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Floristic Diversity of the Sub-Class Monochlamydeae in the Government Brennen College Campus, Thalassery, Kerala, India

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ABSTRACT

This study documents the floristic diversity of the sub-class Monochlamydeae in the Government Brennen College campus, Thalassery, Kerala. Extensive field surveys conducted between June 2019 and March 2020 recorded 68 species belonging to 48 genera and 14 families. Euphorbiaceae emerged as the dominant family, followed by Amaranthaceae. The study highlights the ecological significance of campus biodiversity and emphasizes the value of botanical inventories for conservation and education.

Introduction

Biodiversity documentation is essential for understanding plant diversity and conservation priorities. The Western Ghats, one of the world's biodiversity hotspots, support a rich assemblage of endemic and economically important plant species. Floristic inventories at local scales contribute significantly to biodiversity assessment and conservation planning.

Biodiversity constitutes the foundation of ecosystem stability and sustainability, encompassing the variety of life forms, their genetic composition, and ecological interactions. Plant diversity, in particular, plays a crucial role in maintaining ecological balance, supporting ecosystem services, and providing resources essential for human well-being. However, increasing anthropogenic pressures such as habitat destruction, urbanization, climate change, and biological invasions have accelerated biodiversity loss worldwide, making the documentation and conservation of plant diversity a global priority.

India is recognized as one of the world's megadiverse countries, harboring a significant proportion of global biodiversity. Among its biologically rich regions, the Western Ghats stands out as one of the world's biodiversity hotspots, characterized by exceptional levels of species richness and endemism. The varied topography, climate, and ecological conditions of the Western Ghats support a remarkable diversity of flora, including numerous endemic and economically important plant species. Kerala, forming a major part of the southern Western Ghats, possesses a rich floristic heritage and serves as an important center for botanical research and conservation.

Taxonomic studies are fundamental to biodiversity assessment and conservation. Accurate identification, classification, and documentation of plant species provide the baseline information required for ecological monitoring, habitat management, and sustainable utilization of biological resources. Floristic inventories conducted at local levels contribute significantly to understanding species distribution patterns and help identify areas of conservation importance.

The subclass Monochlamydeae, recognized in the Bentham and Hooker system of classification, comprises a diverse assemblage of dicotyledonous plants characterized by flowers possessing a single perianth whorl or lacking differentiation between calyx and corolla. Members of this group include several ecologically, medicinally, and economically important species distributed across a wide range of habitats. Despite their significance, localized floristic documentation of Monochlamydeae remains limited in many parts of Kerala.

Literature Review

Previous floristic investigations in India include the works of Hooker, Gamble and Fischer, and regional floras of Kerala. Studies by Sasidharan and Ramachandran & Nair have documented the rich angiosperm diversity of Kerala and Kannur district, providing a foundation for local floristic studies.

The earliest flora of India is *Hortus Malabaricus* by Van Rheede (1678- 1693). Itis a comprehensive treaties that deals with the properties of the flora of Western Ghats region principally covering the area now in the Indian states of Kerala, Karnataka and Goa.it was published in Holland as 12 volume work and written in Latin. Over 742 different plants and their indigenous science are considered in this book. Carolus Linnaeus (1707-1778), a Swedish naturalist proposed a system of classification which was published in his S*ystema Naturae (*1735).

Buchanan-Hamilton (1807) collected 1807 species during his journey and published in 2 volumes entitled *A Journey from Madras through Mysore, Canara and Malabar.* Talbot (1895) collected plants

largely from the Bombay presidency and reported the systematic list of trees, shrubs, and woody climbers of the Bombay presidency. Cooke published *flora of the Bombay presidency* (1901-1908). Talbot (1909-1911) reported around 975 species belonging to 90 families in his flora, *Forest Flora of The Bombay Presidency and Sint.*

Systematic exploration of plant wealth of India initiated by Europeans particularly British.*TheFlora of British India* is indistinguishable among angiosperm floristic studies. This most relevant work is done by Joseph Dalton Hooker (Hooker, 1872-1897). Hooker and his associates described 14900 species of angiosperms in 7 volumes. *Flora of the Presidency of Madras* by Gamble and Fischer (1915-1936), it deals with the plants of Coimbatore, Malabar, South canara, Nilgiri in Western Ghats and Southern districts of Bellari and Kolar in Eastern Karnataka.

The Species Plantarum (Linnaeus, 1953) contained an enumeration of around 6000 species of plants, accompanied by brief description of each species with distribution and previous reference. In this work he consistently used binary nomenclature with a generic name followed by specific name.

Biodiversity Documentation for Kerala by Sasidharan (2004) is one of the major works in angiosperm studies in Kerala, which describes 5094 species of flowering plants. *Floristic diversity of Western Ghats and its conservation* (Nair & Daniel, 1986) describes floristic wealth of Western Ghats region. *The Flora of Cannanore District* by. Ramachandran and Nair (1988) describes 1132 species of flowering plants in 658 genera.

Objective of the study

1.Documentation of floristic diversity of the sub-class Monochlamydeae in the Government Brennen College campus, Thalassery.

2.Preparation of voucher specimens for further studies.

