
Department of Botany, Vivekanandha College of Arts and Sciences for Women, Elayampalayam, Tiruchengode, Tamil Nadu, India

A study on medicinal and commercial uses of sacred groves of Namakkal district, Tamil Nadu, India

Bhuvaneswari Manoharan and Ravinder Singh Chinnappan

Abstract
Conservation of biodiversity is essential and major goal for us to protect the environment. Traditional belief with sanctified manners had a vital role in the conservation of plants and their habitat. People across the Nations had an immense belief in their spiritual habitation and sustainability. It promotes us to protect the plants and utilize them in different medicine from the sacred groves to the level of *in-situ* type of conservation. Indigenous people and the local communities depend on the sacred grooves for their spiritual and medicinal purpose. But in recent years the urbanisation plays an adverse impact on the loss of plant diversity and destruction rate also be increased gradually.
In this present investigation, we conducted periodic field survey during the months of December 2018 to July 2019. This study was performed to expose the conservation strategy of floristic diversity of sacred groves and its associated species were recorded in the entire Taluks of Namakkal district, Tamil Nadu, India. Also the medicinal and commercial value of all the plant species were documented for future reference. We found 88 miniature Sacred Groves in our study area. Totally 77 species belongs to 37 families were documented. From this study the family Fabaceae species were found to be dominant and *Azadirachta indica* is keystone species, it is found in 63 groves in the study area.

Keywords: Sacred groves, urbanization, medicinal plants and conservation

Introduction
Sacred forests are often referred as Sacred Groves, which sites cultural and spiritual significance for the people who lived around them. They have been protected by local communities around the world for a variety of reasons, including religious practices, burial grounds and watershed value. India has the world estimated to be over 100,000 Sacred grove species. These are disappearing due to cultural changes and pressure to utilize the natural resources in the daily life. The size of the sacred groves varies greatly from small plots less than one hectare to larger tracts of small plots less than one hundred of hectares (Alison Ormsby., ss 2013) [1]. The term 'sacred' denotes extra ordinary and it stimulate feelings of power, mystery, awe, transcendence, peace and healing. Trees are the custom of nature which represent life and the sacred community of spiritual, cosmic and physical worlds that were considered the first temple of gods. Trees may be 'holy' 'blessed' or 'sacred', depending upon the religious attitude of people toward them and nature (Arti Garg., 2013) [4]. Sacred grove culture was one of the ancient cultures, since the age of Rig Veda, their concept of worship to trees was pioneer of sacred grove (Negi., 2005) [5].
Nature worship is one of the important phenomenon in human beings across the World and mainly in India. Indian indigenous people dedicated themselves to local deities and conserve vegetation along with nature worship. Sacred groves named differently in different places of India like 'Devarakadu', 'Devarabana', 'Nagabana', 'Buthadabana' in Kannada, 'Kavu in Kerala, 'Kovilkadu' in Tamil Nadu, ' Sarna' or 'Dev' in Madhyapradesh, ' Devrai or Devrahati' in Maharastra, ' Sarnas' in Bihar, 'Orans' in Rajasthan, 'Lai Umang' in Manipur, 'Dev van in Himachalpradesh, 'Sarana' or 'Jayathavi' in Jharkhand and 'Ki Law Lyngadoh' or 'Ki Law kyntang' in Meghalaya (Rajesh., 2016) [16]. Sacred groves are one of the important natural resources to obtain medicine, food and fuel wood from the plants, interlinking the human and nature with ecological relationship. Sacred groves are outstanding and excellent examples of the collective attitudes and beliefs of a rural society. These are the aesthetic symbols of the interaction of man with nature, a rich blend of natural and cultural values. These are believed to be the sites, where the ancestors and forefathers lived and the abode of

Natural spirits or deities. Their plant wealth and conservation potential were impressive enough to acknowledge them as mini biosphere reserves (Gadgil and Vartak., 1973, 1975) [8, 20]. Water bodies near a sacred grove play an impact and fulfill the need of drinking water to the fauna in the sacred area and the local community people. (Lakshman Singh *et al*., 2014) [13]. Sacred Groves enrich the soil through its rich litter and the nutrients generated by litter decomposition are not only recycled within the Sacred Groves ecosystem, but also find their way into the adjoining Agro Ecosystems (Jincy and Subin, 2016) [11]. The conservation of sacred groves by the local people involves strict rules and taboos, tree felling, damaging of plants are strictly prohibited. Generally, inside the grove foot wears, smoking and alcoholic beverage are prohibited. Only local people are allowed to sickness. In the case of persons damaging the groves properties, fines or punishments are awarded, resulting in the religious taboo and myth, the diversity of the groves is protected (Ganesan, 2009) [9]. Hunting and logging are usually strictly banned within these patches. Beyond this forest usage like honey collection and dead wood collection, sometimes permitted on the basis of needs for survival (Divya and Manonmani, 2013) [7].

