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Floristic Study of Monocotyledonous Plants in Naduveerappattu, Cuddalore District of Tamil Nadu

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Abstract

In the present floristic study area of Naduveerappattu, Panruti Taluk in Cuddalore District of Tamil Nadu. It is located 16 km towards west from District headquarters of Cuddalore. Total geographical area of this village 1012.34 hectares which comes under the area is tropical dry evergreen forest. Phonologically, they are partly evergreen and partly deciduous and represent a near climax, The study indicated that 27 species of Monocotyledons belongs to 10 families were observed. The Poaceae was the leading family and having heist number of species and all most herbs (89%) and while the lowest number of family Arecaceae and all most tree (11%). The flora refers to collection, identification and enumeration of plants in a particular location. All the areas were surrounded by paddy crop fields.

Keywords: Plant diversity, Sacred groves, Ethnobotany, Naduveerapattu.

Introduction

The Flora is represented as a beautiful maiden wearing a crown of flowers. Flora is the list of species occurring in a regional *a* given moment. Vegetation is the manners in which the species are grouped together form the physiognomic landscapes. The vegetation and the flora of Indian coastline have not been discussed in their proper prospective although frequent references on the occurrences of sea-shore plants find places in several floras and papers, since the time of the publication of the flora of British India. The coastal region which comprises diverse ecosystem, presenting very interesting aspects for ecological, physiological and phytogeographical studies. The first systematic work on the floral wealth of Madras and Coromandel Coast was performed by (Petiver, 1704).

The word floristic is derived from flora, which means to list all types of plant species or plant taxa within specific geographic area. Flora of an area includes all types of plants either wild or cultivated one while vegetation refer to the numbers of individuals, their distribution pattern, size, relationship and their relative importance (Ali, 2008). Plant ecology is the branch of ecology which deals of the distribution pattern, relative abundance of plant species, environmental effects, interaction among themselves and other organism (Keddy, 2007).

Phytosociology is that branch of Ecology which deals with the plant communities, relationships among the plant species, their development and composition. The phytosociological system is specified for classifying the plant communities Rabotnov, (1970-1979). In the year 1989 The Government Museum was established at Manjakuppam, Cuddalore, Tamil Nadu, India. This museum collection represents History culture, Flora and fauna of the district. A natural history specimen includes South Indian Timbers, Fibres, Swan Xizard and Snakes. Wood fossils and Ammonite fossils are also displayed here. Imparting knowledge to researchers, students and public through popular lectures, exhibitions and training programs form part of educational activities.

Materials and Method

Study Area

Naduveerappattu is a Village, Panruti Taluk in Cuddalore District of Tamil Nadu. Naduveerappattu is surrounded by Panruti Taluk towards west, Cuddalore Taluk towards East, Nettapakkam Taluk towards North, Bahour Taluk towards East. Nellikuppam, Panruti, Cuddalore, Vadalur are the nearby Cities to Naduveerapattu. Total geographical area of Naduveerapattu 1012.34 hectares and Latitude and longitude about the 11.6916^0 N, 79.6787^0 E. Phonologically, they are partly evergreen and partly deciduous and represent a near climax (Blasco and Legris, 1973). However Marlange and Meher-Homji (1973) prefer to call them aeplesio climax formations. The vegetation of the environs of Cuddalore is generally described as “Dry evergreen forest" (Champion, 1936).

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Soil Types

The study area has almost all the soil types of Tamil Nadu except those of the high hill ranges, the variety available is ranging from saline, red, black, calcareous, alluvial, laterite and marshy. The natural vegetation is confined to the red lerrallitic sandy loam. It is not that the order soils are not fit to bear any vegetation. The situation is paradoxical the red sandy loams is the least fertile of all the soil types and so concern relic patches of the natural plant-life are left to survive on this substrata as near Vridhachalam and Neyveil, The more lertile soils like alluvial or black clayey are intensively cultivated since time immemorial, with the result all the traces of natural vegetation have been obtained from these (Marlange and Meher-Homji, 1966). Geologically, the entire study area is a part of the Cuddalore sandstone formation of Miocene period (Elayaraja. M and Kumarasamy. D, 2019).

Data Collection

Floristic composition of Naduveerappattu region was enumerated during field visits staggered over different seasons. Flowering twigs were collected, identified taxonomically using the publications of Gamble and Fisches (1915-1935). Henry *et al.,* (1989) [7] and Mathew (1981-1983 and 1988). The taxonomic positions were confirmed by comparison with the herbaria of French Institute, Pondicherry Botanical nomenclature followed in the text conforms to the flora of Tamil Nadu by Nair *et al.,* (1983) [15]: Henry *et al*., (1987) [8]. The families are arranged based on Bentham and Hooker's (1862-1883) system of classification.