Area of Study

Wedged between Arabian Sea in the west and Western Ghats in the east, geographically Kerala is unique and beautiful. It is a narrow strip of land mass in the south-western part of India. The geographical province of the state is divided in to three regions: a narrow coast land, midland and the highlands. Kannur is one of the 14 districts along the west coast in the state of Kerala,lies within 11° 40' and 12° 48' North latitudes and 74° 52' and 76° 07' East longitudes with a total area of 2,966 square kilometres. The annual average rainfall is 3438 mm and more than 80 percentage of it occurs during the period of South-

West monsoon.The district can be divided into three geographical regions-highlands, midlands and lowlands. Thalassery is situated along the coastal area of lowland. The geography of Thalassery is adorned with 4 rivers, hills and a long cost line

Government Brennen College, Dharmadam, Thalassery is one of the premier institution in the state of Kerala. With the tradition of 130 years, the college is catering to the comprehensive advancement of the various sections of the society in the region. The College is situated in Dharmadam Panchayath in a hillock just 5 km north of Thalassery town and 1 km away from Kannur-Thalassery National Highway. The campus has 16.5 acres of land having a great diversity of plants. The College developed out of the free school established in 1862 by the English philanthropist Edward Brennen, a master attendant of the Thalassery port, who had made Thalassery his home. It was elevated to the status of II Grade College with F.A. classes in 1890. The institution became I Grade College in 1947, and it was shifted to the new building at Dharmadam in 1958.

Climate

The climate is tropical. There is significant rainfall during monsoon. The annual average temperature is 27.3. The annual rainfall is 3438 mm. Pre-monsoon (March–May), monsoon (June–November) and post-monsoon (December–February) are the three main seasons. Maximum temperature is experienced in the month of May and minimum in the month of December. Relative humidity is maximum in the month of July and minimum in the month of February.

Topography

Brennen College is situated in a hillock, 1 km away from the coast of Arabian Sea. The soil is of laterite type. Several sectors can be seen in the campus like Academic Departments, Botanical garden, NCC garden, green house, ‘shanthivanam’ with dense trees, central library, Staff quarters, College playground, students hostel and scattered in different terrains.

Flora & fauna

The campus is a habitat for diverse and peculiar forms of plants, mainly herbs and trees. Rainy season is the period when numbers of herbs become maximum, the majority of them complete their life cycle within a short period of time and is followed by another group of species. In this respect the campus holds many folds of species and diversity. The favourable temperature and humidity of the area supports the life of different plant groups.

'Shanthivanam' is the major centre of large trees; dense canopy of these trees reduces the diversity and growth of herbs and shrubs. The major trees includes Swietenia macrophylla, Mallotus philippensis, Syzygium cumini, Holigarna arnottiana, Cinnamomum verum, Caryota urens, Chrysophyllum cainito, Acacia auriculiformis, Albizia saman, Delonix regia, Litsea coriacea, Anacardium occidentale, Alstonia scholaris, etc. The plant diversity also includes a number of lower plants such as lichens, fungi, bryophytes, pteridophytes and a few gymnosperms.

The number of herbs is maximum in the college playground. The diversity of herbs in this area is mainly due to the openness and soil texture. The major herbs include Synedrella nodiflora, Cyanthillium cinereum, Murdannia dimorpha, Lindernia ciliata, Evolvulus nummularis, Phyllanthus virgatus, Mimosa pudica, Eragrostis unioloides, Setaria pumila, Pennisetum polystachion, Eriocaulon xeranthemum, Alternanthera tenella and different species of Cyperus. Ixora coccinea, Urena lobata, Crotalaria pallida,Mussaenda frondosa, etc. are the major shrubs. Cyclea peltata, Passiflora foetida, Ipomoea hederifolia, Cosmostigma racemosa, Ichnocarpus frutescens, Wattakaka volubilis, Cosmostigma recemosum, Calycopteris floribunda, etc. are the major climbers.

Materials and Methods

The study was conducted in the Government Brennen College campus, Thalassery, Kerala. Repeated field surveys were undertaken from June 2019 to March 2020. Specimens were collected, processed, identified using standard floras and taxonomic keys, and voucher specimens were prepared and deposited in the institutional herbarium.

Extensive field visits were conducted frequently covering all areas of campus, for floristic studies from June 2019 to March 2020. Different groups of plants such as grasses, sedges, herbs, shrubs, climbers and trees are surveyed repeatedly in different months and specimens were collected for laboratory studies and for the preparation of voucher specimens. Plant twigs are collected using secateurs, rhizomes and bulbs are collected with diggers and long sticks are used to collect specimens from large trees and climbers. Duplicates of each specimen were collected, for herbarium preparation and other laboratory studies. Collected specimens were put in polythene bags and tightened with rubber bands, pickled in 10% formaldehyde for herbarium preparations and for further studies. Specimens of same species were collected in both vegetative and reproductive stages to represent different stages of phenology. Herbaceous species were collected with roots, bulbs and rhizomes, if any. Fruiting stages were also collected in the absence of flowers. Observations in the field were recorded in field notes and a field number is given for each specimen. Photographs of plants and habitats were taken using Canon EOS

760D camera. Collected specimens were pressed early as possible to retain all its structures intact. Voucher specimens were prepared by following wet method (Fosberg & Sachet, 1965). Specimens were deposited at the herbarium of the Government Brennen College, Thalassery.