In India around 14,000 sacred groves have been reported which act as reservoirs of rare fauna and more often rare flora, amid rural and even urban settings. Experts believe that the total number of sacred groves could be as high as 100,000. India is believed to have nearly 14,000 sacred groves spread among different States. Most of the groves are located in Himachal Pradesh, Kerala, Andra Pradesh, Maharashtra, West Bengal and Chhattisgarh. (Khan and Tripathi, 2004) [12]. There are still many undiscovered sacred groves existing in the Eastern ghats region. Indian sacred groves are sometimes associated with temples/ monasteries/ shrines and burial grounds. Sacred groves are traditionally protected small patches of vegetation types and managed by local communities, through a wide range of management practices considered as biological heritage. They are dedicated to local deities or ancestral spirits, protected through social traditions by local people and taboos that incorporate spiritual and ecological values. These sacred groves are preserved over course of many generations represent native vegetation in a natural habitation or natural state (Sanjay S. Sathe., 2017) [18].

According to a report prepared by WHO, all over the world 21,000 plant species are used for medicinal purpose, where 7500 plant species are used in ethno medicine in India. Nearly 80% of the indigenous people over the world and especially in developing countries depend on traditional systems of medicine and medicinal plants for immediate health care. The ethnic and indigenous people of forests and villages possess a rich knowledge of medicinal plants and their uses. Older generation acquire traditional knowledge from the ancient generation, thus much information may be lost by unproper documentation (Antaryami Pradhan., 2016) [2]. But in recent times the traditional knowledge appear to be on the gradual decline, due to the advent of modernization and various anthropogenic activities, which altered the structure and function of different ecosystems all over the world. One of the most conspicuous effects of ecosystem perturbation has been resulted in the depletion of biodiversity (S.G. Gawade., 2018) [10]. This study enlightens the urgent conservation of sacred grove. In addition, it provides information regarding the floral wealth of the sacred groves, which facilitates the knowledge about its culture, social and ecological values. In India the government or NGO'S (Non-government Organization's) have to fund these agencies to monitor the adverse changes in the sacred groves and suggest the sustainable measures to conserve it. Sacred groves are declining in biodiversity, reason could be lack in diversity, education and also the significance to conserve the sacred groves (Devika Langathasa., 2018) [6].

Materials and Methods

Study area

Namakkal District is a newly formed district from Salem District, functioning from 1-1-1997 in the state of Tamilnadu. Namakkal is also called as "Namagiri" the name of the rock formation at the centre of the town. It consists of 7 Taluks namely Namakkal, Rasipuram, Thiruchengodu, Paramathi velur, Kolli hills, Sendamangalam and Komarapalayam. (30 Revenue firakas). For local arrangements, the district has been divided into 5 municipalities, 15 Panchayats unions, 19 Town panchayats. The district is bounded by Salem on the North, Karur on the South, Trichy and Salem on the East and Erode on the West. The Geographical area of the District is 3368.21 Sq.Kms. Which lies between 11.00 and 11. 360 North Latitude and 77.280 and 78.300 East Longtitude.

Methodology

A survey was conducted in 7 Taluks in Namakkal district. During the survey interviews were conducted for elderly people and pujari in the particular groves. From these areas nearly 77 plant species were identified as medicinal plants. Different kinds of medicinally and commercially useful plant communities were also present in that area as herbs, climbers, shrubs and trees. Various plant medicinal values were recorded by using the phytochemical analysis and literature.

Inventory of floristic

An inventory of collected plant species was prepared following the identification of plant specimens simultaneously. All the located and inventoried specimens were identified with the help of The Flora of Presidency Madras (Gamble) and finally specimens were arranged in their respective families following the Benthem & Hooker's system of classification (1862-1883).

Result and Discussion

The present study reveals 77 different plant species belongs to 37 families were medicinally and commercially used by the indigenous people (Table 1-3). Each village has a grove, a protected area with Amman or the mother Goddess (Fig.1). Groves with many forms of deity like Kaali like statues and Ayyanar, Karuppanar, Muniappan, Nagar, Putru mariyamman, etc., These statues were made up of stone. The surveyed plant materials have some distinct medicinal values. According to the literature, we enlisted some medicinal uses as follows.

