

**THE FLORA OF
THE GULF OF MANNAR
SOUTHERN INDIA**



BOTANICAL SURVEY OF INDIA
Ministry of Environment and Forests

THE FLORA OF THE GULF OF MANNAR SOUTHERN INDIA

**P. DANIEL
and
P. UMAMAHESWARI**



**भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA**

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FOREWORD

The Indian MAB Committee following the UNESCO Programme identified a network of 14 representative ecosystems to be designated as biosphere reserves. Twelve biosphere reserves have already been set up. The Gulf of Mannar, the first marine biosphere reserve in Southeast Asia, was established on 18 Feb. 1989. A biosphere reserve is intended to fulfil three basic objectives: "of conserving *in situ* of biodiversity of natural and seminatural ecosystems and landscapes, contributing to foster sustainable economic development of the human population living within and around the biosphere reserve and providing facilities for long-term ecological studies, environmental education and training, and research and monitoring related to local, national and global issues of conservation and sustainable development".

Article 7 of the Convention on Biological Diversity states that each contracting party shall identify the components of biological diversity important for conservation and sustainable use, monitor, through sampling and other techniques, the components of biological diversity identified paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use ... etc. It is only appropriate to identify and monitor components of biological diversity in protected areas on priority basis. Realising that the Gulf of Mannar Biosphere Reserve, with a variety of ecosystems such as coastal, mangrove island and marine, is suitable site for such an exercise, the Ministry of Environment & Forests, Govt of India, funded a project for 3 years during 1993-1996. However, the authors have explored the 19 existing islands comprising the biosphere reserve as well as the mainland coast from Rameswaram to Kanyakumari so that the flora of the islands can be related.

Enumerated in this flora are 764 species of angiosperms including cultivated ones, with 115 illustrations and 26 photographs mostly on vegetation. Identified are also endemic, rare and otherwise interesting species and their island-wise distribution. These apart, the authors have enumerated the wild relatives of cultivated plants, wild edible plants, fodder plants and medicinal plants in the area. More importantly, in addition to identifying threats to biodiversity, suggesting conservation measures, they have also identified areas for further research. I am convinced that this book will be of great use to students and teachers of and researchers in botany, managers of the biosphere reserve and above all all those concerned about and with conservation.

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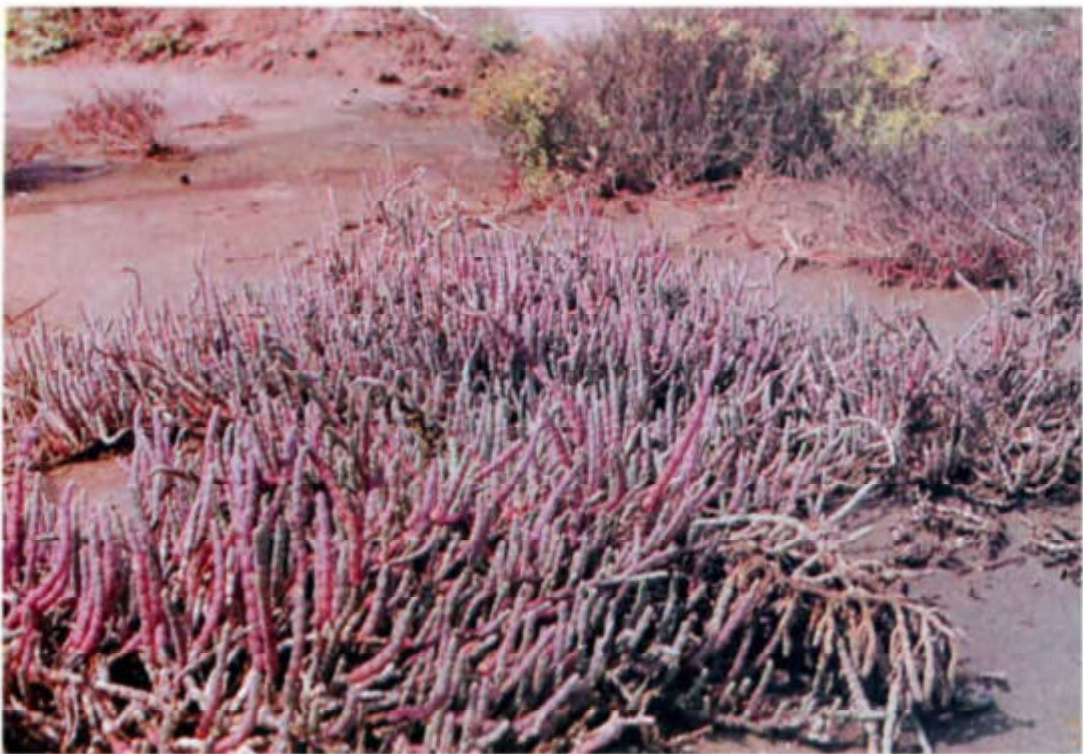
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INTRODUCTION

Biodiversity is the number, variety and variability of all organisms and the habitats where they exist. It has ethical, social and economic values. Biological resources meet all major requirements of human beings. Concern for access to bioresources and their conservation has grown *pari passu* with the fast-expanding scope for their use for human welfare. This concern led to the Convention on Biological Diversity (CBD) that came into being in Dec. 1993. India is a signatory to the CBD. The CBD aims to promote conservation of biodiversity, sustainable use of its components and sharing the benefits arising from the use of genetic resources. Till this Convention came into being bioresources were considered a common heritage of humankind. This Convention, however, considers them as a sovereign property of the nation states. This has made biodiversity-rich nations, which mostly happen to be the developing ones in the tropics, to seriously take stock of their possessions as such an exercise is considered as the first step towards using them sustainably.

With the ever increasing population in the the tropics the demand for natural resources continues to increase. This demand has resulted in over-exploitation of tropical forests and other ecosystems. Consequently there has been fragmentation, degradation and disappearance of habitats of species leaving a number of them threatened and leading to the extinction of some of them at times. Apart from many species waiting to be rediscovered, a large number of them are waiting to be discovered and described. India, a vast country with a variety of ecosystems and habitats including marine and coastal ecosystems, has this problem in a more pronounced way.

The Indian land mass has a geographical area of 329 million ha and a coastline of 7,500 km. Coastal areas with their beaches, estuaries, mangroves, seagrasses and algal beds, coral reefs and island ecosystems are rich in biodiversity. The marine ecosystems with their associated habitats support a wealth of marine resources and provide physical protection to the coastal environment and benefit people directly. Coastal areas in the tropics are highly industrialised and populated. The Gulf of Mannar, the present study area, is no exception.

With a view to protecting biodiversity *in situ*, which is also embodied in Art. 8 of the CBD, a number of wildlife sanctuaries and national parks were established after the enactment of the Indian Forest Act 1929. After the setting up of the Wildlife Board in 1952 the number of national parks and sanctuaries in the country has risen from 33 in 1952 to a total of 85 national parks and 448 sanctuaries in 1998. There is a proposal to increase the existing network coverage to 147 national parks and 519 sanctuaries (Arora & al., 1996) covering 5% of the total geographical area of the country. The Indian MAB Committee in 1979 identified a network of 14 representative ecosystems to be designated as biosphere reserves (Maikhuri & al., 1998) following the MAB programme of the UNESCO. Twelve biosphere reserves have already been established including the Gulf of Mannar, the first marine biosphere reserve in southeast Asia, which was established on 18 Feb. 1989. Seven sites have been identified and another eight have been suggested by state governments/expert groups (Maikhuri & al., 1998).

Each biosphere reserve is intended to fulfill three basic objectives.

- *In situ* conservation of biodiversity (genetic resources, species, ecosystems) of natural and semi-natural ecosystems and landscapes;

- Contribution to foster sustainable economic development of the human population living within and around the biosphere reserve;

- Provide facilities for long term ecological studies, environmental education and training, and research and monitoring related to local, national and global issues of conservation and sustainable development.

These functions/objectives are associated together through a zonation system consisting of a core area, buffer area and transition area (Maikhuri & al., 1998) as shown below.

- One or more core zones: securely protected sites for conserving biological diversity, monitoring minimally disturbed ecosystems, and undertaking non-destructive research and other low-impact uses (such as eco-tourism and education).

- A well-defined buffer zone(s): which usually surrounds or adjoins the core zones, and is used for cooperative activities compatible with sound ecological practices, including environmental education, recreation and applied and basic research.

- A flexible transition area or area of cooperation: which may contain a variety of agricultural activities, settlements and other uses and in which local communities, management agencies, scientists, non-governmental organizations, cultural groups, economic interests and other stakeholders work together to manage and sustainably develop the area's resources.

Such zonation has been demarcated in the Gulf of Mannar Biosphere Reserve in the form of biosphere clusters (Table I).

TABLE I

DEMARCATON OF LOCALITIES IN THE BIOSPHERE RESERVE

(Anon., 1987)

Region 1: Pamban (Rameswaram) Island to Keelakarai on the mainland

<i>Core zone</i>	<i>Buffer zone</i>	<i>Utilization zone</i>
Shingle	Mullai	Thalaiyari
Kurusadai	Valai	Appa
Pullivasal		& the immediate sea
Pumarichan		surrounding them

Manoli
 Manoliputti
 Muyal

Region 2: Keelakarai to Therkumukaiyur

<i>Core zone</i>	<i>Buffer zone</i>	<i>Utilization zone</i>
Anaipar	Valimunai	Sea between mainland &
Nallathanni		islands
Puhvinichalli		
Upputhanni		

Region 3: Therkumukaiyur to Tuticorin

<i>Core zone</i>	<i>Buffer zone</i>	<i>Utilization zone</i>
Pearl banks near & away from Tuticorin	Karaichalli Kaswari Van	Sea between mainland & islands

Region 4: Tuticorin to Kanyakumari

<i>Core zone</i>	<i>Utilization zone</i>
Pockets of pearl banks & chank beds	The rest

Article 7 of the CBD on Identification and Monitoring states - Each Contracting Party shall, as far as possible and as appropriate, in particular for the purposes of Articles 8-10:

- a. Identify components of biological diversity important for its conservation and sustainable use having regard to the indicative list of categories set down in Annex 1;
- b. Monitor, through sampling and other techniques, the components of biological diversity identified pursuant to sub-paragraph (a) above, paying particular attention to those requiring urgent conservation measures and those which offer the greatest potential for sustainable use;
- c. Identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques; and
- d. Maintain and organise by any mechanism data derived from identification and monitoring activities pursuant to sub-paragraphs (a), (b) and (c) above.

It is only appropriate to identify and monitor components of biological diversity in protected areas on priority basis. The Gulf of Mannar Biosphere Reserve with a variety of fragile ecosystems such as coastal, mangrove, island and marine was considered an appropriate site for taking up such an exercise.

Study area

The Gulf of Mannar Biosphere Reserve is situated between southeastern Tamil Nadu, India and northwestern Sri Lanka (Map). It takes its name from Thalaimannar in Sri Lanka. The Indian part of the gulf covers approximately an area of about 10,500 sq km (Anon., 1987). It is spread on the Indian side along longitude 78° 8' E - 79° 30' E and latitude 8° 35' N - 9° 25' N. It was declared as a biosphere reserve by the Government of India on 18 Feb. 1989. It is the first marine biosphere reserve in southeast Asia. It includes 23 islands as well as the sea from Dhanushkodi in Ramanathapuram district in the north to Kanyakumari in the south through Tuticorin and Tirunelveli districts. The mainland coast runs for about 350 km. Among the existing 23 islands, Hare or Pandian Island having become a part of Tuticorin port is no longer an island and Rameswaram is now connected to the mainland by rail and road. The other two islands namely Vilanguchalli near Tuticorin and Poovarasampatti near Keelakarai get exposed only during extreme low tides. The remaining 19 islands run like an arc in the Bay of Bengal from Pamban in Ramanathapuram district to Tuticorin. The islands together cover an area of about 625 ha. Based on the nearness of certain places/towns on the mainland coast the islands are designated as Mandapam group with 8 islands, Keelakarai group with 9 islands and Tuticorin group with 7 islands (Table II). Zonation demarcated in the biosphere reserve is given in Table I.

TABLE II

ISLANDS OF THE GULF OF MANNAR BIOSPHERE RESERVE

Sl.no.	Name of the island	Approximate area	Distance from the mainland
A. Mandapam group of islands			
1.	Shingle	12.69 ha	4 km from Pamban
2.	Kurusadai	65.80 ha	3 km from Pamban
3.	Pullivasal	29.95 ha	3 km from Mandapam Camp
4.	Pumarichan	16.58 ha	3 km from Mandapam Camp
5.	Manoliputti	2.34 ha	5 km from Mandapam Camp
6.	Manoli	25.90 ha	6 km from Mandapam Camp
7.	Muyal	129.00 ha	7 km from Mandapam Camp
8.	Rameswaram		(connected to the mainland)

B. Keelakarai group of islands

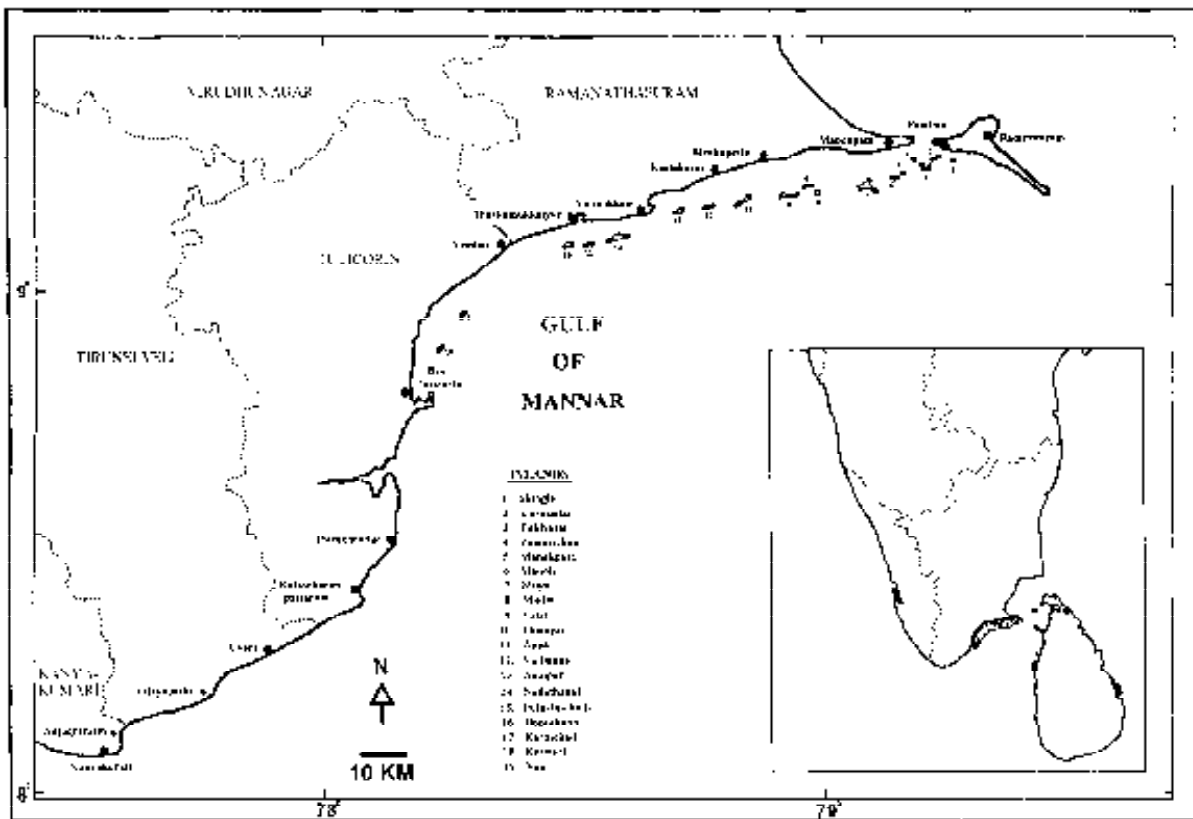
1.	Mullai	10.20 ha	10 km from Keelakarai
2.	Valai	10.10 ha	10 km from Keelakarai
3.	Thalaiyari	75.15 ha	10 km from Keelakarai
4.	Appa	28.63 ha	8 km from Keelakarai
5.	Valimunai	6.72 ha	9 km from Keelakarai
6.	Anaipar	11.00 ha	9 km from Keelakarai
7.	Nallathanni	101.00 ha	2 km from Mundal
8.	Puluvnichalli	6.00 ha	18 km from Vembar
9.	Poovarasapatti	0.50 ha	12 km from Keelakarai (now submerged)

C. Tuticorin group of islands

1.	Upputhanni	22.94 ha	8 km from Vembar
2.	Karaichalli	16.46 ha	15 km from Tuticorin (now only 12.70 ha)
3.	Kaswari	19.54 ha	7 km from Tuticorin (now only 15 ha)
4.	Van	16.00 ha	6 km from Tuticorin (now only 12 ha)
5.	Kuttichalli		(reportedly submerged 30 years ago)
6.	Vilanguchalli	0.95 ha	15 km from Tuticorin (now submerged)
7.	Hare (Pandian)	16.00 ha	(now connected to the mainland)

The biosphere reserve is rich in biological resources and ecosystem diversity. These islands are considered a biologists' paradise. The variety of natural resources such as seagrasses, seaweeds, coral reefs, pearl banks, chank beds, mangroves and other island species, marine animals, birds etc. along with other non-renewable resources make the biosphere reserve an important region for conservation.

There are many places of historical importance on the Gulf of Mannar Coast. Rameswaram, Dhanushkodi and Valinokkam are associated with Lord Rama. The Ramathaswamy temple at Rameswaram and Subramaniaswamy temple at Thiruchendur attract thousands of devotees daily. Of late Kanyakumari has become a place of tourist attraction because of the Vivekananda rock memorial, temples and other places of interest. Mosques at Keelakarai and Ervadi, the Suyambulingaswamy temple at Uvari, and the churches at Manappadu and Uvari are also places of pilgrimage. Earlier there were small ports at Vembar, Kulasekaranpattanam, Virapandianpattanam, Kayalpattanam and Punnakayal. Tuticorin is a major port on the East Coast.



Map of Gulf of Mannar Biosphere Reserve. Inset: Location in Peninsular India

Rivers

The only perennial river in the study area is Tambraparani which traverses Tirunelveli and Tuticorin districts. It takes its origin from Periya Pothigai on the Tirunelveli hills of the Western Ghats and discharges into the Bay of Bengal near Punnakayal in Tuticorin district. It has a catchment area of about 2,800 sq km and drains into the sea the excess of water received from both the northeast and southwest monsoons. The river Kundar in Ramanathapuram district is not a perennial one. It joins the sea near Mukaiyur. Vembar makes a boundary line between Ramanathapuram and Tuticorin districts and it empties into the sea near Vaipar in Tuticorin district. The Nambiyar takes its origin from Mayamparambu shola on the Mahendragiri slopes on the Western Ghats and reaches the plains at Thirukurungudi and the sea near Athankaraipallivasal in Tirunelveli district. A rivulet namely Veppalodai in Tuticorin district discharges into the sea near Veppalodai, a coastal village located about 20 km away from Tuticorin on Rameswaram highway.

Geology and soil

The soil is sandy throughout the coast. A little interior the subcoastal region has black soil at certain places like Kannirajapuram in Ramanathapuram district. There is red soil at Periyathalai and regions adjoining the Kudiraimoli Theri in Tuticorin district. Rameswaram Island is built up by coarse brown to light grey sandstones carrying plenty of broken shells, coral fragments and other calcareous materials. Soil types that occur in the study area include sandy, saline, red and black soils. Classification of the soil has been made based on its nature and colour (Anon., 1917, 1972).

Sandy soil occurs along the mainland coast and on islands. Saline soil occurs in mangroves, tidal swamps and marshy areas and red and black soil in subcoastal and regions adjoining the Kudiraimoli Theri. Calcareous sandstones have rocky nature in the northern part of Rameswaram.

Rao & al. (1963a) while studying the vegetation of the Kurusadai group of islands analysed the soil. The soil is sandy throughout the islands. In the foreshore habitat the soil is loose and sandy, dull white and consists mostly of shell fragments and disintegrated coral reef. Soil is dry up to 25 cm depth and there is no development of horizons. The pH is more than 8.2 and organic matter varies from 0.389% to 0.225% from top to bottom. Soluble salt and chloride contents are comparatively lower. The inland sandy habitat soil is not markedly different from that of the foreshore sandy habitat. But then, organic matter is more (0.809%) and soluble salt and sodium chloride contents are also on the higher side. In salt marsh habitat soil is highly calcareous and white to dull white with pinkish tinge. It is moist due to poor drainage and preservation of moisture by salt crust formation. Though the pH is 8.2, organic matter content is low (0.542%). Total soluble salt and sodium chloride contents are very high. The soil in the mangrove habitat, on the other hand, is semi-muddy coral sand with a pH of 7.8 and high organic matter content (1.737%). Soluble salt (1.640%) and sodium chloride contents (1.397%) though high are comparatively lower than that in the salt marsh

habitat. The soil in maritime habitat though has a pH of 7.8 as the soil of the mangrove habitat the organic matter is comparatively lower (1.049%). Soluble salt (1.744%) and sodium chloride (1.284%) contents are a little less when compared to that of the mangrove habitat.

Meteorological data

Meteorological data presented refer to 3 stations viz., Pamban, Tuticorin and Kanyakumari located in Ramanathapuram, Tuticorin and Kanyakumari districts respectively. Monthly mean values of maximum and minimum temperature, relative humidity at 08.30 and 17.30 hours, monthly rainfall and wind speed are plotted based on 5 years' data (1991-1995) (Charts 1-3).

Temperature: It is more or less uniform in all the three regions. Mean minimum temperature fluctuates between 21.2° C in January at Tuticorin and 28.1° C in May at Pamban. Mean maximum temperature ranges between 28.6° C in December at Pamban and 35.8° C in July at Tuticorin.

Rainfall: The rainfall is mostly from the northeast monsoon from October to December. It ranges between 1.4 mm in July and 279 mm in November at Pamban. Compared to the other two regions Kanyakumari region enjoys higher annual rainfall due to both the northeast and southwest monsoons.

Humidity: At Pamban and Tuticorin relative humidity is also more or less uniform throughout the year or with a slight increase in January and from October to December. Kanyakumari exhibits higher relative humidity in June and July. Mean relative humidity at 08.30 hrs ranges between 70 and 83.6% and at 17.30 hrs ranges between 64.2 and 80.2%.

Wind: Wind velocity (km/hr) is more or less uniform throughout the year. The lowest recorded is in April at Pamban and the highest is in August at Kanyakumari.

Review of earlier work

The earliest collections from the area particularly around Tuticorin are by Wight made in the 1830s. And the earliest collection from the biosphere reserve is by Thurston who was the superintendent of the Government Museum, Madras (1885-1909) made on the Kurusadai Island in 1888. Lawson collected especially around Kanyakumari at the end of the last century. The Bournes also collected around Tuticorin at the turn of this century. Sundararaj collected on the Gulf of Mannar Coast and some islands in the 1940s.

There is no comprehensive floristic work on this region particularly for islands as a whole. The earliest work exclusively related to this region seems to be that of Iyengar (1927) who, while exploring for algae, incidentally studied the angiosperms of Kurusadai and Shingle Islands. Chacko & al. (1955) who studied the fauna of Kurusadai Island also

Chart 1 - METEOROLOGICAL DATA FOR PAMBAN (1891-1995)

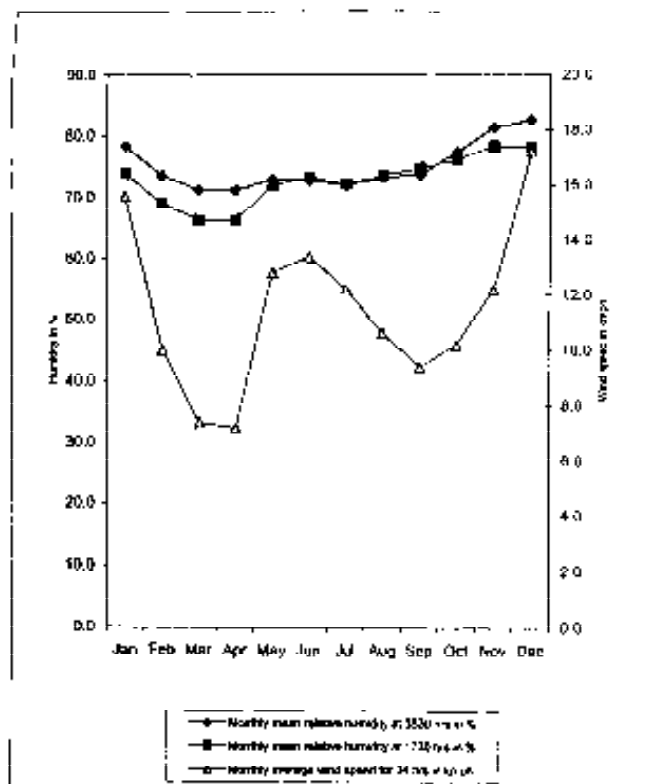
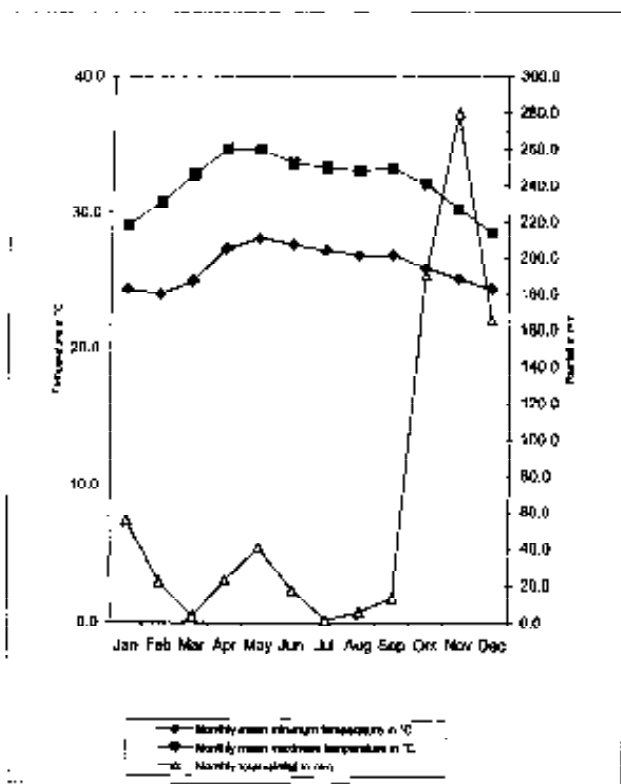
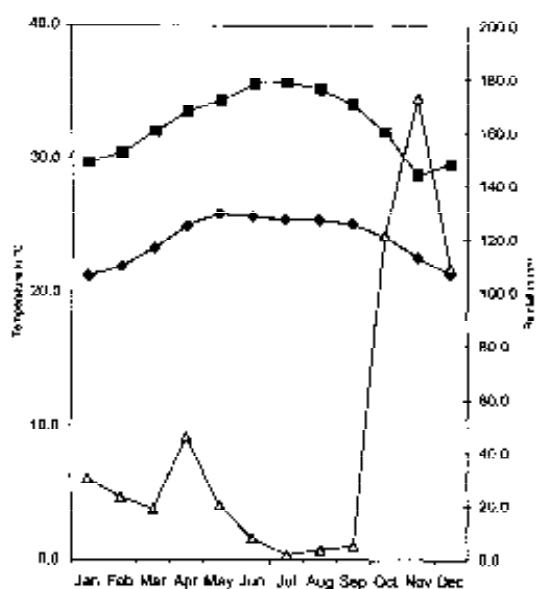
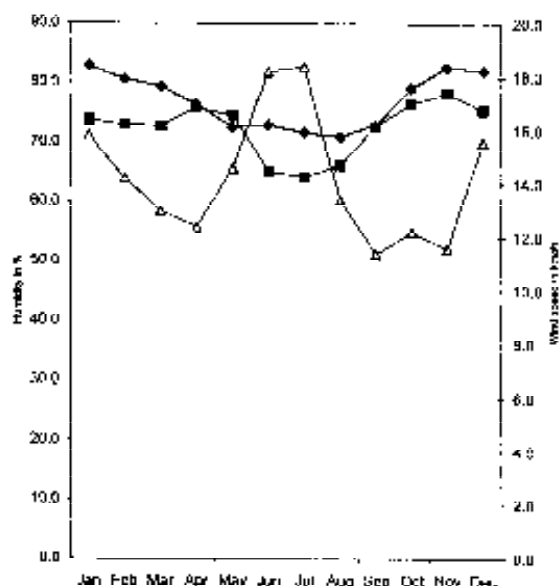


Chart 2 - METEOROLOGICAL DATA FOR TUTICORIN (1991-1995)

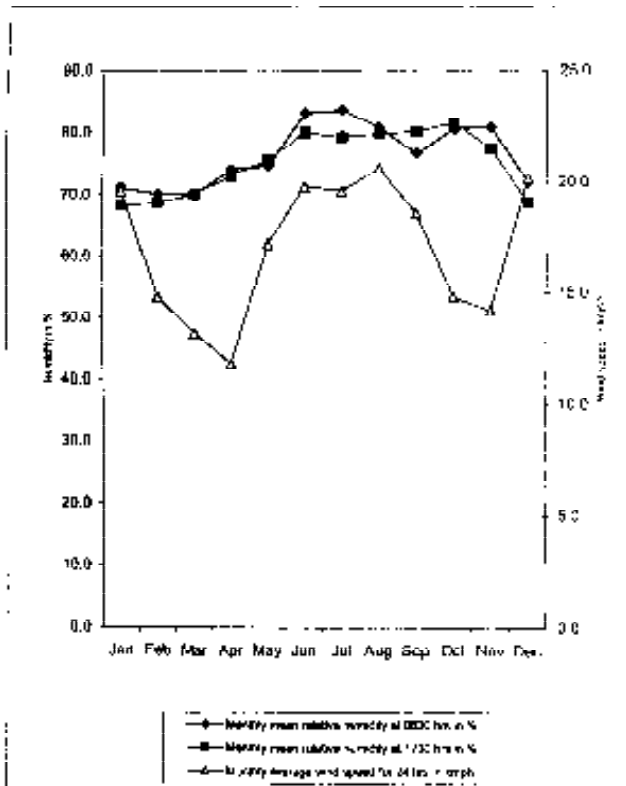
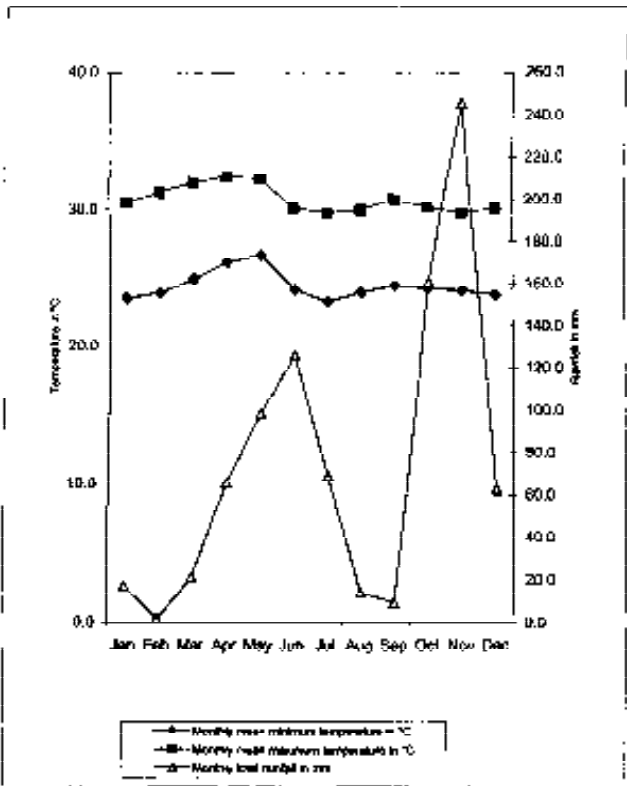


● Monthly mean maximum temperature in °C
 ■ Monthly mean relative humidity in %
 ▲ Monthly total rainfall in mm



● Monthly mean relative humidity at 0600 hrs in %
 ▲ Monthly average wind speed (m/s)

Chart 3 - METEOROLOGICAL DATA FOR KANYAKUMARI (1991-1995)



enumerated the angiosperms. Srinivasan (1960) described the vegetation of Church (Van) Island off Tuticorin. Sundararaj and Nagarajan (1964, 1966) enumerated the flora of both Church (Van) and Hare Islands off Tuticorin as well as Kurusadai Island. Rao & al. (1963a,b, 1975) studied the mainland coastal flora of Tamil Nadu and that of Kurusadai (Mandapam) group of islands with an emphasis on ecology. Lakshmanan & al. (1984) studied the mangrove and seagrass ecosystems of Kurusadai and Rameswaram Islands. The mainland coast of Ramanathapuram district as well as Kurusadai Island were explored by Ramachandran and Balasubramanian (1991). Studies of most of the other authors involved only the mainland coast (Gamble, 1915-1936; Henry & Swaminathan, 1981; Hooker, 1872-1897; Lawrence, 1960; Nayar, 1959; Shankararayan, 1960). The seagrasses of the Coromandel Coast including the Gulf of Mannar were studied by Lakshmanan and Rajeswari (1982), Parthasarathy & al. (1988, 1991), Ravikumar and Ganesan (1990), and Ramamurthy & al. (1992). The more recent comprehensive reports on the biosphere reserve (Deshmukh & Venkataramani, 1994; Neelakantan, 1994) are with a special stress on the fauna. No efforts were made to study the flora of the biosphere reserve as a whole. However, the mainland coastal vegetation and flora thereof have been dealt with at length by various authors earlier referred to as well as Rao (1974), Rao and Sastry (1972, 1974) and Rao & al. (1975) and more recently Nair and Vivekananthan (1983). Islands such as Appa, Anaipar, Kaswari, Karaichalli, Manoli, Manoliputti, Mullai, Muyal, Nallathanni, Puluvinichalli, Thalayiari, Upputhanni and Valimunai and certain areas on the mainland coast particularly in Tirunelveli and Tuticorin were never collected earlier. The entire biosphere reserve and the mainland coast were explored together for the first time for angiosperms including seagrasses.

Present Work

Earlier literature pertaining to the Gulf of Mannar was perused for species distribution and index cards were prepared. Specimens collected from this region by earlier workers and deposited at various herbaria, the Central National Herbarium, Botanical Survey of India, Howrah (CAL), herbarium of the Botanical Survey of India, Southern Circle, Coimbatore (MH), that of the Presidency College, Madras (PCM), the Rapinat Herbarium, St. Joseph's College, Tiruchirapalli (RHT) as well as the herbaria of the Bharathiar University, Coimbatore and Kongunadu Arts & Science College, Coimbatore were studied and information was added to the already prepared index cards.