The specimens collected for laboratory studies were worked out and described using dissection microscopes. The specimens were identified using pertinent literature like The 'Flora of British India' (Hooker, 1872-1897); 'The Flora of the Presidency of Madras' (Gamble & Fischer, 1915-1936); 'Flora of Cannanore' (Ramachandran & Nair, 1988) and relevant revisions and monographs; and by comparison with the specimens available at Brennen college herbarium; and by consultation o experts. Online databases like The International Plant Names Index (IPNI) (http://ipni.org/ipni/plantnamesearchpage.do) and World Checklist of Selected Plant Families (http://apps.kew.org/wcsp/home.do) of the Royal Botanical Gardens, Kew, were used for updating nomenclature. The taxonomic descriptions are made from laboratory worked out flowers of the voucher specimen

Results and discussion

A total of 68 species belonging to 48 genera and 14 families were recorded. Euphorbiaceae was represented by 27 species, followed by Amaranthaceae with 11 species. The genus Ficus was the most species-rich genus. Herbs constituted the largest life-form category within the documented flora.

The dominance of Euphorbiaceae and Amaranthaceae reflects the adaptability of these groups to disturbed and semi-natural habitats. The presence of native, endemic, cultivated, and naturalized species indicates the ecological heterogeneity of the campus. Educational institutions can therefore serve as important refuges for biodiversity conservation.

The present study resulted in the documentation of 68 plant species belonging to the sub class Monochlamydeae under 14 families and 48 genera. Among these 25 are herbs, 16 shrubs and 6 climbers. Three epiphytic species; Dendrophthoe falcata, Helicanthes elastica and Macrosolen parasiticus are parasitic on various tree species. Largest family of Monochlamydeae in the campus is Euphorbiaceae with 27 species under 16 genera, followed by Amaranthaceae with 11 species under 7 genera. Largest genus is Ficus with 6 species. They are Ficus arnottiana, F. benghalensis, F. elastica, F. exasperata, F. hispida and F. religiosa. The next largest genera are Euphorbia and Phyllanthus with 5 species each. Four families (Phytolaccaceae, Polygonaceae, Aristolochiaceae, Casuarinaceae) and 34 genera are represented by a single species each. Infraspecific catogaries include few varieties and subspecies.

Table 1. List of the species under the sub class Monochlamydeae recorded from Govt. Brennen College Campus

FAMILY	SPECIES
NYCTAGINACEAE	Boerhavia diffusa, Bougainvillea spectabilis, Mirabilis jalapa
AMARANTHACEAE	Achyranthes aspera, Aerva lanata, Alternanthera brasiliana, A. sessilis, A. tenella, Amaranthus spinosus, A. viridis, Celosia argentea, Cyathula prostrata, Gomphrena globosa, G. serrata
PHYTOLACCACEAE	Rivina humilis
POLYGONACEAE	Antigonon leptopus
ARISTOLOCHIACEAE	Aristolochia indica
PIPERACEAE	Peperomia pellucida, Piper argyrophyllum, P. longum, P. nigrum
LAURACEAE	Cinnamomum verum, Litsea coriacea, L. deccanensis, Persea americana
LORANTHACEAE	Dendrophthoe falcata, Helicanthes elastica
SANTALACEAE	Santalum album
EUPHORBIACEAE	Acalypha amentacea, A. hispida, A. indica, Agrostistachys indica, Baliospermum montanum, Breynia vitis-idaea, Bridelia retusa, Codiaeum variegatum, Euphorbia heterophylla, E. hirta, E. milii, E. nivulia, E. tithymaloides, Flueggea leucopyrus, F. virosa, Jatropha gossypifolia, Macaranga

	peltata, Mallotus philippensis, Microstachys chamaelea, Phyllanthus amarus, P. emblica, P. myrtifolius, P. urinaria, P. virgatus, Ricinus communis, Sauropus quadrangularis, Tragia involucrata
URTICACEAE	Laportea interrupta, Pouzolzia zeylanica, Pilea microphylla
ULMACEAE	Trema orientalis, Holoptelea integrifolia
MORACEAE	Artocarpus heterophyllus, Ficus arnottiana, F. benghalensis, F. elastica, F. exasperata, F. hispida, F. religiosa
CASUARINACEAE	Casuarina equisetifolia