The present study reveals the maintenance of Sacred Groves of local peoples in and around the various Groves. Sacred Groves are mainly conserved on the basis of traditional, cultural and spiritual beliefs (Malhotra *et al*., 1997) [14]. But unfortunately the religious beliefs and taboos in the centre of Sacred Grove conservation are now destroying vastly due to urbanization and modern way of exploitation (Rao., 1996) [17]. This study enlightens the urgent conservation of Sacred Grove. In addition, it also provides information regarding the floral wealth of the Sacred Groves, which facilitates the knowledge about its culture, social and ecological role. The Governmental or NGO's have to fund these agencies to monitor the adverse changes occured in the Sacred Groves

and also suggest sustainable measures to conserve diversity. Due to the conservation of Sacred Groves, it improves and increases soil fertility, water storage and Oxygen production.
Sacred Groves are declining in its diversity, because of lack of motivation and educating people about the importance of Sacred Groves (Devika Langthasa., 2018) [5]. In recent times the spiritual and traditional myth was slowly degraded leads the extinction of sacred grove. (Arpita Vipat and Erach Bharucha., 2014) [3]. Better and healthy life style was attained by conserving the sacred grooves. (Sushma aingh et al., 2017) [19].

Our initial step in the documentation of the floral vegetation in the sacred groves may enhance the conservation efforts and safeguarding the rare and endemic species. Major concern in the conservation efforts is to involve the local communities, NGO's, Traditional educators to protect the sacred groves in the society.

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Conclusion

Our initial step in the documentation of the floral vegetation in the sacred groves and sustainable utilization may enhance the conservation efforts and safeguarding the rare and endemic species. Major concern in the conservation efforts is essential to involve the local communities, NGO's, Traditional educators to protect the sacred groves for the welfare of our environment.

Table 1: Sacred Groves of study area (Namakkal District)

S. No	Vernacular Name	Scientific Name	Family	Habit
1.	Vembu	*Azadirachta indica* A. Juss.	Meliaceae	Tree
2.	Poovarasu	*Thespesia populnea* (L.) Sol. ex Corrêa	Malvaceae	Tree
3.	Arasa maram	*Ficus religiosa* L.	Moraceae	Tree
4.	Arali	*Nerium oleander* L.	Apocyanaceae	Shrub
5.	Vanni	*Prosopis spicigera* L.	Fabaceae	Tree
6.	Mahilam	*Mimusops elengi*	Sapotaceae	Tree
7.	Tulsi	*Ocimum sanctum* L.	Lamiaceae	Herb
8.	Vilvam	*Aegle marmelos* (L.) Corrêa	Rutaceae	Tree
9.	Matti	*Terminalia elliptica* Willd	Combretaceae	Tree
10.	Ma maram	*Mangifera indica* L.	Anacardiaceae	Tree
11.	Nochi	*Vitex negundo* L.	Lamiaceae	Shrub
12.	Naval	*Syzygium cumini* (L.) Skeels	Myrtaceae	Tree
13.	Nagalingam	*Couroupita guianensis* Aubl	Lecythidaceae	Tree
14.	Athipazham	*Ficus racemosa* L.	Moraceae	Tree
15.	Thiruvodu maram	*Crescentia cujete* L.	Bignonaceae	Tree
16.	Manjal Kadambam	*Anthocephalus cadamba* (Roxb.) Miq	Rubiuaceae	Tree
17.	Coconut	*Cocos nucifera* L.	Arecaceae	Tree
18.	Pavalla Malli	*Nyctanthes arbor-tristis* L.	Oleaceae	Shrub
19.	Vazhai	*Musa paradisiaca* L.	Musaceae	Shrub
20.	Punnai maram	*Calophyllum inophyllum* L.	Calophyllaceae	Tree
21.	Punga mara	*Millettia pinnata* (L.) Panigrahi	Fabaceae	Tree
22.	Sorikka maram	*Schleichera oleosa* (Lour.) Merr	Sapindaceae	Tree
23.	Karuvepillai	*Murraya koenigii* (L.) Spreng	Rutaceae	Tree
24.	Malai Vembu	*Melia azedarach* L.	Meliaceae	Tree
25.	Elumichai	*Citrus limon* (L.) Osbeck	Rutaceae	Tree
26.	Kiluvai	*Commiphora caudata* (Wight & Arn.) Engl	Bruseraceae	Tree
27.	Ichi	*Ficus microcarpa* L.f	Moraceae	Tree
28.	Puliya maram	*Tamarindus indica* L.	Fabaceae	Tree
29.	Nettilingam	*Polyalthia longifolia* (Sonn.) Thwaites	Annonaceae	Tree
30.	Minnamaram	*Premna tomentosa* Willd	Verbenaceae	Tree
31.	Vagai	*Albizia lebbeck* (L.) Benth.	Leguminosae	Tree
32.	Ooncha (Arappu) maram	*Albizia amara* (Roxb.) B.Boivin	Leguminosae	Tree
33.	Vadhanarayana maram	*Delonix regia* (Hook.) Raf	Fabaceae	Tree
34.	Illupai	*Madhuca longifolia* (J.Koenig ex L.) J.F.Macbr	Sapotaceae	Tree
35.	Paalai	*Alstonia scholaris* (L.) R. Br	Apocyanaceae	Tree
36.	Pannai maram	*Borassus flabellifer* L.	Arecaceae	Tree
37.	Karattai	*Ziziphus mauritiana* Lam	Rhamnaceae	Tree
38.	Vakkai maram	*Carissa carandas* L.	Apocyanaceae	Tree
39.	Villa maram	*Feroniaelephantum Corrêa*	Rutaceae	Tree