The mainland coast from Dhanushkodi to Kanyakumari as well as the existing 19 islands of the biosphere reserve were explored periodically from 1993 to 1996 covering various seasons. The mainland coast was collected for up to 3 km from the sea depending upon the natural vegetation present. A total of 13 field trips were conducted and 3,030 field numbers comprising about 9,750 specimens were collected. All the specimens were processed and mounted following customary methods (Fosberg & Sachet, 1965). Field observations on phenology, habitat, associated species, distribution pattern, frequency etc. were noted down. Uses and local names were confirmed as far as possible after making enquiries with the local people.

Specimens were identified using Gamble's flora of the Presidency of Madras (1915-1936), Matthew's flora of the Tamilnadu Carnatic (1983) and other related works. These were later confirmed with authentic specimens at MH. Novelties and additions to Indian flora were got confirmed by experts. Duly labelled 2 sets of voucher specimens are deposited at MH and CAL.

PLAN OF PRESENTATION

The families are arranged according to Bentham and Hooker's (1862-1883) system of classification. However, in certain instances a more recent concept is followed. Dichotomous bracketed keys are provided for families, genera, species and infraspecific taxa. The genera under a family and species under each genus are arranged alphabetically. Under each genus distribution and number of species is given in the order of the world, India, Tamil Nadu and the present study area. Each species is provided with the correct name followed by relevant synonyms(s), if any. A reference is invariably given to Hooker's *The flora of British India*, Gamble's, *Flora of the Presidency of Madras*, Matthew's, *Flora of the Tamilnadu Carnatic and Illustrations on the flora of the Tamilnadu Carnatic*, Das-sanayake's, *A revised hand-book to the flora of Ceylon*, Henry & al.'s *Flora of Tamil Nadu* and the more recent *Flora of India* volumes brought out by the Botanical Survey of India. Revisions and other critical works pertaining to the area, if any, are also cited.

Abbreviations of authors' names are after Brummit and Powell (1992). For abbreviations of titles of books and periodicals *Taxonomic literature* ed. 2 (Stafleu & Cowan, 1976-88) and *Botanico-Periodicum-Huntianum* (Lawrence & al., 1968) respectively have been followed. For correct names and synonyms and names published for the first time at any rank abbreviations of books/periodicals is after the above mentioned works. Other abbreviations resorted to are purely to save space.

Nomenclatural citation is followed by local name(s), if any, description, flowering and fruiting times, habitat and distribution in the order of world, India, Tamil Nadu and the study area, uses if any, and specimens examined. Uses are mostly based on literature particularly that of Ambasta (1992). Under specimens examined total number of specimens in Tamil Nadu is given in parenthesis followed by selected specimens. Collectors names are given alphabetically placing those from the mainland coast first. Notes on nomenclature, taxonomy and dispersal mechanism, if any, are added. Distribution of species on islands is also discussed wherever possible. Based on field observations the frequency of occurrence is recorded. Monocots are described in detail while for dicots only salient features are given. Rare and/or otherwise interesting species are supported by illustrations. Selected photographs are provided to show nature of vegetation with particular reference to different islands and for individual plants in some instances.

Cultivated tree species are provided with a very short description.

Following are the expansions of abbreviations used.

Abbreviations of names of collectors & places

ANH	A.N. Henry	MAL	M.A. Lawson
AKM	A.K. Mukherjee	MOP	M.O. Parthasarathy Iyengar
ARKS	A.R.K. Sastry	MSS	M.S. Swaminathan
CAB	C.A. Barber	N	V. Narayanaswamy
CR	C. Rajasekhara Mudaliar	NCN	N.C. Nair
DD	D. Daniel	NP	N. Parthasarathy
DDS	D. Daniel Sundararaj	PD	P. Daniel
DJ	D. Jawahar	PU	P. Umamaheswari
GJT	G. James Thiyagaraj	RW	Robert Wight
JA	Jayajothi	SAM	S.A. Muthukumar
JGR	J. Gopal Rao	SNC	S.N. Chandrasekaran
JSG	J.S. Gamble	SR	S. Raghupathi
JSR	J. Sakharam Rao	SRR	S.R. Raju
KCJ	K.C. Jacob	SRS	S.R. Srinivasan
KKL	K.K. Lakshmanan	SVP	S.V. Parthasarathy
KMS	K.M. Sebastine	TAR	T.A. Rao
KR	K. Ravikumar	VB	V. Balasubramanian
KSK	K. Sampath Kumar	GM	Gulf of Mannar
		TN	Tamil Nadu

Abbreviations of titles of books & periodicals

BOBSI	<i>Bulletin of the Botanical Survey of India</i>
FBI	<i>The flora of British India</i>
FFI	<i>Fascicles of flora of India</i>
FI	<i>Flora of India</i>
FIFTC	<i>Further illustrations on the flora of the Tamilnadu Carnatic</i>
FM	<i>Flora Malesiana</i>
FPM	<i>Flora of the Presidency of Madras</i>
FSSI	<i>Flora sylvatica for southern India</i>
FTC	<i>The flora of the Tamilnadu Carnatic</i>
FTN	<i>Flora of Tamil Nadu</i>
GBCIP	<i>The grasses of Burma, Ceylon, India and Pakistan</i>
HISG	<i>A handbook of some south Indian grasses</i>

IF	<i>Indian Forester</i>
IFTC	<i>Illustrations on the flora of the Tamilnadu Carnatic</i>
IIB	<i>Illustrations of Indian Botany</i>
IJB	<i>Indian Journal of Botany</i>
IJF	<i>Indian Journal of Forestry</i>
JAA	<i>Journal of the Arnold Arboretum</i>
JBNHS	<i>Journal of the Bombay Natural History Society</i>
JETB	<i>Journal of Economic & Taxonomic Botany</i>
JSBC	<i>Journal of Swamy Botanical Club</i>
KB	<i>Kew Bulletin</i>
PIAS	<i>Proceedings of the Indian Academy of Sciences</i>
RBSI	<i>Records of the Botanical Survey of India</i>
RDBIP	<i>Red data book of Indian plants</i>
RHFC	<i>A revised hand-book to the flora of Ceylon</i>
SCCI	<i>Seagrasses of Coromandel Coast, India</i>

Abbreviations of Islands

1.	An	Anaipar	11.	Pc	Puluvnichalli
2.	Ap	Appa	12.	Pu	Pumarichan
3.	Ka	Kaswari	13.	Pv	Pullivasal
4.	Kc	Karaichalli	14.	Sh	Shingle
5.	Ku	Kurusadai	15.	Th	Thalaiyari
6.	Ma	Manoli	16.	Ut	Upputhanni
7.	Mp	Manoliputti	17.	Val	Valai
8.	Mu	Muyal	18.	Vm	Valimunaj
9.	Mul	Mullai	19.	Va	Van
10.	Nt	Nallathanni			

VEGETATION

Vegetation in contrast to flora identifies the distinct assemblages of plant species in a given area. Vegetation of the study area can be classified into mainland coastal and island vegetation. The mainland coast of the Gulf of Mannar runs for about 350 km from Dhanushkodi in Ramanathapuram in north to Kanyakumari in south through Tuticorin and Tirunelveli districts.

Mainland coastal vegetation

The coastal vegetation of Kanyakumari (Lawrence, 1960; Henry & Swaminathan, 1981), Tirunelveli (Shankarnarayan, 1960), Ramanathapuram (Rao & al., 1963b) and Tamil Nadu (Rao & al., 1975; Nair & Vivekananthan, 1983) have been already dealt with. The mainland coastal vegetation can be differentiated into sandy seashore, inland woody scrub jungle, wetland, mangrove and seagrass vegetation.

Sandy seashore

Spinifex littoreus is predominant on sandy seashores. Usually associated with it are *Aerva persica*, *Boerhavia diffusa*, *Cassia* spp., *Euphorbia rosea*, *Hedyotis* spp., *Heliotropium scabrum*, *Gisekia pharnaceoides*, *Ipomoea pes-caprae*, *Launaea sarmentosa*, *Pentatropis capensis*, *Pupalia lappacea* and *Tribulus terrestris*. Sedges like *Bulbostylis barbata*, *Cyperus arenarius*, *C. bulbosus*, *C. conglomeratus* subsp. *pachyrrhizus* and *C. stoloniferus* and grasses such as *Dactyloctenium aegyptium*, *Eragrostis* spp., *Halopyrum mucronatum*, *Lopholepis ornithocephala*, *Perotis indica*, *Sporobolus* spp. and *Trachys muricata* may also be associated.

At Dhanushkodi and Pamban *Casuarina* plantations have been established by the forest department to check soil erosion. Sand dunes observed adjoining the sea all along particularly near Dhanushkodi, Mandapam, Valinokkam, Keelakarai and Koodankulam are also colonized by such seashore species. At times sand dunes and sandy beaches may be inhabited by *Spinifex littoreus* with *Citrullus colocynthis*, *Prosopis chilensis* and rarely *Cryptostegia grandiflora* as in Keelavaipar near Tuticorin.

Inner woody scrub jungles

There are villages and towns all along the coast, at times almost uninterrupted for several kilometres. Or else there are well-cared for coconut groves, cultivated fields or salt pans. In most places private lands extend up to the coast. Natural vegetation is left in very few places only. Even the above mentioned sandy seashore vegetation may be absent at times.

The vegetation in the woody zone is dominated by *Borassus flabellifer* - *Acacia planifrons* association (Photo 1) with *A. horrida*, *Euphorbia antiquorum*, *E. tortilis* and *Prosopis chilensis*. This association occurs all along the coast.

Shrubs in the woody zone are *Abutilon indicum*, *Azima tetracantha*, *Calotropis gigantea*, *Capparis sepiaria*, *Clerodendrum inerme*, *Commiphora berryi*, *Dodonaea viscosa*, *Morinda pubescens*, *Phyllanthus reticulatus*, *Securinega leucopyrus*, *Toddalia asiatica* etc. Herbs are represented by *Aerva* spp., *Barleria* spp., *Boerhavia* spp., *Cassia* spp., *Croton bonplandianum*, *Hedyotis* spp., *Indigofera aspalathoides*, *Leucas aspera*, *Spermacoce hispida*, *Tephrosia purpurea*, *Tribulus terrestris* and *Tridax procumbens* with grasses like

Aristida spp., *Cenchrus ciliaris*, *Chloris barbata*, *Chrysopogon fulvus*, *Dactyloctenium aegyptium*, *Eragrostis* spp. and *Trachys muricata*. The prominent climbers are *Asparagus racemosus*, *Cayratia trifolia*, *Cissus quadrangularis*, *Coccinia grandis*, *Cyphostemma setosum*, *Galactia tenuiflora*, *Hemidesmus indicus*, *Ipomoea* spp., *Pentatropis capensis*, *Pergularia daemia*, *Rivea hypocrateriformis*, *Sarcostemma acidum*, *Tylophora indica* etc. Trailers are represented by *Allmania nodiflora*, *Dipterocanthus prostratus*, *Evolvulus alsinoides*, *Gisekia pharnaceoides*, *Rothia indica*, *Merremia emarginata* etc.

Common trees such as *Albizzia amara*, *A. lebbek*, *Azadirachta indica*, *Cocos nucifera*, *Ficus benghalensis*, *Lannea coromandelica*, *Pongamia pinnata*, *Samanea saman*, *Syzygium cumini*, *Tamarindus indica*, *Terminalia arjuna*, *Thespesia populnea* are found on roadsides and in the vicinity of human habitations. Common weeds in this zone are *Acalypha indica*, *Aerva* spp., *Aristolochia brachiata*, *Cassia auriculata*, *Cleome viscosa*, *Croton bonplandianum*, *Martynia annua*, *Pedaliium murex*, *Tribulus terrestris* etc.

Phoenix pusilla - *Dodonaea viscosa* association is also a part of this vegetation particularly around Mandapam. Certain species association appears to be confined to a particular region alone. For instance, the endemic grass *Acrachne henrardiana* which occurs under coconut trees at Pamban and Kanyakumari invariably occurs under either *Borassus flabellifer* or *Acacia planifrons* in other places. In a number of places particularly near Mundal *Solanum pubescens* occurs only under *Acacia planifrons*. Likewise near Thiruchendur it is *Urginea indica* under *Acacia planifrons* whereas at Vijayapathi it is the endemic *Dipcadi montanum* var. *madrasicum*. On the Tirunelveli coast *Caralluma adscendens* occurs adjoining the trunks of *Acacia planifrons* and *Euphorbia antiquorum*. Again on the Tirunelveli and Kanyakumari coasts *Helicanthus elastica* is a parasite on *Euphorbia antiquorum* and *Anacardium occidentale* respectively.

Species that occur along railway tracks are *Aristida adscensionis*, *Cleome angustata*, *Chloris barbata*, *Heliotropium scabrum*, *Mollugo* spp., *Portulaca* spp., *Trianthema portulacastrum* etc. Herbs under *Cocos nucifera* - *Borassus flabellifer* groves are *Achyranthes aspera*, *Aeschynomene indica*, *Allmania nodiflora*, *Cleome angustifolia*, *Commelina* spp., *Corchorus* spp., *Evolvulus alsinoides*, *Indigofera colutea*, *Physalis minima* with sedges and grasses like *Bulbostylis barbata*, *Cyperus* spp., *Brachiaria distachya*, *Eragrostis* spp. The climbers include *Diplocyclos palmatus*, *Gloriosa superba*, *Hemidesmus indicus*, *Mukia maderaspatana* and *Sarcostemma secamone*.

Northern part of Rameswaram exhibits a typical scrub jurgle. The soil is hard with calcareous sand stones. The vegetation is well diversified with *Anisomeles malabarica*-*Vitex negundo*, *Clerodendrum inerme*-*Phoenix pusilla* with herbs such as *Alysicarpus rugosus*, *Cassia* spp. and *Celosia polygonoides* with sedges like *Cyperus bulbosus*, *C. stoloniferus* and *Fimbristylis cymosa* and grasses like *Apluda mutica*, *Coelachyrum lagopoides* and *Setaria verticillata*. Shrubs such as *Cadaba fruticosa*, *Calotropis gigantea*, *Carmona retusa*, *Jatropha glandulifera*, *J. gossipifolia*, *Toddalia asiatica* etc. may also be associated with.

Wetlands

The usually low-lying salt marsh habitat on islands is generally inhabited by *Aeluropus lagopoides*, *Arthrocnemon glaucum*, *Salicornia brachiata*, *Sporobolus maderaspatanus*, *S. spicatus*, *S. tremulus* and *Suaeda* spp. namely *S. maritima*, *S. monoica* and *S. nudiflora*. Exactly similar vegetation may be found on the mainland coast in the vicinity of salt pans particularly around Tuticorin, Punnakayal and Valinokkam. Interestingly the salt marsh on Kurusadai Island has *Typha angustata*, a fresh water marsh plant common on the mainland coast.

There are many streams, lakes and ponds fed by Tambraparani river particularly in Tuticorin district. There are also many such water bodies on Kanyakumari coast. Emergent species include *Colocasia esculenta*, *Cryptocoryne spiralis*, *Cyperus exaltatus*, *C. pangorei*, *Echinochloa colona*, *Paspalidium geminatum*, *Pycreus polystachyos*, *Saccharum spontaneum* and *Schoenoplectus articulatus*. Floating-leaved hydrophytes are *Aponogeton natans*, *Ipomoea aquatica*, *Limnophyton obtusifolium*, *Monochoria vaginalis*, *Nelumbo nucifera*, *Nymphaea pubescens*, *Nymphoides aurantiacum*, *N. hydrophylla* and *N. indicum*. Submerged species are *Ceratophyllum demersum*, *Hydrilla verticillata*, *Lagarosiphon alternifolia*, *Najas marina*, *Ottelia alismoides*, *Potamogeton pectinatus* and *Vallisneria natans*. Free floating ones are *Eichhornia crassipes*, *Lemna gibba* and *Pistia stratiotes*.

Schoenoplectus litoralis subsp. *litoralis* and subsp. *thermalis* are very rare along streams particularly near Tuticorin and Thiruchendur. *Schoenoplectus maritimus* is also rare. *Ruppia maritima*, rare again, occurs in streams near Punnakayal. Marshy areas are dominated by *Aeschynomene indica*, *Ammannia baccifera*, *Centella asiatica*, *Commelina* spp., *Cyanotis papilionacea*, *Fimbristylis* spp., *Ludwigia* spp., *Murdannia spirata* and *Riklrella squarrosa*. Along bunds of cultivated fields species such as *Euphorbia indica*, *E. hirta*, *Eclipta prostrata*, *Fimbristylis* spp., *Synedrella nodiflora* and *Sesbania* spp. are common. In dried up rice fields *Cressa cretica*, *Vicoa indica* and *Celosia polygonoides* are also observed.

Mangroves

Mangroves are salt-tolerant species of divergent groups. They play a vital role in land-stabilizing and -building, preventing soil erosion in coastal zones and are a source of nutrients for the inhabitants therein besides being a supplier of a variety of forest produce for human use. Beyond Chatram in Thanjavur District in Tamil Nadu on the East Coast the Gulf of Mannar Biosphere Reserve is the only region in south harbouring mangroves with some diversity. On the mainland coast the total area under mangroves is 187 ha with 40 ha at Kundhukal, 10 ha around Tuticorin and 137 ha at Punnakayal (Neelakantan, 1994). The islands of the Mandapam group, and Pamban, now connected to the mainland by road and rail, have mangroves with multiple species. There are large shrubs of *Avicennia marina* at Veppalodai where this large stream meets the sea. There are also large areas of small shrubby *A. marina* in the vicinity of the Tuticorin harbour (Photo 2). However, those at Punnakayal

in the Tambraparani delta are extremely stunted. Kurusadai, Pumarichan, Pullivasal, Manoli and Manoliputti Islands have large areas of mangroves of *Aegiceras corniculatum*, *Avicennia marina*, *Bruguiera cylindrica*, *Ceriops tagal*, *Lumnitzera racemosa*, *Rhizophora apiculata* and *R. mucronata*. Muyal and Shingle Islands, nevertheless, have only *Avicennia marina* and *Lumnitzera racemosa*. Among these the occurrence of *Aegiceras corniculatum* and *Rhizophora apiculata* is extremely rare whereas that of *Excoecaria agallocha* is a little frequent. In the Keelakarai group only Thalaiyari and Valai Islands have good patches of mangroves with *A. marina* and *Lumnitzera racemosa* and, *A. marina* and *Pemphis acidula* respectively. The Tuticorin group of islands is very poor in mangroves. Upputhanni Island has only *A. marina*. Kaswari Island has a small patch with *A. marina* and *P. acidula* which appears to be getting stabilized. Other associates are *Aeluropus lagopoides*, *Arthrocnemon glaucum*, *Atriplex repens*, *Clerodendrum inerme*, *Fimbristylis ferruginea*, *F. polytrichoides*, *Halosarcia indica*, *Ipomoea violacea*, *Pandanus fascicularis*, *Salicornia brachiata*, *Salvadora persica*, *Sesuvium portulacastrum*, *Sporobolus tremulus*, *Suaeda maritima*, *S. monoica*, *S. nudiflora* and *Thespesia populnea*.

It has been pointed out that the mangroves on the East Coast are dwindling and species vanishing due to anthropogenic activities. The Gulf of Mannar is no exception. There is no previous survey of mangroves for the whole of the Gulf of Mannar nor are there any benchmark studies on the flora. There are indications that there is over-exploitation that has led to degradation and shrinkage of mangroves and vanishing of species as a result. Species such as *Bruguiera gymnorrhiza* and *Acanthus ilicifolius* earlier collected in Rameswaram, and *Pemphis acidula* in Pamban have not been re-collected in recent years. Likewise *Acanthus ilicifolius* and *Excoecaria agallocha* earlier collected on Kurusadai Island have not been re-collected. Destruction of mangroves on Muyal and Pullivasal for firewood has been systematic. Effects of rapid industrialization all along the mainland coast particularly around Tuticorin and pollution from existing industries on the ecosystems particularly on the islands do not seem to have been quantified. The increase in the extent of salt pans is yet another factor leading to the shrinkage of mangroves particularly around Tuticorin.

Seagrasses

These specialised marine angiosperms inhabit the tidal and subtidal zones of shallow and sheltered localities of seas, gulfs, bays, backwaters, lagoons and estuaries. They grow either homogeneously or heterogeneously in mixed populations forming thick and dense meadows on muddy, sandy and clayey soils of the sea and coral rubble bottoms (Ramamurthy & al., 1992). Seagrasses support a large number of marine organisms which directly or indirectly depend on them. Besides, they help to reduce surface erosion in the sedimentation areas and check ocean currents, maintain active nutrient cycles especially phosphorus, nitrogen and sulphur, stabilize shorelines and act as a nursery ground for a variety of shell-fish larvae. They also form a natural effluent purification system. More importantly, they are relished by many endangered and extinction-prone marine animals. For instance, the seacow, *Dugong dugong*, one of the most endangered marine mammals, is reported to prefer pastures of *Halodule uninervis* (Anon., 1987). A variety of products such as paper,

chemicals, fertilizers etc. can also be produced from harvested seagrasses (Phillips & McRoy, 1980). There are also reports that they have antibacterial, antifungal and antiviral activities. *Halophila* leaf extract with turmeric is used to cure cuts and burns by people on the Gulf of Mannar Coast. Direct human consumption of seagrasses as food has also been reported. The seeds of *Enhalus acoroides* and rhizomes of *Cymodocea* spp. are consumed by local people in the Gulf of Mannar. All the 13 species distributed along the Coromandel Coast (Ramamurthy & al., 1992) occur in the biosphere reserve. They belong to Hydrocharitaceae with 3 genera and 7 species and Potamogetonaceae with 3 genera and 6 species (Table III).

TABLE III

SEAGRASSES

HYDROCHARITACEAE

1. *Enhalus acoroides*
2. *Halophila beccarii*
3. *H. decipiens*
4. *H. ovalis*
5. *H. ovata*
6. *H. stipulacea*
7. *Thalassia hemprichii*

POTAMOGETONACEAE

8. *Cymodocea rotundata*
9. *C. serrulata*
10. *Halodule pinifolia*
11. *H. uninervis*
12. *H. wrightii*
13. *Syringodium isoetifolium*

Plants of *Cymodocea serrulata* (Photo 13), *Halodule pinifolia*, *H. uninervis*, *Halophila ovalis*, *H. ovata* and *Syringodium isoetifolium* (Photo 14) are found abundantly washed ashore both along the mainland coast as well as that of many islands. *Enhalus acoroides* with its large leaves harbours various marine micro-flora and -fauna. It is common along Kurusadai, Pumarichan, Pullivasal and Thalairyari Islands. *Halophila stipulacea*, earlier collected around Kurusadai Island and now collected around Kaswari Island and *Halodule wrightii*, earlier collected on Akkamadam coast near Pamban (Ravikumar & Ganesan, 1990) and now collected around Manoli Island, are rare in the biosphere reserve.

Island vegetation

For convenience, based on the nearness of the places on the mainland coast, the islands are grouped into Mandapam, Keelakarai and Tuticorin groups (Table II). The sequence of the islands given below is after their location in the gulf from Rameswaram in north to Tuticorin in south.

Shingle Island

The name seems to have been derived from the geomorphology of the island. Another version is that the name is Singala theevu since the Sinhalese fishermen used to stay here while fishing.

This island is mostly filled with dead corals and chanks along its shores. The soil is mostly coralline. The vegetation is sparse with a few species of large shrubs and a number of herbs. The presence of *Suriana maritima* in good numbers and a few bushes of *Scaevola taccada* (Photo 9) on the western side is a significant feature in that both species are rare in the biosphere reserve. While mangrove species such as *Avicennia marina*, *Lumnitzera racemosa* and *Excoecaria agallocha* are scarce, *Pemphis acidula* is the dominant shrub in the marsh on the eastern side. The foreshore sandy habitat has *Atriplex repens*, *Cyperus bulbosus*, *C. conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Ipomoea pes-caprae*, *Launaea sarmentosa*, *Scaevola plumieri* etc. Some of the other species frequent here are *Pandanus fascicularis* which forms two patches in the middle of the island, *Asparagus racemosus*, *Blumea obliqua*, *Clerodendrum inerme*, *Phoenix pusilla*, *Phyllanthus maderaspatensis*, *Salvadora persica*, *Spinifex littoreus*, *Thespesia populnea*, *Vernonia cinerea*, *Vigna trilobata* etc. The parasitic climber *Cassytha filiformis* infests almost all plants on the island. One large *Calotropis gigantea* and a small tree of *Ficus benghalensis* were also found. Succulent halophytes like *Sesuvium portulacastrum*, *Suaeda maritima* and *S. nudiflora* are frequent in marshy areas on the eastern side while *Cordia subcordata* is extremely rare.

Halodule spp., *Halophila ovalis* and *Syringodium isoetifolium* are some of the common seagrasses cast ashore. With an area of 12.69 ha this island has 44 species (Chart 4; Appendix I).

Kurusadai Island

The island's name is reportedly derived from the biblical word 'crusade'. The word 'crusade' later got corrupted as Kurusadai (Anon., 1972). It is the fourth largest island and has the highest number of species (Chart 4; Appendix I).

The vegetation is varied with different habitats such as foreshore sandy, inland sandy, salt marsh, mangrove, sand dune and maritime habitats, in addition to a large *Pandanus* swamp in the middle. The foreshore sandy vegetation consists of *Atriplex repens*, *Cyperus conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Ipomoea pes-caprae* along with the rare *Canavalia rosea* (Photo 17), *Scaevola plumieri* and *Sesuvium portulacastrum*. Inland sandy habitat harbours herbs like *Aerva lanata*, *Aloe vera*, *Cucumis melo*, *Enicostema axillare*, *Euphorbia indica*, *Hedyotis puberula*, *Leucas aspera*, *Phyllanthus maderaspatensis*, *Spermacoce ocymoides*, *Vigna trilobata* etc., grasses like *Chloris barbata*, *Cymbopogon caesius*, *Dactyloctenium aegypticum*, *Eragrostis amabilis*, *Trachys muricata* etc. and sedges such as *Bulbostylis barbata*, *Cyperus arenarius*, *C. compressus*, *C. pumilus*, *Fimbristylis*

cymosa etc. *Commelina benghalensis*, *C. paleata* and *Cyanotis cristata* which usually grow in shades are frequent. Common climbers are *Asparagus racemosus*, *Coccinia grandis*, *Lablab purpureus*, *Momordica dioica* and the seasonal *Gloriosa superba* (Photo 10). *Cocculus hirsutus*, *Pergularia daemia*, *Solanum trilobatum*, *Tinospora cordifolia* and *Trichosanthes cucumerina* are occasional. A large number of palmyra palm (*Borassus flabellifer*) trees are present on the southern side. Common species in open sandy areas include *Aerva persica*, *Crotalaria retusa*, *Indigofera oblongifolia* and many grasses and sedges. Some of the common tree species are *Dichrostachys cinerea*, *Pleurostylia opposita*, *Prosopis chilensis*, *Salvadora persica*, *Thespesia populnea* etc. Species like *Azima tetracantha*, *Caesalpinia bonduc*, *Cordia subcordata*, *Dodonaea viscosa*, *Manilkara hexandra*, *Phoenix pusilla*, *Premna serratifolia* are frequent near sand dunes. *Spinifex littoreus* is the dominant species on sand dunes. *Calotropis gigantea* occasionally occurs in this habitat. While *Ipomoea violacea* is a frequent climber on many plants, *Cassytha filiformis* infests a number of species. In marshy habitat the vegetation consists of *Aeluropus lagopoides*, *Fimbristylis ferruginea*, *F. polytrichoides*, *Sporobolus tremulus*, *Typha angustata* and the rare *Fimbristylis triflora*. Succulent halophytes such as *Salicornia brachiata*, *Suaeda maritima*, *S. monoica* and *S. nudiflora* also occur. Mangroves consisting mostly of *Avicennia marina*, *Bruguiera cylindrica*, *Ceriops tagal*, *Rhizophora mucronata* etc. with the rare *Aegiceras corniculatum* occur on the northwestern shores (Photo 3, 4). *Pemphis acidula* is a frequent associate of mangroves and protects parts of the northern and eastern shores. *Suriana maritima* forms a patch of about 20 plants on the southern shore. Many species such as *Breynia vitis-idaea*, *Cordia subcordata*, *Ehretia laevis*, *E. ovalifolia*, *Pavetta indica*, *Phyllanthus rotundifolius* and *Solanum pubescens* occur occasionally in different habitats.

The seagrasses *Cymodocea serrulata*, *Enhalus acoroides*, *Halodule pinifolia*, *H. uninervis*, *Halophila ovalis* and *Syringodium isoetifolium* are common along the shores. With an area of 65.8 ha this island has 134 species (Chart 4; Appendix I).

Pullivasal Island

This name is a corrupt form of Pallivasal (mosque) which was once present on this island (Anon., 1972).

It harbours a good vegetation particularly mangroves associated with *Pemphis acidula* along the shores and in the muddy swamps and intertidal regions. The area between this island and the Pumarichan Island is covered with luxuriant growth of seagrasses *Enhalus acoroides* and *Syringodium isoetifolium*. The shores are well protected from wave action by dense growth of *Pemphis acidula* in most places. Some of the common plants that occur in the inland woody zone include *Dichrostachys cinerea*, *Dodonaea viscosa*, *Lanea coromandelica*, *Pleurostylia opposita* and *Salvadora persica* among others. A few species like *Aerva persica*, *Indigofera oblongifolia*, *Clitoria ternatea*, *Crotalaria retusa*, *Suaeda maritima* and *Azima tetracantha* are common in some places. Many herbs such as *Cleome viscosa*, *Commelina paleata*, *Enicostema axillare*, *Euphorbia indica*, *Hedyotis puberula*, *Launaea intybacea*, *Phyllanthus* spp., *Pupalia lappacea* var. *orbiculata*, *Spermacoce ocy-*

moides, *Vernonia cinerea* etc. are fairly common among grasses. While climbers like *Abrus precatorius*, *Asparagus racemosus* and *Clitoria ternatea* are frequent in some places, *Lablab purpureus* is the most common climber spreading on almost all trees. The other gregarious climber common here is *Ipomoea violacea* which is mostly found atop *Thespesia populnea*. Similarly the parasitic twiner *Cassytha filiformis* infests trees including *Manilkara hexandra*, shrubs and herbs including grasses. The foreshore sandy habitat has sand binders such as *Atriplex repens*, *Cyperus conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Launaea sarmentosa*, *Scaevola plumieri*, *Sesuvium portulacastrum* etc. The common grasses and sedges that grow in the inner herbaceous zone include *Bulbostylis barbata* subsp. *pulchella*, *Cymbopogon caesius*, *Dactyloctenium aegyptium*, *Fimbristylis cymosa*, *Trachys muricata* etc. Species such as *Aloe vera*, *Cassia auriculata*, *Colubrina asiatica*, *Crinum defixum*, *Premna serratifolia*, *Sauropus bacciformis*, *Vicoa indica* and *Ziziphus xylopyrus* are less frequent in different parts of the island. The mangrove species present in the adjacent islands are common here too. Destruction of mangroves on this island in the hidden interior (Photo 21) amounts to near-vandalism. A few plants of *Suriana maritima*, a rare species, occur on the southern side. A notable feature of the vegetation is that some of the rare plants like *Cordia subcordata*, *Tarenna asiatica*, *Heterostemma tanjorensis* and *Wedelia biflora* grow well in some places. Among these *Wedelia biflora* is a very rare but potentially useful plant which according to reports contains useful agrochemicals that effectively control some of the most serious phytopathogens (Miles & al., 1993). Most interestingly this plant is restricted only to the southwestern shore of this island in the entire biosphere reserve. The seagrasses that occur along the shallow waters of the shores include *Halodule uninervis*, *Halophila ovalis* and *H. ovata*. There are no sand dunes on the Pumarichan as well as the Pullivasal Islands. With an area of 29.95 ha this island has 91 species (Chart 4; Appendix I).

Pumarichan Island

This island has land connection with the nearby Pullivasal Island which gets exposed during low tides. It is situated at the extreme left of and connected to Kurusadai Island by shallow waters during low tides. Both Pumarichan and Pullivasal Islands have almost similar type of vegetation and species composition. Both the islands are rich in mangroves along the muddy shores, tidal swamps and creeks and intertidal regions (Photo 5). Mangrove species such as *Avicennia marina*, *Bruguiera cylindrica*, *Ceriops tagal*, *Excoecaria agallocha*, *Lumnitzera racemosa*, *Rhizophora mucronata* thrive well. Common trees are *Dichrostachys cinerea*, *Lannea coromandelica*, *Manilkara hexandra*, *Pemphis acidula*, *Pleurostylia opposita*, *Salvadora persica* and *Thespesia populnea*. Shrubby species such as *Azima tetracantha*, *Caesalpinia bonduc*, *Clerodendrum inerme*, *Phoenix pusilla*, *Premna serratifolia* and the tree *Cordia subcordata* are less frequent. Occurrence of a good number of plants of *Suriana maritima* near mangrove habitat along with *Pemphis acidula* and *Lumnitzera racemosa* on the eastern side is an interesting feature. More common climbers are *Coccinia grandis*, *Ipomoea violacea*, *Lablab purpureus* etc. and the frequent ones are *Asparagus racemosus*, *Cissus quadrangularis*, *Clitoria ternatea*, *Gloriosa superba*, *Momordica dioica*, *Pergularia daemia* etc. Common species of seaward areas are *Atriplex*

repens, *Cyperus arenarius*, *C. conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Ipomoea pes-caprae*, *Launaea sarmentosa*, *Scaevola plumieri* and *Sesuvium portulacastrum*. Herbs such as *Acalypha indica*, *Aerva lanata*, *Corchorus aestuans*, *Cucumis melo*, *Euphorbia indica*, *Hedyotis puberula*, *Leucas aspera*, *Phyllanthus maderaspatensis*, *Spermacoce ocymoides*, *Vernonia cinerea*, *Vicoa indica*, *Vigna trilobata* etc. are frequent among grasses and sedges like *Apluda mutica*, *Cymbopogon caesius*, *Cyperus bulbosus*, *Fimbristylis cymosa*, *Sporobolus maderaspatanus*, *S. virginicus*, *Trachys muricata* etc. The succulent halophytes *Suaeda maritima* and *S. monoica* often occur near pure and dense populations of *Atriplex repens* in the foreshore sandy habitat. Species that are rare and restricted only to this island in the biosphere reserve are *Capparis sepiaria*, *Ehretia canarensis* and *Erythroxylum monogynum*. Similarly plants which are apparently absent include *Azadirachta indica*, *Calotropis gigantea*, *Ficus* spp., *Pandanus fascicularis*, *Prosopis chilensis*, *Spinifex littoreus* etc. This island with an area of 16.58 ha has 94 species (Chart 4; Appendix I).