Observation

Monocotyledonae

Family: Amaryllidaceae

Perennial herbs. Leaves alternate, simple, more or less basal, flat, entire, sheathing at base, stipules absent. Inflorescence umbelloid cymes. Flowers regular, bisexual actinomorphic. Perianth has 6-petaloid tepals, Stamens 6, attached to the receptacle or adnate to the perianth tube. Ovary inferior, carples-3, united, locules-3, ovules numerous, axile placentation, style-1, stigma capitates or style, stigma capitales or-lobed. Fruit loculicidal capsule or berry. Seeds blue or black in colour.

Crinum americanum L.: Leaves radical, in rosettes, ensiform, succulent. Scapes racemes to 40cm. Flowers bisexual, 2.5-3.5cm long. Perianth tube terete, 1-1 5cm, white, oblong, 3-nerved. Stamens 3+3. Ovary 3-celled, ovules many axile, style elongate, to 2.5cm, stigma obscurely lobed. Capsule ellipsoid-oblong.

Family, Arecaceae

Monoecious, dioecious trees, shrubs. Often covered by persistent leaf-base. leaves usually in a terminal crown pinnate, palmate with leaflets many, narrow, 1 or 2 pinnate, petiole usually well developed, rachis often expanded at the base into fibrous sheath sometimes prominently tubular as crown-shaft. Inflorescence spadices, spathe is present. Flowers small sessile, commonly unisexual. Tepals 3, rounded, imbricate, free, rarely connate, often accrescent. Stamens 3 or 6, pistillode occasional. Ovary 1-3 celled. Fruit drupe, berry hard coriaceous. Seeds 1, rarely 2 or 3s endosperm present. Sometimes ruminate.

Borassus flabellifer L.: Dioecious tree to 40 m. Stem obscurely hooped. Leaves simple, palmate, plicately multifled, leaflets 60-80, petiole stout, spinous, Spadices inter foliar, large, branched. Male: small, clustered, tepals 3-6, stamens 6. Female: large, globose. Perianth fleshy accrescent.Ovary globose, entire or 3-, 4 clefts, 3-4 celled, ovules basal. Drupes yellow when ripe$_P$ with 1-3 pyrenes.

Cocos nucifera L.: Monoecious tree. Stem with annular petiolar scars. Leaves pinnatiest, 4-6 m, leaflets reduplicate. Spadices inter foliar 60-90 cm long. Flowers shortly pedicellate. Flowers often paired, sepal's ovate, petals narrowly ovate to 8mm Stamens 6. Ovary, celled, ovule-1 Drupe trigonous, pericarp fibrous, endocarp stony with 3 basal pores, seed coherent with the endocarp, endosperm lining the endocarp, with a hallow centre filled with coconut milk.

Phoenix sylvestris (L.) Roxb.: Trunk to 15(25)m. Leaves 2-4 m long: leaflets many, glaucous, rigid. Spadices to i m, spathes as long as spadices, coriaceous, spike many in clusters, to 30cm long. Flowers angular, denses, calyx copular, lobes rounded. Petals 2 or 3 times as long as calyx lobes. Stamens 6. Female flowers distant. Drupe oblong-ellipsoid to 2cm.

Family: Commelinaceae

Herbs. Stems erect, sub-scandent, jointed. Leaves simple, alternate, sessile, base sheathing. Inflorescence terminal or axillary cymes, panicles or in cluster. Flowers irregular, bisexual. Sepals 3, basally connate. Petals 3, free, connate at base stamens 2-6, fertile, staminodes cruciform. Ovary 3-celled, ovules 1-several$_3$ axile. Capsule loculicidaL seeds smooth, rugose.

Commelina benghalensis L.: Root stock with cleistogamous flowers, Leaves ovate, oblong-ovate. Spathes clustered, funnel shaped, 1.5cm long, pubescent, upper cymes 2-flowered, lower cymes 1 or 2 flowered. Flowers to 8mm across. Petals blue, larger ones broadly ovate. Capsule ellipsoid, 3-celled. Seeds 5.

Family: Cyperaceae

Perennial herbs, rarely annual, perennating by creeping rhizomes or tuber. Exstipulate sessile, leaf base sheathing, sheath closed, eligulate, arranged in three rows, alternate, simple, pointed. Inflorescence, flowers arranged in spikelets, panic les or in cymose, rarely solitary terminal. Flowers sessile tractate, zygomorphic, bisexual and hypogynous. Perianth usually absent rarely present. Stamens usually 3, may be 1 to 6 or one, free. Ovary superior, bi, tricarpellary, unilocular, style single or divided into the number of carpels, stigma linear or feathery. Fruit three angled nutlet.