Figure 2. Diversity of Monochamydeae in the Govt. Brennen College Campus

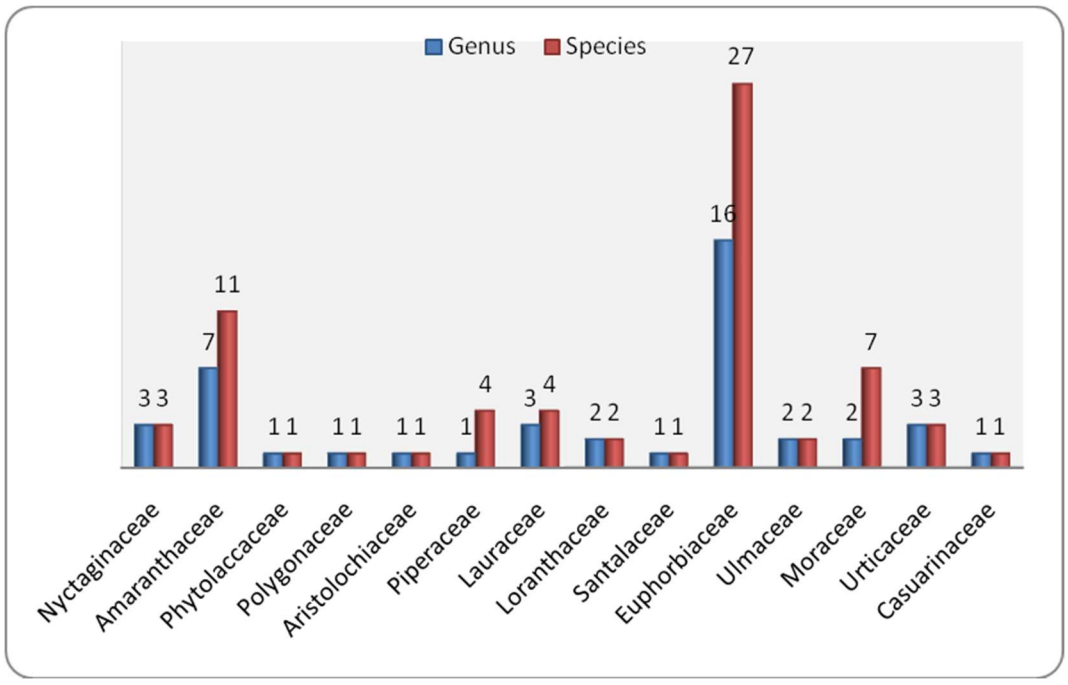
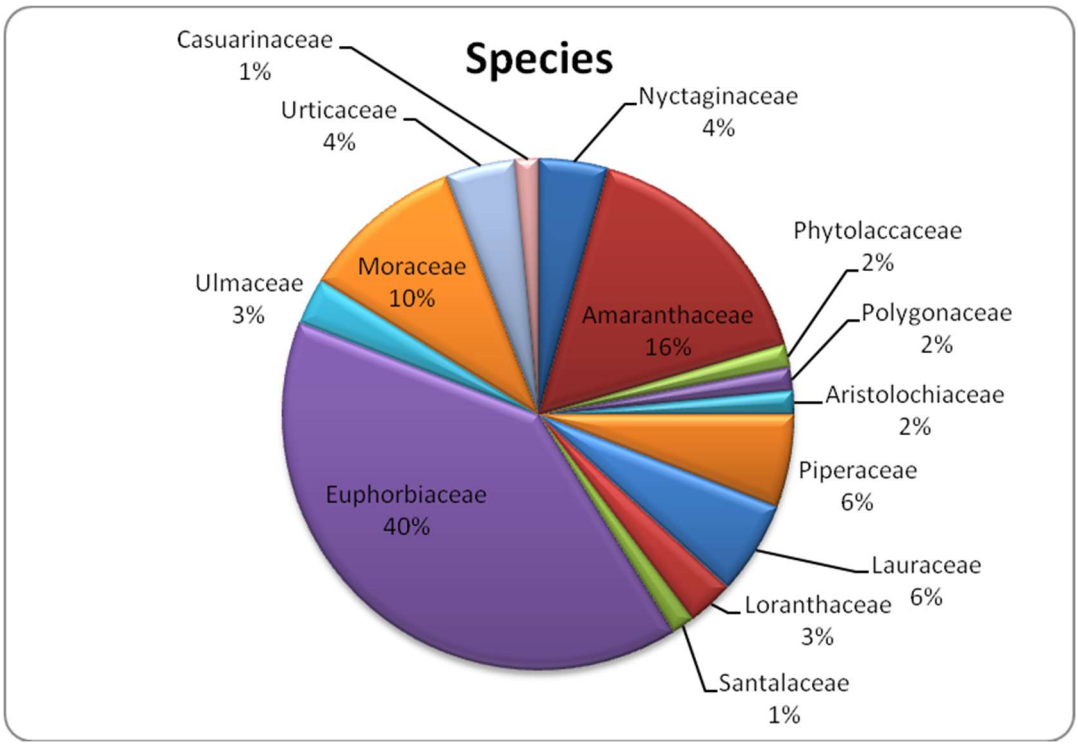


Figure 3. Distribution of families under the sub class Monochamydeae in the Govt. Brennen College Campus



Systematic treatment

NYCTAGINACEAE Juss.

Gen. Pl. [Jussieu] 90. 1789, *nom. cons.*

Boerhavia L.

Sp. Pl. 1: 3. 1753.

Boerhavia diffusa L., Sp. Pl. 3.1753; Gamble, Fl. Pres. Madras 1162.1925; V.S. Ramach.& V.J.Nair, Fl. Cannanore373. 1988. *Boerhavia repens* L., Sp. Pl. 3. 1753; Hook.f., Fl. Brit. India 4: 709. 1885. *Boerhavia procumbens* Banks ex Roxb., Fl. Ind. 1: 148. 1820.*Thazhuthaama*.

Herbs with long trailing branches; stem reddish, tomentose. Leaves simple, unequal, ovate, obtuse, margins undulate, base truncate tosubcordate, tomentose, variable in size; petiole to 1 cm long. Flowers 4 mm, 4-10 together, in axillary or terminal, peduncled umbels; bracts 5, ovate, glandular; Perianth pink. Stamens 3; ovary superior; style slightly exserted; stigma head shaped. Capsule 3 x 1 mm, clavate, 5-ribbed, glandular.

Fl. & Fr.: August-December.