Manoliputti Island

It is the smallest island among the existing islands of the biosphere reserve with a land area of mere 2.34 ha and has 51 species (Chart 4; Appendix I). Mangroves and their associate species and sand binders present on the Manoli Island are also common here. The shores are protected by *Pemphis acidula* especially on the eastern side and less frequently with *Avicennia marina*. *Suaeda maritima* has notably lost its robust form here and occurs as a low shrub. The characteristic feature of the Manoli and Manoliputti Islands is the presence of *Excoecaria agallocha* in good numbers. Other common species of the sandy inland regions are *Clerodendrum inerme*, *Crotalaria retusa*, *Enicostema axillare*, *Euphorbia indica*, *Ipomoea violacea*, *Lablab purpureus*, *Salvadora persica*, *Thespesia populnea*, *Vernonia cinerea* etc. Besides, species such as *Hedyotis corymbosa* and *Pentatropis capensis* are also frequent. *Sopubia delphinifolia* and *Striga asiatica* are absent.

A small sandbar connecting Manoli and Manoliputti Islands is getting stabilized with plants like *Cyperus conglomeratus* subsp. *pachyrrhizus*, *Sesuvium portulacastrum* and *Suaeda maritima* along with a few grasses and sedges, and seedlings of *Pemphis acidula*. It has the potential of connecting the two islands if left undisturbed.

Manoli Island

The most striking feature of the vegetation is the presence of near-pure-stands of robust plants of *Suaeda maritima* attaining a height of ca 2 m in marshy places. *Pemphis acidula*, *Salvadora persica* and *Thespesia populnea* are the common trees. *Avicennia marina*, *Bruguiera cylindrica*, *Ceriops tagal*, *Excoecaria agallocha*, *Lumnitzera racemosa* and *Rhizophora mucronata* are common in mangrove swamps and intertidal regions (Photo 6). Herbaceous species in the interior include *Achyranthes aspera*, *Aerva persica*, *Blumea obliqua*, *Corchorus aestuans*, *Cucumis melo*, *Eclipta prostrata*, *Enicostema axillare*, *Euphorbia indica*, *Hedyotis puberula*, *Peplidium maritimum*, *Phyllanthus maderaspatensis*,

P. rotundifolius, *Pupalia lappacea* var. *orbiculata*, *Sopubia delphiniifolia*, *Striga asiatica*, *Vernonia cinerea* etc. with grasses such as *Aeluropus lagopoides*, *Apluda mutica*, *Cymbopogon caesius*, *Sporobolus maderaspatanus* etc. *Atriplex repens*, *Cyperus conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Launaea sarmentosa*, *Sesuvium portulacastrum* and *Spinifex littoreus* are the common sand binders on the eastern and western shores. The climbers *Asparagus racemosus*, *Cissus quadrangularis* and *Coccinia grandis* are common, and *Labiab purpureus* and *Ipomoea violacea* are abundant in the sandy interiors. *Clerodendrum inerme*, *Premna serratifolia* and the succulent halophytes *Arthrocnemum glaucum* and *Suaeda monoica* are less frequent. Seagrasses common along the shores are *Cymodocea serrulata* and *Halophila ovata*. With an area of 26 ha this island has 76 species (Chart 4; Appendix I).

Muyal Island

Earlier it was called 'Musal theevu' meaning island with hares (Anon., 1972).

It is the largest island in the biosphere reserve (Chart 4; Appendix I). A very large number of palmyra and coconut palms earlier introduced by the private owners occupy most part of the island. On the northwestern side exists a considerably large swamp with tidal creeks and mangroves, mostly of *Avicennia marina* and *Lumnitzera racemosa* often associated with *Thespesia populnea* and *Salvadora persica* towards the interior. The mangroves here have been degraded to a large extent due to felling as may be evident from the left over stumps (Photo 22). *Acacia planifrons* is the dominant tree on the western side. The northern and southern shores are protected by *Pemphis acidula*. The sand binder *Sesuvium portulacastrum* forms dense patches (Photo 7) in certain areas with *Cyperus conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Ipomoea pes-caprae* etc. *Spinifex littoreus* is a common sand dune stabiliser on the eastern side while *Indigofera oblongifolia* is the most common species on the northern side. Some of the herbs present in the middle zone include *Acalypha indica*, *Achyranthes aspera*, *Aerva lanata*, *Cassia senna*, *Eclipta prostrata*, *Entostema axillare*, *Hedyotis puberula*, *Iphigenia indica*, *Phyllanthus maderaspatensis* etc. and climbers include *Asparagus racemosus*, *Cissus quadrangularis*, *Coccinia grandis*, *Gloriosa superba*, *Tylophora indica*, *Wattakaka volubilis* etc. Grasses such as *Dactyloctenium aegyptium*, *Sporobolus maderaspatanus*, *S. tremulus*, *Trachys muricata* and sedges such as *Bulbostylis barbata*, *Cyperus arenarius*, *C. bulbosus*, *C. stoloniferus*, *Fimbristylis cymosa*, *F. polytrichoides* etc. are very common and often occur in association with *Sopubia delphiniifolia* and *Striga asiatica*. Species frequent in the coconut groves are *Aerva persica*, *Anisomeles malabarica*, *Blumea obliqua*, *Boerhavia diffusa*, *Corchorus aestuans*, *Cucumis melo*, *Epaltes divaricata*, *Euphorbia* spp., *Leucas diffusa*, *Petalium murex*, *Tridax procumbens*, *Vernonia cinerea* etc. In the inner woody zone shrubby species like *Calotropis gigantea*, *Clerodendrum inerme*, *Opuntia dillenii*, *Premna serratifolia*, *Securinega leucopyrus* etc. and occasionally *Capparis zeylanica*, *Pleurostylia opposita* and *Ziziphus xylopyrus* occur in wet sandy localities. Herbs such as *Ammannia baccifera*, *Euphorbia indica*, *Lindernia crustacea*, *Peplidium maritimum*, *Phyllanthus rotundifolius*, *Sauropus bacciformis* etc. are frequent among grasses. A few large trees of *Ficus benghalensis* and

Azadirachta indica are present on the eastern and northern sides. A number of trees of the latter and *Tamarindus indica* are present in the western interior. *Caesalpinia bonduc*, *Cordia obliqua*, *C. subcordata* and *Vitex trifolia* are rare. The climber *Ipomoea violacea* grows here luxuriantly. There are rabbits and peafowls on this island. The private owners in whose possession this island was until recently are said to have introduced them. Their interaction with plant species would form an interesting study.

The seagrasses *Halophila ovata* and *Syringodium isoetifolium* are common in the shallow waters along the shores. This island with an area of 129 ha has 115 species (Chart 4; Appendix I).

Mullai Island

The original name was 'Muli theevu' which means barren island (Anon., 1972). The land area of 10.20 ha of this island is reported to have increased to 16 ha as per 1994 satellite imagery (Deshmukh & Venkataramani, 1994). It has 29 species (Chart 4; Appendix I). It is mostly sandy and calcareous in some parts. The western side of the island is connected with Valai Island by a ca 50 m long and 10 m wide sandy tract which is exposed during low tides. The most common species here include *Acacia planifrons*, *Lablab purpureus*, *Pemphis acidula*, *Salvadora persica*, *Scaevola plumieri*, *Sporobolus maderaspatanus*, *Thespesia populnea* etc. *Atriplex repens*, *Cyperus bulbosus*, *C. conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum* and *Sesuvium portulacastrum* are frequent especially along the foreshore sandy habitat. Species such as *Cassia auriculata*, *Clerodendrum inerme*, *Crotalaria retusa*, *Dichrostachys cinerea* and *Indigofera oblongifolia* occupy the calcareous-sandy inner regions. The middle region with sandy soil supports growth of herbs like *Enicostema axillare*, *Hedyotis puberula*, *Launaea tintybaea*, *Vernonia cinerea*, *Vicoa indica*, *Vigna trilobata* etc. along with a few grasses and sedges. The climber *Pentatropis capensis* is also found here. There are neither sand dunes nor salt marshes. The absence of mangroves is a notable feature. However, coral reefs and seaweeds are abundant in the shallow waters along the shores.

Valai Island

This name is derived from Valai fish which is reportedly abundant around this island. Another version is that it was named after Vali of Ramayana who visited this island (Anon., 1972). The total area of 10.15 ha of the island is reported to have increased to 13.25 ha as per 1994 satellite imagery (Deshmukh & Venkataramani, 1994) and has 36 species (Chart 4; Appendix I). It is a linear island which runs parallel to the mainland. Some of the common trees are *Acacia planifrons*, *Dichrostachys cinerea*, *Salvadora persica* and *Thespesia populnea*. Besides, species like *Clerodendrum inerme*, *Crotalaria retusa*, *Indigofera oblongifolia*, *Prosopis chilensis* are frequent in the inner sandy habitat. Herbs such as *Achyranthes aspera*, *Aerva lanata*, *Enicostema axillare*, *Hedyotis puberula*, *Vernonia cinerea*, *Vicoa indica*, *Vigna trilobata* etc. are quite common along with grasses such as *Cymbopogon caesius*, *Eragrostis riparia*, *Eremopogon foveolatus*, *Sporobolus mad-*

eraspatanus etc. Along the northern shores the dominant sand binders are *Cyperus conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Scaevola plumieri* and *Spinifex littoreus* whereas on the southern side dense populations of *Pemphis acidula* and *Avicennia marina* protect the shores from erosion. *Caesalpinia bonduc* occasionally occurs among bushes on the northern side. *Lablab purpureus* is the dominant climber, mostly climbing on *Salvaroda persica* and *Thespesia populnea*. The long sandy tract on the northern side connecting this island with the Mullai Island is getting colonised by sand binders like *Sesuvium portulacastrum* and *Scaevola plumieri*.

Thalayari Island

It is the second largest island in the Keelakarai group and third largest in the biosphere reserve. The most common species here are *Pemphis acidula* and *Thespesia populnea*. Sand binders like *Atriplex repens*, *Cyperus conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Scaevola plumieri*, *Spinifex littoreus* etc. often in association with *Apluda mutica* and *Suaeda* spp. or *Ipomoea pes-caprae* protect the northern and western shores. Most of the island's shores are inhabited by *Pemphis acidula* which completely covers the eastern side. In the marshy inland habitat grasses and sedges such as *Sporobolus maderaspatanus*, *Cyperus squarrosus*, *Fimbristylis cymosa* etc. are common with herbs like *Sopubia delphiniifolia* and *Striga asiatica*. Other species common in marshy habitat are *Ammannia baccifera*, *Blumea obliqua*, *Hedyotis corymbosa*, *Heliotropium* spp., *Lindernia minima*, *L. parviflora*, *Ludwigia perennis*, *Peplidium maritimum*, *Salicornia brachiata*, *Sauropus bacciformis*, *Spermacoce ocymoides* etc. Open areas of the island are mostly inhabited by species like *Aerva lanata*, *A. persica*, *Cleome viscosa*, *Corchorus fascicularis*, *Crotalaria retusa*, *Eclipta prostrata*, *Enicostema axillare*, *Euphorbia indica*, *Hedyotis puberula*, *Launaea intybacea*, *Pedaliium murex*, *Phyllanthus maderaspatensis*, *Physalis minima*, *Stemodia viscosa*, *Tribulus lanuginosus*, *Vernonia cinerea*, *Vigna trilobata* etc. and grasses.

Species such as *Acacia planifrons*, *Clerodendrum inerme*, *Dichrostachys cinerea*, *Indigofera oblongifolia*, *Prosopis chilensis* and *Salvadora persica* are frequent. A small patch of *Avicennia marina* associated with *Lumnitzera racemosa* and *Suaeda maritima* occurs on the northern part. *Lablab purpureus* is the common climber whereas *Coccinia grandis*, *Ipomoea nil*, *Pergularia daemia* etc. are less frequent. Weedy herbs such as *Amaranthus polygamus*, *Datura metel*, *Tribulus terrestris* etc. inhabit the interior damp sandy places. Species of rare occurrence include *Hedyotis pumila*, *Ipomoea dissecta*, *Micrococca mercurialis* and *Polycarpaea spicata* which grow among grasses. *Enhalus acoroides*, earlier recorded only around the Mandapam group of islands, is the common seagrass along the shallow waters of the eastern shores. With an area of 75.15 ha this island has 97 species (Chart 4; Appendix I).

Appa Island

The name is reported to have been derived from the Tamil word 'Appam' which refers to *Cissampelos pareira*. This plant which perhaps was common here in the past is now absent. Another version is, it derived this name because of the mosque of Sheramudilli Appa on the island. For that reason it was also known as Sheramudilli Island in the past (Anon., 1972).

This island, lying north-south in two bits, is connected by a sandbar under shallow waters. The predominant species of the northern bit is *Prosopis chilensis* followed by *Acacia planifrons*. *Thespesia populnea* and *Salvadora persica* are very occasional. The shores of the southern bit are full of dead corals and live coral reefs while that of the northern one are sandy with entirely of *Prosopis chilensis* forming dense populations. There are no mangroves or their associate species. Herbs such as *Achyranthes aspera*, *Aerva lanata*, *A. persica*, *Aloe vera*, *Boerhavia diffusa*, *Hedyotis puberula*, *Pedaliium murex*, *Pupalia lappacea* var. *orbiculata*, *Striga asiatica*, *Tephrosia maxima* and *Vernonia cinerea* along with grasses like *Dactyloctenium aegyptium*, *Eragrostis amabilis*, *Trachys muricata* and sedges such as *Cyperus arenarius*, *C. bulbosus* etc. and the climbers *Cissus quadrangularis* and *Coccinia grandis* are common on the entire island. The northern bit harbours species such as *Ipomoea pes-caprae*, *Launaea sarmentosa*, *Scaevola plumieri*, *Sesuvium portulacastrum* and *Spinifex littoreus* whereas the southern bit has *Sesuvium portulacastrum* and *Scaevola plumieri*. Likewise, plants such as *Bulbostylis barbata* subsp. *pulchella*, *Cyperus bulbosus*, *C. stoloniferus*, *Eragrostis coarctata*, *Fimbristylis ferruginea*, *Mariscus squarrosus*, *Rikiliella squarrosus*, *Tribulus lanuginosus* etc. are exclusive to the northern bit. The lonely *Moringa pterygosperma* tree which must have been brought by a fisherman and the rare grass *Eragrostis amabilis* var. *insularis* are the interesting taxa present in this part.

The western elevated part of the southern bit has a vast expanse of grasses dominated by *Cenchrus setigerus* with a sprinkling of *Aloe vera*, *Apluda mutica*, *Cymbopogon caesius*, and *Gloriosa superba* here and there. Species occurring only on the southern bit include *Alysicarpus rugosus* var. *styracifolius*, *Calotropis gigantea*, *Cayratia trifolia*, *Crinum defixum*, *Indigofera colutea*, *Opuntia dillenii* and the rare herb, *Polycarpha spicata*. Seagrasses along the shores are *Cymodocea serrulata*, *Halophila ovalis* and *Syringodium isoetifolium*. *Halophila ovalis* is particularly abundant. This island with an area of 28.63 ha has 70 species (Chart 4; Appendix I).

Vallimunal Island

Palliyarmunai is the other name for this island. The foreshore habitat species are *Cyperus arenarius*, *C. bulbosus*, *C. conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Ipomoea pes-caprae*, *Scaevola plumieri*, *Sesuvium portulacastrum*, *Spinifex littoreus* etc. In the interior herbs such as *Boerhavia diffusa*, *Hedyotis puberula*, *Phyllanthus maderaspatensis*, *Pupalia lappacea* var. *orbiculata*, *Vernonia cinerea* etc. are frequent. Grasses such as *Cymbopogon caesius*, *Dactyloctenium aegyptium*, *Sporobolus mad-*

eraspatanus and sedges like *Bulbostylis barbata*, *Cyperus arenarius* etc. also occur. A few patches of *Aloe vera* are found. The parasitic herb *Cassytha filiformis* and *Cissus quadrangularis* too are common in this habitat. The more common species of the island are *Aerva persica*, *Coccinia grandis*, *Crotalaria retusa*, *Indigofera oblongifolia* and *Lablab purpureus*. Trees which are a little frequent include *Acacia planifrons*, *Lannea coromandelica*, *Prosopis chilensis*, *Salvadora persica* and *Thespesia populnea*. A few patches of *Pemphis acidula* occur on the western side. Notably large shrubs of *Cassia auriculata* are present on the eastern side. The climber *Wattakaka volubilis* is rare. With an area of 6.72 ha this island has 39 species (Chart 4; Appendix I).

Ansipar Island

This island is mostly surrounded by large coral reefs. Trees are represented by species such as *Acacia planifrons*, *Dichrostachys cinerea*, *Lannea coromandelica* and *Salvadora persica*. Large bushes of *Pemphis acidula* and *Prosopis chilensis* occur here and there. The foreshore sandy habitat harbours species like *Atriplex repens*, *Scaevola plumieri* and *Sesuvium portulacastrum* along with grasses and sedges. *Coccinia grandis*, *Ipomoea pes-tigris*, *I. violacea* and *Lablab purpureus* are the most common climbers whereas the parasitic climber *Cassytha filiformis* infests most herbs. Species that occur in the interior are *Aerva lanata*, *A. persica*, *Aloe vera*, *Asystasia gangetica*, *Boerhavia diffusa*, *B. erecta*, *Cardiospermum canescens*, *Cleome viscosa*, *Commelina benghalensis*, *Euphorbia indica*, *Hedyotis puberula*, *Pergularia daemia*, *Phyllanthus rotundifolius*, *Vernonia cinerea*, *Vigna trilobata* etc. Grasses like *Cymbopogon caesius*, *Dactyloctenium aegyptium*, *Sporobolus maderaspatanus* and sedges such as *Cyperus arenarius*, *C. bulbosus* etc. also grow well along with these herbs. A few plants of the bushy *Clerodendrum inerme* occur on the eastern side. With an area of 11 ha this island has 41 species (Chart 4; Appendix I).

Nallathanni Island

This is just 2 km away from the mainland coastal village of Mundal near Valinokkam in Ramanathapuram district. It is the largest island in the Keelakarai group and the second largest in the biosphere reserve. With an area of 101 ha this island has 110 species (Chart 4; Appendix I). Planted trees of *Azadirachta indica*, *Borassus flabellifer*, *Delonix elata*, *Ficus benghalensis*, *Lannea coromandelica*, *Moringa pterygosperma*, *Pongamia pinnata*, *Tamarindus indica* are present here. Most part of the island is occupied by a large number of palmyra and coconut palm trees. The western side is dominated by *Acacia planifrons* (Photo 8), *Thespesia populnea* and *Prosopis chilensis*. The eastern side is rich in sand binders such as *Ipomoea pes-caprae*, *Spinifex littoreus* and occasionally *Atriplex repens*, *Cyperus conglomeratus* subsp. *pachyrrhizus* and *Halopyrum mucronatum*. Species like *Aerva persica*, *Calotropis gigantea*, *Citrullus colocynthis*, *Hedyotis graminifolia*, *Euphorbia rosea*, *Phyllanthus maderaspatensis* etc. occur near sand dunes. *Boerhavia diffusa*, *Cenchrus ciliaris*, *Chloris barbata*, *Cyperus bulbosus*, *Hedyotis puberula*, *Iphiginea indica*, *Leucas aspera*, *Petalium murex*, *Sida cordifolia*, *Trachys muricata*, *Vernonia cinerea* etc. are common in the inner sandy regions. In coconut groves *Achyranthes aspera*, *Aerva*

lanata, *Ammannia baccifera*, *Corchorus aestuans*, *Cucumis melo*, *Eclipta prostrata*, *Euphorbia rosea*, *Hedyotis graminifolia*, *Launaea intybacea*, *Phyllanthus amarus*, *Physalis minima*, *Polygala erioptera*, *Spermacoce hispida*, *Vigna trilobata* etc. along with grasses and sedges such as *Brachiaria ramosa*, *Cyperus pumilus*, *Setaria verticillata*, *Sporobolus maderaspatanus* etc. are common. While climbers like *Cissus quadrangularis* and *Coccinia grandis* are common here, *Cocculus hirsutus* and *Wattakaka volubilis* are occasional. Species that are frequent in the inland herbaceous zone include *Cleome viscosa*, *Crotalaria retusa*, *Indigofera colutea*, *Jatropha glandulifera*, *Waltheria indica* etc. In marshy areas *Cyperus stoloniferus*, *Fimbristylis cymosa*, *F. ferruginea* and *Sporobolus tremulus* are common whereas *Bulbostylis barbata*, *Cymbopogon caesius*, *Eragrostis amabilis*, *E. coarctata* etc. are frequent in dry sandy areas. *Acrachne henrardiana*, the endemic grass, is rare on sandy soil under *Acacia planifrons* trees. *Fimbristylis triflora* is pretty common on sandy soil in the interior. *Echinochloa colona* and *Solanum virginianum* are also rare. A few plants of *Ziziphus mauritiana* and *Clerodendrum inerme* occur on the eastern and south-eastern sides respectively. Other species that are extremely rare are *Atalantia racemosa*, *Ehretia ovalifolia*, *Hydrophylax maritima* and *Polycarpacea spicata*. This is the only island that has potable water now. The absence of *Lablab purpureus* which is profuse on almost all islands of the Mandapam group is striking. There are rabbits and peafowls on the island introduced by earlier private owners.

Puluvinchalli Island

This is the smallest island in the Keelakarai group. With an area of 6 ha it harbours 47 species (Chart 4; Appendix I). The northern shores are inhabited by *Cyperus conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Launaea sarmentosa*, *Scaevola plumieri*, *Sesuvium portulacastrum* etc. The inner herbaceous habitat has *Aerva persica*, *Asystasia gangetica*, *Boerhavia diffusa*, *Cyperus arenarius*, *C. rotundus*, *Dactyloctenium aegyptium*, *Hedyotis puberula*, *Phyllanthus maderaspatensis*, *Sporobolus virginicus*, *Vernonia cinerea* etc. *Coccinia grandis*, *Cissus quadrangularis* and *Lablab purpureus* are the common climbers. One large bush of *Clerodendrum inerme* in association with *Pupalia lappacea* var. *orbiculata* was found on the northern side. Some of the common trees of the mainland such as *Azadirachta indica*, *Prosopis chilensis* and *Tamarindus indica* along with *Thespesia populnea* also occur.

Absence of mangroves and associated species, salt marsh plants and sand dune stabilizers like *Spinifex littoreus* is a notable feature of this island.

Upputhanni Island

The origin of the name is unclear since Upputhanni in Tamil means salt water (sea water).

The low-lying southern side of the island is coralline while other sides are sandy. There is a large swamp almost in the middle with numerous stunted bushes of *Avicennia marina*

along the fringes extending into the sea on the southern side. On the southwest raised sandy tract occur robust bushes of *Arthrocnemon glaucum* in association with *Suaeda maritima*. Small trees are represented by *Azadirachta indica*, *Prosopis chilensis*, *Tamarindus indica* and *Thespesia populnea* which are rare. Sand binders such as *Cyperus arenarius*, *C. conglomeratus* subsp. *pachyrrhizus*, *Ipomoea pes-caprae*, *Scaevola plumieri* and *Sesuvium portulacastrum* are found on the northern and eastern sandy shores. Inland vegetation is dominated by herbs like *Achyranthes aspera*, *Aerva persica*, *Asystasia gangetica*, *Enicostema axillare*, *Petalium murex*, *Phyllanthus maderaspatensis*, *Spermocoe hispida*, *Tribulus terrestris*, *Vernonia cinerea* etc. and grasses and sedges like *Bulbostylis barbata*, *Cymbopogon caesius*, *Dactyloctenium aegyptium*, *Eragrostis amabilis*, *E. coarctata* etc. *Hedyotis puberula*, *Hydrophylax maritima* (Photo 18) and *Leucas mollissima* are not uncommon. *Leucas anandaraoana* is a new species described from here. *Aloe vera* is frequent in association with *Achyranthes aspera*, *Aerva persica* and *Azadirachta indica*. Climbers like *Coccinia grandis* and *Pergularia daemia* dwell on *Azadirachta indica* and *Clerodendrum inerme*. *Crotalaria medicaginea* var. *herniarioides* is frequent and occurs on the western and eastern sides with *Gisekia pharnaceoides* and *Indigofera linnaei*. The sandy eastern shore is dominated by *Cardiospermum canescens* in association with *Aerva persica*, *Asystasia gangetica* and *Pupalia lappacea* var. *orbiculata*. Shrubs like *Clerodendrum inerme* and *Calotropis gigantea* are frequent.

Notable feature is the occurrence of about 30 plants of *Atalantia racemosa*, a native of the Western Ghats and Sri Lanka, with a near-globose crown of ca 1 m and an almost invisible trunk, a few individuals of *Sapindus emarginatus* and *Ehretia ovalifolia*. With an area of 22.94 ha this island has 71 species (Chart 4; Appendix I).

Karaichalli Island

In the foreshore sandy habitat sand binders such as *Cyperus conglomeratus* subsp. *pachyrrhizus*, *Halopyrum mucronatum*, *Scaevola plumieri* and *Sesuvium portulacastrum* usually dominate. *Atriplex repens* and *Launaea sarmentosa* are also frequent. Species like *Aerva persica*, *Blumea obliqua*, *Cassia italica*, *Cleome viscosa*, *Crotalaria retusa*, *Croton bonplandianum*, *Cucumis melo*, *Enicostema axillare*, *Euphorbia rosea*, *Hedyotis puberula*, *Indigofera oblongifolia*, *Phyllanthus maderaspatensis*, *Spermocoe hispida*, *Trianthema triquetra*, *Vernonia albicans*, *Vigna trilobata* etc. are common. *Cymbopogon caesius* and *Eremopogon foveolatus* are common in the interior. *Cadaba fruticosa*, *Caralluma adscendens* and *Jatropha glandulifera* which usually occur in association with *Aloe vera*, *Cardiospermum canescens* and *Cissus quadrangularis* are rare. *Suaeda maritima* and *S. monoica* are also rare.

The coralline habitat on the southern side harbours species like *Aloe vera*, *Cissus quadrangularis*, *Suaeda maritima*, *Prosopis chilensis*, *Ziziphus mauritiana* etc. The common tree species present almost all over the island is *Salvadora persica*.

Seagrasses such as *Halodule pinifolia* and *Syringodium isoetifolium* are quite common around this island in that they are washed ashore in plenty. This island with an area of 12.7 ha has 67 species (Chart 4; Appendix I).

Kaswari Island

This island which originally had an area of about 19 ha has lost one fourth of its area due to removal of coral reefs, seaweeds, and other human interference and consequent erosion (Neelakantan, 1994). The vegetation is sparse with less number of species. The foreshore habitat has sedges like *Cyperus arenarius*, *C. conglomeratus* subsp. *pachyrrhizus* and other herbs like *Atriplex repens*, *Launaea sarmentosa*, *Ipomoea pes-caprae*, *Sesuvium portulacastrum*, *Spinifex littoreus* etc. *Scaevola plumieri* is abundant almost throughout the island. Species like *Crotalaria retusa*, *Enicostema axillare*, *Vernonia cinerea* and *Vigna trilobata* along with common sedges and grasses like *Bulbostylis barbata* subsp. *pulchella*, *Cyperus stoloniferus*, *Fimbristylis ferruginea*, *Cymbopogon caesius*, *Eremopogon foveolatus* and *Sporobolus maderaspatanus* are frequent. *Opuntia dillenii* which usually occurs in association with the rare *Indigofera oblongifolia* is also rare.

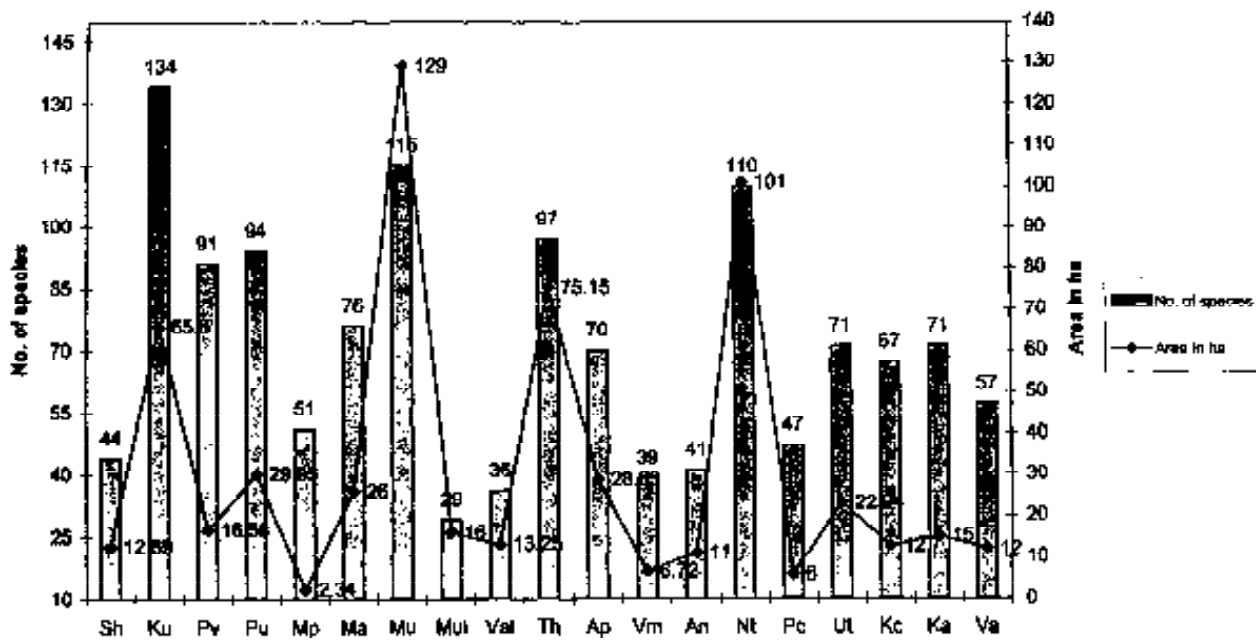
Around the swamp on the southern side occur shrubs of *Avicennia marina* and *Arthrocnemum glaucum* in association with *Atriplex repens*, *Suaeda maritima* and *S. monoica*. *Pemphis acidula* which is part of this association is rare.

Seagrasses such as *Halodule pinifolia*, *Halophila stipulacea*, and *Syringodium isoetifolium* were found washed ashore in plenty. *Halophila stipulacea* was collected on this island for the first time. With an area of 15 ha this island has 71 species (Chart 4; Appendix I).

Van Island

This is the smallest island in the Tuticorin group and was known as Church Island to earlier workers (Srinivasan, 1960; Sundararaj & Nagarajan, 1964). Wight (1834) stated that there was a tower-bearing church on the northwestern side which has no traces now. This island which had an area of 22 ha in the 1940s (Sundararaj & Nagaraj, 1964) has only 12 ha now. The vegetation is very sparse with less number of species. Sand binders like *Cyperus conglomeratus* subsp. *pachyrrhizus* and *Halopyrum mucronatum* are common along the shores often in association with *Sesuvium portulacastrum* and *Scaevola plumieri* which is the most common species here. Only a few bushes of *Salvadora persica* occur on the eastern and southern sides. On the western and northern sides a few patches of trees of *Prosopis chilensis* are present. *Clerodendrum inerme* forming two large patches is found on the southwestern side. Herbs such as *Aerva lanata*, *Crotalaria retusa*, *Enicostema axillare*, *Hedyotis puberula*, *Indigofera oblongifolia*, *Tribulus terrestris*, *Vernonia cinerea* and *Vigna trilobata* are frequent in the interior mostly in association with grasses and sedges like *Cenchrus ciliaris*, *Cymbopogon caesius*, *Eremopogon foveolatus*, *Sporobolus maderaspatanus*, *S. tremulus*, *Bulbostylis barbata* subsp. *pulchella*, *Fimbristylis cymosa* etc.

Chart 4 - Area and No. of species on different Islands of GMR



Atriplex repens and *Launaea sarmentosa* are found occasionally along with *Scaevola plumieri*. Succulent halophytes like *Suaeda maritima*, *S. monoica* and *Arthrocnemum glaucum* are frequent on the southern shores. A few bushes of *Aloe vera* occur in association with *Salvadora persica* on the southeastern side. A good population of *Cressa cretica*, which is rare on islands, was found on the sandy tracts of the southern side. *Pentatropis capensis* in association with *Sporobolus tremulus* was also common here. *Cissus quadrangularis*, found on *Salvadora persica*, is not common. *Halopyrum mucronatum* is in its robust form here (Photo 25). The presence of stunted trees of *Salvadora persica* which is otherwise a tree is a characteristic feature of the islands of the Tuticorin group.

Some of the more common seagrasses along the shores are *Cymodocea serrulata* (Photo 13), *Halophila ovalis* and *Syringodium isoetifolium* (Photo 14). With an area of 12 ha this island has 57 species (Chart 4; Appendix I).

Sundararaj and Nagarajan (1964) based on their studies beginning in the 1940s gave an account of the vegetation and flora of Church (Van) Island. They enumerated 54 species. Of these 23 have not been collected this time around. Though some of them might have been based on mistaken identity trees such as *Acacia horrida*, *A. planifrons* and *Dichrostachys cinerea* are unlikely to be mistaken. However, from the absence of voucher specimens this cannot be confirmed with certainty. During the present explorations 22 species not reported by them have been collected.

Phytogeographical analysis

Based on the distribution of the species in the study area they may be categorized as those with restricted distribution and wide distribution.

Endemics

Indian flora has about 17,000 species of which 5725 are endemics and belong to 146 genera (Nayar, 1997). Peninsular India has 2015 species distributed in 60 genera (Ahmedullah & Nayar, 1987). In the study area 46 endemic taxa have been identified including one subspecies and 7 varieties (Table IV).