40.	Etti maram	*Strychnos nux-vomica* L	Loganiaceae	Tree
41.	Chembaruthi	*Hibiscus rosa-sinensis* L	Malvaceae	Shrub
42.	Perunkalli	*Plumeria alba L*	Apocyanaceae	Tree
43.	Murungai	*Moringa oleifera Lam*	Lamiaceae	Tree
44.	Maruthani	*Lawsonia inermis L*	Lythraceae	Shrub
45.	Karpuravalli	*Plectranthus amboinicus* (Lour.) Spreng.	Lamiaceae	Herb
46.	Nelli maram	*Phyllanthus emblica L*	Phyllanthaceae	Tree
47.	Nanthiya kalyani	*Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult*	Apocyanaceae	Shrub
48.	Nithyakalyani	*Catharanthus roseus* (L.) G.Don	Apocyanaceae	Herb
49.	Adathodai	*Justicia adhatoda* L.	Acanthaceae	Tree
50.	Thiruneetrupachillai	*Ocimum basilicum L.*	Lamiaceae	Sub-shrub
51.	Kathirikai	*Solanum melongena L*	Solanaceae	Herb
52.	Avaram poo	*Senna auriculata (L.) Roxb.*	Fabaceae	Shrub
53.	Karu oomathai	*Xanthium strumarium L*	Asteraceae	Shrub
54.	Avuri	*Indigofera tinctoria L*	Fabaceae	Shrub
55.	Sundakai	*Solanum torvum Sw.*	Solanaceae	Shrub
56.	Vettukayathalai	*Tridax procumbens (L.) L*	Asteraceae	Herb
57.	Vellerukku	*Calotropis gigantea (L.) Dryand*	Asclepiadaceae	Shrub
58.	Seenthilkodi	*Tinospora cordifolia (Willd.) Miers*	Menispermaceae	Climbing shrub
59.	Thanga arali	*Tecoma stans (L.) Juss. ex Kunth*	Bignoniaceae	Shrub
60.	Padanikai	*Prunus dulcis (Mill.)* D.A.Webb	Rosaceae	Tree
61.	Koyya maram	*Psidium guajava L.*	Myrtaceae	Tree
62.	Pappali	*Carica papaya L.*	Caricaceae	Tree
63.	Nayuruvi	*Achyranthes aspera* L.	Amaranthaceae	Herb
64.	Kuppaimeni	*Acalypha indica* L.	Euphorbiaceae	Herb
65.	Ponnankanni	*Alternanthera sessilis* (L.) R.Br. ex DC.	Amaranthaceae	Herb
66.	Siriyanangai	*Andrographis paniculata* (Burm.f.) Nees	Acanthaceae	Herb
67.	Thuthuvalai	*Solanum trilobatum* L.	Solanaceae	Herb
68.	Parankikai	*Cucurbita pepo* L.	Cucurbitaceae	Creeper
69.	Sarangkondrai	*Cassia fistula* L.	Fabaceae	Tree
70.	Perungkondrai	*Peltophorum pterocarpum* (DC.) K.Heyne	Fabaceae	Tree
71.	Mudakkathan	*Cardiospermum halicacabum* L.	Sapindaceae	Climbing herb
72.	Vellai Karisalankanni	*Eclipta prostrata* (L.) L.	Asteraceae	Herb
73.	Elanthai	*Ziziphus jujuba* Mill.	Rhamnaceae	Tree
74.	Seethamaram	*Annona acuminata* Saff.	Annonaceae	Tree
75.	Manathakali	*Solanum nigrum* L.	Solanaceae	Herb
76.	Ciru-pulai	*Aerva lanata* (L.) Juss.	Amaranthaceae	Herb
77.	Aala maram	*Ficus benghalensis* L.	Moraceae	Tree

Table 2: Medicinal values and commercial uses of sacred groves in the study area (Namakkal district)