Distr.: Pantropical. *Princy*12183, 8086.

AMARANTHACEAE Juss.

Gen. Pl. [Jussieu] 87. 1789, *nom. cons.*

Achyranthes L.

Sp. Pl. 1: 204. 1789, nom. cons.

Achyranthes aspera L., Sp. Pl. 204. 1753, var. aspera; Hook.f., Fl. Brit. India 4: 730. 1885; Gamble, Fl. Pres. Madras 1176.1925; V.S.Ramach.& V.J.Nair, Fl. Cannanore375. 1988.*Kadalaadi*.

Large herbs; stem tomentose. Leaves simple, opposite, 6-10 x 3-6 cm, broadly elliptic to obovate, 2-8 ×1-4 cm, pubescent above, densely appressed white hairy below, margins entire, apex abruptly acuminate, base acute-attenuate, nerves 6 pairs; petiole 5 mm long, pubescent. Inflorascence spike, terminal, upto 20 cm long, hispid; bracts*c*. 6 mm long, lanceolate, aristate; bracteoles entire, aristate; Flowers bisexual, *c*. 5 mm long, deflexed, pinkish green; tepals 5, 7.5 x 2 mm, elliptic, acute, boat shaped, apex spiny, glabrous, equal; stamens 5, alternating with 5 staminodes, connate at base; ovary*c*. 1 mm across, truncate at apex. Achenes 3 mm long, ovoid, brown.

Fl. & Fr.: October-March.

Distr.: Pantropical. *Princy*10631.

PHYTOLACCACEAE R.Br.

Narr. Exped. Zaire 454.1818, *nom. cons.*

Rivina L.

Sp. Pl. 1: 121. 1753.

Rivina humilis L., Sp. Pl. 121. 1753. *Rivina laevis* L., Mant. Pl. 1: 41. 1767; Hook.f., Fl. Brit. India 5: 21. 1888.*Raktha nelli.*

Herbs to 80 cm tall, young parts thinly pubescent. Leaves alternate, 7-15 x 2.5-5 cm, ovate-lanceolate, chartaceous, base rounded to acute, margin entire to minutely crenulate, apex gradually acute to acuminate, lateral nerves 8-12 pairs, impressed above, raised below, glabrous, except for the puberulous nerves; petiole to 4 cm. Racemes flexuous, lax, 7-10 cm; bracts lanceolate, 1 mm; pedicel to 2 mm; flowers white, 4.5 mm across, rotate. Perianth-lobes 4, oblong, 2 x 0.8 mm, chartaceous, rounded at

both ends, spreading, connivent in fruit, reflexed later; Stamens 4; filaments 1.5 mm, persistent in fruit; anthers oblong, rounded at both ends, sometimes unequal, to 0.8 mm; ovary globose, 1 mm across; style bent, upper half erect, 1 mm, recurved in fruit. Fruit a pseudoberry, globose, 0.5 cm across; epicarp fleshy, juicy; seed lenticular, hard, 2.5 mm across, hairy.

Fl. & Fr.: November-January.

Distr.: Native in Tropical America; naturalised in Indo-Malaysia. *Princy*10644.

POLYGONACEAE Eaton

Bot. Dict. ed. 4, 30. 1836.

Antigonon Endl.

Gen. Pl. [Endlicher] 310. 1837.

Antigonon leptopus Hook. &Arn., Bot. Beech. Voy. 308. t. 69. 1841; V.S.Ramach.& V.J.Nair, Fl. Cannanore380.1988.*Thenpoovalli*.

Woody climber, with tuberous root, stem angular, glabrescent. Leaves alternate, blade 3-8 cm long, 1.5-5 cm broad, hastate-ovate, triangular or cordate-ovate, simple, hairy above, densely towards margin, glabrescent below; petiole 1-2 cm long. Inforescence a raceme ending into a branched tendril; flowers showy; pedicel 3-8 mm long with sparsely spreading simple hairs; perianth segments 5, bright pink, 6-15 mm long, 3-7 mm broad, very reticulately veined; Stamens 8, 3-7 mm long, sparsely hairy throughout; anthers oblong; carpels 3; ovary ovoid, trigonous, glabrous, 3-4 mm long; styles 3 with capitate stigma. Nut c.5 mm long.

Fl. & Fr.: November-March.

Distr.: Native of South America, widely grown in gardens.*Princy*10545.

ARISTOLOCHIACEAE Juss.

Gen. Pl. [Jussieu] 72. 1789, *nom. cons.*

Aristolochia L.

Sp. Pl. 2: 960. 1753.

Aristolochia indica L., Sp. Pl. 960. 1753; Hook.f., Fl. Brit. India 5: 75. 1886; Gamble, Fl. Pres. Madras 1202.1925; V.S.Ramach.& V.J.Nair, Fl. Cannanore383. 1988.*Eeswaramulla, Urithookki.*

Twining perennial herbs, branches slender, angular, glabrous. Leaves simple, alternate, ovate-lanceolate or ovate-oblong, 3-10 × 1-4 cm, margins entire, base truncate, apex acute to acuminate, glabrous, 3-5-nerved at base; petiole to 2.5 cm long, glabrous. Flowers in few-flowered axillary racemes; peduncle 7 mm long, elongate in fruits; bracts c. 1.5 mm long, lanceolate; perianth tube dull brown, 1-1.5 cm long, bulbous base 3-5 mm across, green; limb 2-2.5 cm long, linear-oblong, rounded at apex, greyish-green; stamens 6; ovary c. 2 mm long; stigmas 6, fleshy. Capsule 1.5-3 x 1.5-2 cm, globose-pyriform, 6-ridged, dehiscing from the base, after dehiscence parachute-like; seeds 4-6 mm across, broadly deltoid, flat, winged.