TABLE IV

ENDEMIC SPECIES

Species endemic to Gulf of Mannar

- *1. *Acrachne henrardiana*
2. *A. sundararajii*
3. *Ceropegia mannarana*
4. *Chloris wightiana*
5. *Ipomoea pes-caprae* var. *perunkulamensis*

6. *Iseilema jainiana*
7. *Jatropha villosa* var. *ramnadensis*
- *8. *Leucas anandaraoana*
9. *Perotis indica* var. *keelakaraiensis*
10. *Sporobolus hajrae*

Species endemic to Tamil Nadu

11. *Bonamia evolvuloides*
- *12. *Cordia diffusa*
13. *Indigofera tirunelvetica*
14. *Jatropha maheshwarii*
15. *Leucas wightiana*
16. *Polycarpaea diffusa*
17. *Tephrosia barberi*
18. *Theriophonum sivaganganum*

Species endemic to peninsular India

- *19. *Alysicarpus rugosus* var. *pilifer*
20. *Barleria buxifolia*
21. *B. cuspidata*
22. *B. longiflora*
23. *Ceropegia juncea*
24. *Commiphora berryi*
25. *Crotalaria globosa*
26. *Cyanotis cucullata*
27. *C. papilionaceu*
28. *Cyperus rotundus* subsp. *tuberosus*
29. *Dalbergia horrida*
- *30. *Dipcadi montanum* var. *madrasicum*
31. *Dipteracanthus prostratus*
32. *Euphorbia corrigioloides*
33. *Geniosporum tenuiflorum* var. *longiracemosum*
34. *Helicanthes elastica*
35. *Lepidagathis pungens*
36. *L. spinosa*
- *37. *Leucas diffusa*
38. *Lindernia minima*
39. *Maerua apetala*
40. *Manisuris myuros*
- *41. *Methania cannabina*
- *42. *Scutia myrtina* var. *emarginata*
43. *Sesbania procumbens*
44. *Sida cuneifolia*

45. *Theriophonum infaustum*
46. *Tribulus lanuginosus*

* Also occurs on islands.

Of these 28 are restricted to peninsular India, 8 to Tamil Nadu and 10 to the Gulf of Mannar.

The flora of the region has close affinity with that of the neighbouring Sri Lanka. There are 63 species which are exclusive to Sri Lanka and peninsular India (Table V).

TABLE V

SPECIES THAT OCCUR IN PENINSULAR INDIA AND SRI LANKA

- | | |
|---|---------------------------------------|
| *1. <i>Acacia planifrons</i> | 29. <i>Grewia rhamnifolia</i> |
| 2. <i>Alysicarpus rugosus</i> var.
<i>styracifolius</i> | 30. <i>Hellotropium marifolium</i> |
| *3. <i>Atalantia racemosa</i> | *31. <i>Heterostemma tanjorensis</i> |
| 4. <i>Bauhinia racemosa</i> | 32. <i>Holcolemma canaliculatum</i> |
| 5. <i>Becium filamentosum</i> | *33. <i>Hydrophylax maritima</i> |
| 6. <i>Brachiaria remota</i> | 34. <i>Indigofera aspalathoides</i> |
| *7. <i>Bulbostylis barbata</i> subsp.
<i>pulchella</i> | 35. <i>Indoneesiella echioides</i> |
| 8. <i>Capparis brevispina</i> | 36. <i>Iseilema laxum</i> |
| 9. <i>Cassine balae</i> | 37. <i>Justicia tranquebariensis</i> |
| 10. <i>C. glauca</i> | 38. <i>Leucas biflora</i> |
| 11. <i>Catharanthus pusillus</i> | 39. <i>Lopholepis ornithocephala</i> |
| 12. <i>Ceropegia candelabrum</i> | 40. <i>Madhuca longifolia</i> |
| 13. <i>Cleome aspera</i> | 41. <i>Mollugo disticha</i> |
| 14. <i>Coelachyrum lagopoides</i> | *42. <i>Nesaea lanceolata</i> |
| 15. <i>Corallocarpus epigaeus</i> | *43. <i>Pentatropis capensis</i> |
| 16. <i>Crinum asiaticum</i> | *44. <i>Phoenix pusilla</i> |
| 17. <i>Crossandra infundibuliformis</i> | 45. <i>Polyalthia longifolia</i> |
| *18. <i>Crotalaria retusa</i> | 46. <i>Polygala rosmarinifolia</i> |
| 19. <i>Cryptocoryne spiralis</i> | *47. <i>Portulaca wightiana</i> |
| 20. <i>Ctenolepis garcinii</i> | 48. <i>Rhynchosia nummularia</i> |
| *21. <i>Cyperus conglomeratus</i>
subsp. <i>pachyrrhizus</i> | 49. <i>Rungia repens</i> |
| 22. <i>Cyphostemma setosum</i> | *50. <i>Salicornia brachiata</i> |
| *23. <i>Dichrostachys cinerea</i> | 51. <i>Sansevieria roxburghiana</i> |
| *24. <i>Ehretia ovalifolia</i> | *52. <i>Solanum pubescens</i> |
| 25. <i>Erythroxyllum monogynum</i> | *53. <i>Sopubia delphinifolia</i> |
| 26. <i>Euphorbia antiquorum</i> | *54. <i>Sporobolus maderaspatanus</i> |
| 27. <i>E. tortilis</i> | *55. <i>Suaeda maritima</i> |
| 28. <i>Geniosporum tenuiflorum</i> | *56. <i>Tephrosia maxima</i> |
| | 57. <i>T. spinosa</i> |
| | 58. <i>Terminalia arjuna</i> |
| | 59. <i>Thecagonum biflorum</i> |

- | | | |
|------|---------------------------------|-------------------------------|
| 60. | <i>Utricularia polygaloides</i> | var. <i>mauritiana</i> |
| *61. | <i>Vernonia albicans</i> | 63. <i>Ziziphus xylopyrus</i> |
| *62. | <i>Ziziphus mauritiana</i> | * Also occurs on islands |

Species such as *Acacia leucophloea*, *Ammannia octandra*, *Anisomeles indica*, *Carissa carandas*, *C. spinarum*, *Cassia auriculata*, *C. fistula*, *Clerodendrum phlomides*, *Crotalaria angulata*, *Epaltes divaricata*, *Euphorbia heyneana*, *E. rosea*, *Ficus amplissima*, *F. benghalensis*, *Gmelina asiatica*, *Hedyotis puberula*, *Jasminum sambac*, *Justicia adhatoda*, *J. diffusa*, *Morinda pubescens*, *Orthosiphon pallidus*, *Peristrophe paniculata*, *Premna serratifolia*, *Sapindus emarginatus*, *Tarenna asiatica*, *Tragia involucrata* and *Vitex negundo* are distributed in India and Sri Lanka. Some of them occur in Myanmar and Malesia, and a few also in Pakistan, China, Bangladesh and Afghanistan.

The Indo-Malayan species are *Biophytum sensitivum*, *Capparis zeylanica*, *Cordia subcordata*, *Crotalaria nana*, *Goniogyna hirta* and *Nymphaea nouchali*. Species distributed in the region that occur in Malesia as well are *Abelmoschus ficulneus*, *Acacia leucophloea*, *Acanthospermum hispidum*, *Acanthus ilicifolius*, *Allmania nodiflora* var. *nodiflora*, *Ammannia baccifera*, *A. octandra*, *Anisomeles indica*, *Asystasia gangetica*, *Barleria cristata*, *Bauhinia racemosa*, *Biophytum sensitivum*, *Blumea lacera*, *Brachiaria distachya*, *Breynia vitis-idaea*, *Bruguiera cylindrica*, *Bulbostylis puberula*, *Calotropis gigantea*, *Canaevia rosea*, *Capparis zeylanica*, *Cardiospermum halicacabum*, *Carissa carandas*, *Cassia alata*, *C. fistula*, *C. pumila*, *C. siamea*, *Casuarina litorea*, *Catunaregam spinosa*, *Cayratia trifolia*, *Ceriops tagal*, *Cissampelos pareira* var. *hirsuta*, *Coccinia grandis*, *Corchorus urticifolius*, *Crotalaria laburnifolia*, *C. linifolia*, *C. medicaginea* var. *herniarioides*, *C. verrucosa*, *Cuscuta reflexa*, *Cyanotis cristata*, *Cyperus bulbosus*, *C. castaneus*, *C. compressus*, *C. difformis*, *C. iria*, *C. pygmaeus*, *C. stoloniferus*, *Diospyros montana*, *Diplocyclos palmatus*, *Enicostema axillare*, *Erythrina variegata*, *Excoecaria agallocha*, *Fioria vitifolia*, *Galactia tenuiflora*, *Halosarcia indica*, *Indigofera cohutea*, *Iphigenia indica*, *Ischaemum rugosum*, *Kyllinga bulbosa*, *K. hyalina*, *Leucas zeylanica*, *Lindernia caespitosa*, *Ludwigia hyssopifolia*, *L. perennis*, *Lumnitzera racemosa*, *Mitrasacme indica*, *Monochoria vaginalis*, *Morinda citrifolia*, *M. pubescens*, *Mukia maderaspatana*, *Murdannia spirata*, *Ocimum thymiflorus*, *Opuntia dillenii*, *Pavetta indica*, *Pergularia daemia*, *Phyllanthus reticulatus*, *P. virgatus*, *Polygala javana*, *Pouzolzia zeylanica*, *Premna serratifolia*, *Pycreus pumilus*, *Rhizophora apiculata*, *R. mucronata*, *Riklilla squarrosa*, *Rotala rosea*, *Sarcostemma secamone*, *Schoenoplectus articulatus*, *S. litoralis* subsp. *thermalis*, *Solanum trilobatum*, *Spermacoce ocymoides*, *S. pusilla*, *Sphaeranthus indicus*, *Spigelia anthelmia*, *Stylosanthes fruticosa*, *Syzygium cumini*, *Tarenna asiatica*, *Terminalia catappa*, *Toddalia asiatica*, *Trianthema decandra*, *T. triquetra*, *Trichosanthes cucumerina*, *Vigna trilobata*, *Wattakaka volubilis*, *Xanthium indicum*, *Ziziphus oenoplia*, *Zornia gibbosa* and *Zoysia matrella*.

Species such as *Abelmoschus ficulneus*, *Calophyllum inophyllum*, *Hibiscus ovalifolius*, *H. rosa-sinensis*, *Tragia involucrata* etc. are native to Africa. Species that occur in Africa and Asia are *Basella alba*, *Cocculus hirsutus*, *Emilia sonchifolia*, *Hedyotis herbacea*,

Ipomoea pes-caprae, *Polygala erioptera*, *Polygonum barbatum*, *Sesbania bispinosa* and *S. sesban*. *Acacia horrida*, *Corallocarpus epigeus*, *Halosarcia indicum*, *Psilotrichum elliotii* are common to India and Africa.

A number of tropical American species are cultivated either as an ornamental or for their fruits. Some of them are *Allamanda cathartica*, *Anacardium occidentale*, *Annona squamosa*, *Capsicum* spp., *Carica papaya*, *Cascabela thevetia*, *Celosia cristata*, *Lycopersicon esculentum*, *Ipomoea batatas*, *Jatropha curcas*, *Manilkara zapota*, *Parkinsonia aculeata*, *Passiflora edulis* and *Psidium guajava*. However, most of them are more common weeds. They are *Alternanthera pungens*, *Amaranthus tricolor*, *Argemone mexicana*, *Aristida adscensionis*, *Brachiaria reptans*, *Bulbostylis barbata* subsp. *barbata*, *Cardiospermum halicacabum*, *Celosia argentea*, *Croton bonplandianum*, *Cyperus corymbosus*, *C. difformis*, *Dichanthium annulatum*, *Eragrostis ciliaris*, *Euphorbia cyathophora*, *E. serpens*, *Flaveria trinervia*, *Gomphrena globosa*, *G. serrata*, *Gisekia pharnaceoides*, *Hedyotis corymbosa*, *Heliotropium curassavicum*, *Hyptis suaveolens*, *Ipomoea alba*, *I. carnea*, *I. nil*, *Jatropha gossypifolia*, *Kyllinga nemoralis*, *Lantana camara*, *Merremia dissecta*, *Mimosa pudica*, *Ocimum basilicum* var. *pilosum*, *Passiflora foetida*, *Polygonum glabrum* var. *glabrum*, *Prosopis chilensis*, *Ruellia tuberosa*, *Spermacoce ocymoides*, *S. pusilla*, *Sporobolus virginicus*, *Suaeda maritima*, *Tephrosia pumila*, *Tridax procumbens*, *Vallisneria natans* and the more recent introduction, *Spigelia anthelmia*.

The pantropical elements are *Abrus precatorius*, *Achyranthes aspera*, *Abutilon indicum*, *Aerva lanata*, *Alternanthera pungens*, *A. sessilis*, *Aeschynomene indica*, *Blainvillea acmella*, *Ceiba pentandra*, *Cressa cretica*, *Cyperus halpan*, *Cassia occidentalis*, *Cleome gynandra*, *C. viscosa*, *Coldenia procumbens*, *Corchorus aestuans*, *C. tridens*, *Crotalaria verrucosa*, *Cyperus exaltatus*, *Datura metel*, *Eclipta prostrata*, *Euphorbia hirta*, *Evolvulus alsinoides*, *Fimbristylis bisumbellata*, *F. complanata*, *F. cymosa*, *F. ferruginea*, *F. miliacea*, *Glinus lotoides*, *G. oppositifolius*, *Halophila decipiens*, *Heteropogon contortus*, *Hibiscus tiliaceus*, *Hybanthus enneaspermus*, *Ipomoea aquatica*, *I. cornea*, *I. pes-caprae*, *Kalanchoe pinnata*, *Lantana camara*, *Melochia corchorifolia*, *Mimosa pudica*, *Mnesithea granulalis*, *Mollugo cerviana*, *M. nudicaulis*, *M. pentaphylla*, *Panicum repens*, *Parthenium hysterophorus*, *Paspalum vaginatum*, *Phyla nodiflora*, *Phyllanthus amarus*, *Pistia stratiotes*, *Plumbago zeylanica*, *Polycarpaea corymbosa*, *Polygala rosmarinifolia*, *Portulaca oleracea*, *P. quadrifida*, *Sesuvium portulacastrum*, *Sida acuta*, *S. cordata*, *Thespesia populnea*, *Trianthema portulacastrum*, *Waltheria indica* etc.

Floristic analysis

The angiosperm flora of the Gulf of Mannar has a total of 784 taxa which includes 764 species and 20 infraspecific taxa (subspecies/varieties). They belong to 433 genera and 113 families. 599 are dicots and belong to 324 genera and 93 families; 195 are monocots and belong to 109 genera and 20 families. In the dicots 105 species are trees, 135 shrubs, 286 herbs, 70 climbers and 3 parasites. Monocots have 4 species of trees, 3 shrubs, 186 herbs and 2 climbers. The islands together have 269 taxa. Of these 203 are dicots and 66 are

monocots. Of the 269 taxa, 42 are trees, 33 shrubs, 173 herbs and 21 climbers. Thirteen species are exclusively insular (Table VI).

TABLE VI

SPECIES EXCLUSIVELY INSULAR

1. *Aegiceras corniculatum* (Kurusadai)
2. *Atalantia racemosa* (Nallathanni & Upputhanni)
3. *Breynia vitis-idaea* (Kurusadai)
4. *Cordia subcordata* (Shingle, Kurusadai, Pumarichan, Pullivasal & Muyal)
5. *Erythroxylum monogynum* (Pumarichan)
6. *Fimbristylis triflora* (Kurusadai & Nallathanni)
7. *Leucas anandaraoana* (Upputhanni)
8. *Pleurostyliia opposita* (Kurusadai, Pumarichan, Pullivasal & Muyal)
9. *Scaevola taccada* (Shingle & Kurusadai)
10. *Suriana maritima* (Shingle, Kurusadai, Pumarichan & Pullivasal)
11. *Vitex trifolia* (Muyal)
12. *Wedelia biflora* (Pullivasal)
13. *Pemphis acidula* (all except Appa, Puluvinichalli, Upputhanni & Karaichalli)

In the study area both on the mainland coast and islands Poaceae is the largest family with 87 species in 51 genera. The 10 large families are given in Table VII.

TABLE VII

LARGE FAMILIES

MAINLAND COAST		ISLANDS	
1. Poaceae	53/87	1. Poaceae	16/27
2. Fabaceae	26/59	2. Cyperaceae	4/16
3. Euphorbiaceae	16/42	Fabaceae	10/16
4. Cyperaceae	9/40	Euphorbiaceae	13/16
5. Asteraceae	20/25	3. Asteraceae	8/10
6. Acanthaceae	13/23	4. Rubiaceae	3/9
7. Convolvulaceae	8/19	5. Scrophulariaceae	4/8
8. Caesalpiniaceae	7/18	Boraginaceae	3/8
Lamiaceae	9/18	6. Amaranthaceae	4/7
Malvaceae	9/18	7. Asclepiadaceae	6/6
Rubiaceae	10/18		
9. Amaranthaceae	10/17		
10. Boraginaceae	7/16		

Large families with the number of species and genera are given in Table VIII for a comparison with other floras.

Apart from the 46 endemic species, 65 species are identified as rare *Acrachne henrardiana* (E), *A. sundararajii* (E), *Aegiceras corniculatum*, *Alysicarpus rugosus* var. *pilifer*, *Atalantia racemosa*, *Barleria buxifolia* (E), ¹*B. cuspidata* (E), *B. longiflora* (E), *Bonamia evolvuloides* (E), *Caesalpinia bonduc*, *Calophyllum inophyllum*, *Canavalia rosea*, *Caralluma adscendens*, *Cardiospermum canescens*, *Cassia nigricans*, *Cassine balae*, *Cattunaregam spinosa*, *Cenchrus pennisetiformis*, *C. setigerus*, *Ceropegia juncea* (E), *C. mannarana* (E) *Chloris wightiana* (E), *Colubrina asiatica*, *Commiphora berryi*, *Cordia diffusa* (E), *C. obliqua*, *C. subcordata*, *Crotalaria globosa* (E), *C. medicaginea* var. *herniarioides*, *Cyanotis cucullata* (E), *C. papilionacea* (E), *Cyperus rotundus* subsp. *tuberosus* (E), *Dactyloctenium aristatum*, *Dalbergia horrida* (E), *Derris trifoliata*, *Dipcadi montanum* var. *madrasicum* (E), *Diplachne malabarica*, *Eremopogon foveolanus*, *Erythroxylum monogynum*, *Euphorbia corrigioloides* (E), *Excoecaria agallocha*, *Fimbristylis triflora*, *Halodule wrightii*, *Halophila stipulacea*, *Halosarcia indica*, *Hedyotis graminifolia*, *Helicanthes elastica* (E), *Heterostemma tanjorensis*, *Holcolemma canaliculatum*, *Hydrolea zeylanica*, *Hydrophylax maritima*, *Indigofera caerulea*, *I. tirunelvelica* (E), *Ipomoea pescaprae* var. *perunkulamensis* (E), *I. rumicifolia*, *Iseilema jainiana* (E), *I. laxum*, *Jatropha maheshwaril* (E), *J. villosa* var. *ramnadensis* (E), *Kleinia grandiflora*, *Lepidagathis pungens* (E), *L. spinosa* (E), *Leucas anandaraoana* (E), *L. diffusa* (E), *L. wightiana* (E), *Lindernia minima* (E), *Maerua apetala* (E), *Mantsuris myuros* (E), *Melhania cannabina* (E), *M. incana*, *Nymphoides aurantiacum*, *Perotis indica* var. *keelakaraiensis* (E), *Phyllanthus rotundifolius*, *Polycarpaea diffusa* (E), *P. spicata*, *Potamogeton pectinatus*, *Premna serratifolia*, *Pupalia lappacea* var. *orbiculata*, *Rhizophora apiculata*, *Rhynchosia velutina*, *R. nummularia*, *Ruppia maritima*, *Sansevieria roxburghiana*, *Sapindus emarginatus*, *Sarcostemma acidum*, *Scaevola taccada*, *Schoenoplectus litoralis* subsp. *litoralis*, *S. litoralis* subsp. *thermalis*, *S. maritimus*, *Scutia myrtina* var. *emarginata* (E), *S. myrtina* var. *myrtina*, *Sesbania procumbens* (E), *Sida cuneifolia* (E), *Sopubia delphiniifolia*, *Spigelia anthelmia*, *Sporobolus virginicus*, *S. hajrae* (E), *Suriana maritima*, *Tephrosia barberi* (E), *Therio-phonum infaustum* (E), *T. sivaganganum* (E), *Trianthema salsoloides*, *Tribulus lanuginosus* (E), *Tylophora indica*, *Vitex trifolia*, *Wattakaka volubilis*, *Wedelia biflora*, *Withania somnifera* and *Zoysia matrella*.

There are 33 species which are wild relatives of cultivated plants *Abelmoschus ficulneus*, *Canavalia rosea*, *Cissus quadrangularis*, *Colocasia esculenta*, *Cymbopogon coesius*, *Dalbergia horrida*, *D. sissoo*, *Eleusine indica*, *Ipomoea alba*, *I. aquatica*, *I. carnea*, *I. nil*, *Manilkara hexandra*, *Momordica dioica*, *Panicum antidotale*, *P. repens*, *Phoenix loureirii*, *P. pusilla*, *Saccharum spontaneum*, *Sesbania bispinosa*, *S. grandiflora*, *S. sesban*, *Setaria pumila*, *S. verticillata*, *Solanum pubescens*, *S. trilobatum*, *S. virginianum*, *Trichosanthes cucumerina*, *Vigna trilobata*, *Ziziphus mauritiana*, *Z. nummularia*, *Z. oenoplia* and *Z. xylopyrus*.

TABLE VIII
COMPARISON OF LARGE FAMILIES

S.No.	Fl. Brit. India	Fl. Pres. Madras	Fl. Taminadu Carnatic	Gulf of Mannar - Mainland coast	Gulf of Mannar - Islands
1.	Gramineae	Leguminosae	Fabaceae	Poaceae	Poaceae
2.	Orchidaceae	Gramineae	Poaceae	Fabaceae	Cyperaceae
3.	Leguminosae	Rubiaceae	Cyperaceae	Euphorbiaceae	Fabaceae
4.	Compositae	Acanthaceae	Euphorbiaceae	Cyperaceae	Euphorbiaceae
5.	Rubiaceae	Euphorbiaceae	Asteraceae	Asteraceae	Asteraceae/ Rubiaceae/ Scrophulariaceae/ Boraginaceae
6.	Cyperaceae	Orchidaceae	Acanthaceae	Acanthaceae	Arbranthaceae
7.	Euphorbiaceae	Compositae	Orchidaceae	Convolvulaceae	Asclepiadaceae/ Cucurbitaceae/ Chenopodiaceae
8.	Labiatae	Cyperaceae	Rubiaceae	Lamiaceae/ Malvaceae/ Rubiaceae/ Caesalpinjaceae	Caesalpinjaceae/ Convolvulaceae
9.	Acanthaceae	Labiatae	Lamiaceae	Amaranthaceae	Malvaceae/ Mimosaceae
10.	Scrophulariaceae	Asclepiadaceae	Asclepiadaceae	Boraginaceae	Rhamnaceae/ Sapindaceae

These apart, identified are 75 species of wild edible plants - *Achyranthes aspera*, *Amaranthus spinosus*, *A. viridis*, *Asystasia gangetica*, *Basella alba*, *Borassus flabellifer*, *Canavalia gladiata*, *Capparis sepiaria*, *C. zeylanica*, *Caralluma adscendens*, *Carissa carandus*, *Celosia argentea*, *Centella asiatica*, *Ceropegia juncea*, *Cissus quadrangularis*, *Cleome gynandra*, *Coccinia grandis*, *Cordia obliqua*, *Cucumis melo*, *Cyperus bulbosus*, *Diospyros ferrea*, *Emilia sonchifolia*, *Enhalus acoroides*, *Gmelina asiatica*, *Hibiscus micranthus*, *Hyptis suaveolens*, *Ipomoea alba*, *I. aquatica*, *I. marginata*, *Lablab purpureus*, *Lantana camara*, *Launaea intybacea*, *Limnophila heterophylla*, *Madhuca longifolia*, *Melochia corchorifolia*, *Merremia emarginata*, *Mimusops elengi*, *Mollugo pentaphylla*, *Momordica dioica*, *Nelumbo nucifera*, *Nymphaea nouchali*, *N. pubescens*, *Opuntia dillenii*, *Pandanus fascicularis*, *Passiflora foetida*, *Pavetta indica*, *Phylla nodiflora*, *Physalis minima*, *Pisonia grandis*, *Pithecellobium dulce*, *Portulaca oleracea*, *Rivea hypocrateriformis*, *Rothia indica*, *Salicornia brachiata*, *Salvadora persica*, *Scutia myrtina* var. *myrtina*, *Securinega leucopyrus*, *Sesbania sesban*, *Sesuvium portulacastrum*, *Solanum pubescens*, *S. trilobatum*, *Spermacoce hispida*, *Stachytarpheta jamaicensis*, *Suaeda maritima*, *Synedrella nodiflora*, *Trianthema decandra*, *Trichosanthes cucumerina*, *Typha angustata*, *Vigna trilobata*, *Wedelia biflora*, *Withania somnifera*, *Xanthium indicum*, *Ziziphus mauritiana*, *Z. nummularia* and *Z. oenoplia*; 81 species of fodder plants - *Acacia planifrons*, *Acrachne henrardiana*, *A. sundararajii*, *Ailanthus excelsa*, *Alternanthera sessilis*, *Alysicarpus monilifer*, *A. rugosus* var. *pilifer*, *A. rugosus* var. *styracifolius*, *Amaranthus viridis*, *Andropogon pumilis*, *Asystasia gangetica*, *Avicennia marina*, *Bothriochloa pertusa*, *Brachiaria distachya*, *B. ramosa*, *Cenchrus ciliaris*, *C. pennisetiformis*, *C. setigerus*, *Chloris barbata*, *C. wightiana*, *Chrysopogon fulvus*, *Clitoria ternatea*, *Commelina benghalensis*, *Crotalaria medicaginea* var. *herniarioides*, *C. globosa*, *Cyanotis cristata*, *Derris trifoliata*, *Desmodium triflorum*, *Dichanthium annulatum*, *Dichrostachys cinerea*, *Digitaria ciliaris*, *Echinochloa colona*, *E. crus-galli*, *Ehretia laevis*, *Enneapogon schimperianus*, *Eragrostiella bifaria*, *Eragrostis amabilis*, *E. viscosa*, *Eremopogon foveolatus*, *Eriochloa procera*, *Erythrina variegata*, *Ficus benghalensis*, *F. religiosa*, *Heteropogon contortus*, *Indigofera glandulosa*, *Ipomoea pes-tigridis*, *Isachne globosa*, *Ischaemum indicum*, *I. rugosum*, *Lablab purpureus*, *Leucaena latisiliqua*, *Maerua oblongifolia*, *Manilkara hexandra*, *Morinda citrifolia*, *M. pubescens*, *Panicum repens*, *Paspalidum geminatum*, *Peristrophe paniculata*, *Polycarpha corymbosa*, *Prosopis chilensis*, *Rhynchosia minima*, *Saccharum spontaneum*, *Scoparia dulcis*, *Sesbania procumbens*, *Spermacoce hispida*, *Sporobolus coromandelianus*, *S. maderaspatanus*, *S. spicatus*, *S. tremulus*, *Stylosanthes fruticosa*, *Suaeda monoica*, *Teramnus labialis*, *Thespesia populnea*, *Trianthema portulacastrum*, *Vicoa indica*, *Vigna trilobata*, *Ziziphus mauritiana*, *Z. nummularia*, *Z. xylopyrus* and *Zornia diphylla*, and 377 species of medicinal plants with known uses- *Abelmoschus esculenta*, *Abrus fruticulosus*, *A. precatorius*, *Abutilon hirtum*, *A. indicum*, *Acacia leucophloea*, *Acalypha ciliata*, *A. indica*, *Acanthospermum hispidum*, *Acanthus ilicifolius*, *Achyranthes aspera*, *Adansonia digitata*, *Aegle marmelos*, *Aerva lanata*, *A. persica*, *Aeschynomene indica*, *Ailanthus excelsa*, *Albizia amara*, *A. lebbek*, *Allamanda cathartica*, *Aloe vera*, *Alternan-*

thera pungens, *A. sessilis*, *Althea rosea*, *Amaranthus spinosus*, *Ammannia baccifera*,
Anacardium occidentale, *Anisomeles indica*, *A. malabarica*, *Annona squamosa*, *Argemone*
mexicana, *Aristolochia bracteolata*, *Arthrocnemum glaucum*, *Asclepias curassavica*, *As-*
paragus racemosus, *Asystasia gangetica*, *Avicennia marina*, *Azadirachta indica*, *Azima*
tetracantha, *Bacopa monnieri*, *Barleria buxifolia*, *B. cristata*, *B. longiflora*, *Basella alba*,
Bauhinia racemosa, *Biophytum sensitivum*, *Boerhavia diffusa*, *Borassus flabellifer*, *Breynia*
vitis-ideae, *Cadaba fruticosa*, *Caesalpinia bonduc*, *Calendula officinalis*, *Calophyllum*
inophyllum, *Calotropis gigantea*, *Canavalia gladiata*, *Canna indica*, *Capparis septaria*, *C.*
zeylanica, *Cardiospermum halicacabum*, *Carica papaya*, *Carissa carandas*, *C. spinarum*,
Cascabela thevetia, *Carmona retusa*, *Cassia absus*, *C. auriculata*, *C. fistula*, *C. occidentalis*,
C. pumila, *C. senna*, *C. sophera*, *C. tora*, *Cassytha filiformis*, *Casuarina litorea*, *Catharan-*
thus roseus, *Catunaregam spinosa*, *Cayratia trifolia*, *Ceiba pentandra*, *Celosia argentea*,
Centella asiatica, *Ceriops tagal*, *Chrozophora rotteri*, *Cissampelos pareira* var. *hirsuta*,
Cissus quadrangularis, *Citrullus colocynthis*, *C. lanatus*, *Citrus limon*, *Cleome viscosa*,
Clerodendrum inerme, *Clitoria ternatea*, *Coccinia grandis*, *Cocculus hirsutus*, *Cocos*
nucifera, *Codiaeum variegatum*, *Coldenia procumbens*, *Colubrina asiatica*, *Corallocarpus*
epigaeus, *Corchorus aestuans*, *C. fascicularis*, *Cordia obliqua*, *Coriandrum sativum*,
Cressa cretica, *Crinum asiaticum*, *Crossandra infundibuliformis*, *Crotalaria retusa*, *C.*
laburnifolia, *C. verrucosa*, *Cucumis melo*, *C. sativus*, *Cuscuta reflexa*, *Cynodon dactylon*,
Cyperus rotundus, *Cyphostemma setosum*, *Dalbergia sissoo*, *Datura innoxia*, *D. metel*,
Delonix elata, *Derris trifoliata*, *Desmodium triflorum*, *Dichrostachys cinerea*, *Digera*
muricata, *Diospyros montana*, *Diplocyclos palmatus*, *Dipteracanthus prostratus*, *Do-*
donaea viscosa, *Eclipta prostrata*, *Ehretia laevis*, *Emilia sonchifolia*, *Enicostema axillare*,
Epaltes divaricata, *Erythrina variegata*, *Erythroxylum monogynum*, *Euphorbia an-*
tiquorum, *E. heyneana*, *E. hirta*, *E. indica*, *E. rosea*, *E. thymifolia*, *E. tirucalli*, *Evolvulus*
alsinoides, *Excoecaria agallocha*, *Ficus benghalensis*, *F. religiosa*, *Geniosporum tenui-*
florum, *Gisekia pharnaceoides*, *Glinus lotoides*, *G. oppositifolius*, *Gloriosa superba*, *Gme-*
lina asiatica, *Gomphrena globosa*, *Gossypium herbaceum*, *Halophila ovalis*, *Halosarica*
indica, *Hedyotis corymbosa*, *H. herbacea*, *Helianthus annuus*, *Helicanthes elastica*, *Heliot-*
ropium curassavicum, *H. indicum*, *H. ovalifolium*, *H. subulatum*, *Hemidesmus indicus*,
Hibiscus rosa-sinensis, *H. tiliaceus*, *Hybanthus enneaspermus*, *Hydrolea zeylanica*,
Hygrophila schulli, *Hyptis suaveolens*, *Impatiens balsamina*, *Indigofera aspalathoides*, *I.*
glandulosa, *I. hirsuta*, *I. linnaei*, *I. oblongifolia*, *I. tinctoria*, *I. trifoliata*, *I. trita*, *In-*
doneesiella echioides, *Iphigenia indica*, *Ipomoea alba*, *I. aquatica*, *I. batatus*, *I. cairica*, *I.*
carnea, *I. coptica*, *I. nil*, *I. pes-caprae*, *I. pès-tigridis*, *I. quamoclit*, *Ixora coccinea*, *Jatropha*
curcas, *J. glandulifera*, *J. gossypifolia*, *J. multifida*, *Jasminum auriculatum*, *J. sambac*,
Justicia adhatoda, *J. tranquebariensis*, *Kalanchoe pinnata*, *Kleinia grandiflora*, *Kyllinga*
nemorulis, *Lagenaria siceraria*, *Lagestroemia indica*, *Lannea coromandelica*, *Lantana*
camara, *Launaea sarmentosa*, *Lawsonia inermis*, *Leptadenia reticulata*, *Leucas aspera*, *L.*
zeylanica, *Limnophila indica*, *Lindernia crustacea*, *L. oppositifolia*, *Ludwigia perennis*,
Luffa acutangula, *L. cylindrica*, *Lumnitzera racemosa*, *Lycopersicon esculentum*, *Macro-*
tyloma uniflorum, *Madhuca longifolia*, *Maerua oblongifolia*, *Mangifera indica*, *Manilkara*
hexandra, *Martynia annua*, *Melia azedarach*, *Melochia corchorifolia*, *Mentha arvensis*,

Merremia tridentata, *Millingtonia hortensis*, *Mimosa pudica*, *Mimusops elengi*, *Mirabilis jalapa*, *Mollugo cerviana*, *M. nudicaulis*, *M. pentaphylla*, *Momordica charantia*, *Monochoria vaginalis*, *Morinda citrifolia*, *M. pubescens*, *Moringa pterygosperma*, *Mukia maderaspatana*, *Murraya königii*, *Musa paradisiaca*, *Nelumbo nucifera*, *Nerium oleander*, *Nyctanthes arbor-tristis*, *Nymphaea nouchali*, *Nymphoides indicum*, *Ocimum americanum*, *O. basilicum* var. *pilosum*, *O. gratissimum*, *O. tenuiflorum*, *Opuntia dillenii*, *Orthosiphon thymiflorus*, *Oryza sativa*, *Ottelia alismoides*, *Pandanus fascicularis*, *Parthenium hysterophorus*, *Paspalum scrobiculatum*, *Passiflora edulis*, *P. foetida*, *Pavetta indica*, *Pavonia zeylanica*, *Pedaliium murex*, *Pedilanthus tithymaloides*, *Peltophorum pterocarpum*, *Pentstemon capensis*, *Pergularia daemia*, *Phoenix pusilla*, *Phyla nodiflora*, *Phyllanthus acidus*, *P. amarus*, *P. emblica*, *P. maderaspatensis*, *P. reticulatus*, *P. virgatus*, *Physalis minima*, *Pilea microphylla*, *Piper betle*, *Pisonia grandis*, *Plectranthus scutellarioides*, *Plumeria rubra*, *Plumbago zeylanica*, *Polyalthia longifolia*, *Polycarpaea corymbosa*, *Polygonum barbatum*, *Pongamia pinnata*, *Portulaca oleracea*, *P. pilosa*, *P. quadrifida*, *Pouzolzia zeylanica*, *Psidium guajava*, *Punica granatum*, *Pupalia lappacea*, *Quisqualis indica*, *Rhizophora mucronata*, *Rhynchosia minima*, *Ricinus communis*, *Rivea hypocrateriformis*, *Ruellia tuberosa*, *Rungia repens*, *Saccharum spontaneum*, *Salvadora persica*, *Sapindus emarginatus*, *Sarcostemma acidum*, *S. secamone*, *Scaevola taccada*, *Scilla hyacinthina*, *Scoparia dulcis*, *Securinega leucopyros*, *Sesamum orientale*, *Sesbania grandiflora*, *S. sesban*, *Sida acuta*, *S. cordata*, *S. cordifolia*, *Solanum americanum*, *S. melongena*, *S. torvum*, *S. trilobatum*, *S. virginianum*, *Spermacoce hispida*, *Sphaeranthus indicus*, *Stemodia viscosa*, *Stachytarpheta jamaicensis*, *Stylosanthes fruticosa*, *Synadenium gratii*, *Synedrella nodiflora*, *Syzygium cumini*, *Tabernaemontana divaricata*, *Tagetes erecta*, *Tamarindus indica*, *Tarenna asiatica*, *Tecoma stans*, *Tephrosia purpurea*, *T. spinosa*, *T. villosa*, *Teramnus labialis*, *Terminalia arjuna*, *T. catappa*, *Thecagonum biflorum*, *Thespesia populnea*, *Thunbergia alata*, *Tinospora cordifolia*, *Toddalia asiatica*, *Tragia involucrata*, *T. plukenetii*, *Trianthema decandra*, *T. portulacastrum*, *Tribulus terrestris*, *Trichodesma indicum*, *Trichosanthes cucumerina*, *Tridax procumbens*, *Triumfetta rotundifolia*, *Tylophora indica*, *Vallisneria natans*, *Vernonia albicans*, *V. cinerea*, *Vetiveria zizanioides*, *Vicoa indica*, *Vigna aconitifolia*, *V. mungo*, *V. trilobata*, *Vitex negundo*, *V. trifolia*, *Waltheria indica*, *Wattakaka volubilis*, *Wedelia biflora*, *Withania somnifera*, *Xanthium indicum*, *Ziziphus mauritiana*, *Z. nummularia*, *Z. oenoplia*, *Zornia diphylla*, and *Z. gibbosa*.