S. No	Scientific Name	Medicinal Uses	Commercial Uses
1.	*Azadirachta indica* A. Juss.	Anti-fungal, anti- bacterial, anti-viral, anti-inflammatory.	Toiletries, pharmaceuticals, manufacture of agricultural implements, furniture, and poultry feed, Nitrification of soil, pest control, oinment, clean teeth, fuel.
2.	*Thespesia populnea* (L.) Sol. ex Corrêa	Cutaneous infections, skin and liver diseases, rheumatism, scabies, insect bites.	Wood- making bowls, utensils, jewellery, carved figures and other craft items. raft making, rope, dye, oil,
3.	*Ficus religiosa* L.	Heart diseases, wound healing, constipation, mumps, fever, anti-fertility, anti- diabetic.	Ropes, dye, wood- bowls, tools, figures, turnery, toys, containers, slit drums, cabinetry and tanning leather, Lamp oil.
4.	*Nerium oleander* L.	Cancer, cardiotonic, leprosy and skin diseases.	Garlands, drug preparation
5.	*Prosopis spicigera* L	Leucoderma, leprosy and skin diseases.	Fodder for goat, bark and leaf galls used for tanning, Wood-making agricultural implements.
6.	*Mimusops elengi*	Stomachic, Cardiotonic, astringent, diseases of the gum and teeth.	Boat and ship building, doors, foundation sills, railway sleepers, garlands, walking sticks, weaving shuttles, toys, lotion, perfume.
7.	*Ocimum sanctum* L	Anti-oxidant, anti-inflammatory, analgesic, anti-ulcer.	Garlands, oil.
8.	*Aegle marmelos* (L.) Corrêa	Chronic diarrhea, dysentery, peptic ulcer, laxative, anti- diabetic.	Seed- cement and varnish, dye, fodder, leaves and Fruit,
9.	*Terminalia elliptica* Willd	Abdominal and back pain, cough, cold, conjunctivitis, diarrhea and dysentery, leprosy.	Wood- furniture, boat building, railroads, dye, tan leather.
10.	*Mangifera indica* L	Burning sensation, wounds, ulcers, dyspepsia, anaemia.	Fruit juice, jam, jellies, pickles, furnitures, plywoods, Agricultural implements.
11.	*Vitex negundo* L	Wounds, burns, fungal skin infection, tooth aches, bleeding gums, liver ailments.	Medicine.
12.	*Syzygium cumini* (L.) Skeels	Blood purifier, stomachic, sore throat, Dysentery, anti-diabetic.	Fruit- wine, jam, squashes, jellies. Leaves- cattle feed, Wood- furniture.
13.	*Couroupita guianensis* Aubl	Cure cold, stomach ache, malaria, cure skin diseases.	Perfumes
14.	*Ficus racemosa* L	Liver diseases, urinary disease, inflammatory disease, hepatoprotective, anti-diuretic.	Oinments (Bark paste)-skin diseases, mosquito bites.
15.	*Crescentia cujete* L	Asthma, cough, blood purifier, blood pressure, clean wounds, tumours.	Fruit- coffee cup, decoration, musical instruments.