Fl. & Fr.: July-March.

Distr.: Indo- Malaysia.

PIPERACEAE Giseke

Prael. Ord. Nat. Pl. 123. 1792, *nom. cons.*

Peperomia Ruiz & Pav.

Fl. Peruv. Prodr. 8. 1794.

Peperomia pellucida (L.) Kunth, Nov. Gen. Sp. 1: 64. 1815; Gamble, Fl. Pres. Madras 1210.1925; Hook.f., Fl. Brit. India 5: 97. 1886; V.S.Ramach.& V.J.Nair, Fl. Cannanore386. 1988.*Mashithandu*.

Delicate, glabrous annual herbs; stems erect, 5-30 cm tall, pellucid, branched when well developed. Leaves simple, alternate throughout, 1-3 cm long and wide, triangular ovate, cordate at base with a sinus 1-2 mm deep, obtuse or shortly acuminate at apex, pellucid, palmately 5-7 nerved from the base; petiole 6-15 mm long, clasping decurrent along the stem. Spikes solitary, terminal but frequently leaf-opposed by overtopping, 2-5 cm long, slender, axis glabrous; peduncle 2-5 cm long, about as thick as spike axis; bracts 0.2-0.3 mm in diameter; flowers scarcely immersed; ovary with a fleshy, oblique, subapical stigma. Fruit sessile, about 0.8 mm long, globose-ellipsoid, with an apical stigma, longitudinally striate-undulate, blackish brown at maturity.

Fl. & Fr.: September-December.

Distr.: Native of Tropical America; now Pantropical. *Princy*12223.

LAURACEAE Juss.

Gen. Pl. [Jussieu] 80. 1789, *nom. cons.*

Cinnamomum Schaeff.

Bot. Exped. 74. 1760, nom. cons.

Cinnamomum verum Presl, Prir.Rostl. 2: 36. t. 7. 1825; V.S.Ramach.& V.J.Nair, Fl. Cannanore393. 1988. *Cinnamomum zeylanicum* Blume, Bijdr. 568. 1826; Hook.f., Fl. Brit. India 5: 131. 1886; Gamble, Fl. Pres. Madras 1224. 1925. *Karuva*.

Trees, to 20 m high, bark 8-10 mm thick, brown, rough, cracks vertical; branchlets glabrous. Leaves simple, opposite or subopposite,ovate, elliptic ovate or elliptic-lanceolate, 9.5-14 × 3.5-5.5 cm, apex acute to acuminate, base acute, margin entire, glabrous, coriaceous, 3-ribbed from base, prominent, glabrous; lateral nerves 3-6 pairs, obscure, pinnate, intercostae reticulate; petiole 8-20 mm, stout, glabrous, slightly grooved above. Flowers bisexual, in terminal and axillary, pedicel 7 mm long, pale yellow, 5 mm long, 6 mm across; perianth 8 mm, silky, tube campanulate, lobes 6, 3 mm long, oblong-lanceolate; stamens 9 perfect, those of first and second rows opposite the perianth lobes, introrse and eglandular, those of third row opposite the first row, lateral, bearing 2 large glands at the base; staminodes 3, of the forth row opposite the second row, cordate and stipitate; ovary half inferior, sessile. Fruit a berry, 1-2 cm, ellipsoid to oblong-ovoid, dark purple, surrounded by the enlarged perianth.

Fl. & Fr.: March-April.

Distr.: South West India and Sri Lanka. *Princy*12235.

LORANTHACEAE Juss.

Ann. Mus. Natl. Hist. Nat. 12: 292. 1808*, nom. cons.*

Dendrophthoe Mart.

Flora 13(1): 109. 1830.

Dendrophthoe falcata (L. f.)Etting., Denkschr. Kaisel.Akad.Wiss. Math.-Naturwiss. Klasse 32: 52,53,58. t.13. 1871, var. *falcata*; V.S.Ramach.& V.J.Nair, Fl. Cannanore399. 1988; Hook.f., Fl. Brit.

India 5: 214. 1886; Gamble, Fl. Pres. Madras 1253. 1925. *Loranthus falacatus* L.f., Suppl.Pl.211.1781. *Itthilkkanni*.

Parasitic; stem woody, terete, lenticellate. Leaves simple, subopposite,ovate-oblong to lanceolate, 5-10 × 3-4.5 cm, apex acute or obtuse, base truncate, obtuse or cordate, thickly coriaceous; petiole 2-3 mm long or absent. Inflorescence axillary and lateral, curved racemes, 3-5 cm long, many-flowered; pedicels c. 3 mm long; calyx 2-3 mm long, truncate; corolla tube pink, 2.5-3.5 cm long, curved, slender at base, widening to top; lobes green, 0.7-1 cm long, c. 2 mm wide, linear, recurved; filaments bright red, c. 4 mm long; anthers yellow, linear-oblong; ovary 2-3 mm long. Berry 1-1.5 x 0.3-0.4 cm, oblong, crimson.