SYSTEMATIC TREATMENT

Key to the families

1a. Cotyledons 2	2
b. Cotyledon 1	101
2a. Flowers with 2 whorls of non-essential parts	3
b. Flowers with a single whorl of non-essential parts	90
3a. Petals free	4
b. Petals united	58
4a. Flowers with a distinct thalamus	5

b. Flowers without a distinct thalamus.....	20
5a. Plants aquatic; leaves peltate; flowers more than 10 cm across.....	6
b. Plants non-aquatic; leaves not peltate; flowers less than 10 cm.....	7
6a. Leaves cordate at base; filaments dilated; carpels united; stigma radiating	4. Nymphaeaceae
b. Leaves rounded at base; filaments linear; carpels free; stigma peltate	3. Nelumbonaceae
7a. Flowers 3-merous; sepals 3 or 6; petals 6	8
b. Flowers usually 5-merous; rarely 4-merous; sepals and petals 5 each	9
8a. Trees; flowers bisexual; stamens numerous	1. Annonaceae
b. Climbers; flowers unisexual; stamens 6	2. Menispermaceae
9a. Placentation parietal	10
b. Placentation not parietal	13
10a. Flowers not solitary; gynophore present	11
b. Flower solitary; gynophore absent	12
11a. Herbs; fruit a capsule.....	7. Cleomaceae
b. Shrubs or trees; fruit a berry	6. Capparaceae
12a. Plants armed, with yellow sap; corolla yellow; stamens 45 - 50; capsules oblong, spiny	5. Papaveraceae
b. Plants unarmed, without yellow sap; corolla rose; stamens 5; capsules subglobose, not spiny	8. Violaceae
13a. Petals appendaged; caruncle hood-like with 2 - 3 appendages	9. Polygalaceae
b. Petals unappendaged; caruncle absent	14
14a. Epicalyx present	13. Malvaceae
b. Epicalyx absent	15
15a. Placentation freecentral	16
b. Placentation axile	17
16a. Sepals 5	10. Caryophyllaceae
b. Sepals 2	11. Portulacaceae
17a. Large trees; corolla white, more than 2 cm across	18
b. Herbs, shrubs or small trees; corolla not white, less than 2 cm across	19
18a. Leaves decussate, not digitate, coriaceous; drupes globose, glabrous, 2 - 3 cm across; seed solitary	12. Clusiaceae
b. Leaves alternate, digitate, chartaceous; capsules oblong, pubescent, 20 - 40 cm long; seeds many	14. Bombacaceae
19a. Filaments connate at base; staminal tube present	15. Sterculiaceae
b. Filaments not connate at base; staminal tube absent	16. Tiliaceae
20a. Flowers hypogynous; sepals usually free and free from the ovary; disc below ovary distinct	21
b. Flowers peri- or epigynous; sepals united, rarely free and adnate to ovary; disc usually absent	39

21a. Sepals spurred	21. Balsaminaceae
b. Sepals not spurred	22
22a. Leaves compound	23
b. Leaves simple, rarely 3 - 5-foliolate	31
23a. Small herbs	24
b. Shrubs or small or large trees	25
24a. Flower solitary; corolla yellow; fruit a schizocarp, spiny	18. Zygophyllaceae
b. Flowers in umbels; corolla brick red or flame-coloured; fruit a capsule, glandular-pubescent	19. Oxalidaceae
25a. Plants armed; branchlets spine-tipped; flowers in axillary clusters ..	25. Burseraceae
b. Plants unarmed; branchlets not spine-tipped; flowers in panicles	26
26a. Flowers bisexual	27
b. Flowers both uni- and bisexual	28
27a. Flowers regular; fruit a berry, oblong, not torulose, 3.5 - 5 cm long; placentation axile; seeds not winged	20. Avertroaceae
b. Flowers irregular; fruit a capsule, oblong, torulose, 30 - 45 cm long; placentation parietal; seeds winged	32. Moringaceae
28a. Fruit a samara	23. Simaroubaceae
b. Fruit not a samara	29
29a. Flowers 4-merous	31. Anacardiaceae (p.p.)
b. Flowers 5-merous	30
30a. Leaves serrate along margins; stamens 10	26. Mettaceae
b. Leaves entire along margins; stamens 8	31. Anacardiaceae (p.p.)
31a. Leaves gland-dotted	22. Rutaceae
b. Leaves not gland-dotted	32
32a. Plants tendrilled	33
b. Plants not tendrilled	34
33a. Fruit a capsule with inflated calyx	30. Sapindaceae (p.p.)
b. Fruit a berry without inflated calyx	29. Vitaceae
34a. Flowers solitary or few in axillary clusters	35
b. Flowers in racemes, cymes or panicles	36
35a. Leaves crowded at ends of branchlets; persistent leaf-scars present; corolla bright yellow; capsules green when mature	24. Surianaceae
b. Leaves not crowded at ends of branchlets; persistent leaf- scars absent; corolla white; drupes red when mature	17. Erythroxylaceae
36a. Fruits more than 2.5 cm long	31. Anacardiaceae (p.p.)
b. Fruits less than 2.5 cm long	37
37a. Branchlets gland-dotted; leaves shiny; petals absent	30. Sapindaceae (p.p.)
b. Branchlets not gland-dotted; leaves not shiny; petals present	38
38a. Stamens alternating petals	27. Celastraceae
b. Stamens opposite petals	28. Rhamnaceae
39a. Inflorescence an umbel; fruits of 2 mericarps	51. Apiaceae
b. Inflorescence not an umbel; fruits not of mericarps	40
40a. Plants succulent, spiny; leaves reduced or absent	48. Cactaceae

b. Plants neither succulent nor spiny; leaves well-developed	41
41a. Fruit a legume	42
b. Fruit not a legume	44
42a. Flowers actinomorphic; calyx and corolla valvate	35. Mimosaceae
b. Flowers zygomorphic; calyx and corolla imbricate	43
43a. Corolla papilionaceous, descendingly imbricate	33. Papilionaceae
b. Corolla caesalpinjiaceous, ascendingly imbricate	34. Caesalpinjiaceae
44a. Plants mangroves	45
b. Plants non-mangroves	46
45a. Hypocotyle present	39. Rhizophoraceae
b. Hypocotyle absent	40. Combretaceae (p.p.)
46a. Plants tendrilled	47
b. Plants not tendrilled	48
47a. Flowers with corona; gynandrophore present; fruit a berry	45. Passifloraceae
b. Flowers neither with corona nor with gynandrophore; fruit a pepo	47. Cucurbitaceae
48a. Plants dioecious	46. Caricaceae
b. Plants monoecious	49
49a. Plants armed	36. Rosaceae
b. Plants unarmed	50
50a. Shrubs or small or large trees	51
b. Herbs	53
51a. Stamens 10; petioles with 2 glands at base	40. Combretaceae(p.p.)
b. Stamens many; petioles without 2 glands at base	52
52a. Flower solitary; corolla bright red; seeds pulpy, pinkish white ...	43. Punicaceae
b. Flowers in panicle or corymbose cymes; corolla not t-right red; seeds neither pulpy nor pinkish white	41. Myrtaceae
53a. Flowers more than 2 cm across; hypogynous scales present	38. Crassulaceae
b. Flowers less than 2 cm across; hypogynous scales absent	54
54a. Leaves and branchlets glandular-pubescent	37. Vahliaaceae
b. Leaves and branchlets not glandular-pubescent	55
55a. Ovules 1 - 3 per locule	49. Aizoaceae
b. Ovules more than 3 per locule	56
56a. Leaves both radical and cauline	50. Molluginaceae
b. Leaves cauline	57
57a. Capsules globose, not ribbed	42. Lythraceae
b. Capsules terete or subterete, ribbed	44. Onagraceae
58a. Stamens epipetalous	60
b. Stamens not epipetalous	59
59a. Leaves palmately nerved; flowers unisexual; watery sap present	90. Euphorbiaceae (p.p.)
b. Leaves pinnately nerved; flowers bisexual; sap absent	58. Ebenaceae
60a. Plants parasitic or insectivorous	61
b. Plants neither parasitic nor insectivorous	62

61a. Plants parasitic, leafless twiners; bladders absent	70. Convolvulaceae (p.p.)
b. Plants insectivorous, leafy creepers; bladders present	73. Lentibulariaceae
62a. Inflorescence a capitulum; calyx modified into pappus; fruit an achene	53. Asteraceae
b. Inflorescence not a capitulum; calyx not modified into pappus; fruit not an achene	63
63a. Interpetiolar stipules present	52. Rubiaceae
b. Interpetiolar stipules absent	64
64a. Corolla with plicate thickenings	70. Convolvulaceae (p.p.)
b. Corolla without plicate thickenings	65
65a. Corolla split open on one side	54. Goodeniaceae
b. Corolla not split open on one side	66
66a. Leaves alternate	67
b. Leaves opposite	76
67a. Calyx glandular-hairy or gland-dotted	68
b. Calyx neither glandular-hairy nor gland-dotted	69
68a. Non-mangrove shrubs; corolla salverform; fruit a capsule, oblong	55. Plumbaginaceae
b. Mangrove trees; corolla campanulate; fruit a follicle, falcate	56. Myrsinaceae
69a. Stamens more than corolla lobes	57. Sapotaceae
b. Stamens as many as or less than corolla lobes	70
70a. Plants aquatic, stoloniferous; placentation parietal	68. Menyanthaceae
b. Plants neither aquatic nor stoloniferous; placentation not parietal	71
71a. Ovary 4-loculed; ovule 1 per locule, basal or pendulous	69. Boraginaceae
b. Ovary 2 - (5 or 6) -loculed; ovules 2 per locule, axile	72
72a. Plants viscid-pubescent; corolla zygomorphic; fruits horned or beaked..	73
b. Plants not viscid-pubescent; corolla actinomorphic; fruits not horned or beaked.....	74
73a. Leaves palmately nerved; flowers in racemes; corolla rose with yellow throat; stamens 2	76. Martyniaceae
b. Leaves pinnately nerved; flower solitary; corolla yellow or pink; stamens 4	75. Pedaliaceae
74a. Plants marshy, rooting at lower nodes	67. Hydrophyllaceae
b. Plants neither marshy nor rooting at lower nodes	75
75a. Fruit a berry	71. Solanaceae
b. Fruit a drupe or follicle	62. Apocynaceae (p.p.)
76a. Milky latex present; carpels 2, apocarpous	77
b. Milky latex absent; carpels 2, syncarpous	79
77a. Gynostegium absent; corona hairy; pollen grains not collected in pollinia	62. Apocynaceae (p.p.)
b. Gynostegium present; corona not hairy; pollen grains collected in pollinia	78
78a. Pollen masses granular; style included	64. Periplocaceae
b. Pollen masses not granular; style exerted	63. Asclepiadaceae
79a. Corolla actinomorphic; stamens equal; staminodes absent	80

b. Corolla zygomorphic (except <i>Tectona</i>); stamens didynamous; staminodes usually present	85
80a. Herbs	81
b. Shrubs or trees	82
81a. Flowers solitary or in cymes; capsules globose or subglobose ..	65. Loganiaceae
b. Flowers in clusters; capsules ellipsoid	66. Gentianaceae
82a. Ovary 1-loculed; ovule 1	61. Salvadoraceae
b. Ovary 2-loculed; ovules more than one per locule	83
83a. Mangrove plants; pneumatophores present; corolla yellow; stamens 4, fruit a drupe	80. Avicenniaceae
b. Non-mangrove plants; pneumatophores absent; corolla white or orange; stamens 2; fruit a berry or capsule	84
84a. Twiners; leaves 3-foliolate; corolla-tube and lobes white; fruit a berry	59. Oleaceae
b. Small trees; leaves simple; corolla-tube orange, lobes white; fruit a capsule	60. Nyctanthaceae
85a. Leaves pinnately compound	74. Bignoniaceae
b. Leaves simple, rarely 3 - 5-foliolate	86
86a. Fruit a drupe; placentation basal	87
b. Fruit a capsule; placentation axile	88
87a. Ovary 4-lobed; style gynobasic	81. Lamiaceae
b. Ovary entire; style terminal	79. Verbenaceae
88a. Upper lip of corolla not crested	72. Scrophulariaceae
b. Upper lip of corolla crested	89
89a. Plants climbers; calyx rudimentary; capsules globose	78. Thunbergiaceae
b. Plants other than climbers; calyx well-developed; capsules not globose	77. Acanthaceae
90a. Plants parasitic	91
b. Plants not parasitic	92
91a. Twiners, leafless; flowers in racemose spikes; perianth yellow; stamens 2	88. Lauraceae
b. Shrubs; leaves coriaceous; flowers in axillary clusters; perianth white or cream with green stripes; stamens 5	89. Loranthaceae
92a. Flowers unisexual	93
b. Flowers bisexual	96
93a. Large trees	94
b. Small herbs, shrubs or small trees	95
94a. Branches drooping; leaves scaly; flowers in spikes	93. Casuarinaceae
b. Branches spreading; leaves well-developed; inflorescence a syconium	92. Moraceae
95a. Ovary 1-loculed; fruit an achene, winged	91. Urticaceae
b. Ovary 3-loculed; fruit neither an achene nor winged	90. Euphorbiaceae (p.p.)
96a. Twiners or climbers	97
b. Erect or prostrate herbs or shrubs	98

97a. Dioecious climbers; inflorescence a catkin; perianth absent; stamens 4; fruit a drupe	87. Pipruraceae
b. Monoecious herbs; flower solitary; perianth present; stamens 8; fruit a septical capsule	86. Aristolochiaceae
98a. Leaves opposite or whorled	99
b. Leaves alternate	100
99a. Perianth-lobes united; stamens basally connate; fruit an anthocarp	82. Nyctaginaceae
b. Perianth-lobes free or basally connate; stamens free; fruit a utricle	84. Chenopodiaceae
100a. Stipules ochraceous	85. Polygonaceae
b. Stipules inconspicuous or absent	83. Amaranthaceae
101a. Plants aquatic	102
b. Plants terrestrial	110
102a. Stamens 6	103
b. Stamens less than 6	105
103a. Leaves oblong; tepals 2	109. Aponogetonaceae
b. Leaves not oblong; tepals 6	104
104a. Carpels free; ovary 1-loculed, 1-ovuled; placentation basal; achenes obovoid	107. Alismataceae
b. Carpels united; ovary 3-loculed; locules many-ovuled; placentation axile; capsules oblong	100. Pontederiaceae
105a. Perianth hairy or absent	106
b. Perianth not hairy	107
106a. Inflorescence a spadix	105. Araceae (p.p.)
b. Inflorescence a spike	104. Typhaceae
107a. Root solitary; fronds orbicular	106. Lemnaceae
b. Roots clustered; leaves not orbicular	108
108a. Ovary inferior; placentation parietal	94. Hydrocharitaceae
b. Ovary superior; placentation not parietal	109
109a. Leaves septate on dorsal surface; stamen 1	108. Najadaceae
b. Leaves not septate; stamens 2 or 4	110. Potamogetonaceae
110a. Small or large trees	111
b. Herbs or shrubs	112
111a. Plants with aerial roots; leaves spiny along margins; flowers fragrant; fruit an aggregate of drupes; drupes turbinate	103. Pandanaceae
b. Plants without aerial roots; leaves not spiny along margins; flowers not fragrant; fruit not an aggregate of drupes	102. Arecaceae (p.p.)
112a. Flowers zygomorphic	113
b. Flowers actinomorphic	114
113a. Leaves more than 50 cm long; inflorescence spicate; fruit a berry, fleshy, edible, indehiscent	95. Musaceae
b. Leaves less than 50 cm long; inflorescence paniculate; fruit a capsule, not edible, dehiscent	96. Cannaceae

114a. Inflorescence subtended by involucreal bracts	115
b. Inflorescence not subtended by involucreal bracts	117
115a. Flowers not in spikelets; perianth present	111. Eriocaulaceae
b. Flowers in spikelets; perianth absent	116
116a. Culms with nodes and internodes; pericarp adnate to testa	113. Poaceae
b. Culms neither with nodes nor internodes; pericarp free from testa	112. Cyperaceae
117a. Inflorescence a spadix; perianth absent	105. Araceae (p.p.)
b. Inflorescence not a spadix; perianth petaloid	118
118a. Tepals 3	101. Commelinaceae
b. Tepals 6	119
119a. Leaves more than 25 cm long	98. Agavaceae
b. Leaves less than 25 cm long (except <i>Aloe</i>)	120
120a. Ovary superior	99. Liliaceae
b. Ovary inferior	97. Amaryllidaceae

1. ANNONACEAE

Key to the genera

- | | |
|---|----------------------|
| 1a. Leaves entire, acute or obtuse; carpels connate; fruits globose, 4.5 - 6 cm ... | 1. <i>Annona</i> |
| b. Leaves undulate, acuminate; carpels free; fruits ovoid, 1 - 1.5 cm long | 2. <i>Polyalthia</i> |

1. *Annona* L.

Tropics, ca 100 species, 5 in India, 4 in Tamil Nadu and one in GM

A. squamosa L., Sp. Pl. 537, 1753; FBI 1: 78, 1872; FPM 14, 1915; FTC 3: 8, 1983; FTN 1: 3, 1983; RIIFC 5: 74, 1985; FI 1: 207, 1993. [*Sithapalam*]

Small tree. Leaves oblong-lanceolate or elliptic. Flowers solitary or 2 - 4, terminal or extra axillary. Sepals 3, triangular. Petals 6, biseriate, oblong. Stamens many. Fruits yellowish green; seeds obovoid, brownish black.

Fl. & Fr.: May - July.

Distrib.: Native of C. America and the W. Indies. Cultivated and becoming naturalised throughout India. Cultivated throughout Tamil Nadu.

Uses: Fruits edible. Unripe fruit, seed, leaf and root are used for destroying insects and lice. Seeds are also abortifacient. Root is a purgative.

Specimens examined: (Total 17) *VB* 2388.

2. *Polyalthia* Blume

Old World tropics, ca 120 species, 50 in India, 7 in Tamil Nadu and one in GM.

P. longifolia (Sonn.) Thwaites, Enum. Pl. Zeyl. 398. 1864; FBI 1: 62. 1872; FPM 11. 1915; FTC 3: 12. 1983; FTN 1: 6. 1983; RHFC 5: 32. 1985; FI 1: 274. 1993. *Uvaria longifolia* Sonn., Voy. Indes Orient. 2: 233, t. 131. 1782; Bedd., Icon. t. 38. 1868 - 1874. [*Nettlingam*]

Tall tree. Leaves narrowly lanceolate. Flowers in fascicles or shortly pedunculate umbels. Sepals 3, triangular. Petals 6, biseriate, linear. Stamens many. Berries black; seeds ovoid, shiny, black.

Fl. & Fr.: April - June.

Distrib.: India and Sri Lanka. Cultivated throughout Tamil Nadu.

Specimens examined: (Total 10) VB 2390.

Artabotrys hexapetalus (L. f.) Bhandari and *Cananga odorata* (Lam.) Hook. f. & Thomson are sometimes cultivated for the fragrant flowers.

2. MENISPERMACEAE

Key to the genera

- | | |
|---|-----------------------|
| 1a. Flowers 4-merous | 1. <i>Cissampelos</i> |
| b. Flowers 3-merous | 2 |
| 2a. Male inflorescence in panicles; drupes oblong or elliptic | 2. <i>Coccoloba</i> |
| b. Male inflorescence in pseudoracemes; drupes globose | 3. <i>Tinospora</i> |

1. *Cissampelos* L.

Tropics, 19 species and one in India.

C. pareira L. var. *hirsuta* (Buch.-Ham. ex DC.) Forman in Kew Bull. 22: 356. 1968; IFTC t. 13. 1982; FTC 3: 18. 1983; FTN 1: 7. 1983; FI 1: 317. 1993. *C. hirsuta* Buch.-Ham. ex DC., Syst. Nat. 1: 535. 1817. *C. pareira* L., Sp. Pl. 1031. 1753, p.p.; FBI 1: 103. 1872; FPM 30. 1915. [*Appatta*]

Climbing shrub. Leaves peltate, orbicular or reniform. Flowers minute, in subcorymbose cymes. Male flowers: sepals and petals 4, obovate; stamens 4, connate. Female flowers: sepal and petal one each, obovate; carpel one; ovary obovoid; drupes obovoid, reddish.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles.

Distrib.: Bangladesh to Malesia, Bhutan, India, Nepal and Pakistan. TN: All districts. GM: Once collected at Rameswaram. Appears rare here.

Not collected on any island. The small red drupes of this wide-spread species must be attractive to birds (Ridley, 1930). Its absence from islands is intriguing.

Uses: Leaves and roots are used as an antidote for snakebite and scorpion sting and for curing cough, dyspepsia, dropsy and diarrhoea. Fibre from stem is used for making ropes. Root is an ingredient in the Ayurvedic oil, 'Narayana taila', used in consumption, emaciation in children, rheumatism etc. (Tripathi & al., 1996).

Specimens examined: (Total 70) VB 1916.

2. *Cocculus* DC. nom. cons.

Tropics and subtropics excluding S. America and Australia, 11 species, 5 in India, 3 in Tamil Nadu and one in GM.

C. hirsutus (L.) Diels in Engl., Pflanzenr. IV. 94. 46: 236. 1910; FPM 29. 1915; IFTC t. 13. 1982; FTC 3: 19. 1983; FTN 1: 7. 1983; FI 1: 318. 1993. *Menispermum hirsutum* L., Sp. Pl. 341. 1753. *Cocculus villosus* (Lam.) DC., Syst. Nat. 1: 525. 1817; FBI 1: 101. 1872. *Menispermum villosum* Lam., Encycl. 4: 97. 1797. [*Kattukodi*]

Climbing shrub. Leaves peltate, ovate-oblong. Panicles axillary. Male flowers: sepals 6, biseriate, oblong-lanceolate or ovate; petals 6, obovate, emarginate; stamens 6. Female flowers: sepals and petals as in the male; carpels 3; ovary oblong or elliptic; drupes reddish purple.

Fl. & Fr.: July - March.

Habitat: Sandy soil, usually on *Acacia planifrons* trees.

Distrib.: Trop. Africa and Asia. Throughout India. TN: Almost all districts. GM: Mainland coast, not common. Earlier collected at Rameswaram at the northern end and Anjukramam in Kanyakumari, at the southern end. Frequent on islands; collected on Kurusadai, Nallathanni and Pumarichan Islands.

Berries of *Cocculus* are eaten and carried internally by birds (Carlquist, 1974). Berries being reddish purple they are likely to be dispersed by birds. But then, it is found only on a few islands.

Uses: Juice of the leaves when mixed with water forms a jelly which is taken as a cooling medicine for gonorrhoea and used externally for eczema, prurigo and impetigo. Root is used as a laxative and demulcent, and used with other ingredients for rheumatism and stomach-ache in children.

Specimens examined: (Total 60) ANH 61562; VB 1983, 1917, 2179; Ku Is. PD 100604; Nt Is. PD 101628; Pu Is. PD & PU 106842.

3. *Tinospora* Miers

Old World tropics, 32 species, 4 in India and one in Tamil Nadu.

T. cordifolia (Willd.) Miers ex Hook. f. & Thomson, Fl. Ind. 184. 1855 & in FBI 1: 97. 1872; FPM 26. 1915; IFTC t. 19. 1982; FTC 3: 23. 1983; FTN 1: 8. 1983; FI 1: 347. 1993. *Menispermum cordifolium* Willd., Sp. Pl. 4: 826. 1806. *Cocculus cordifolius* (Willd.) DC., Syst. Nat. 1: 517. 1817; Wight, Icon. t. 485 & 486. 1841. [*Cheenthil*]

Woody climber with aerial roots; bark corky. Leaves peltate, cordate. Racemes axillary. Male flowers fascicled; sepals 6; outer 3 ovate; inner 3 elliptic; petals 6, obovate, yellowish; stamens 6. Female flower solitary; sepals 6, lanceolate; petals 6, spatulate; staminodes 6; carpels 3; ovary ellipsoid; drupes globose, reddish.

Fl. & Fr.: Sept. - March.

Habitat: On bushes in scrub jungles, with *Cissus quadrangularis*, *Euphorbia antiquorum* etc.

Distrib.: Bangladesh, India, Myanmar and Sri Lanka. TN: All districts. GM: Collected at Rameswaram, and mainland coast at Kootapuli in Tirunelveli and Anjukramam in Kanyakumari.

Not collected on any island. The reddish drupes are likely to be picked up by birds. Perhaps there are certain discouraging insular factors which need investigations.

Uses: Dried stem powder mixed with honey is used to treat cough. It is an ingredient in 'Kaya kalpa', the rejuvenating elixir of the Ayurveda. An ingredient in the herbal product 'Bonnisan' given to babies for digestion (Anon., 1996a). Also an ingredient in the Ayurvedic preparations, 'Gintona' capsules, used as an immunomodulator, 'Mustang' used in sexual dysfunction, 'Vigorex-Sf' used in sexual debility, and 'Deltaviron', 'Lukol', 'Mendo-sarsal' and 'Virilex' used as antiageing (Tripathi & al., 1996).

Specimens examined: (Total 32) ANH 61561; KSK 102861; VB 1914, 1982.

3. NELUMBONACEAE

Nelumbo Adans.

Tropics, 2 species and one in India.

N. nucifera Gaertn., Fruct. Sem. Pl. 1: 73, t. 9. 1788; FTC 3: 26. 1983; FTN 1: 9. 1983; FI 1: 441. 1993. *Nymphaea nelumbo* L., Sp. Pl. 51. 1753. *Nelumbium speciosum* Willd., Sp. Pl. 2: 1258. 1799; IIB 1: t. 9. 1840; FBI 1: 116. 1872; FPM 34. 1915. [*Chenthamarai*]

Aquatic, rhizomatous herb. Leaves peltate, orbicular. Flower solitary. Sepals 4 or 5, ovate or elliptic. Petals many, elliptic, rose. Anthers with clavate appendages. Receptacle 2 - 4 cm across, spongy. Carpels many, oblong. Fruits nut-like, 1-seeded.

Fl. & Fr.: Aug. - April.

Habitat: Stagnant ponds and lakes.

Distrib.: S. and E. Asia to far E. Russia and to N. Australia and India. TN: All districts. GM: Once collected at Athur in Tuticorin. Earlier collected at Thiruchendur, also at Tuticorin.

Uses: Leaves used by small-time butchers, and flower and fruit vendors for packing. Cultivated on large scale for this purpose. Rhizomes and petioles are cooked and eaten. Flowers are offered to Hindu gods. Seeds are roasted and the kernels eaten. Seeds are also used in dry flower bouquets.

It is an ingredient in the Ayurvedic preparation, 'Vinomyn forte', used as an antiageing (Tripathi & al., 1996).

Specimens examined: (Total 16) KMS 13720; PD & PU 107272.

4. NYMPHAEACEAE

Nymphaea L. nom. cons.

Cosmopolitan, ca 35 species, 6 in India and 2 in Tamil Nadu.

Key to the species

- | | | |
|-----|--|------------------------|
| 1a. | Leaves glabrous beneath; petals bluish-purple; stamens with sterile appendages..... | 1. N. nouchali |
| b. | Leaves pubescent beneath, petals rose-white; stamens without sterile appendages..... | 2. N. pubescens |

1. *N. nouchali* Burm. f., Fl. Indica 120. 1768; IFTC t 22. 1982; FTC 3: 27. 1983; FTN 1: 9. 1983; FI 1: 430. 1993. *N. stellata* Willd., Sp. Pl. 2: 1153. 1799; Wight, Icon. t. 178. 1839; FBI 1: 114. 1872 incl. vars.; FPM 43. 1915. [*Karuneythal*]

Aquatic herb. Leaves elliptic-orbicular, deeply cleft. Flower solitary, fragrant. Sepals 4, ovate, cucullate. Petals lanceolate-oblong. Stamens petaloid. Ovary 8-16-loculed. Berries globose, 1.5 - 4 cm; seeds ellipsoid, reticulate.

Fl. & Fr.: Aug. - Feb.

Habitat: Stagnant ponds and tanks.

Distrib.: SE. Asia and throughout Indian plains. TN: All districts. GM: Collected at Suchindram in Kanyakumari, not far away from seashore. It may occur on mainland coast.

Uses: Rhizomes and peduncles used as a vegetable; seeds on frying are eaten as puffed grain.

Specimens examined: (Total 28) ANH 49534.

2. *N. pubescens* Willd., Sp. Pl. 2: 1154. 1799; FPM 43. 1915; FTN 1: 9. 1983; FI 1: 431. 1993. *N. lotus* L. var. *pubescens* (Willd.) Hook. f. & Thomson, Fl. Ind. 241. 1855 & in FBI 1: 114. 1872. *N. lotus* auct. non L. 1753; FBI 1: 114. 1872, p.p. [*Allithamarai*]

Aquatic herb. Leaves broadly ovate-elliptic or reniform. Flower solitary, fragrant. Sepals 4, ovate-lanceolate or elliptic-oblong. Petals linear-oblong. Stamens petaloid. Ovary 13 - 22-loculed. Berries globose, 2.5 - 4 cm; seeds ellipsoid, papillose.

Fl. & Fr.: Aug. - Jan.

Habitat: Stagnant ponds and tanks.

Distrib.: SE. Asia and throughout Indian plains. TN: All districts. GM: Mainland coast in Kanyakumari and Tuticorin, frequent.

Uses: All parts of the plant eaten in times of scarcity; starchy rhizomes eaten raw or boiled. Flowering stalks and unripe fruits used as a vegetable. Rhizome demulcent, used in dysentery and dyspepsia. Seeds employed in cutaneous diseases.

Specimens examined: (Total 53) ANH 49539; PD 104622.

5. PAPAVERACEAE

Argemone L.

N. and S. America, W. Indies and Hawaii, 28 species, 3 in India and one in Tamil Nadu.

A. mexicana L., Sp. Pl. 508. 1753; IIB 1: t. 11. 1840; FBI 1: 117. 1872; FPM 35. 1915; FTC 3: 29. 1983; FTN 1: 9. 1983; FI 2: 2. 1993. [*Pirama thandu*]

Prickly, glaucous herb. Leaves sessile, semiamplexicaul, elliptic-obovate, dentate. Flower solitary, terminal. Sepals 2, obovate-elliptic. Petals 4 - 6, obovate, golden yellow. Capsules oblong, spinous; seeds brownish black.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands and roadsides, with *Alternanthera pungens*, *Cassia auriculata* etc.

Distrib.: Native of Trop. America, naturalized throughout India. TN: All districts. GM: Throughout mainland coast.

Uses: Seeds are poisonous when taken in large quantities. The yellowish fresh sap of the plant is reportedly useful in eye infections, eczema etc. Seed oil is used in treating ulcers and also in burning wounds.

Specimens examined: (Total 51) KSK 102844, 102964; PD 101174.

6. CAPPARACEAE

Key to the genera

- | | | |
|-----|-------------------------------------|-------------|
| 1a | Armed shrubs | 2. Capparis |
| b. | Unarmed shrubs or trees | 2 |
| 2a. | Sepals free; stamens 4 | 1. Cadaba |
| b. | Sepals fused; stamens 20 - 30 | 3. Maerua |

1. Cadaba Forssk.

Old World tropics, ca 30 species, 2 in India and Tamil Nadu and one in GM.

C. fruticosa (L.) Druce in Bot. Exch. Club Soc. Brit. Isles 3: 415. 1914; FTC 3: 37. 1983; FTN 1: 12. 1983; FI 2: 250. 1993. *Cleome fruticosa* L., Sp. Pl. 671. 1753. *Cadaba indica* Lam., Encycl. 1: 544. 1785; FBI 1: 172. 1872; FPM 43. 1915. [*Kattu agathi*]

Straggling shrub. Leaves elliptic, rounded, entire, acute or obtuse. Inflorescence corymbose; flowers on one side. Sepals 4, biseriate; outer 2 ovate; inner 2 elliptic-oblong. Petals 4, clawed, creamy white; limb elliptic-oblong. Stamens 4. Gynophore ca 2 cm long. Capsules oblong.