16.	*Anthocephalus cadamba* (Roxb.) Miq	Anti-diabetic, diarrhea, fever, anti-inflammatory, cough, vomiting.	Wood- plywood, light construction, pulp, paper, Boxes, crates, furniture.
17.	*Cocos nucifera* L	Anti- helminthic, anti-inflammatory, anti-fungal, anti-tumor activities, anti-microbial.	Confectionary, soaps, shampoos, leaves- Thatching and making baskets, coir- mats, ropes, baskets, brushes.
18.	*Nyctanthes arbor-tristis* L	Coronary heart diseases, stroke, diabetes mellitus, cancer.	Garlands, oil, soaps and lubricants.
19.	*Musa paradisiaca* L	Anti-diabetic, stomach upset, intestine lesions, dissolving stones in the Kidney, reducing weight.	Leaves –plate, fibre, vegetable- stem, flower, fruit.
20.	*Calophyllum inophyllum* L.	Skin diseases, heart stroke, sore eyes, vaginal discharge, wounds, ulcers, chronic bronchitis.	Oils, making poisonous arrows, fuel
21.	*Millettia pinnata* (L.) *Panigrahi*	Diarrhoea, dyspepsia, leprosy, gonorrhea.	Fuel, tool handles, oil, fertilizers, animal feed.
22.	*Schleichera oleosa* (Lour.) *Merr*	Acne, itching, malaria, dysentery, rheumatism, hair loss, anti-ulcer, anti- cancer, anti-bacterial.	Oil- cooking, lighting, hair dressing. Wood- cart wheels, Pestles, axles, ship building, musical instruments.
23.	*Murraya koenigii* (L.) *Spreng*	Protct from high cholesterol, cardio vascular disease, anti-diabetic and many other degenerative illness.	Leaves-flavouring curries and hair oil preparation.
24.	*Melia azedarach* L.	Malaria, anti- diabetic and skin diseases.	Furniture, plywood, boxes, poles, tool handles, fuel wood.
25.	*Citrus limon* (L.) *Osbeck*	Anti-inflammatory, anti-bacterial, anti-fungal, anti- diabetic.	Pickles, lemon squash, soap.
26.	*Commiphora caudata* (Wight & Arn.) Engl	Anti- microbial, anti- oxidant, anti-inflammatory, anti-hypoglycemia, cytotoxic activities.	Resin,
27.	*Ficus microcarpa* L. f	Anti- diabetic, ulcers, burning sensations, hemorrhages, leprosy.	Oil, oinments, fibre- cloth, caulking boats. tool making, fuel.
28.	*Tamarindus indica L*	Blood tonic, jaundice, laxative, skin cleanser, hepatoprotective.	Fruit – adding juices in curries, jam, wood- furniture.
29.	*Polyalthia longifolia* (Sonn.) Thwaites	anti- bacterial, anti- fungal, anti- tumor, anti- ulcer.	Making barrels, inner bark- bast fibre
30.	*Premna tomentosa* Willd	Anti- microbial, anti- oxidant, anti- inflammatory, anti-hyperglycemia, cytotoxic activities.	Furniture, weaving shuttles, carving, turnery and Fancy work.
31.	*Albizia lebbeck* (L.) Benth.	Anti-septic,anti- tubercular, anti-diarrhoeal properties, leprosy.	Fodder, leaves- manure, wood- furniture, railway carriages.
32.	*Albizia amara (Roxb.) B.Boivin*	Anti-cancer, anti-inflammatory, anti-microbial, analgesic, anti-oxidant activities.	Fuel, making tool handles. Dried leaves- soaps.
33.	*Delonix regia (Hook.) Raf*	Arthritis, anti-diabetic, hepatoprotective, wound healing.	Gum, oil, beads and necklac es, fungicides, fuel.
34.	*Madhuca longifolia (J.Koenig ex L.) J.F.Macbr*	Treatment of Ecezema, wound healing, rheumatism, emollient, headache.	Oil,soap, candles,tannin, furniture- cart wheels, door, window frames, fuel.
35.	*Alstonia scholaris (L.) R. Br*	Diarrhoea, epilepsy, skin diseases, snake bite.	Wood- carvings
36.	*Borassus flabellifer L*	Analgesic, anti-pyretic effects, anti- inflammatory, diabetes.	Leaflet- palm-leaf books, fan and hats. Fibre- brushes, brooms, jaggery, wood- pillars, rafters, posts and bridges.
37.	*Ziziphus mauritiana Lam*	Anti-diabetic, anti- inflammatory, neurological disorders, sedative hypnotics, overine	Dye, furniture, tool handles, tent pegs,gun stocks, Sandals, bowling pins, baseball bats.
38.	*Carissa carandas L.*	Scabies, intestinal worms, anti-scorbutic, antihelmintic, cardiotonic, antipyretic.	Fruit- vegetable, pickles.
39.	*Feroniaelephantum Corrêa*	Liver and cardiotonic, diarrhoea, dysentery, sore throat.	Gum, watercolours, ink, dyes, varnish, construction, agricultural implements, carving, rulers, fuel.
40.	*Strychnos nux-vomica L*	Neurological disorders, vatha diseases.	Beads and, termite proof wood, agricultural implements, cart wheels.
41.	*Hibiscus rosa-sinensis L*	Hypotensive, anti-pyritic, anti-inflammatory, anti-diabetic, wound healing, abortifacient activities.	Purplish dye, shoe polishes, shampoo, tonic.
42.	*Plumeria alba L*	Anti-fertility, anti-inflammatory, purgative, toothache.	Carpentar work, fuel.
43.	*Moringa oleifera Lam*	Hypocholesterolemic effect, cardio protective property, anti-asthmatic.	Perfumes,artist paints, soaps,oinments, seed cake-water purification, small rope,mat,blue dye,leaves-cleaning utensils, fertilizer.
44.	*Lawsonia inermis L*	Anti-carcinogenic, anti-bacterial, sedative effect, opthalmia, anti-fungal.	Dye- cloth and hair, cosmetic, oinments, perfume,oil, Baskets,tooth brushes, oil, tent pegs, tool handles, fuel.
45.	*Plectranthus amboinicus* (Lour.) Spreng.	Cold, asthma, constipation, headache, cough, fever, skin diseases.	Flavouring food, seed- extraction of juice medicine (oma water).
46.	*Phyllanthus emblica L*	Diuretic, laxative, liver tonic, anti-pyritic, hair tonic, ulcer preventive& anti-cancer, anti-diabetic	Pickles, jam.
47.	*Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult*	Anti-oxidant, anti- infection, anti-tumor action, analgesia, myasthenia gravis, alzheimer's disease.	Red dye, incense, perfume, wood- charcoal.
48.	*Catharanthus roseus* (L.) G.Don	Anti-diabetic, anti- bacterial, human cancer, anti-ulcer, anti-diarrheal properties.	Flower- used in preparing drug, dye.
49.	*Justicia adhatoda* L.	Asthma, Anti-tubercular activity, anti-inflammatory, anti-microbial activity, anti-diabetic, Hepatoprotective.	Leaves- green manure, control insects in grain storage, Wood- gunpowder charcoal.
50.	*Ocimum basilicum L.*	Anti-cancer, analgesic, anti-microbial, anti-ulcerogenic, Central nervous Depressant.	Seeds- cooling agent, perfume, mosquito repellent, insect repellent.
51.	*Solanum melongena L*	Hepatoprotective activity, anti-microbial activity, anti-inflammatory.	Vegetable, leaves- tannin.
52.	*Senna auriculata (L.) Roxb.*	Anti- microbial, anti- oxidant, anti-inflammatory properties.	Black dye, yellow dye, fibre- rope, sticks,tooth brushes.
53.	*Xanthium strumarium L*	Leucoderma, poisonus bites of insects, epilepsy, salivation, rheumatism, utricaria, lumbago, diarrhea, constipation.	Tannin, dye, paint, wheat grain, oil.
54.	*Indigofera tinctoria L*	Hepatotoxic, antiulcergenic, teratogenic, cytotoxicity, phytotoxic, insecticidal.	Green manure, herbal hair dye.
55.	*Solanum torvum Sw.*	Anti-bacterial, anti-oxidant.	Vegetable, syrup, oinments.
56.	*Tridax procumbens (L.) L*	Anti-inflammatory, hepatoprotective, wound heal, antiseptic, hypotensive, bradycardiac effects.	Insecticide, parasiticide, mosquito repellent, hair restorative.
57.	*Calotropis gigantea (L.) Dryand*	Analgesic activity, antimicrobial activity, pregnancy interceptive properties, purgative properties, procoagulant activity, wound healing activity.	Fishing net, bowstrings, textile, dye, tannin, gun powder.