Fl. & Fr.: December-May.

Distr.: Indo-Malaysia to Australia. *Princy* 4231, 8078.

SANTALACEAE R.Br.

Prodr. Fl. Nov. Holland. 350. 1810*, nom. cons*.

Santalum L.

Sp. Pl. 1: 349. 1753.

Santalum album L., Sp. Pl. 349. 1753; Hook.f., Fl. Brit. India 5: 231. 1886; Gamble, Fl. Pres. Madras 1261.1925; V.S.Ramach.& V.J.Nair, Fl. Cannanore402. 1988.*Chandhanam*.

Evergreen trees, to 10 m high, bark surface dark grey to nearly black, rough with short vertical cracks. Leaves simple, opposite,elliptic, elliptic-ovate or ovate-lanceolate, 3.7-12 × 2-4 cm, apex acute, base acute or round, margin entire, glabrous, shiny above and glaucous beneath, coriaceous; lateral nerves 8-13 pairs, pinnate, faint, intercostally reticulate, obscure; petiole 12-18 mm long, slender, glabrous, grooved above. Flowers bisexual, 5-6 mm across, reddish-purple, in axillary and terminal paniculate cymes, much shorter than leaves; tepals 5, basally connate into a campanulate tube of 2 mm long, shortly connate to the basal part of the ovary; lobes 2.5 x 1.5 mm, ovate, thin, fleshy, glaucescent without, minutely ciliate; disc concave, adhering to the bottom of perianth, its lobes alternates with tepals; stamens 5, alternates with disc; filaments 1 mm; anthers 0.7 mm, ovoid, 2-celled; ovary superior later half inferior at the time of flowering, globose, 1 mm, 1-celled, ovules 2-3, pendulous from below the long, acuminate,

central column; style 1.5 mm, stigma 3 lobed. Fruit a drupe, 8-12 mm across, globose, blackish-purple, annulate above, beaked with the basal part of the style; seed one.

Fl. & Fr.: November-December.

Distr.: Peninsular India and Malaysia.

EUPHORBIACEAE Juss.

Gen. Pl. [Jussieu] 384. 1789, *nom. cons.*

Acalypha L.

Sp. Pl. 2: 1003. 1753.

Acalypha amentacea Roxb., Fl. Ind. 3: 676. 1832, subsp. *wilkesiana* (Muell.-Arg.) Fosb., Smithsonian Contr. Bot. 45: 10. 1980; Gamble, Fl. Pres. Madras 1331. 1925.

Compact shrub; branchlets tomentose, puberulous later. Leaves alternate, elliptic to ovate, to 25 x 12 cm, base cuneate, margin crenate-serrate, apex acuminate, glabrous except on veins, 5-nerved from base, bronzy-green-mottled with shades of red and purple; petiole to 12 cm;stipules lanceolate, to1.5 cm. Monoecious; staminate spikes axillary, to 13 cm, pendulous, reddish, many-flowered, flowers in the axils of minute bracts; perianth 4-lobed, axillary; stamens 8-16; pistillate spikes erect, to 9 cm, reddish, to 12-flowered; flowers in the axils of foliaceous, 3-angular, 9-13-parted reddish bracts; perianth 3-5-parted; lobes ovate-lanceolate, acuminate; ovary 3-lobed,3-celled, 1 ovule per cell, on axile placentae; styles 3, united basally, fringed apically.

Fl. & Fr.: October-May.

Distr.: Native of Polynesia widely cultivated as an ornamental. *Princy*4217.

URTICACEAE Juss.

Gen. Pl. [Jussieu] 400. 1789, *nom. cons.*

Laportea Gaudich

Voy. Uranie, Bot. 498. 1830.

Laportea interrupta (L.) Chew, Gard. Bull. Singapore 21: 200. 1965; 6937, V.S.Ramach.& V.J.Nair, FI. Cannanore 439. 1988; Sasidh., Biod. Doc. Kerala 6, FI. Pl.433. 2004.*Urtica interrupta* L., Sp. Pl. 985. 1753. *Fleurya interrupta* (L.) Gaud., Voy. Uranie 12: 497. t. 8. 1830; Hook.f., FI. Brit. India 5: 548. 1888; Gamble, F1. Madras 1372. 1928. *Kodootha*.

Erect monoecious annual herbs with stinging hairs. Leaves simple, alternate, 4-10 x 3-5 cm, broadly ovate, apex acuminate, base rounded or subcordate, margin coarsely serrate, sparsely hairy, membranous, 3-nerved from base; petiole to 8 cm long. Flowers in short, cymose clusters aggregated in slender lax, axillary spikes to 13 cm long; male flowers: tepals 4, c. 1 mm long, ovate, concave; stamens 4, filaments unequal; pistillode linear, clavate; female flowers: tepals 4, unequal, basally connate into a cup; ovary obliquely attached, ovoid; style lateral, filiform. Achenes c. 2 mm across, ovoid.

Fl. & Fr.: August - September.

Distr.: Paleotropics. *Princy* 10676, 10649.

ULMACEAE Mirb.

Elém. Physiol. Vég. Bot. 2: 905. 1815, *nom. cons*.

Trema Lour.

Fl. Cochinch. 2: 539, 562. 1790.