Cyperus iria L.: Erect tufted sedge with numerous short yellowish red underground stems, Leaves usually shorter, sheathy at its base, covers the culmn. Inflorescence compound umbels 3-5 rays, subtended by 3-5 bracts, spiklets are erect, golden to yellowish green. Flowers, glumes are broad and ovate 1.0-1.6 mm long, stamens-3, style branched into 3. Three angled brown achene, fruiting throughout the year.

Cyperus esculentus L.: Erect tufted sedge with numerous short yellowish red underground stems, 2-3m. Leaves usually shorter than culmn, shealhy at its base, covers the culmn. Inflorescence compound umbels 3-5 rays, subtended by 3-5 bracts, spiklets are erect$_5$ golden to yellowish green. Flowers, glumes are broad and ovate 1.0-L6 mm long, stamens-3, style branched into 3. Three angled brown achene, fruiting throughout the year.

Family: Liliaceae

Erect herbs, climbers, generally underground stems. leaves

simple, parallel nerved, cladodes in asparagus. Inflorescence terminal, axillary racemes, umbels, sub-corymbose, rarely flow er 1 perianth tubular, 6 lobed. Stamens 6, adnate at the base of perianth tube. Ovary usually-superior, 3-celled, ovules 1-many per cell, axile, style simple, 3-lobed. Fruit a loculicidal berry, capsule. Seeds 1 or more per cell, compressed.

Aloe vera (L,) Burn.f: Leaves radical, in rosettes, ensiform, succulent, spiny. Scape(s), racemes to 40cm Flowers bisexual, 2.5-3.5cm long. Perianth tube terete, 1-10.5cm, orange, oblong, 3-nerved. Stamens 3+3. Ovary 3-celled, ovules many axile, style elongate, to 2.5cm, stigma obscurely lobed. Capsule ellipsoid – oblong.

Family: Musaceae

Stout erect herbs, from imbricate bases of petioles. Leaves simple, spiral, large, with a thick mid nerve and pinnately parallel nerves. Inflorescence spicate, paniculate, bracts spathaceous$_5$ large and green. Flowers uni, bisexual. Tepals 3 united or not. Stamens 5 fertile, with a lobulate stigma. Fruit fleshy, indehiscent.

Musa paradisiaca L.: Erect herb, Leaves spiral: oblong-narrowed into sheathing leaf-base. Spikes pendulous, bract dark purplish. Flowers unisexual, long in 2 rows under each bract, lower bracts with female and upper ones with male flowers. Tepals 6 in two whorls, 3+3 in each whorl, Stamens 5, Ovary inferior, 3-celled, oveles many, axile. Fruit fleshy, indehiscent.

Family: Poaceae

Herbs, annuals or perennial shrubs, rarely trees. Stem underground rhizome perennial grasses. Cylindrical culm with conspicuous nodes and internode, internode is hallow herbaceous or woody. Leaves simple, alternate, sessile, ligulate leaf base forming tubular sheath. Compound spike stalked or sessile^each unit of inflorescence is spikelet. The spikelets arranged in various ways on the rachilla. Flowers bracteates, bracteolate, sessile, incomplete, bisexual or unisexual, irregular zygomorphic, hypogynous. Perianth represented by membranous scalec called lodicules 2 or 3. Stamens usually 3 or 6. Ovary monocarpellary, style short or absent. Stigmas two feathery or papillate and branched.

Cynodon dactylon (L J Pers.): Perennial herb. Leaves simple, distichous and horizontal often bent and linear. Usually 3-6 racemes consisting several purplish spikelets, Fruit caryopsis with adherent pericarp, ellipsoid, laterally compressed.

Chloris barbata Sw.: Erect or prostrate herb. Leaves alternate, spiral, sessile, linear margin entire, undulate, Ligule memberano ciliate. Flowers bisexual in terminal digitate raceme. Fruit a nut.

Panicum maximum Jacq.: Densely tufted perennial herb. Leaves simple, alternate, spiral, lanceolate, 30-80cm long, membranous ligule. Inflorescence conically shaped open panicle, spikelets ellipsoid. Fruit caryopsis with free soft pericarp, obovoid.

Panicum virgatum L,: Densely tufted perennial herb. Leaves simple, alternate, spiral, lanceolatejm long. Inflorescence conically shaped open panicle, spikelets ellipsoid. Fruit caryopsis with free soft pericarp, obovoid.