58.	*Tinospora cordifolia (Willd.) Miers*	Fever, vomiting, diabetes, jaundice, anaemia, skin diseases.	Tying bundles.
59.	*Tecoma stans (L.) Juss. ex Kunth*	Anti-diabetic, diuretic, anti-spamodic, anti-microbial, anti-fungal, Anti-cancer.	Cabinet making, turnery, making tools, construction, firewood, charcoal.
60.	*Prunus dulcis (Mill.)* D.A.Webb	Laxative, demulcent, nervine tonic, aphrodisiac.	Nuts edible.
61.	*Psidium guajava L.*	Hepato protection,anti-oxidant, anti-spasmodic,anti-cancer,analgesic, Anti-stomachache and anti-diarrhoea.	Jam, confectionary, wood- small tools, handles.
62.	*Carica papaya L.*	Anti- amoebic, anti-fertility,antitumor, anti-ulcerogenic, Hypolipidaemic, wound healing.	Chewing gum, latex, fruit edible.
63.	*Achyranthes aspera* L.	Cough, asthma, bronchitis, leucoderma, ear compliants, snake bite, Renal complications, bleeding, pneumonia, colic, debility, dysentry, Scorpion bite, skin diseases.	Burnt plant- tooth cleaning powder, twig- tooth brush, dye.
64.	*Acalypha indica* L.	Anthelmintic, anti-ulcer, bronchitis, asthma, wound healing, anti- bacterial.	Oinment, eye drops.
65.	*Alternanthera sessilis* (L.) R.Br. ex DC.	Cooling effects to eyes & body, relieve s neuritis, aids disease free healthier life.	Hair tonic, hair oil.
66.	*Andrographis paniculata* (Burm.f.) Nees	Hepapatoprotective, anticancer, antitumor, hypoglycemic, fever.	Tonic
67.	*Solanum trilobatum* L.	Tuberculosis, respiratory problems, bronchial asthma.	Leaves, leaf powder.
68.	*Cucurbita pepo* L.	Anti-diabetic, anti-oxidant, anti- carcinogenic, anti-inflamatory.	Gourds- cups, ladles, dippers.
69.	*Cassia fistula* L.	Anti-inflammatory, anti-tissive, antifungal, antibacterial.	Gum, dye, tannin, tablets, wood- furniture, carts, Agricultural implements.
70.	*Peltophorum pterocarpum* (DC.) K.Heyne	Stomatitis, insomnia, dysentry, muscular pains, sores and skin Disorders, conspitation, ringworm.	Dye, fishing net, wood carving, furniture
71.	*Cardiospermum halicacabum* L.	Anxiolytic,rubifacient,antipyretic, management of painful, Arthritic, inflammatory conditions.	Insect repellent, washing clothes and hair, seeds-beads, Basket.
72.	*Eclipta prostrata* (L.) L.	Antimicrobial, antinociceptive, analgesic, anti- inflammatory, Antiviral, hepatoprotective, immunomodulatory activity.	Black dye, hair dye, tattooing.
73.	*Ziziphus jujuba* Mill.	Antitode, diuretic, laxative.	Tannin, red dye, tent pegs, gun stocks, bowling pins.
74.	*Annona acuminata* Saff.	Antibacterial, antidiabetic, antitumor, anti-malarial, Anthelmintic, anti-genotoxical potential.	Dye, insecticide, making utensils.
75.	*Solanum nigrum* L.	Cure liver diseases, chronic skin ailments, painfull periods, Fever, inflammatory conditions, diarrhoea, eye disease, Hydrophobia.	Tonic,oinments.
76.	*Aerva lanata* (L.) Juss.	Cough, antitode, emollient, skin infections, anti-diuretic, Anti-oxidant.	Flower and leaves decoration.
77.	*Ficus benghalensis* L.	Dysentry, diarrhea, diabetes, leucorrhoea, menorrhagi, Nervous disorders, tonic, astringent.	Latex- Rubber, cart yokes, furniture.