Trema orientalis (L.) Blume, Mus. Bot. Lugd.-Bat. 2: 62. 1856; Hook.f., Fl. Brit. India 5: 484. 1888; Gamble, Fl. Pres. Madras 1350.1928; V.S.Ramach.& V.J.Nair, Fl. Cannanore429. 1988. *Celtis orientalis* L., Sp. Pl. 1044. 1753. *Aamathaali*.

Dioecious trees, to 15 m high, bark 0.6 cm, thin, greyish or bluish-green, rough, lenticellate; branchlets scabrous to adpressed pubescent. Leaves simple, alternate, 7.5-15 x 2.5-6 cm, ovate-lanceolate, ovate or oblong-lanceolate, apex acuminate, base obliquely cordate, margin serrulate, scabrid above, tomentose beneath, chartaceous, 3-5-ribbed from base, prominent; stipules lateral, caducous; petiole 5-10 mm, slender, tomentose, grooved above; lateral nerves 3-4 pairs, pinnate, prominent, intercostae reticulate, prominent. Flowers unisexual, 3-4 mm across, greenish, in axillary fascicles or cymes; male flowers usually sessile; tepals 4 or 5, equal, 2 mm long, curved, ciliate; stamens 5; pistillode oblong; female flowers : tepals unequal, ciliate; ovary superior, sessile, 1-celled, ovate; style bifid, villous; stigma plumose. Fruit a drupe, 4 x 3 mm, globose, black; stylar tip persistent; seed globose.

Fl. & Fr.: September-December.

Distr.: Tropical Africa, Asia and Australia. *Princy*10637.

MORACEAE Gaudich.

Gen. Pl. [Trinius] 13. 1835, *nom. cons.*

Artocarpus J.R.Forst. & G.Forst.

Char. Gen. Pl., ed. 2. 101. 1776.

Artocarpus heterophyllus Lam., Encycl. 3: 209. 1789; Gamble, Fl. Pres. Madras 1369(957).1928; Ramach.& V.J. Nair, Fl. Cannanore Dist. 430. 1988.*Plaavu*.

Evergreen trees to 25 m high, bark 10-12 mm thick, blackish-grey, mottled with green and black, exfoliating in large thick flakes, exfoliated surface orange-red; exudation milky white latex; trunk with warty tubercles; branchlets glabrous. Leaves simple, alternate, 8-23 x 3-13 cm, obovate, obovate-oblong, or elliptic-ovate, apex acute or obtuse, base acute, round or cuneate, margin entire, glabrous and shining above and scabrous beneath; lateral nerves 6-8 pairs, pinnate, prominent, arched, intercostae scalariform, prominent; stipules 3-5 cm long, lateral, ovate-lanceolate, sheathing, glabrous, cauducous; petiole 20-40 mm long, stout, grooved above, glabrous. Flowers unisexual, minute, yellowish-green, in spikes enclosed by spathe-like bracts, male from young branches, catkin narrow-cylindric; perianth 2-lobed, puberulous; stamen 1; filament somewhat flattened, stout; anthers ovate-oblong; female catkins from the trunk and mature branches, more massive, perianth with strongly projecting conical apex; ovary 0.3 mm, superior, globose-obovoid; style exserted; stigma spathulate. Fruit a sorosis 30-45 x 20-25 cm, oblong, tuberculate, tubercles conical yellowish-green, fruiting perianth yellow to light orange, fleshy; seeds 10-12 x 8-10 mm, elliptic-oblong, smooth, glossy.

Fl. & Fr.: November-April.

Distr.: Widely cultivated in the tropics, origin is probably South India. *Princy*12164.

CASUARINACEAE R.Br.

Voy.Terra Austral.2: 571.1814, *nom. cons.*

Casuarina L.

Amoen. Acad. Linnaeus ed. 4: 123, 143. 1759.

Casuarina equisetifolia L., Amoen. Acad., Linnaeus ed. 4: 143. 1759. *Kaattadi*.

Dioecious trees, to 30 m high, bark brown, rough, peeling off in vertical strips; branchlets to 15 cm, arising from the axils of small, recurved scales, ribbed. Leaves scaly, ca. 7 at a node, alternating with the ribs of the upper node, 0.5-1 mm long, acute. Flowers in spikes; male flowers: in terminal spikes, pendulous, brown, of 3-6 x 0.3 cm; tepals 2, 1 mm, lanceolate, scarious, thinly ciliate, acute; stamen 1, inflexed in bud; filaments 1-2 mm; anther oblong, 1 mm; female flowers: in axillary spikes of 0.4-0.8 x 0.3-0.4 cm, solitary or in pairs, condensed into an ovoid` cone', shortly stalked; bracts and bracteoles 1.5-2 mm, persistent, woody; tepals absent; ovary superior, 1 mm, ovoid; style 0.5-0.8 cm; style filiform, persistent, reddish-purple, 2-fid. Fruit a carpophore, 1.5-3 x 1-2 cm, ovoid or oblong-cylindric; nutlets compressed; seeds winged.

Fl. & Fr.: December- January.

Distr.: Malay Islands, Australia, Pacific. *Princy* 10614.

Conclusion

The Government Brennen College campus supports considerable diversity of Monochlamydeae species. Continued monitoring and conservation of campus vegetation are recommended to preserve this valuable biological resource and to support future taxonomic and ecological studies.

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