Fl. & Fr.: Almost throughout the year.

Habitat: Among bushes, on sandy soil and in dry localities, with *Jatropha glandulifera*, *Salvadora persica* etc.

Distrib.: Bangladesh, Myanmar, Pakistan, Sri Lanka and extending to Africa and Arabia, almost throughout India. TN: Most districts. GM: Mainland coast, less frequent. Rare on islands. Collected only on Karaichalli Island. Its dispersal deserves further studies.

Specimens examined: (Total 140) KSK 103360; PD & PU 106911; Kc Is. PD & PU 107308.

2. Capparis L.

Pantropical, ca 240 species, 29 in India, 16 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|-------------------------|
| 1a. Gynophore 0.5 - 0.6 cm long, puberulous towards base;
berries globose, yellowish..... | 2. <i>C. septaria</i> |
| b. Gynophore 1.8 - 5.5 cm long, glabrous; berries globose, ellipsoid
or ovoid, not yellow | 2 |
| 2a. Leaves entire; gynophore 3 - 5.5 cm long; berries globose,
ca 3 cm, reddish | 3. <i>C. zeylanica</i> |
| b. Leaves recurved; gynophore 1.8 - 2.5 cm long; berries ellipsoid or
ovoid, 3 - 4.5 cm long, orange to red-purple | 1. <i>C. brevispina</i> |

1. *C. brevispina* DC., Prodr. 1: 246. 1824; Wight, Icon. t. 126. 1839; FPM 45. 1915; FTC 3: 39. 1983; FTN 1: 13. 1983; FI 2: 260. 1993. *C. zeylanica* auct. non L. 1762; FBI 1: 174. 1872, p.p.

Shrub; spines straight or curved. Leaves elliptic-oblong, cuneate, obtuse or subacute. Flower solitary, axillary. Sepals 4, subequal, ovate or orbicular. Petals 4, oblong or obovate, creamy or white. Stamens 25 - 35. Berries apiculate; seeds reniform.

Fl. & Fr.: Feb. - Sept.

Habitat: Scrub jungles of low elevations and coastal belts.

Distrib.: India and Sri Lanka. TN: Chengalpattu, Pudukkottai, Ramanathapuram, Salem, S. Arcot, Tiruchirapalli and Tirunelveli. GM: Apparently rare; earlier once collected at Rameswaram.

Specimens examined: (Total 44) TAR 1525(CAL).

2. *C. sepiaria* L., Syst. Nat. ed. 10, 2: 1071. 1759; FBI 1: 177. 1872; FPM 46. 1915; FTC 3: 43. 1983; FTN 1: 14. 1983; FI 2: 289. 1993. *C. incanescens* DC., Prodr. 1: 247. 1824; Wight in Hooker's Icon. Pl. t. 123. 1837. [*Karunjurai*]

Erect or climbing shrub; stem zig-zag with recurved spines. Leaves ovate-elliptic or oblong, rounded, entire, rounded or retuse. Corymbs many-flowered. Sepals 4, subequal, ovate or suborbicular. Petals 4, obovate or oblong, white. Stamens 25 - 40. Berries ca 1.5 cm; seeds discoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Among bushes on road sides and in scrub jungles, with *Pleurostylia opposita*, *Ziziphus mauritiana* etc.

Distrib.: Africa to Australia, Trop. Asia, almost throughout India. TN: All districts. GM: Less frequent on mainland coast and rare on islands. Collected on Karaichalli and Pumarichan Islands, located at the two extremes of the biosphere reserve.

Use: Berries edible.

Specimens examined: (Total 110) PD 100435; VB 2180; Kc Is. PD & PU 107307; Pu Is. PD 99743, PD & PU 106831.

3. *C. zeylanica* L., Sp. Pl. ed. 2, 1: 720. 1762; FPM 46. 1915; FTC 3: 43. 1983; FTN 1: 14. 1983; FI 2: 298. 1993. *C. horrida* L.f., Suppl. Pl. 264. 1782; Wight, Icon. t. 173. 1839; FBI 1: 178. 1872. [*Adondai*]

Climbing shrub; spines recurved. Leaves ovate-elliptic, cuneate, entire, acute or obtuse. Flowers 2 - 6, in supraaxillary rows. Sepals 4, subequal, elliptic-oblong or orbicular. Petals 4, oblong, white with red spots. Stamens 30 - 50. Seeds reniform.

Fl. & Fr.: June - Dec.

Habitat: Among bushes on sandy soil and in scrub jungles, with *Premna serratifolia*, *Salvadora persica* etc.

Distrib.: Indomalesia. TN: All districts. GM: Rare. Once collected on Muiyal Island.

Uses: Fruits edible. Unripe fruits are pickled. Pulverised fruits mixed with berries of *Capparis moonii* are reportedly efficacious in treating jaundice, liver ailments and even tuberculosis.

Specimens examined: (Total 113) VB 2330; Mu Is. PD 100321.

Seeds or fruits of *Capparis* are probably resistant to seawater but unable to float for long periods (Carlquist, 1974) and thus likely to have arrived on the islands through rafting. As the fruits are edible humans may also be involved.

3. *Maerua* Forssk.

Tropics, S. Africa to India, ca 50 species, 2 in India.

Key to the species

- | | |
|--|---------------------------|
| 1a. Tree; leaves 3-foliolate; petals absent; berries oblong | 1. <i>M. apetala</i> |
| b. Shrub; leaves simple; petals present; berries cylindrical or moniliform | 2. <i>M. oblongifolia</i> |

1. *M. apetala* (Roth) M. Jacobs in *Blumea* 12: 207. 1963; FTN 1: 15. 1983; FI 2: 329. 1993. *Capparis apetala* Roth, Nov. Pl. Sp. 238. 1821. *Niebuhria linearis* DC., Prodr. 1: 244. 1824; Wight, Icon. t. 174. 1839; FBI 1: 171. 1872. *N. apetala* (Roth) Dunn in Gamble, Fl. Madras 41. 1915. (Fig. 1)

Leaflets ovate-elliptic, truncate or tapering, entire, acute. Racemes terminal, 7-12-flowered, fragrant. Sepals 4, basally united, ovate. Berries 1.5 - 1.8 cm long, 1-seeded; seeds globose, muricate.

Fl. & Fr.: Jan. - Aug.

Habitat: Scrub jungles.

Distrib.: India (Tamil Nadu and Andhra Pradesh). Endemic. TN: Kanyakumari, Madurai, Ramanathapuram, Tiruchirappalli and Tirunelveli. GM: Rare, earlier collected at Vattakottai in Kanyakumari. There is only one tree on the Gulf of Mannar Coast at Vattakottai. Even in the interior it appears extremely rare. Sometimes cultivated near temples.

Its reproductive biology and seed dispersal need further studies.

Specimens examined: (Total 14) ANH 53302, 49502.

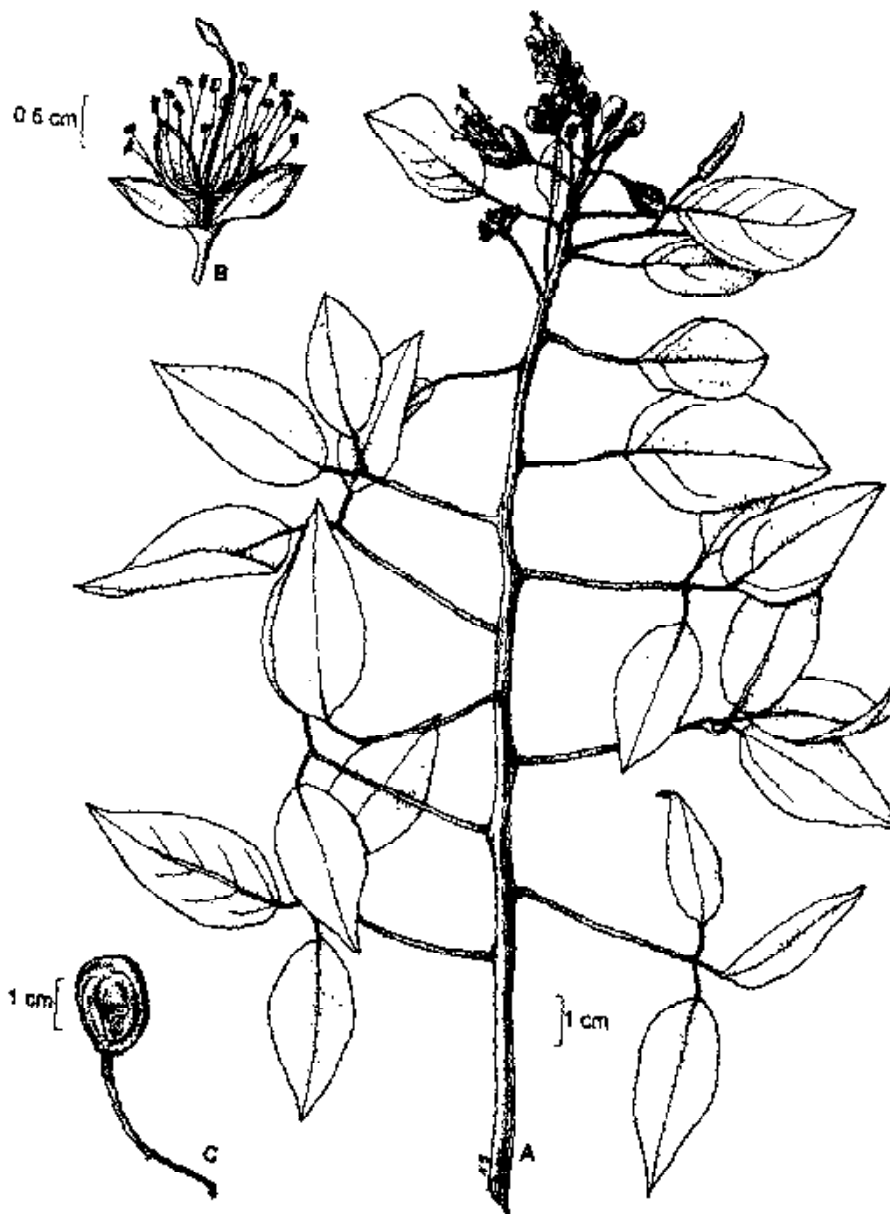


Fig 1(A - C). *Murraya spetala* (Roth) M Jacobs
A. Twig B. Flower C. Fruit

2. *M. oblongifolia* (Forssk.) A. Rich. in Guill. & Perr., Fl. Seneg. Tent. 1: 32, t. 5. 1831; FTC 3: 51. 1983; FTN 1: 15. 1983; FI 2: 331. 1993. *Capparis oblongifolia* Forssk., Fl. Aegypt.-Arab. 99. 1775. *Maerua arenaria* (DC.) Hook. f. & Thomson in Fl. Brit. India 1: 171. 1872; FPM 30. 1915. *Niebuhreria arenaria* DC., Prodr. 1: 244. 1824. [*Mulmurandai*]

Scandent shrub. Leaves elliptic-oblong, rounded, entire, obtuse or retuse, mucronate. Corymbs axillary. Flowers 3 - 6 together. Sepals 4, petaloid. Petals 4, ovate, greenish yellow. Berries 5 - 12 cm long; seeds globose, minutely echinate-tuberculate.

Fl. & Fr.: Almost throughout the year.

Habitat: Among bushes, with *Anisomeles malabarica*, *Lantana camara* etc.

Distrib.: Africa, Arabia, India, Pakistan, Sri Lanka and Thailand. TN: All districts. GM: Rare. Once collected on mainland coast near Vattakottai in Kanyakumari.

Birds and squirrels are said to eat the fruits and disperse the seeds. However, this plant has not reached any island so far.

Use: Leaves used as a fodder.

Specimens examined: (Total 68) KSK 102790.

7. CLEOMACEAE

Cleome L.

Tropics and subtropics, ca 150 species, 15 in India, 9 in Tamil Nadu and 4 in GM.

Key to the species

- | | |
|---|---------------------------|
| 1a. Plant prostrate, prickly | 2. <i>C. aspera</i> |
| b. Plants erect, not prickly | 2 |
| 2a. Leaflets filiform; seeds suborbicular | 1. <i>C. angustifolia</i> |
| b. Leaflets elliptic-oblong or obovate-elliptic; seeds reniform | 3 |
| 3a. Plant not viscid; petals white or creamy | 3. <i>C. gynandra</i> |
| b. Plant viscid; petals yellow | 4. <i>C. viscosa</i> |

1. *C. angustifolia* Forssk., Fl. Aegypt.-Arab. 120. 1775; FTN 1: 15. 1983; FI 2: 302. 1993. *C. tenella* L.f., Suppl. Pl. 300. 1782; FBI 1: 169. 1872; FPM 41. 1915; FTC 3: 49. 1983. [*Naikadugu*]

Annual, erect herb. Leaves 3-foliolate; leaflets sessile, entire, acute. Flower solitary, axillary. Sepals 4, elliptic. Petals 4, elliptic-oblong, yellowish purple. Stamens 6. Capsules linear, 2 - 3 cm long; seeds rugulose.

Fl. & Fr.: July - Jan.

Habitat: On loose sandy soil, in shades of trees of *Acacia* spp. and on railway tracks, with *Alysicarpus monilifer*, *Hedyotis graminifolia*, *Leucas aspera* etc.

Distrib.: Sri Lanka, extending to Arabia and Africa, and India. TN: Kanyakumari, Ramanathapuram, Salem, S. Arcot and Tirunelveli. GM: Mainland coast, not common.

Specimens examined: (Total 13) KSK 103420; PD 100417; PD & PU 106512.

2. *C. aspera* J. König ex DC., Prodr. 1: 241. 1824; Wight, Icon. t. 287. 1840; FBI 1: 169. 1872; FPM 41. 1915; FTC 3: 45. 1983; FTN 1: 15. 1983; FIFTC t. 10. 1988; FI 2: 303. 1993.

Annual herb. Leaves 3-foliolate below, simple above; leaflets oblong-lanceolate, cuneate, entire, obtuse. Flower solitary, axillary. Sepals 4, linear-lanceolate. Petals 4, elliptic or obovate, pinkish yellow. Stamens 6. Capsules linear, 1 - 2.5 cm long, beaked, torulose; seeds suborbicular, concentrically ribbed.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Cassia pumila*, *Crotalaria angulata*, *C. globosa* and *Rothia indica*.

Distrib.: India and Sri Lanka. TN: Coimbatore, Dharmapuri, Pudukkottai, Ramanathapuram, Salem, S. Arcot and Tuticorin. GM: Mainland coast, rare. Once collected at Tuticorin port. Earlier collected in Ramanathapuram. Addition to MH from Tuticorin Distr.

Specimens examined: (Total 63) PD & PU 107363; VB 10230.

3. *C. gynandra* L., Sp. Pl. 671. 1753; IFTC t. 34. 1982; FTC 3: 46. 1983; FTN 1: 16. 1983; FI 2: 309. 1993. *Gynandropsis pentaphylla* (L.) DC., Prodr. 1: 238. 1824; FBI 1: 171. 1872; FPM 40. 1915. *Cleome pentaphylla* L., Sp. Pl. ed. 2, 2: 983. 1762. [*Kattu kadugu*, *Thaivalai*]

Annual, erect, foetid herb. Leaves 3 - 5-foliolate; leaflets obovate-elliptic, cuneate, entire or denticulate, acute. Flowers in corymbs. Sepals 4, ovate-elliptic. Petals 4, obovate-oblong, subequal. Androphore ca 1.25 mm long. Stamens 6. Gynophore to 2 cm long. Capsules cylindrical, 5 - 10 cm long, striate, sticky-glandular; seeds suborbicular, concentrically striate.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and roadsides, with *Asystasia gangetica*, *Euphorbia rosea*, *E. thymifolia* etc.

Distrib.: Pantropical, throughout India. TN: All districts. GM: Mainland coast, common. Also collected on Karaichalli Island.

Uses: Tender leaves are used as herbage and as a vegetable after boiling and salting. Leaves also used in treating rheumatism and leafjuice for headache by applying on forehead and dropping into nostrils. Seeds anthelmintic. Seed oil is efficacious in killing lice.

Specimens examined: (Total 67) KSK 103334; Kc Is. PD & PU 107294.

4. *C. viscosa* L., Sp. Pl. 672. 1753; Wight, Icon. t. 2. 1838; FBI 1: 170. 1872; FPM 41. 1915; FTC 3: 49. 1983; FTN 1: 16. 1983; FIFTC t. 15. 1988; FI 2: 317. 1993. [*Naikadugu*]

Annual, erect herb. Leaves 3 - 5-foliolate; leaflets subequal, cuneate, entire, obtuse. Flowers solitary or in racemes. Sepals 4, oblong-lanceolate. Petals 4, subequal, obovate or oblanceolate, yellow. Stamens 8. Capsules linear-oblong, 5 - 7 cm long, striate; seeds reniform, transversely ridged.

Fl. & Fr.: Throughout the year.

Habitat: Road sides and wastelands, with *Hedyotis puberula*, *Phyllanthus madraspatensis* etc.

Distrib.: Pantropical. TN: All districts. GM: Common on mainland coast and Anaipar, Karaichalli, Pullivasal and Thalaiyari Islands.

Specimens examined: (Total 117) VB 1120, 1151; An Is. KSK 102379; Kc Is. PD 102094; Pu Is. PD 99750; Th Is. PD 101523.

The capsules of *Cleome* may float and get transported to the islands. Humans may also be involved.

8. VIOLACEAE

Hybanthus Jacq.

Tropics and subtropics, ca 150 species, 2 in India and Tamil Nadu and one in GM.

H. enneaspermus (L.) F. Muell., Fragm. 10: 81. 1876; FTC 3: 53. 1983; FTN 1: 16. 1983; FI 2: 343. 1993. *Viola enneasperma* L., Sp. Pl. 937. 1753. *Ionidium suffruticosum* (L.)

Ging. in DC., Prodr. 1: 311. 1824; Wight, Icon. t. 308. 1840; FBI 1: 185. 1872; FPM 49. 1915. *Viola suffruticosa* L., Sp. Pl. 937. 1753. [*Orilai thamarai*]

Annual, erect herb. Leaves sessile, linear-lanceolate or elliptic lanceolate, cuneate, serrate, acute or subobtus. Flower solitary, axillary. Sepals narrowly ovate-lanceolate. Petals unequal; upper 2 elliptic, acuminate; laterals oblong-ovate, narrowed above, acute or subobtus; lower one suborbicular. Stamens 5. Capsules globose, 3-lobed; seeds ovoid-ellipsoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Roadsides, railway tracks and wastelands, with *Mollugo cerviana*, *Portulaca* spp. and *Spermacoce hispida*.

Distrib.: Tropics. TN: All districts. GM: Mainland coast, frequent.

Uses: Plant diuretic and demulcent. Decoction or powder of the whole plant taken to improve memory and vitality. A shampoo made from the plant removes dandruff.

Specimens examined: (Total 100) KSK 102919; PD 100422; PD & PU 107254; VB 1128, 1423.

9. POLYGALACEAE

Polygala L.

Cosmopolitan, ca 500 species, 27 in India, 16 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|----------------------------|
| 1a. Caruncle with 2 membranous winged appendages, almost as long as seeds | 2. <i>P. javana</i> |
| b. Caruncle with 2 or 3 appendages, neither membranous nor winged, not as long as seeds | 2 |
| 2a. Inner sepals hyaline along margins; bundles of appendages on mid corolla lobe 2..... | 1. <i>P. erioptera</i> |
| b. Inner sepals not hyaline along margins; bundles of appendages on mid corolla lobe 3 | 3. <i>P. rosularifolia</i> |

1. *P. erioptera* DC., Prodr. 1: 326. 1824; FBI 1: 203.1872; FPM 59. 1915; PIAS 90: 121. 1981; FTC 3: 68. 1983; FTN 1: 21. 1983; F12: 467. 1993. *P. erioptera* DC. var. *vahliana* (DC.) Chodat in Mem. Soc. Phys. Genève 31: 281. 1893. *P. vahliana* DC., Prodr. 1: 326. 1824.

Herb. Leaves oblong-linear, obtuse. Flower solitary. Sepals 5; outer 3 ovate-lanceolate; inner 2 elliptic-obovate. Corolla pink, 3-lobed; lateral lobes deltoid; midlobe keeled. Capsules oblong-ellipsoid, notched; seeds oblong, densely sericeous, blackish; caruncle galeate with 3 appendages.

Fl. & Fr.: Nov. - Feb.

Habitat: Wastelands, with *Cynodon dactylon*, *Heliotropium scabrum* and *Portulaca quadrifida*.

Distrib.: Africa, India, Myanmar, Pakistan and W. Asia. TN: Most districts. GM: Mainland coast, less frequent.

Specimens examined: (Total 34) DD 86690; PD 100500; VB 1698.

2. *P. javana* DC., Prodr. 1: 327. 1824; FBI 1: 201. 1872; FPM 58. 1915; PIAS 90: 112. 1981; IFTC t. 44. 1982; FTC 3: 70. 1983; FTN 1: 21. 1983; RHFC 6: 304. 1987; FI 2: 467. 1993.

Herb. Leaves obovate, emarginate. Flower solitary. Sepals 5; outer 3 ovate-lanceolate to elliptic-oblong; inner 2 broadly ovate. Corolla yellow, 3-lobed; lateral lobes ovate or ovate-oblong; midlobe keeled with appendages. Capsules broadly oblong; seeds oblong, densely hairy.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Cleome viscosa*, *Enneapogon schimperianus* etc.

Distrib.: India, Malesia and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional. Collected at Vivekananthapuram in Kanyakumari. Common in the interior.

Specimens examined: (Total 60) SAM 106397; VB 1630, 2101.

3. *P. rosmarinifolia* Wight & Arn., Prodr. 37. 1834; FBI 1: 206. 1872; FPM 58. 1915; PIAS 90: 122. 1981; FTC 3: 72. 1983; FTN 1: 21. 1983; RHFC 6: 308. 1987; FI 2: 480. 1993.

Herb. Leaves linear, acute or acuminate. Flower solitary or 3 - 5 in axillary racemes. Sepals 5; outer 3 ovate or obovate; inner 2 petaloid, obliquely oblong-elliptic. Corolla yellow, 3-lobed; lateral lobes suborbicular to spatulate; midlobe keeled. Capsules obliquely obcordate; seeds oblong, sericeous; caruncle hood-shaped with 2 appendages.

Fl. & Fr.: Almost throughout the year.

Habitat: Road sides, wastelands and wet localities, with *Cyperus stoloniferus*, *Mollugo pentaphylla* etc.

Distrib.: Pantropical. TN: All districts. GM: Mainland coast, common.

Specimens examined: (Total 51) KSK 103487; PD 100419, 100536; PD & PU 104623.

10. CARYOPHYLLACEAE

Polycarpha Lam. nom. cons.

Tropics and subtropics, ca 50 species, 4 in India and Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|------------------------|
| 1a. Leaves radical and cauline, obovate-spatulate; flowers in spikes..... | 3. <i>P. spicata</i> |
| b. Leaves cauline only, linear-lanceolate; flowers in cymes..... | 2 |
| 2a. Plant densely white-tomentose to glabrescent; leaves apiculate; stipules more than 1.2 mm long; petals emarginate or obtuse at apex | 1. <i>P. corymbosa</i> |
| b. Plant glabrous; leaves not apiculate; stipules less than 1.2 mm long; petals acute-acuminate at apex | 2. <i>P. diffusa</i> |

1. *P. corymbosa* (L.) Lam., Tabl. Encycl. 2: 129. 1797; Wight, Icon. t. 712. 1841; FBI 1: 245. 1874; FPM 65. 1915; FTC 3: 77. 1983; FTN 1: 23. 1983; FI 2: 549. 1993. *Achyranthes corymbosa* L., Sp. Pl. 205. 1753. [*Nilasadachi*]

Decumbent or erect herb. Leaves pseudovercillate. Flowers in dichasial cymes. Sepals ovate. Petals pinkish brown. Capsules ovoid or ellipsoid; seeds subreniform to reniform, striate to striate-reticulate.

Key to the varieties

- | | |
|--|-----------------------------|
| 1a. Petals less than half as long as sepals, elliptic-obovate, emarginate; seeds reniform, striate | 1.1 var. <i>corymbosa</i> |
| b. Petals 3/4 as long as sepals, linear-oblong, obtuse; seeds subreniform, striate-reticulate | 1.2 var. <i>longipetala</i> |

1.1. var. *corymbosa*

Fl. & Fr.: June - Feb.

Habitat: Wastelands and open places, with *Cassia absus*, *Chrysopogon fulvus* and *Crotalaria angulata*.

Distrib.: Pantropical. TN: All districts. GM: Mainland coast, frequent. Collected at Tuticorin port and near Periyathalai.

Uses: Plants are reportedly grazed by cattle. Leaves are pounded and applied as poultice, warm or cold, over boils and inflammatory swellings; also given in the form of pills with molasses for jaundice.

Specimens examined: (Total 150) PD & PU 107370, 107231; VB 1246, 1752.

1. *2. var. longipetala* S.R. Sriniv. & Narasimh. in J. Econ. Tax. Bot. 10: 347, ff. 1 & 2 a - c, 1987; FI 2: 551. 1993.

Fl. & Fr.: Aug. - March.

Habitat: Wastelands.

Distrib.: India (Andhra Pradesh and Tamil Nadu). Endemic. TN: Chengalpattu, S. Arcot, Ramanathapuram and Tirunelveli. Earlier collected at Nazareth in Tuticorin and Sayalkudi in Ramanathapuram, a little away from the coast. Likely to occur on the coast.

Specimens examined: (Total 7) CAB 627; NCN 53173.

2. *P. diffusa* Wight ex Arn. in Ann. Nat. Hist. 3: 91. 1839; FBI 1: 245. 1874; FPM 65. 1915; FTN 1: 23. 1983; FI 2: 552. 1983; JSBC 17: 7. 2000 (Fig. 2)

Erect herb. Leaves pseudovercillate. Flowers in dichasial cymes. Sepals ovate, acute-acuminate. Petals oblong, pink. Capsules subglobose or ovoid, reddish brown; seeds reniform, smooth, pale brownish.

Fl. & Fr.: May - July.

Habitat: Red sandy soil, with *Bulbostylis barbata*, *Hedyotis* spp. and *Lopholepis ornithocephala*.

Distrib.: India (Tamil Nadu coast). Endemic. TN: Tuticorin. Earlier collected at Tuticorin and Nazareth. Now collected at Periathalai in Tuticorin.

The type was collected by Wight in 1835 at Tuticorin. Never once has it been collected here again. This seaport, a major one on the East Coast, which is highly industrilaised and continued to be burdened with industries has no coastal habitat worth the name now for the existence of such a lowly species. It was collected twice in the 1940s at Nazareth adjoining the Kudiraimoli Theri in Thiruchendur Taluk, then in Tirunelveli District, now in Tuticorin District. The Kudaraimoli Theri has an area of about 50 km² and extends up to the Gulf of Mannar Coast in some places. Other workers have re-collected in the Kudiraimoli Theri in

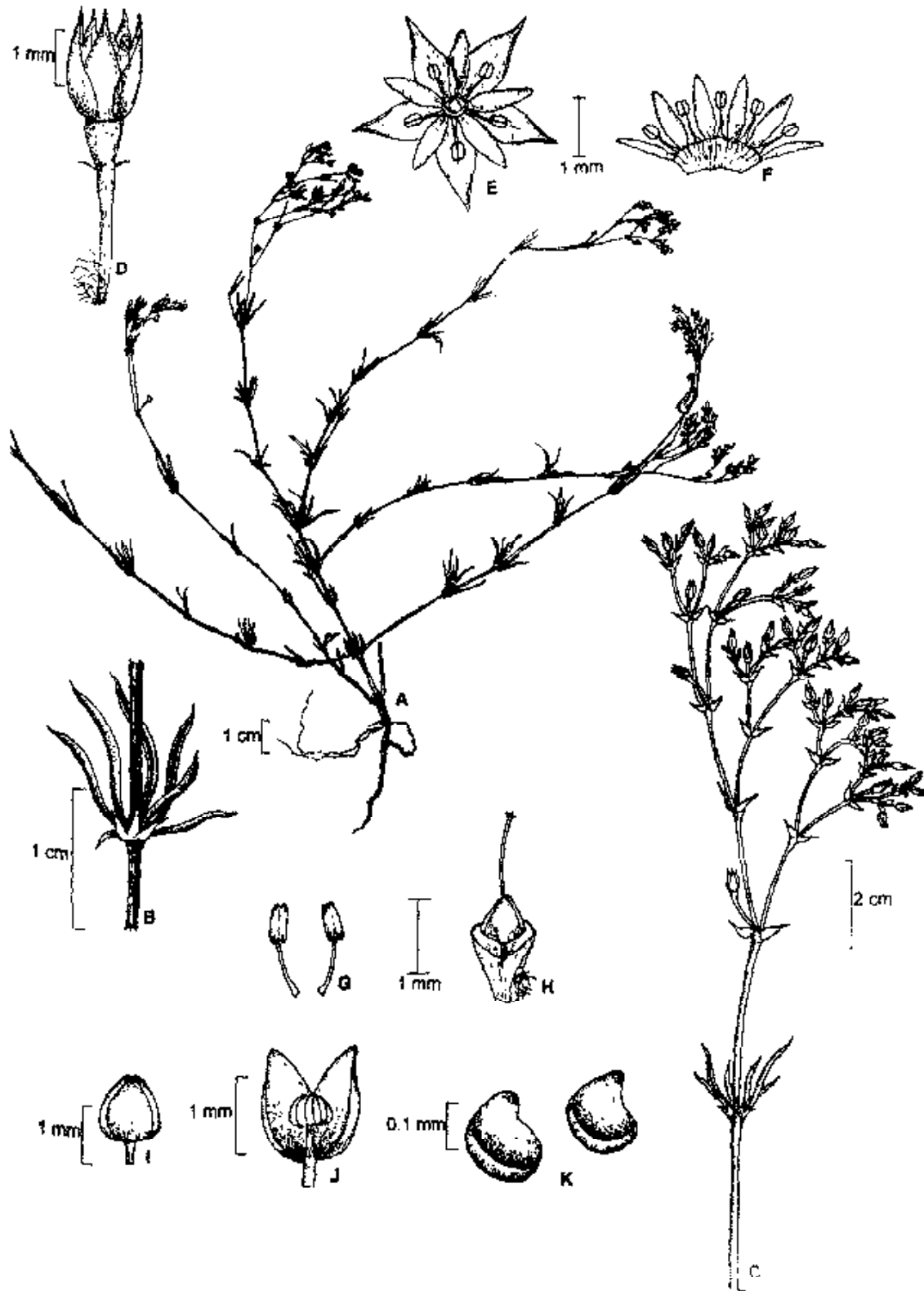


Fig. 2(A - K). *Polycarpha diffusa* Wight ex Arn
 A. Habit B. Node enlarged C. Inflorescence D. Flower E. Flower open F. Staminal ring
 G. Stamens H. Pistil I. Capsule J. Capsule open K. Seeds

the earlier collected locality of Nazareth, as well as two new localities, near Kayamoli, a little away from seacoast and Periathalai on the Gulf of Mannar Coast. The total present known area of occurrence of this species is about 400 km² and it occurs only on red sandy soil. In none of these places it is common except at Nazareth where it is a little frequent locally. However, with the recent settlement of refugees from Sri Lanka in the area in question who depend on the Theri forests for firewood and their voracious goats which browse on anything green, this narrow endemic certainly falls in the endangered category of the IUCN. Further monitoring of populations and studies on ecological factors that govern its successful/unsuccesful survival are called for.

Specimens examined: Wight, Cat. No. 2442 (E holotype, photocopy!; E isotype, photocopy!; K photo!); CAB 668; DD & SRR 20457; GJT & SAM 4 & 5; DJ 6.

3. *P. spicata* Wight ex Arn. in Ann. Nat. Hist. Soc. 3: 91. 1839; Wight, Icon. t. 510. 1841; FBI 1: 246. 1874; FPM 65. 1915; FTN 1: 23. 1983; FI 2: 549. 1993; JSBC 17: 10. 2000 (Fig. 3)

Erect herb. Leaves spatulate, attenuate, entire, acute. Flowers in long spikes. Sepals 5. Petals 5, hyaline, shorter than sepals. Capsules ellipsoid; seeds subreniform, shiny.

Fl. & Fr.: Oct. - Jan.

Habitat: Sandy seashores, with *Bulbostylis barbata* subsp. *pulchella*, *Dactyloctenium aegyptium*, *Pedaliium murex*, *Portulaca wightiana* and *Sauropus bacciformis*.

Distrib.: Australia, India (Gujarat and Tamil Nadu), Pakistan and W. Asia. TN: Ramanathapuram and Tuticorin. GM: Rare. Earlier collected on mainland coast at Tuticorin and Mandapam, and Kurusadai Island. Now collected on Appa, Nallathanni and Thalaiyari Islands. Found on rocky substation on Appa Island and sandy shores on Nallathanni and Thalaiyari Islands.