Heteropogon controtus (L.): Erect or prostrate herb. Leaves alternate, spiral, sessile, linear, margin entire, undulate, Ligule memberano ciliate. Flowers bisexual in terminal digitate raceme. Fruit caryopsis with free soft pericarp, obovoid.

Saccharum officinarum L.: Culms 3-5 m, juicy and thick stem. Leaves simple, spiral with long blade, leaf base sheathy, greatly overlapping, with very thick midrib. Inflorescence panicle plumelike, slender racemes drooping. Spikelets about 3mm long. Fruit caryopsis with free soft pericarp.

Bambusa vulgaris Schra (Lex. J.C. Wend. L): Woody Culms to 10-20 m, thick stem with distinct nodes and internodes, nodes have thorns. Leaves simple, spiral with long blade, leaf base sheathy, greatly overlappings with very thick midrib. Inflorescence panicle plumelike, slender racemes drooping. Spikelets about 3mm long. Fruit caryopsis with free soft pericarp.

Family: Typhaceae

Aquatic and marshy perennial herb, rhizome-long, creeping, thick, clothed. Scale leaves in two lateral rows on the rhizome, the leaves with narrow, linear, thin and spongy. Inflorescence spike bearing yellow male flowers over the brown female flowers. Flowers unisexual. Male, tepals-3, stamens 2-5. Female, perianth as in male, represented by many 1 cellular hair. Ovary unilocular with a pendulous ovule. Fruit an achene. Seeds small and endospermic.

Typha angustifolia L.: Perennial herb. Leaves scaly and long, linear, green, spongy, in two lateral rows. Inflorescence spike, male flowers over the female flowers, flowers unisexual. Male, yellowish, tepals *3,* stamens 2-5. Female, tepals as in male represented by many 1 cellular hair. Ovary unilocular with a pendulous ovule. Fruit an achene. Seeds small and endospermic.

Result and Discussion

Flora refers to collection, identification and enumeration of plants in a particular location. The flora of Naduveerappattu village, Cuddalore has a remarkable diversity which may be attributed to the different types of soil comprising of the hydromorphic soils, the sand dunes and the dry soils developed on the red sand stone. A part from indigenous species a number of exotic species were also introduced by the Europeans.

The present Floristic study focuses on the herbs and trees of Monocotyledonous plants. Altogether 27 species belonging to 9 genera and 10 families were enumerated. This comprised on the family of Poaceae was the largest family and having heist number of species and all most herbs (89%) and while the lowest number of family Arecaceae and all most tree (11%). (Table-1).

The Monocot plants of herbs and trees were observed from this area. The Family of Poaceae is well represented with largest number of species (10) followed by Cyperaceae (4), Arecaceae (3), Commelinaceae (3), Araceae (2), Asparagaceae (1), Liliaceae (1), Musaceae (1), Amaryllidaceae (1) and Typhaceae (1), these top of the families together comprises most of them are Herbs, Tree forms reported here.

Summary

Flora refers to collection, identification and enumeration of plants in a particular location. Plants of Naduveerapattu village were selected for the study on survey of Flora analysis and enumerated. The present study of this area measured about 1012.24 hectares With 27 species of monocotyledonous representing 22 genera and 10 families are really noteworthy (habit wise) there were 24 herbs (89%), and 3 trees (11%), 36. shrubs (18.55%)^ 18 climbers (9.27%) and one parasite. The herbs were dominated over all other life forms. All the areas were surrounded by paddy, pulses, sugarcane and cashew nuts crop fields.

In addition, the construction of public toilet, threshing floor and dumping of domestic waste and heaping they are the reasons for the erosion of the village by anthropogenic pressures. The disturbance against the vegetation as they were away from human interference. At present modernisation of temple is also a key factor of the plant genetic resources. In conclusion, man and nature have co-existed without disturbing the environment for long. The culture and tradition have cemented this harmonious bondage and paved way for the conservation of nature and natural resources.

A number of species found restricted to very few localities. This is mainly due to the destruction of natural habitats for various developmental activities. Another reason for depletion of native flora is the invasion of exotic plants and obnoxious weeds. Regular monitoring of flora is essential to understand the changing pattern of the flora, it is also suggested to conserve the native plant species through *ex-situ* and *in-situ* conservational methods.