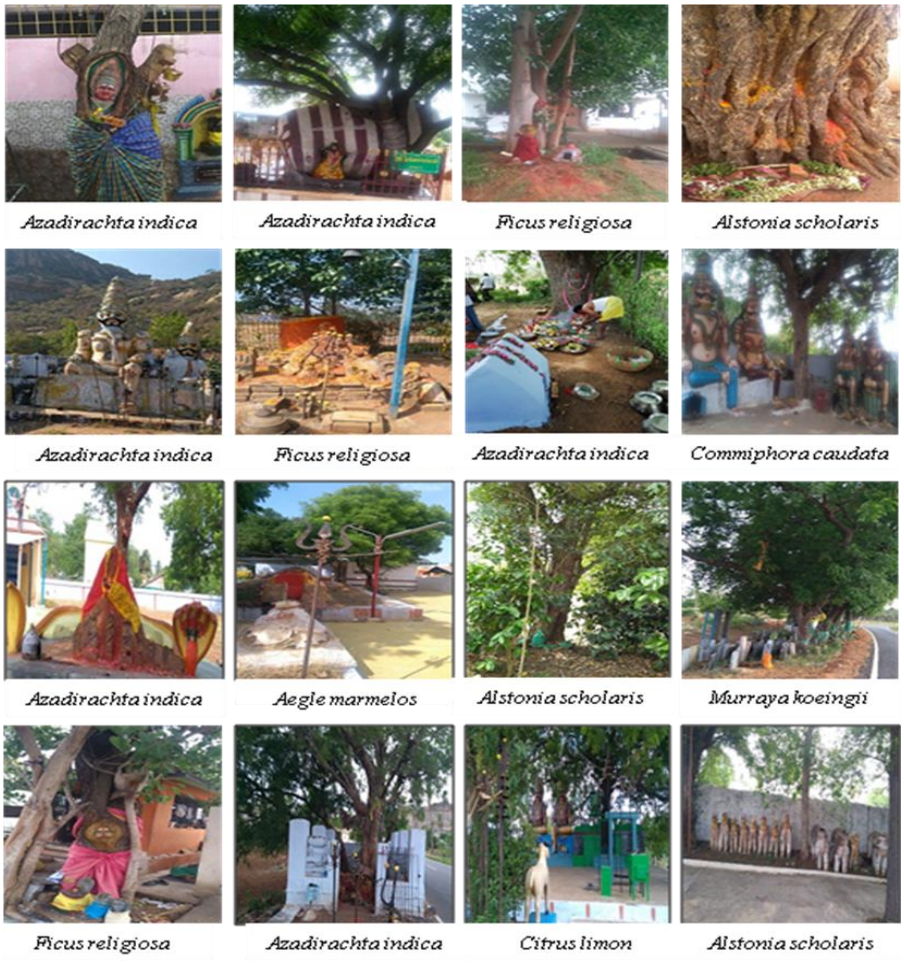

Fig 1: Sacred groves of namakkal district

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