In India *P. spicata* has been reported only from coastal Gujarat and Tamil Nadu. In Tamil Nadu it occurs only on the Gulf of Mannar from Mandapam to Tuticorin which covers a distance of about 200 km and some islands. The type was collected by Wight in 1835 at Tuticorin. Thereafter it has never been re-collected there. Tuticorin is a major seaport in this part of the country and has become highly industrialised of late with disturbed or destroyed coastal habitats. In the 1940s it was collected twice on Kurusadai Island. But since then it has never been re-collected here too. It was once collected on the nearby mainland coast at Mandapam in the early 1970s but not again. This time around it was collected on Appa, Nallathanni and Thalaiyari Islands. On none of these islands was it common. Not more than 20 plants were seen in any given locality. The plants were sometimes so tiny that one is likely to miss them unless observant. Being a seasonal ephemeral which might appear soon after a few showers it is unlikely to be collected unless visited at that point in time. But nowhere was it common during any season may explain that it is a rare species. What makes

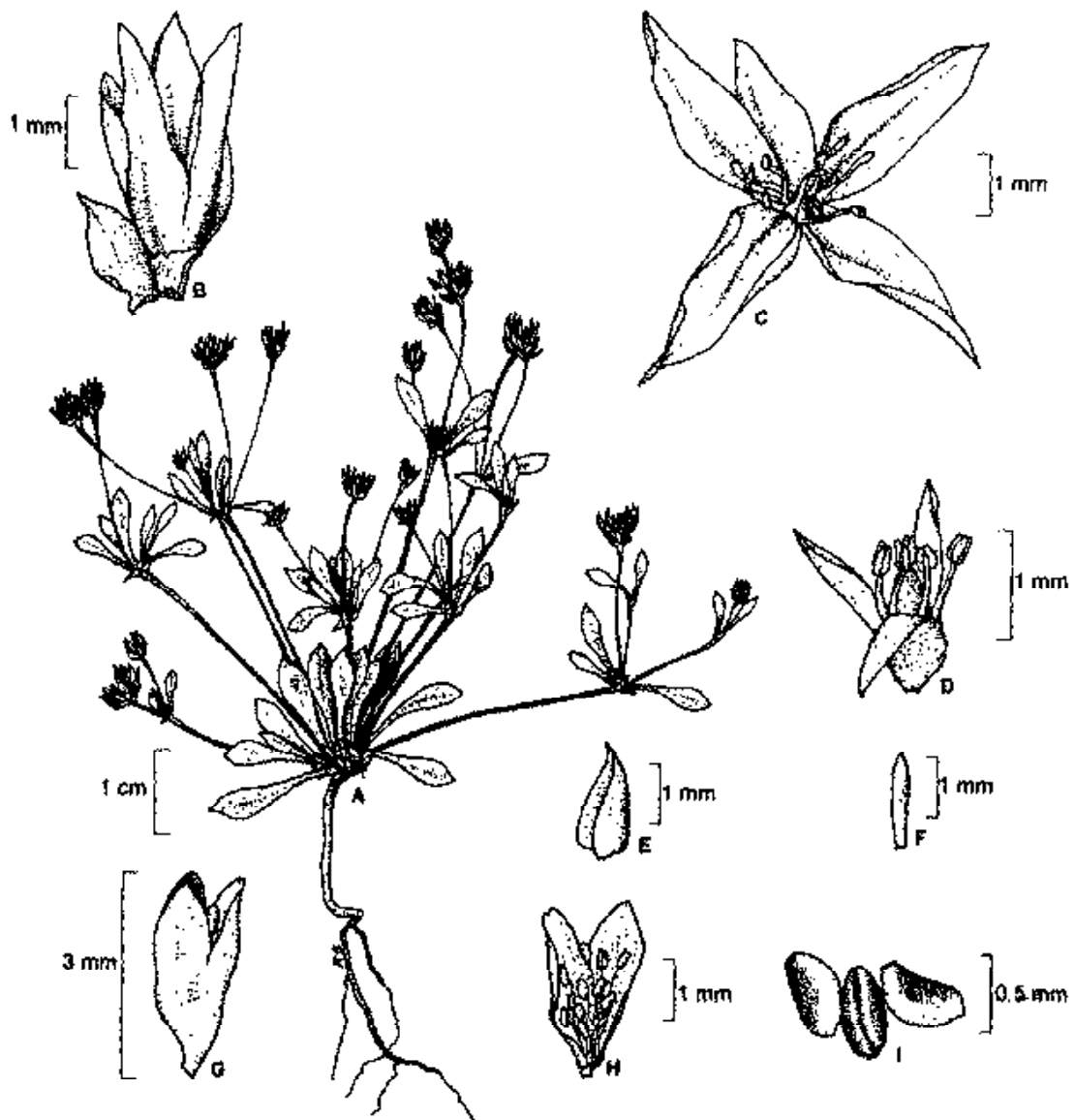


Fig. 3(A - I). *Polycarpaea spicata* Wight ex Arn
 A. Habit B. Flower C. Flower open D. Petals & stamens
 E. Bract F. Petal G. Capsule H. Capsule open I. Seeds

it rare despite it producing large number of flowers, fruits and seeds is not known. Seed predation might be one of the factors. Studies on other autecological factors including seed dispersal, germination, survival of seedlings etc. may throw light on its rarity.

Specimens examined: Wight, Cat. No. 2441 (E holotype, photocopy!; E isotype, photocopy!; K photo!); ARKS 9247 (CAL); Ap Is. PD 101576; Ku Is. DD & SRR 20562; DDS & JSR s.n.; Nt Is. PD & PU 106633; Th Is. PD 101482.

Seeds or fruits of the other Caryophyllaceous genera which stick to mud are dispersed by birds (Carlquist, 1974).

11. PORTULACACEAE

Portulaca L.

- | | |
|--|--|
| 1a. Perennial herb; root tuberous..... | 2. <i>P. pilosa</i> subsp. <i>pilosa</i> |
| b. Annual herb; root not tuberous..... | 2 |
| 2a. Nodes glabrous; leaves obovate-spatulate | 1. <i>P. oleracea</i> var. <i>oleracea</i> |
| b. Nodes with silvery hairs or scales; leaves linear-ovate
or ovate-lanceolate..... | 3 |
| 3a. Creeping herb; capsules conical..... | 3. <i>P. quadrifida</i> |
| b. Trailing or erect herb; capsules globose..... | 4. <i>P. wightiana</i> |

1. *P. oleracea* L., Sp. Pl. 445. 1753, var. *oleracea*: FBI 1: 246. 1874; FPM 66. 1915; FTC 3: 81. 1983; FTN 1: 24. 1983; FI 3: 4. 1993 [*Karikeerai*]

Succulent, prostrate herb; stem pinkish green. Leaves cuneate, entire, rounded. Flowers few, terminal. Sepals 2, lanceolate. Petals 4 or 5, obovate, yellow. Capsules ovoid; seeds reniform, tuberculate.

Fl. & Fr.: Throughout the year.

Habitat: Road sides and wastelands in wet localities, with *Cyperus stoloniferus*, *Mollugo pentaphylla* etc.

Distrib.: Pantropical, throughout India. TN: All districts. GM: Mainland coast, common.

Specimens examined: (Total 51) KSK 103487; PD 100419; PD & PU 104623; SAM 106329.

2. *P. pilosa* L., Sp. Pl. 445. 1753, subsp. *pilosa*: R. Geesink in Blumea 17: 294. 1969 & in Steenis, Fl. Males. Ser. 1, 7: 131. 1971; FTN 1: 24. 1983. *P. tuberosa* Roxb., Fl. Ind. 2: 464. 1824; FBI 1: 247. 1874; FPM 66. 1915; FTC 3: 83. 1983; FIFTC t. 26. 1988.

Succulent, erect herb. Leaves linear-lanceolate, cuneate, entire, acute. Flower solitary or few, terminal. Sepals 2, linear. Petals 5, obovate, yellow. Capsules obovoid; seeds obovoid, granular.

Fl. & Fr.: Dec. - Feb.

Habitat: Road sides and wastelands, with *Chloris barbata*, *Trianthema triquetra* etc.

Distrib.: Pantropical, throughout India. TN: Chengalpattu, Coimbatore, N. & S. Arcot, Ramanathapuram, Thanjavur and Tirunelveli. GM: Mainland coast, frequent.

Specimens examined: (Total 23) PD 100426; SAM 104794; SVP & DD 87111; VB 1886.

3. *P. quadrifida* L., Syst. Nat. ed. 12, 328. 1766 & Mant. Pl. 73. 1767; IIB 2: t. 109. 1850; FBI 1: 247. 1874; FPM 66. 1915; FTC 3: 82. 1983; FTN 1: 25. 1983; FI 3: 6. 1993. [*Chinnaparupukirai*]

Leaves opposite or whorled, linear to ovate, cuneate, entire, acute. Flower solitary, terminal with an involucre of 4 leaves. Sepals 2, oblong. Petals 4, oblong-ovate, yellow. Seeds numerous, reniform, tuberculate.

Fl. & Fr.: Throughout the year.

Habitat: Road sides and cultivated fields, with *Boerhavia diffusa*, *Celosia polygonoides* etc.

Distrib.: Pantropical, almost throughout India. TN: All districts. GM: Mainland coast, occasional. Earlier collected on Kurusadai Island. Could not be collected here despite repeated visits.

Specimens examined: (Total 74) PD 100425, 100499, 100513; VB 1010; Ku Is. VB 1786.

4. *P. wightiana* Wall. ex Wight & Arn., Prodr. 356. 1834; FBI 1: 247. 1874; FPM 66. 1915; FTN 1: 25. 1983; FI 3: 7. 1993.

Leaves ovate-lanceolate, cuneate, entire, acute. Flower solitary, terminal with an involucre of 4 leaves. Sepals 2, ovate, acute. Petals 5, ovate-oblong, pale pinkish yellow. Seeds reniform, tuberculate.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy seacoast, with *Polycarpha spicata*, *Trianthema triquetra* etc. Under extreme dry conditions stem and leaves turn pinkish.

Distrib.: India (Andhra Pradesh and Tamil Nadu) and Sri Lanka. TN: Chengalpattu, Ramanathapuram, S. Arcot, Tiruchirapalli and Tirunelveli. GM: Frequent on sandy beaches of the mainland coast and Nallathanni Island.

Specimens examined: (Total 29) PD & PU 104605; PD & PU 107397; SAM 104353.

The seeds of *Portulaca* might be carried through drifting logs (Ridley, 1930).

12. CLUSIACEAE (nom. alt. GUTTIFERAE)

Calophyllum L.

Tropics, 187 species, 8 in India, 4 in Tamil Nadu and one in GM.

C. inophyllum L., Sp. Pl. 513. 1753; IIB 1: t. 77. 1840; FBI 1: 273. 1874; FPM 76. 1915; RHFC 1: 90. 1980; IFTC t. 55. 1982; FTC 3: 93. 1983; FTN 1: 27. 1983; FI 3: 92. 1993. [*Punnai*]

Large tree. Leaves oblong-obovate, leathery, glabrous, shiny. Sepals 4, obovate. Petals 4, white. Stamens numerous. Drupes globose, yellowish, 1-seeded.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities.

Distrib.: New Caledonia, Trop. E. Africa to Taiwan, the Ryukyu and Live Islands. TN: Most plain districts, also cultivated. GM: Rare. Collected only at Thiruchendur.

Commonly cultivated in some of the littoral districts like Kanyakumari. The seeds are reported to be dispersed by seawater (Ridley, 1930). Though cast-ashore seeds are common on the islands, this plant has not established so far on any island. The factors that prevent the plant from establishing need further studies.

Uses: Wood used for posts, beams, furniture etc. Seed oil used for soap making and as an illuminant; applied externally for rheumatism and skin affections.

Specimens examined: (Total 29) PD 102250, 107242; VB 2157.

13. MALVACEAE

Key to the genera

- | | |
|------------------------------|---|
| 1a. Fruit a schizocarp | 2 |
| b. Fruit a capsule | 4 |

2a. Branchlets viscid; epicalyx present; petals pink or white	5. Pavonia
b. Branchlets not viscid; epicalyx absent; petals yellow.....	3
3a. Flowers 2.5 - 3 cm across; petals yellow, purplish or brownish at base inside; mericarps 15 - 25	2. Abutilon
b. Flowers 1 - 1.5 cm across; petals yellow, not coloured at base inside; mericarps 5 - 10	6. Sida
4a. Calyx cupular; capsules indehiscent	7. Theopista
b. Calyx not cupular; capsules dehiscent	5
5a. Capsules neither angled nor beaked	4. Hibiscus
b. Capsules angled or beaked	6
6a. Flowers 3.3 - 3.7 cm across; epicalyx segments subulate; capsules 2 - 2.5 cm long; seeds globose	1. Abelmoschus
b. Flowers 4 - 5 cm across; epicalyx segments linear; capsules 1 - 1.5 cm long; seeds reniform	3. Floria

1. Abelmoschus Medik.

Old World tropics, 15 species, 6 in India, 5 in Tamil Nadu and 2 in GM.

A. ficulneus (L.) Wight & Arn. ex Wight, Cat. Ind. Pl. 14. 1833 & Icon. t. 154. 1839; FTC 3: 104. 1983; FTN 1: 31. 1983; FI 3: 304. 1993; Sivar. & Pradeep, Malvac. S. India 64. 1996. *Hibiscus ficulneus* L., Sp. Pl. 695. 1753; FPM 97. 1915. [*Kattuvendai*]

Herb or undershrub. Leaves 3-5-lobed; lobes obovate-spatulate. Flowers axillary, solitary, or in terminal racemes. Petals creamy, purplish at base inside. Capsules oblong-ovoid, 5-angled, shortly beaked; seeds globose, hairy, blackish.

Fl. & Fr.: Dec. - Feb.

Habitat: Cultivated fields, with *Corchorus fascicularis*, *Euphorbia indica* etc.

Distrib.: Africa, India, Malesia, N. Australia, Pakistan and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Plant yields a white fibre useful for twine and light cordage.

Specimens examined: (Total 16) PD & PU 106666, 106949.

Abelmoschus esculentus (L.) Moench is cultivated for its fruits used as a vegetable.

2. Abutilon Mill.

Tropics and subtropics, ca 100 species, 12 in India, 10 in Tamil Nadu and 2 in GM.

Key to the species

- 1a. Stem glandular-hairy; petals yellow, purplish at base inside..... 1. *A. hirtum*
 b. Stem not glandular-hairy; petals yellow, brownish at base inside..... 2. *A. indicum*

1. *A. hirtum* (Lam.) Sweet, Hort. Brit. 53. 1826; FPM 91. 1915; FTC 3: 106. 1983; FTN 1: 32. 1983; FI 3: 264. 1993; Sivar. & Pradeep, Malvac. S. India 190. 1996. *Sida hirta* Lam., Encycl. 1: 7. 1783. *Abutilon graveolens* (Roxb. ex Hornem.) Wight & Arn. var. *hirtum* (Lam.) Mast. in Fl. Brit. India 1: 327. 1874. [*Vadathutti*]

Undershrub. Leaves orbicular to broadly ovate, acute. Flower axillary, solitary. Schizocarps globose; mericarps 20 - 25, ovate-reniform, rounded, mucronate; seeds reniform, brownish black.

Fl. & Fr.: Almost throughout the year.

Habitat: Road sides.

Distrib.: Semiarid tropics of the Old World, throughout India. TN: All districts. GM: Mainland coast, occasional.

Uses: Plant yields a fibre. Used as a febrifuge, antiemetic, and antiinflammatory; also employed in urinary troubles and lumbago. Roots used as a nervine tonic, antipyretic etc.

Specimens examined: (Total 54) VB 1287.

2. *A. indicum* (L.) Sweet, Hort. Brit. 54. 1826; Wight, Icon. t. 12. 1838; FBI 1: 326. 1874; FPM 91. 1915, subsp. *indicum*: Borss. Waalk. in Blumea 14: 171. 1966; FTC 3: 107. 1983; FTN 1: 32. 1983; FI 3: 266. 1993; Sivar. & Pradeep, Malvac. S. India 193. 1996. *Sida indica* L., Cent. Pl. 2: 26. 1756. [*Thuthi*]

Shrub. Leaves cordate or broadly ovate. Flower axillary, solitary. Schizocarps globose; mericarps 15 - 20, reniform, acute or mucronate; seeds ovoid or suborbicular, brownish black.

Fl. & Fr.: June - Feb.

Habitat: Wastelands and road sides, with *Asystasia gangetica*, *Cleome gynandra* etc.

Distrib.: Tropics and subtropics. TN: All districts. GM: Mainland coast, common.

Uses: Plant yields a white lustrous fibre, coarser than jute. Suitable for cordage.

Specimens examined: (Total 84) KSK 10276, 103331; PD 100534.

3. *Floria* Mattei

Old World tropics and Africa, 3 species and one in India.

F. vitifolia (L.) Mattei in Boll. Reale Orto Bot. Giardino Colon. Palermo N.S. 2: 71, 1917; FI 3: 310. 1993. *Hibiscus vitifolius* L., Sp. Pl. 696, 1753; FBI 1: 338. 1874; FPM 98, 1915; IFTC t. 62. 1982; FTC 3: 119. 1983; FTN 1: 35. 1983; Sivar. & Pradeep, Malvac. S. India 75. 1996. [*Manjal thuthi*]

Undershrub. Leaves ovate-cordate; lower leaves 3 - 5-lobed. Flowers axillary, solitary or 3 - 5 in a cluster. Petals yellow, dark purple at base inside. Capsules ovoid, 5-angular, shortly beaked; seeds reniform, verruculose, brownish black.

Fl. & Fr.: Almost throughout the year.

Habitat: Open wastelands, with *Anisomeles malabarica*, *Hybanthus enneaspermus* and *Jatropha glandulifera*.

Distrib.: Africa, Australia, India, Malesia, Myanmar, Pakistan and Sri Lanka, TN: All districts. GM: Mainland coast, occasional. Collected at Sethukarai in Ramanathapuram. More common in the interior.

Use: Fibre used for cordage, twines, ropes and fishing lines.

Specimens examined: (Total 125) KSK 103493; VB 1597, 1845.

4. *Hibiscus* L. nom. cons.

Tropics and subtropics, ca 200 species, 23 in India, 19 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|------------------------------------|-------------------------|
| 1a. Undershrub; corolla white..... | 1. <i>H. micranthus</i> |
| b. Tree; corolla yellow..... | 2. <i>H. tiliaceus</i> |

1. *H. micranthus* L. f., Suppl. Pl. 308. 1782; FBI 1: 335. 1874; FPM 97. 1915; FI 3: 330. 1993; Sivar. & Pradeep, Malvac. S. India 97. 1996. *Hibiscus ovalifolius* (Forssk.) Vahl, Symb. Bot. 1: 50. 1790; FTC 3: 115. 1983; FTN 1: 34. 1983. *Urena ovalifolia* Forssk., Fl. Aegypt.-Arab. 124. 1775.

Leaves ovate-suborbicular or elliptic. Flower axillary, solitary. Capsules globose; seeds reniform, hirsute, blackish.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and road sides, with *Cleome viscosa*, *Corchorus aestuans* etc.

Distrib.: Africa, Arabia, India and Sri Lanka. TN: All districts. GM: Mainland coast, common. Collected only on Pumarichan Island, rare.

Use: Fruits edible.

Specimens examined: (Total 139) KSK 102927, 103317; Pu Is. PD 99729.

2. *H. tiliaceus* L., Sp. Pl. 694. 1753; FBI 1: 343. 1874; FPM 98. 1915; FTC 3: 118. 1983; FTN 1: 35. 1983; FI 3: 322. 1993; Sivar. & Pradeep, Malvac. S. India 91. 1996. *Paritium tiliaceum* (L.) A. St.- Hil., Fl. Bras. Merid. 1: 256. 1828; Wight, Icon. t. 7. 1838. [*Neerparuthi*]

Leaves cordate-orbicular, 3 - 5-lobed or unlobed. Flowers in terminal racemes. Capsules globose-ovoid; seeds reniform, papillose, blackish brown.

Fl. & Fr.: Throughout the year.

Habitat: Sandy seashore.

Distrib.: Tropics and subtropics. TN: All districts. GM: Usually cultivated on mainland coast. Collected on Moyal Island, rare. The further spread of the plants on this island needs monitoring.

The seeds in the genus that float might be dispersed by seawater (Ridley, 1930).

Uses: Bark yields a fibre, used for cordage, ropes, mats, tows, sails, fishing-nets etc. Wood durable in seawater, used for planking and light boats. Leaves used as a laxative and resolvent. Roots used in rheumatism and lumbago. Seeds emetic.

Specimens examined: (Total 15) KR 85750; NCN 53091; PD 100457; Mu Is. PD & PU 106810.

H. rosa-sinensis L. and *H. schizopetalus* (Mast.) Hook. f. are commonly cultivated as ornamentals.

5. *Pavonia* Cav.

Tropics and subtropics, ca 150 species, 7 in India, 3 in Tamil Nadu and one in GM.

P. zeylanica (L.) Cav., Diss. 3: 134, t. 48, f. 2. 1787; FBI 1: 330. 1874; FPM 93. 1915; IFTC t. 67. 1982; FTC 3: 124. 1983; FTN 1: 36. 1983; FI 3: 377. 1993; Sivar. & Pradeep, Malvac. S. India 173. 1996. *Hibiscus zeylanicus* L., Sp. Pl. 697. 1753. [*Mammatti*]

Undershrub. Leaves deeply 3 - 5-lobed; lobes obovate. Flower axillary, solitary. Corolla pink or white. Schizocarps globose; mericarps 5, oblong, slightly winged at angles, beaked at apex; seeds reniform, pubescent, brownish.

Fl. & Fr.: Almost throughout the year.

Habitat: Road sides and wastelands, with *Indigofera tinctoria*, *Micrococca mercurialis* etc.

Distrib.: Africa, Arabia, India, Mauritius, Pakistan and Sri Lanka. TN: All districts. GM: Mainland coast, frequent.

Uses: Plant used as a febrifuge and anthelmintic. Also yields a fibre.

Specimens examined: (Total 95) SAM 104696; VB 1569.

6. *Sida* L.

Tropics and subtropics, ca 150 species, 12 in India, 7 in Tamil Nadu and 4 in GM.

Key to the species

- | | |
|---|-------------------------|
| 1a. Herb, prostrate or ascending | 2. <i>S. cordata</i> |
| b. Undershrubs, erect | 2 |
| 2a. Leaves entire along margins, retuse or emarginate at apex, apiculate | 4. <i>S. cuneifolia</i> |
| b. Leaves serrate or serrate-crenate along margins, acuminate or acute-obtuse at apex | 3 |
| 3a. Leaves acuminate; schizocarps shorter than calyx; mericarps tetrahedral | 1. <i>S. acuta</i> |
| b. Leaves acute-obtuse; schizocarps longer than calyx; mericarps trigonous | 3. <i>S. cordifolia</i> |

1. *S. acuta* Burm. f., Fl. Indica 147. 1768, emend. K. Schum. in Mart., Fl. Brasil. 12: 326. 1891; Wight, Icon. t. 95. 1838; FPM 90. 1915; IFTC t. 68. 1982; FTC 3: 127. 1983; FTN 1: 36. 1983; FI 3: 281. 1993; Sivar. & Pradeep, Malvac. S. India 238. 1996. *S. carpinifolia* auct. non L. f. 1782; FBI 1: 323. 1874. [*Arivamooku keerai*, *Malaitangi*]

Leaves oblong-lanceolate or elliptic. Flowers axillary, solitary, or 2 - 8 in clusters. Corolla pale yellow. Schizocarps globose; mericarps 6 - 10, awned; seeds triangularly ovoid, dark brownish.

Fl. & Fr.: Throughout the year.

Habitat: Road sides and wastelands, with *Blumea obliqua*, *Spermacoce hispida* and *Trichodesma indicum*.

Distrib.: Pantropical. TN: All districts. GM: Mainland coast, frequent.

Uses: Fibre used as a substitute for jute. Leaves demulcent and diuretic, also used in haemorrhoids and impotency. Roots tonic, stomachic, diaphoretic and antipyretic, used in nervous and urinary disorders and bowel complaints.

Specimens examined: (Total 74) KSK 102880, 103381.

2. *S. cordata* (Burm. f.) Borss. Waalk. in *Blumea* 14: 182. 1966; FTC 3: 128. 1983; FTN 1: 36. 1983; FI 3: 283. 1993; Sivar. & Pradeep, *Malvac. S. India* 266. 1996. *Melochia cordata* Burm. f., *Fl. Indica* 143. 1768. *Sida veronicifolia* Lam., *Encycl.* 1: 5. 1783; FPM 89. 1915. *S. humilis* Cav., *Diss.* 5: 277. 1788; FBI 1: 322. 1874. [*Palampasi*]

Leaves ovate-orbicular. Flower axillary, solitary. Corolla yellow. Schizocarps globose; mericarps 5, trigonous, shortly beaked, awnless; seeds ovoid or trigonous, brownish black.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, in shades, with *Cassia occidentalis*, *Corchorus aestuans* and *Vicoa indica*.

Distrib.: Pantropical. TN: All districts. GM: Mainland coast, frequent.

Specimens examined: (Total 90) KSK 102881, 102966.

3. *S. cordifolia* L., *Sp. Pl.* 684. 1753; FBI 1: 324. 1874; FPM 89. 1915; FTC 3: 128. 1983; FTN 1: 36. 1983; FI 3: 285. 1993; Sivar. & Pradeep, *Malvac. S. India* 256. 1996. [*Nilathuthi*]

Leaves cordate or ovate-oblong. Flowers axillary, solitary or 2 - 5 in clusters. Corolla yellow or whitish yellow. Shizocarps globose; mericarps 8 - 10, awned; seeds ovoid or trigonous, dark brownish.

Fl. & Fr.: Throughout the year.

Habitat: Dry localities and also in sandy habitats, with *Cassia senna*, *Cleome viscosa*, *Launaea sarmentosa* etc.

Distrib.: Pantropical. TN: All districts. GM: Common on mainland coast and rare on islands. Collected only on Nallathanni Island.

Seeds might be dispersed by ballast (Ridley, 1930).

Uses: Plant yields a fibre. Young parts used as a fodder. Leaves demulcent and febrifuge also used in dysentery. Roots astringent, diuretic and tonic. Powdered roots given with milk in leucorrhoea and frequent micturition.

It is an ingredient in the Ayurvedic preparations, 'Boniol oil' used in skin care, and 'Neropar', 'Revivin', 'Tonactiv' and 'Vitalyf' used as antiageing (Tripathi & al., 1996).

Specimens examined: (Total 130) KSK 102717, 102738; PD 100482, 102112.

4. *S. cuneifolia* Roxb., Fl. Ind. 3: 170. 1832; KB 41: 91. 1986; Sivar. & Pradeep, Malvac. S. India 261. 1996, non Gray, 1850. *S. schimperiana* auct. non Hochst. ex A. Rich. 1847; FBI 1: 322. 1874; FPM 90. 1915; FTC 3: 131. 1983; FTN 1: 37. 1983; FFI 9: 212. 1988; FI 3: 292. 1993.

Undershrub. Leaves oblong-obovate. Flowers solitary or 3-5 in clusters. Corolla yellow. Schizocarps globose; mericarps 5, trigonous, awned; seeds ovoid or trigonous, blackish.

Fl. & Fr.: Almost throughout the year.

Habitat: Dry open lands, with *Barleria buxifolia*, *Bonamia evolvuloides* and *Croton bonplandianum*.

Distrib.: India. Endemic. TN: Most districts. GM: Mainland coast, occasional.

The plants were woody and stunted, hardly reaching 30 cm high, which may be a consequence of repeated browsing by goats. Poor natural regeneration as a result of such browsing might be a causal factor for its rarity as pointed out by Sivarajan and Pradeep (1996).

Specimens examined: (Total 44) PD 107535; PD & PU 107068.

7. *Thespesia* Sol. ex Correa nom. cons.

Tropics, 17 species, 4 in India, 3 in Tamil Nadu and one in GM.

T. populnea (L.) Sol. ex Correa in Ann. Mus. Natl. Hist. Nat. 9: 290, t. 8, f. 1. 1807; Wight, Icon. t. 8. 1838; FBI 1: 345. 1874; FPM 101. 1915; IFTC t. 69. 1982; FTC 3: 133. 1983; FTN 1: 37. 1983; FI 3: 352. 1993; Sivar. & Pradeep, Malvac. S. India 37. 1996. *Hibiscus populneus* L., Sp. Pl. 694. 1753. [*Poovarasu*]

Tree, with root suckers. Leaves ovate. Corolla lemon yellow, with dark purple centre inside. Capsules globose-depressed with a short mucro, indehiscent; seeds up to 24, obovoid, angular, covered with yellowish-brown long hairs.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy shores of the islands, usually with *Pemphis acidula*. Planted on mainland coast.

Distrib.: Tropics. TN: All districts. GM: Common on all islands except that of the Tuticorin group.

Trees on the islands are hardly a few metres high unlike the ones on the mainland coast and their crowns are flat due to frequent violent winds. Only those on the islands produce seeds.

The seeds float by the aid of the air-spaces between the cotyledons and get dispersed.

Uses: Wood used for constructions. Bark, leaves, flowers and fruits used in cutaneous affections. Seed oil used in skin troubles. Bark, roots and fruits are astringent, used in dysentery and haemorrhoids.

Specimens examined: (Total 39) PD 100302, 102150; Pu Is. PD 99727.

T. populneoides (Roxb.) Kostel., was included by Ramachandran and Balasubramanian (1991). From the absence of a specimen it is excluded.

Althea rosea (L.) Cav., an ornamental, is cultivated in gardens. *Gossypium herbaceum* L. [*Uppamparuthi*] and *G. hirsutum* L. [*Paruthi*] are cultivated for the cotton of commerce.

14. BOMBACACEAE

Adansonia L.

Africa, Madagascar and NW. Australia, 9 species and one in India.

A. digitata L., Sp. Pl. 1190. 1753; FBI 1: 348. 1874; FPM 102. 1915; RHFC 1: 67. 1980; FTC 3: 138. 1983; FTN 1: 32. 1983; FI 3: 404. 1993. [*Anaipuli*, *Paparapuli*]

Large tree; trunk to 3.5 m across. Leaves 4-7-foliolate; leaflets oblong-obovate. Flower solitary, axillary, pendulous. Petals white, brown when dry. Capsules oblong, 20-40 cm long, velvety-tomentose.

Fl. & Fr.: June - Dec.

Distrib.: Native of Trop. Africa. GM: Rarely cultivated. Collected at Rameswaram and Punnakayal.

Specimens examined: (Total 14) PD 100481; SAM 106303.

Ceiba pentandra (L.) Gaertn. [*Ilavam*], an introduced huge tree, is sometimes cultivated for the pods which yield silk cotton used for stuffing pillows and mattresses.

15. STERCULIACEAE

Key to the genera

- | | |
|-----------------------------|---------------------|
| 1a. Petals pink..... | 2. <i>Melochia</i> |
| b. Petals yellow..... | 2 |
| 2a. Staminodes present..... | 1. <i>Melhania</i> |
| b. Staminodes absent..... | 3. <i>Waltheria</i> |

1. *Melhania* Forssk.

Old World tropics, ca 60 species, 7 in India, 3 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|------------------------|
| 1a. Leaves ovate or oblong; involucre bracts lanceolate; staminal tube more than 1 mm long..... | 1. <i>M. cannabina</i> |
| b. Leaves oblong-elliptic; involucre bracts linear; staminal tube less than 1 mm long..... | 2. <i>M. incana</i> |

1. *M. cannabina* Wight ex Mast. in Fl. Brit. India 1: 372. 1874, FPM 113. 1915, FTN 1: 40. 1983; FI 3: 437. 1993. *M. balakrishnanii* Ravik. & al. in Bull. Bot. Surv. India 31: 172, f 1 A-D. 1989. (Fig. 4)

Herb or undershrub. Cymes pedunculate; involucre bracts 3. Calyx-lobes ovate, acuminate. Petals 5, obovate, truncate, yellow. Stamens 5; staminodes 5. Capsules subglobose; seeds 4 in each locule, trigonous, rugose.

Fl. & Fr.: July - Jan.

Habitat: Sandy soil, with *Aerva persica*, *Asparagus racemosus* and *Pupalia lappacea*.

Distrib.: India: Karnataka and Tamil Nadu. Endemic. TN: Nilgiri, Tirunelveli and Tuticorin. GM: Frequent on mainland coast of Tuticorin and Tirunelveli. Also collected on Karaichalli Island.

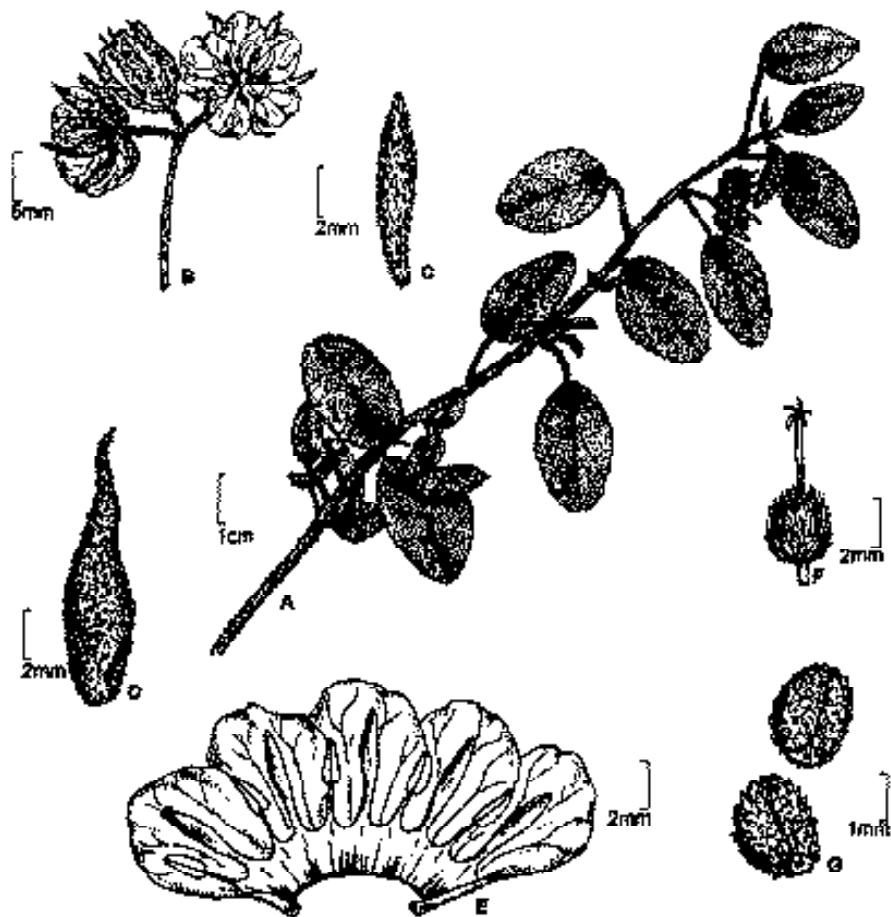


Fig. 4(A - G). *Melhania canabina* Wight ex Misset.

A. Twig B. Bud & flower C. Bract D. Sepal E. Petals with stamens & staminodes F. Pistil G. Seeds

Plants are pretty common at Tuticorin particularly around the harbour. The capsules might be sea-dispersed. However, it occurs only on Karaichalli Island.

Specimens examined: (Total 11) PD 102153; PD & PU 103532, 107391; RW 2318; SAM 104656, 104777; Kc Is. PD & PU 107311.

2. *M. incana* Heyne ex Wight & Arn., Prodr. 68. 1834; FBI 1: 372. 1874; FPM 113. 1915; IFTC t. 79. 1982; FTC 3: 146. 1983 FTN 1: 40. 1983; FI 3: 439. 1993.

Erect or prostrate herb. Calyx-lobes ovate-acuminate. Petals 5, obovate, yellowish. Stamens 5; staminodes 5. Capsules subglobose; seeds 2 - 4 in each locule, ovoid, angled, tuberculate.

Fl. & Fr.: July - Dec.