Table 1: Family of Poaceae

Name of the Family	Name of the Genus	Habit
Amaryllidaceae	*Crinum americanum L.*	Herb
Araceae	*Colocasia esculenta (L,) Schott*	Herb
Araceae	*Typhonium blumei Nicolson SivatL*	Herb
Arecaceae	*Borassus flabellifer L.*	Tree
Arecaceae	*Cocos nucifera L.*	Tree
Arecceae	*Phoenix sylvestris (L.) Roxb,*	Tree
Asparagaceae	*Agave vivipara L.*	Herb
Commelinaceae	*Commelina benghalensis L.*	Herb
Commelinaceae	*Murdannia keisak(Hassk.) Haftd,Mazz*	Herb
Commelinaceae	*Eichornia crassipes(Mart) Solms*	Herb
Cyperaceae	*Cyperus iria L.*	Herb
Cyperaceae	*Cyperus micoroiria Stead*	Herb
Cyptraccae	*Cyperus esculentus L.*	Herb
Cyperaceae	*Cyperus difformis L.*	Herb
Liliaceae	*Aloe vera (L.) Burn,,*	Herb
Musaceae	*Musa paradisiaca L.*	Herb
Poaceae	*Cynodon dactylon (L.)Pers.*	Herb
Poaceac	*Chloris barbata Sw.*	Herb
Poaceae	*Chloris gayana Kunth.*	Herb
Poaceae	*Dactyloctenium egyptium (L.) Wild.*	Herb
Poaceae	*Panicum maximum Jacq.*	Herb
Poaceae	*Heteropogon cotttrotus (L,) Roem.& Schult.*	Herb
Poaceae	*Panicum virgatum L.*	Herb
Poaceae	*Crotoderia selloan a (SchuttA.Schutt.f.) Asch&Gfeabti*	Herb
Poaceae	*Saccharum officinarum L.*	Herb
Poaceae	*Bambusa vulgaris Sehrad.ex.J.C. Wen*	Herb
Typhaceae	*Typha angustifolid L.*	Herb

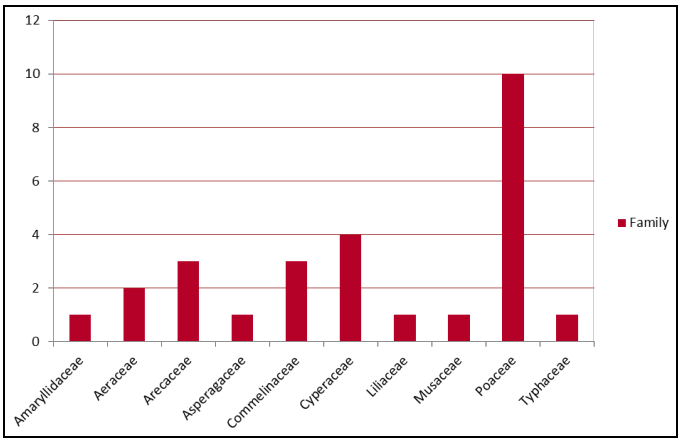

Fig 1: Generic wise dominant of the family

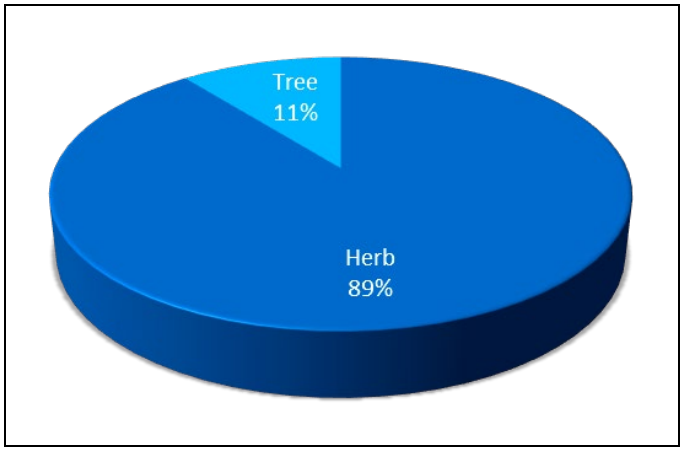

Fig 2: Habit wise distribution of the plants


Borassus flabellifer


Cocos nusifera


Phoenix sylvestris


Bambos vulgaris


Aloe vera


Musa paradisiaca


Typha aunustifolia


Saccharum oficinarum


Panicum virgatum


Heteropogon cotttrotus


Panicum maximum


Cyperus esculentus

Plate 1: Monocotyledonous plants of Naduveerappattu Village


Cyperus iria


Commelina benghalensis


Crinum americanum


Cynodon doctylon


Chloris barbata


Murdannia keisak


Eichhornia crassipes


Cyperus microiria


Cyperus difformis


Colocasia esculenta


Dactyloctenium


Typhonium blumei

Plate 2: Monocotyledonous plants of Naduveerappattu Village

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