Habitat: Sandy localities, with *Hedyotis pumila*, *Leucas aspera*, *Sesuvium portulacastrum* etc.

Distrib.: Australia and S. India. TN: Coimbatore, Dharmapuri, Madurai, Ramanathapuram, Salem, Tiruchirapalli and Tuticorin. GM: Mainland coast, rare.

Specimens examined: (Total 20) PD & PU 103516; SAM 106305.

2. *Melochia* L.

Tropics especially America, ca 60 species, 3 in India, 2 in Tamil Nadu and one in GM.

M. corchorifolia L., Sp. Pl. 675. 1753; FBI 1: 374. 1874; FPM 110. 1915; IFTC t. 80. 1982; FTC 3: 147. 1983; FTN 1: 40. 1983; FI 3: 441. 1993. [*Punnakkuthalai*]

Herb or undershrub. Leaves ovate or ovate-lanceolate. Cymes terminal, capitate. Staminal cup spindle-shaped; stamens 5. Capsules subglobose; seeds ovoid, angular.

Fl. & Fr.: July - March.

Habitat: Wet fallow fields and also on clayey soil.

Distrib.: Pantropical. TN: Almost all districts. Earlier collections though are from areas a little away from the coast this common species may occur on the mainland coast.

Uses: Fibre from bark used for fishing lines. Leaves eaten as a vegetable, also used in soups; their decoction used in dysentery.

Specimens examined: (Total 56) VB 1095, 1262.

3. Waltheria L.

Trop. America, 67 species and one in India.

W. indica L., Sp. Pl. 673. 1753; FBI 1: 374. 1874; FPM 111. 1915; FTN 1: 42. 1983; FI 3: 473. 1993. [*Semboodu*]

Erect undershrub. Leaves ovate or elliptic. Flowers dense, sessile, axillary. Petals oblanceolate-spatulate, yellow. Staminal tube subconical, ca 2 mm long; stamens 5. Style eccentric. Capsules obconical; seeds obovoid.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands, with *Cleome viscosa*, *Dactyloctenium aegyptium* etc.

Distrib.: Pantropical. TN: All districts. GM: A frequent weed on the mainland coast.

Specimens examined: (Total 114) KSK 102709, 102856, 102930.

16. TILIACEAE

Key to the genera

- | | |
|--|----------------------|
| 1a. Shrubs or small trees; petals white; fruit a drupe | 2. <i>Grewia</i> |
| b. Herbs; petals yellow; fruit a capsule | 2 |
| 2a. Capsules oblong, ribbed or angled, not spinescent | 1. <i>Corchorus</i> |
| b. Capsules ovoid-subglobose or globose, not ribbed
or angled, spinescent | 3. <i>Triumfetta</i> |

1. *Corchorus* L.

Tropics, ca 40 species, 8 in India, 7 in Tamil Nadu and 5 in GM.

Key to the species

- | | |
|--|---------------------------|
| 1a. Capsules terminating in 3, 2-fid spreading tips | 2 |
| b. Capsules not terminating in 3, 2-fid spreading tips | 3 |
| 2a. Stamens 12 - 30; capsules 6-angled; angles prominently winged | 1. <i>C. aestuans</i> |
| b. Stamens 10 - 15; capsules cylindrical, not winged | 3. <i>C. tridens</i> |
| 3a. Capsules falcate, strigose; seeds winged | 5. <i>C. urticifolius</i> |
| b. Capsules neither falcate nor strigose; seeds not winged | 4 |
| 4a. Stamens 15 - 20; capsules scabrous-tuberculate; seeds
trigonus, truncate at both ends | 4. <i>C. trilocularis</i> |
| b. Stamens 5 - 10; capsules pubescent; seeds wedge-shaped, | |

truncate at one end and obliquely produced at the other

2. *C. fascicularis*

1. *C. aestuans* L., Syst. Nat. ed. 10, 1079. 1759; FTC 3: 157. 1983; FTN 1: 42. 1983; RHFC 7: 423. 1991; FI 3: 484. 1993. *C. acutangulus* auct. non Forssk. 1775; FBI 1: 398. 1874; FPM 121. 1915.

Suberect or spreading herb. Leaves lanceolate-ovate. Cymes pedunculate, leaf-opposed. Petals yellow. Capsules solitary or paired; 6-angled, angles winged; seeds truncate, dark brown.

Fl. & Fr.: Aug. - Feb.

Habitat: Open wastelands and sandy soil, with *Aerva lanata*, *Phyllanthus madraspatensis* and *Vigna trilobata*.

Distrib.: Pantropical. TN: All districts. GM: Common on mainland coast and Appa, Kurusadai, Manoli, Muyal, Nallathanni, Pumarichan and Upputhanni Islands.

Use: Seeds stomachic.

Specimens examined: (Total 71) KSK 102011; PD 102103; Ap Is. PD 101547; Ku Is. PD 99772; Ma Is. PD 101111; Mu Is. PD 100643; Nt Is. PD 101603; Pu Is. PD 99723; Ut Is. PD 101670.

2. *C. fascicularis* Lam., Encycl. 2: 104. 1786; FBI 1: 398. 1874; FPM 121. 1915; FTC 3: 158. 1983; FTN 1: 42. 1983; RHFC 7: 424. 1991; FI 3: 486. 1993.

Suberect herb. Leaves lanceolate or elliptic-oblong. Cymes pedunculate. Petals yellow. Capsules in fascicles of 2 - 5 (- 8), triangular, shortly beaked, septate; seeds blackish.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and also cultivated fields, with *Eragrostis japonica*, *Euphorbia hirta*, *E. indica* etc.

Distrib.: Africa, Australia, India and Sri Lanka. TN: Most districts. GM: Mainland coast, occasional. Collected only on Thalaiyari Island.

Use: Plant used as an astringent and restorative.

Specimens examined: (Total 24) PD & PU 106663; Th Is. PD 101487.

3. *C. tridens* L., Mant. Pl. 566. 1771; FBI 1: 398. 1874; FPM 121. 1915; FTC 3: 160. 1983; FTN 1: 43. 1983; FI 3: 488. 1993.

Erect herb. Leaves oblong-lanceolate or linear-lanceolate. Petals yellow. Capsules 3 in a cluster, curved, septate; seeds angular, truncate, blackish.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands and road sides, with *Cleome viscosa*, *Pedaliium murex* etc.

Distrib.: Pantropical. TN: Most districts. GM: Mainland coast, common.

Specimens examined: (Total 39) KSK 103455, 102753.

4. *C. trilocularis* L., Mant. Pl. 77. 1767; FBI 1: 397. 1874; FPM 122. 1915; FTC 3: 161. 1983; FTN 1: 43. 1983; RHFC 7: 425. 1991; FI 3: 488. 1993.

Erect or suberect herb. Leaves oblong-lanceolate or broadly oblong-elliptic. Petals yellow. Capsules 3 in a cluster, triangular, septate; seeds truncate, blackish.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet localities and on road sides, with *Asystasia gangetica*, *Cleome gynandra*, *Cyperus compressus* etc.

Distrib.: Paleotropics. TN: Almost all districts. GM: Mainland coast, frequent.

Specimens examined: (Total 49) KSK 103330; PD 101681A.

5. *C. urticifolius* Wight & Arn., Prodr. 83. 1834 (as "*urticaefolius*"); FBI 1: 397. 1874; FPM 122. 1915; FTC 3: 161. 1983; FTN 1: 43. 1983; RHFC 7: 421. 1991; FI 3: 489. 1993.

Erect herb. Leaves ovate-lanceolate. Petals yellow. Stamens ca 15. Capsules solitary or paired, triangular, beaked, septate; seeds trigonous, wrinkled.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and sandy localities, with *Corchorus tridens*, *Euphorbia hirta* etc.

Distrib.: E. Africa, India, Malay Peninsula, Myanmar, and Sri Lanka. TN: Most districts. GM: Mainland coast, rare.

Specimens examined: (Total 11) KSK 103454.

Seeds of *Corchorus* spp. are reportedly conveyed to islands on drifting woods (Ridley, 1930).

2. *Grewia* L.

Old World tropics and subtropics, ca 150 species, 31 in India, 23 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|----------------------------|
| 1a. Leaves woolly; cymes ca 6-flowered; drupes sparsely pilose, blackish | 1. <i>G. oppositifolia</i> |
| b. Leaves glabrous; cymes ca 3-flowered; drupes tomentose, yellowish brown | 2. <i>G. rhamnifolia</i> |

1. *G. oppositifolia* Buch.-Ham. ex Roxb., Fl. Ind. 2: 583. 1832; FBI 1: 384. 1874; FTN 1: 44. 1983; FI 3: 503. 1993. *G. emarginata* Wight & Arn., Prodr. 79. 1834; FBI 1: 384. 1874; FPM 117. 1915; IFTC t. 86. 1982; FTC 3: 168. 1983. [*Pannipidungikai*]

Small tree or straggling shrub. Leaves ovate or elliptic-ovate. Cymes terminal or axillary. Petals white. Drupes deeply 4-lobed, subglobose.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles, with *Barleria longiflora*, *Capparis sepiaria*, *Kleinia grandiflora* and *Phyllanthus reticulata*.

Distrib.: India and Nepal. TN: Almost all districts. GM: Mainland coast, rare. Once collected near Koodankulam in Tirunelveli.

Specimens examined: (Total 40) PD & PU 107097.

2. *G. rhamnifolia* Heyne ex Roth, Nov. Pl. Sp. 244. 1821; FPM 117. 1915; FTC 3: 172. 1983; FTN 1: 44. 1983; FI 3: 507. 1993. *G. orientalis* auct. non L. 1753; FBI 1: 382. 1874, p.p.

Shrub. Leaves ovate or lanceolate. Cymes terminal or axillary, umbellate. Petals white. Drupes subglobose, obscurely 2 - 4-lobed.

Fl. & Fr.: Aug. - Feb.

Habitat: Scrub jungles, with *Cadaba fruticosa*, *Pavetta indica* etc.

Distrib.: India and Sri Lanka. TN: Most districts. GM: Frequent on mainland coast and rare on islands. Collected only on Pumarichan Island.

Specimens examined: (Total 28) KSK 103359; VB 2184; Pu Is. PD & PU 106833.

Birds which feed on the fruits of *Grewia* might have conveyed the plants to the island.

Rao (1963b) reported *Grewia barberi* J. R. Drumm. ex Dunn (= *G. serrulata* DC.) from Rameswaram. Earlier material collected from here represents only *G. rhamnifolia* Heyne ex Roth.

3. *Triumfetta* L.

Tropics, ca 100 species, 8 in India, 5 in Tamil Nadu and one in GM.

T. rotundifolia Lam., Encycl. 3: 421. 1792; FBI 1: 395. 1874; FPM 120. 1915; FTC 3: 177. 1983; FTN 1: 46. 1983; FI 3: 521. 1993. [*Adayoti*]

Suffruticose herb. Leaves obovate-orbicular. Flowers in interrupted racemes. Petals yellow. Seeds ovoid, beaked, black.

Fl. & Fr.: Nov. - Feb.

Habitat: Open wastelands and road sides.

Distrib.: India and Myanmar. TN: Most districts. GM: Mainland coast, occasional. Earlier collected at Kayalpatnam and Sethupathinagar.

Uses: Plant used as a demulcent. Seeds yield a fatty oil.

Specimens examined: (Total 25) KMS 13731; VB 1288, 1662.

17. ERYTHROXYLACEAE

Erythroxylum P. Browne

Tropics, ca 250 species, 6 in India, 5 in Tamil Nadu and one in GM.

E. monogynum Roxb., Pl. Coromandel t. 88. 1798; FBI 1: 414. 1874; FPM 127. 1915; IFTC t. 91. 1982; FTC 3: 182. 1983; FTN 1: 47. 1983; FI 3: 590. 1993. *E. indicum* (DC.) Bedd., Fl. Sylv. S. India t. 81. 1871. *Sethia indica* DC., Prodr. 1: 576. 1824. [*Desadaram*]
(Fig. 5)

Shrub. Leaves obovate-elliptic. Flowers axillary, solitary, or to 4 in clusters, fragrant. Calyx cupular. Petals yellowish white. Stamens 10. Drupes oblong-ovoid, bright red, 1-seeded.

Fl. & Fr.: Throughout the year.

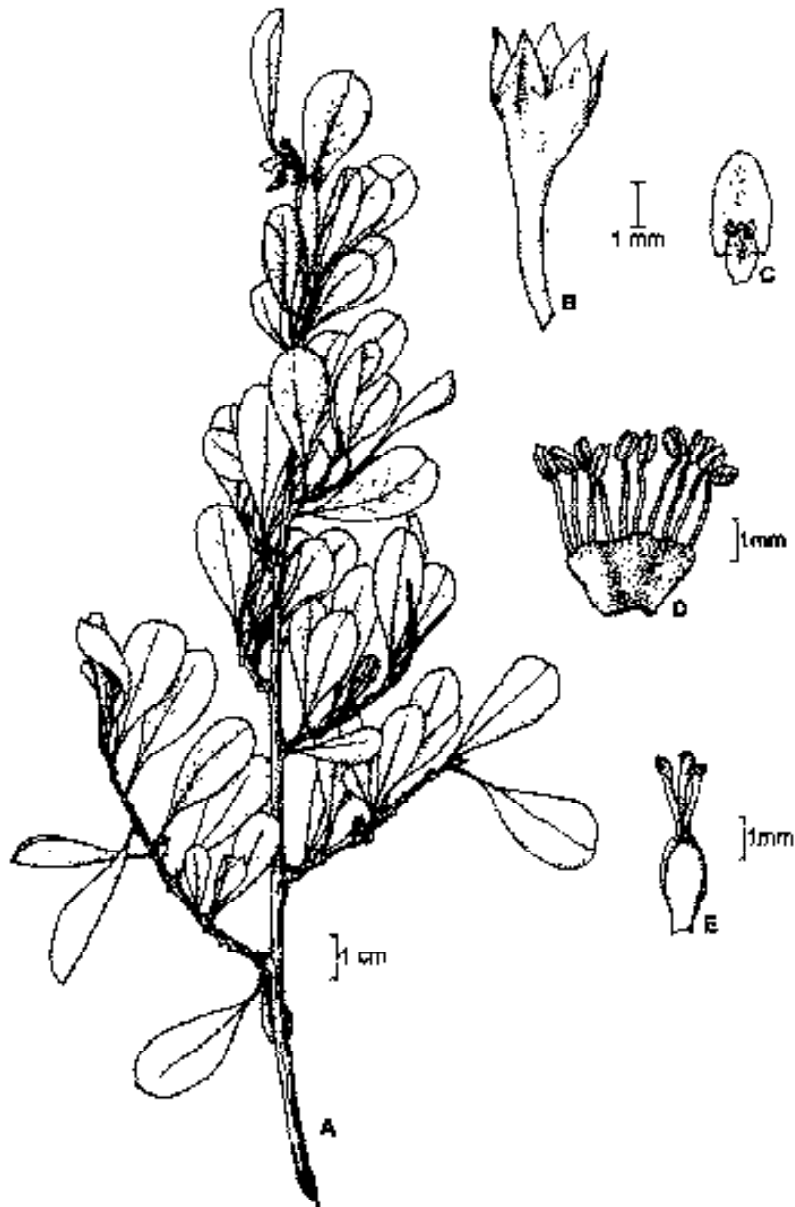


Fig. 5(A - E). *Erythroxylum monogyum* Roxb
 A. Twig B. Calyx C. Petal D. Androecium E. Pistil

Habitat: Sandy localities, with *Capparis septaria*, *Manilkara hexandra* and *Pleurostylia opposita*.

Distrib.: S. India and Sri Lanka. TN: Almost all districts. GM: Rare. Collected only on Pumarichan Island.

Plants do not occur anywhere in the vicinity of the coast. Collection made nearest the coast is from Piranmalai, Tirupathur in Ramanathapuram (K. Ramamurthy 22783, MH) which may be about 150 km from the Gulf of Mannar Coast as the crow flies. Consequently it is an addition to the flora of this region. The lesser white throat which is also found in the Gulf of Mannar feeds on the red fruits and disperse them (Balasubramanian & al., 1998). Only a few plants were observed on Pumarichan Island. This limited population needs monitoring for increase/decrease.

Uses: Wood used for turnery. Oil odour resembling sandalwood is recommended for perfumery. Infusion of wood and bark considered stomachic, diaphoretic and diuretic, useful in dyspepsia and fever.

Specimens examined: (Total 50) Pu Is. PD 99746.

18. ZYGOPHYLLACEAE

Tribulus L.

Tropics and subtropics, ca 25 species, 6 in India, 4 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|--------------------------|
| 1a. Style conspicuous, 1.5 - 2.5 mm long..... | 1. <i>T. lanuginosus</i> |
| b. Style inconspicuous, ca 0.5 mm long..... | 2. <i>T. terrestris</i> |

1. *T. lanuginosus* L., Sp. Pl. 387, 1753; Wight, Icon, t. 98, 1840; FI 4: 51, 1997.

Prostrate herb. Leaflets 6 - 14, oblong. Flower axillary, solitary. Corolla yellow. Ovary globose. Schizocarps globose, ca 1.5 cm, spinose; spines glabrous, unequal.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Cleome viscosa*, *Dactyloctenium aegyptium* and *Vigna trilobata*.

Distrib.: India. Endemic. TN: Chengalpattu, Coimbatore, Ramanathapuram, S. Arcot and Tuticorin. GM: Occasional on mainland coast and frequent on Appa, Kaswari, Karaichalli, Thalayiari, Upputhanni and Van Islands.

Specimens examined: (Total 9) PD 102130; PD & PU 107371; Ap Is. PD 101543; Ka Is. PD & PU 107508; Kc Is. PD & PU 107289; Th Is. PD 101486; Ut Is. PD 101671; Va Is. PD 102175.

2. *T. terrestris* L., Sp. Pl. 387. 1753; FBI 1: 423. 1874; FPM 130. 1915; IFTC t. 93. 1982; FTC 3: 185. 1983; FTN 1: 49. 1983; RHFC 6: 422. 1987; FI 4: 55. 1997. [*Nerinji*]

Prostrate herb. Leaflets 6 - 12, oblong. Flower axillary, solitary. Corolla yellow. Ovary globose. Schizocarps globose, ca 1 cm, spinose; spines hairy, unequal.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands and road sides, with *Aerva persica*, *Spermacoce hispida* and *Waltheria indica*.

Distrib.: Tropical and warm temperate regions. TN: All districts. GM: Mainland coast, common.

Uses: Fruits tonic and diuretic, used in painful micturition and calculous affections. Leaves stomachic, used as lithontriptic. Roots aperient. It is an ingredient in the herbal syrups 'Bonliv' and 'Bonnisan' (Anon., 1996a). Also an ingredient in the Ayurvedic preparations 'Mustang' and 'Vigorex-sf' capsules used in sexual debility and 'Ashree', 'Lukol', 'Neurophos-12', 'Orthoherb', 'Siotone' and 'Virilex' used as antiageing (Tripathi & al., 1996).

Specimens examined: (Total 57) KSK 102813; VB 1062.

The separated cocci are reportedly do not float in water (Ridley, 1930). Hence, they may be dispersed by birds. However, the absence of *T. terrestris* on islands appears inexplicable.

19. OXALIDACEAE

Biophytum DC.

Tropics, ca 50 species, 9 in India and Tamil Nadu and one in GM.

B. sensitivum (L.) DC., Prodr. 1: 690. 1824, var. *sensitivum*: Edgew. & Hook. f. in Fl. Brit. India 1: 436. 1874, p.p.; FPM 133. 1915; IFTC t. 96. 1982; FTC 3: 189. 1983; FTN 1: 50. 1983. *Oxalis sensitiva* L., Sp. Pl. 434. 1753, p.p.

Small, erect herb. Leaflets 7 - 15 pairs, obovate or oblong-ovate. Flowers 7 - 10, in umbels. Calyx glandular-pubescent. Corolla bright red. Capsules ovoid, septate; seeds globose, 9-ridged.

Fl. & Fr.: Throughout the year.

Habitat: Open wastelands, with *Hybanthus enneaspermus*, *Spermacoce hispida* etc.

Distrib.: Indomalesia. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Plants used as tonic and stimulant, used in chest complaints, convulsions, cramps and inflammatory tumours. Ash is mixed with lime juice and given for stomachache. Leaves and roots styptic. Decoction of leaves given for diabetes, asthma and phthisis

Specimens examined: (Total 30) PD & PU 107340, 107380.

20. AVERRHOACEAE

Averrhoa L.

Cultivated in the tropics, 2 species.

Key to the species

- | | |
|---|------------------------|
| 1a. Leaflets less than 5 pairs; berries acutely angled;
seeds arillate | 2. A. carambola |
| b. Leaflets more than 5 pairs; berries obtusely
angled; seeds exarillate | 1. A. bilimbi |

1. **A. bilimbi** L., Sp. Pl. 428. 1753; FBI 1: 439. 1874; FPM 133. 1915; IFTC t. 98. 1982; FTC 3: 192. 1983; FTN 1: 51. 1983; FI 4: 256. 1997. [*Pulicha*]

Small tree. Leaflets 4 or 5 pairs, oblong, ovate or lanceolate. Flowers in axillary panicles. Berries oblong, greenish yellow.

Fl. & Fr.: Jan. - March.

Distrib.: Cultivated in kitchen gardens.

Uses: The sour fruits are edible and sold in market; sometimes pickled.

2. **A. carambola** L., Sp. Pl. 428. 1753; FBI 1: 439. 1874; FPM 133. 1915; FTC 3: 193. 1983; FTN 1: 57. 1983; FI 4: 257. 1997.

Small tree. Leaflets to 17 pairs, ovate or lanceolate. Flowers in cauliflorous panicles. Berries oblong, greenish yellow.

Fl. & Fr.: Feb. - March.

Distrib.: Cultivated in kitchen gardens.

Uses: The sour edible fruits are sold in market; sometimes pickled.

21. BALSAMINACEAE

Impatiens balsamina L. is cultivated in gardens as an ornamental plant. The flowers are pink, red or white.

22. RUTACEAE

Key to the genera

- | | |
|--|---------------------|
| 1a. Armed, straggling shrub; flowers unisexual | 3. <i>Toddalia</i> |
| b. Armed trees; flowers bisexual | 2 |
| 2a. Leaves 3-foliolate; berries ovoid, ca 8 x 6 cm | 1. <i>Aegle</i> |
| b. Leaves 1-foliolate; berries globose, ca 2 cm | 2. <i>Atalantia</i> |

1. *Aegle* Correa nom. cons.

Indomalaysia, 3 species and one in India.

A. marmelos (L.) Correa in Trans. Linn. Soc. London, Bot. 5: 223, 1800; Wight, Icon. t. 16, 1838; FBI 1: 516, 1875; FPM 161, 1915; IFTC t. 101, 1982; FTC 3: 199, 1983; FTN 1: 57, 1983; RHFC 5: 414, 1985. *Crateva marmelos* L., Sp. Pl. 444, 1753. [*Vilvam*]

Armed tree. Leaflets elliptic or oblong-obovate. Panicles axillary. Corolla white. Berries woody; seeds numerous, oblong.

Fl. & Fr.: Almost throughout the year.

Distrib.: Myanmar and Vietnam. TN: All districts. Usually planted in temples.

Uses: Unripe fruits astringent, digestive and stomachic, used in diarrhoea and dysentery. Marmelosin acts as a laxative and diuretic; in strong doses it is a cardiac depressant. Gummy substance around the seeds serves as an adhesive. Also used as a varnish for pictures and adds brilliancy to watercolour paints.

Known as bel-cups, fruits are also used in dry flower decorations.

Specimens examined: (Total 17) VB 1679.

2. *Atalantia* Correa nom. cons.

Trop. forests of India, SE. Asia and China, 11 species, 4 in India and Tamil Nadu and one in GM.

A. racemosa Wight & Arn., Prodr. 91. 1834; FBI 1: 512. 1875; FPM 159. 1915; IFTC t. 102. 1982; FTC 3: 201. 1983; FTN 1: 58. 1983; RHFC 5: 419. 1985; FI 4: 269. 1997. *Sclerostylis parviflora* Wight, Icon. t. 71. 1838. [*Kattu Naragam*]. (Fig. 6; Photo 15)

Armed, small tree or shrub, to 2 m high. Leaves elliptic, cuneate, entire or crenulate, obtuse, rarely emarginate. Racemes axillary. Corolla creamy white; berries 1 - 5-seeded.

Fl. & Fr.: Dec. - April.

Habitat: Sandy localities, with *Asystasia gangetica*, *Cardiospermum canescens* and *Sapindus emarginatus*.

Distrib.: S. India and Sri Lanka. TN: Coimbatore, Dharmapuri, Kanyakumari, Madurai, Nilgiri, Ramanathapuram, Salem, S. Arcot and Tiruchirapalli. GM: Rare. Nal-lathanni and Upputhanni Islands. Only 2 plants on the former and about 30 on the latter were seen.

Reported to occur in semievergreen forests of the W. Ghats, up to 1370 m (Nair & Nayar in FI 4: 269. 1997). However, it also occurs on the E. Ghats (Matthew, 1983). The nearest place of collection on the W. Ghats is Srivilliputhur (*N. C. Nair* 61431, MH) which is about 125 km away from the Gulf of Mannar Coast as the crow flies. The fruits/seeds are unlikely to have arrived through a bird as the fruits are large and not attractively coloured. Larger bats may be involved. However, that the fruits/seeds might have arrived through one of the rivers after a flash flood appears more convincing. The fruits of *A. monophylla* can float (Balasubramanian, pers. comm.). The fruits of *A. racemosa* may also float. But then how long the seeds can withstand the salinity of the water is a moot point. The small populations call for strict monitoring.

Specimens examined: (Total 22) Nt Is. PD & PU 106638; Ut Is. PD 101648.

3. *Toddalia* Juss. nom. cons.

Old World tropics, unispecific.

T. asiatica (L.) Lam., Tabl. Encycl. 2: 116. 1792; FPM 151. 1915, incl. vars.; FTC 3: 213. 1983, incl. vars.; FTN 1: 62. 1983; RHFC 5: 472. 1985; FI 4: 403. 1997. *Paullinia asiatica* L., Sp. Pl. 365. 1753. *Toddalia aculeata* Pers., Syn. Pl. 1: 249. 1805; FBI 1: 497. 1875.

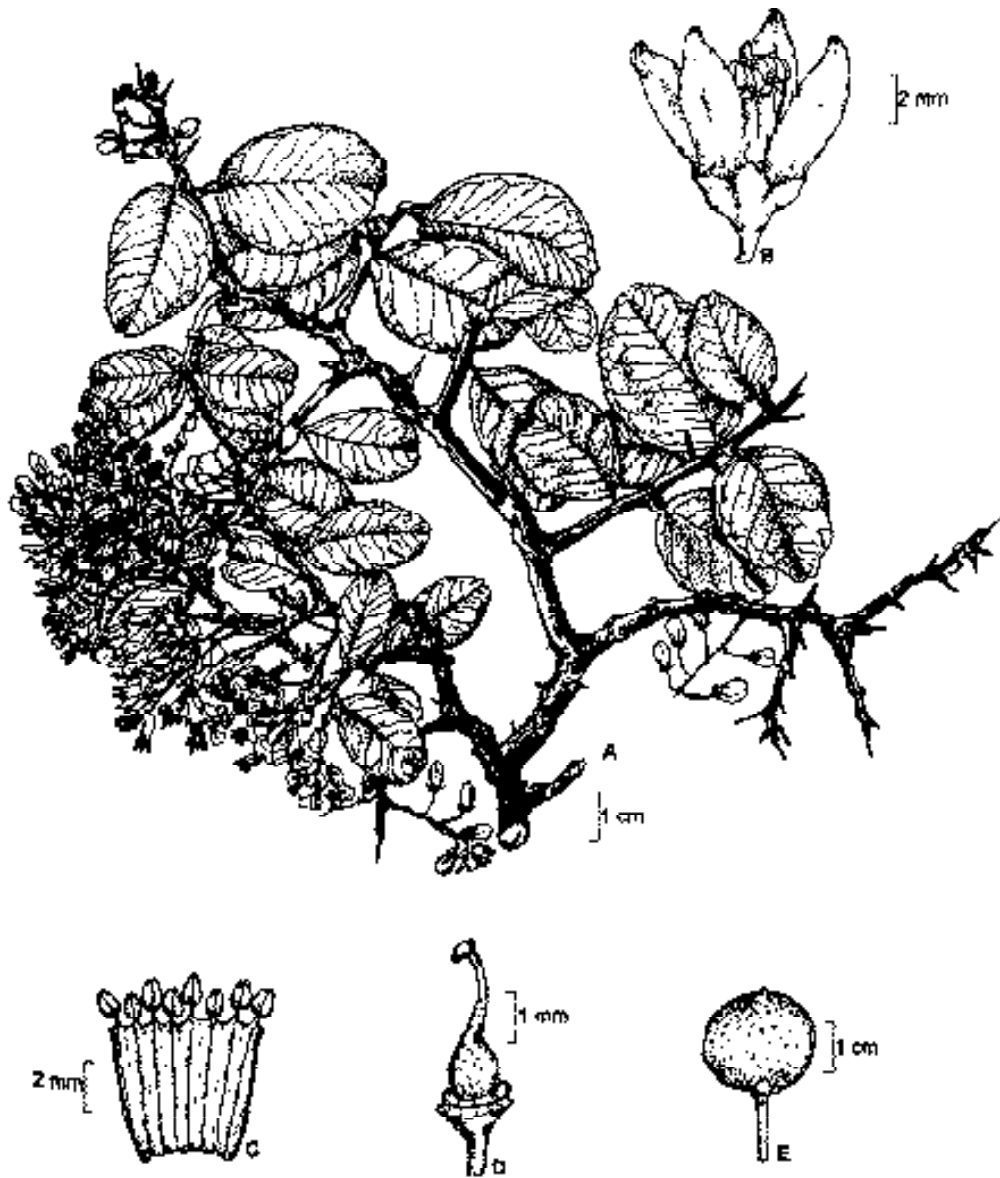


Fig. 6(A - E). *Atalapha racemosa* Wight & Arn.
 A. Twig B. Flower C. Stamens D. Pistil E. Fruit

Straggling, prickly shrub. Leaves 3-foliolate; leaflets lanceolate-elliptic; midnerve spiny beneath. Flowers in panicles. Corolla white. Stamens 3. Berries globose; seeds subreniform.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles, with *Anisomeles malabarica*, *Caesalpinia bonduc*, *Jatropha glandulifera* and *Vitex negundo*.

Distrib.: India to China and Malesia. TN: Most districts. GM: Mainland coast, frequent.

Uses: Root bark diaphoretic, stomachic and antipyretic, also used in diarrhoea and debility during convalescence. Fresh leaves eaten to relieve pain in bowels. Ripe berries pickled.

Specimens examined: (Total 38) KSK 102005, 103305; PD 100429; PD & PU 106904.

Citrus aurantifolia (Christm.) Swingle, *C. medica* L. and *C. limon* (L.) Burm. f., the common lemon tree, are cultivated for their sour fruits, used as pickles. *Murraya königii* (L.) Spreng., the curry leaf tree, is cultivated for the leaves, much used in flavouring curries. *Limonia acidissima* L., for its edible fruits and *Murraya paniculata* (L.) Jack as an ornamental may sometimes be cultivated.

23. SIMAROUBACEAE

Allanthus Desf.

Asia to Australia, 5 species, 2 in India and Tamil Nadu and one in GM.

A. excelsa Roxb., Pl. Coromandel t. 23. 1795; IIB 1: t. 67. 1840; FBI 1: 518. 1875; FPM 163. 1915; IFTC t. 115. 1982; FTC 3: 217. 1983; FTN 1: 63. 1983. [*Pee maram*]

Lofty tree. Leaves odd-pinnate; leaflets oblong-lanceolate. Panicles axillary or terminal. Flowers polygamous. Petals 5, pale yellow. Samara oblong; seeds compressed.

Fl. & Fr.: Jan. - March.

Habitat: Wastelands. Also cultivated on roadsides.

Distrib.: India and Sri Lanka. TN: Coimbatore, Dharmapuri, Kanyakumari, Madurai, Ramanathapuram, Salem and Tiruchirapalli. GM: Mainland coast, occasional.

Uses: Wood used for catamarans and small boats. Bark anthelmintic, febrifuge, expectorant and antispasmodic. Leaves and shoots used as fodder.

Specimens examined: (Total 17) VB 2399.

24. SURIANACEAE

Suriana L.

Pantropical, unispecific.

S. maritima L., Sp. Pl. 284. 1753; FBI 1: 522. 1875; FPM 1872. 1936; FFI 4: 17. 1980; FTN 1: 63. 1983; FI 4: 422. 1997. (Fig. 7; Photo 16)

Shrub, to 2 m high. Leaves clustered at ends of branchlets, sessile, linear-spatulate, densely sericeous. Flowers solitary, or 2-5 in axillary or terminal cymes. Sepals unequal, shortly connate at base, ovate-lanceolate, acute. Petals 6, caducous, obovate, bright yellow, falling off at the slightest disturbance. Stamens 10; fertile stamens usually 5, rarely 6; staminodes (4-) 5, opposite petals. Carpels (4-) 5(-6), distinct. Fruits obovoid, with (2-) 5(-6) carpels and persistent calyx; seeds oblong, ca 2 mm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy and coral substratum with *Cyperus conglomeratus* subsp. *pachyrhizus*, *Gloriosa superba*, *Lumnitzera racemosa*, *Salvadora persica*, *Sporobolus maderaspatanus* and *Thespesia populnea*.

Distrib.: India: Andaman & Nicobar Islands, Lakshadweep and Tamil Nadu. TN: Ramanathapuram. GM: Rare. On Kurusadai, Pullivasal, Pumarichan and Shingle Islands only.

Earlier it was collected on Kurusadai and Shingle Islands only. During the present explorations plants were collected on Pullivasal and Pumarichan Islands as well. Iyengar (1927) stated that in 1922 he saw one plant on the southern side of Kurusadai Island and 3 or 4 plants on Shingle Island. Now there are about 10 plants on Kurusadai and more than 300 plants on other Islands.

Chances for the fruits to be dispersed by birds appear rather remote as they do not possess any special mechanisms nor do they occur in the vicinity of mud to get stuck fortuitously to the feet of birds. The fruits are likely to be dispersed by seawater as pointed out by earlier workers.

The restricted distribution of this species in the study area seems to be governed by intricate factors which can be unravelled only by intensive field studies.

Specimens examined: (Total 14) Ku Is. MOPI 6019 (K photo!); PD & PU 106822; Pu Is. KSK 101682, 102337; Pv Is. KSK 103346; Sh Is. PD & PU 106873.

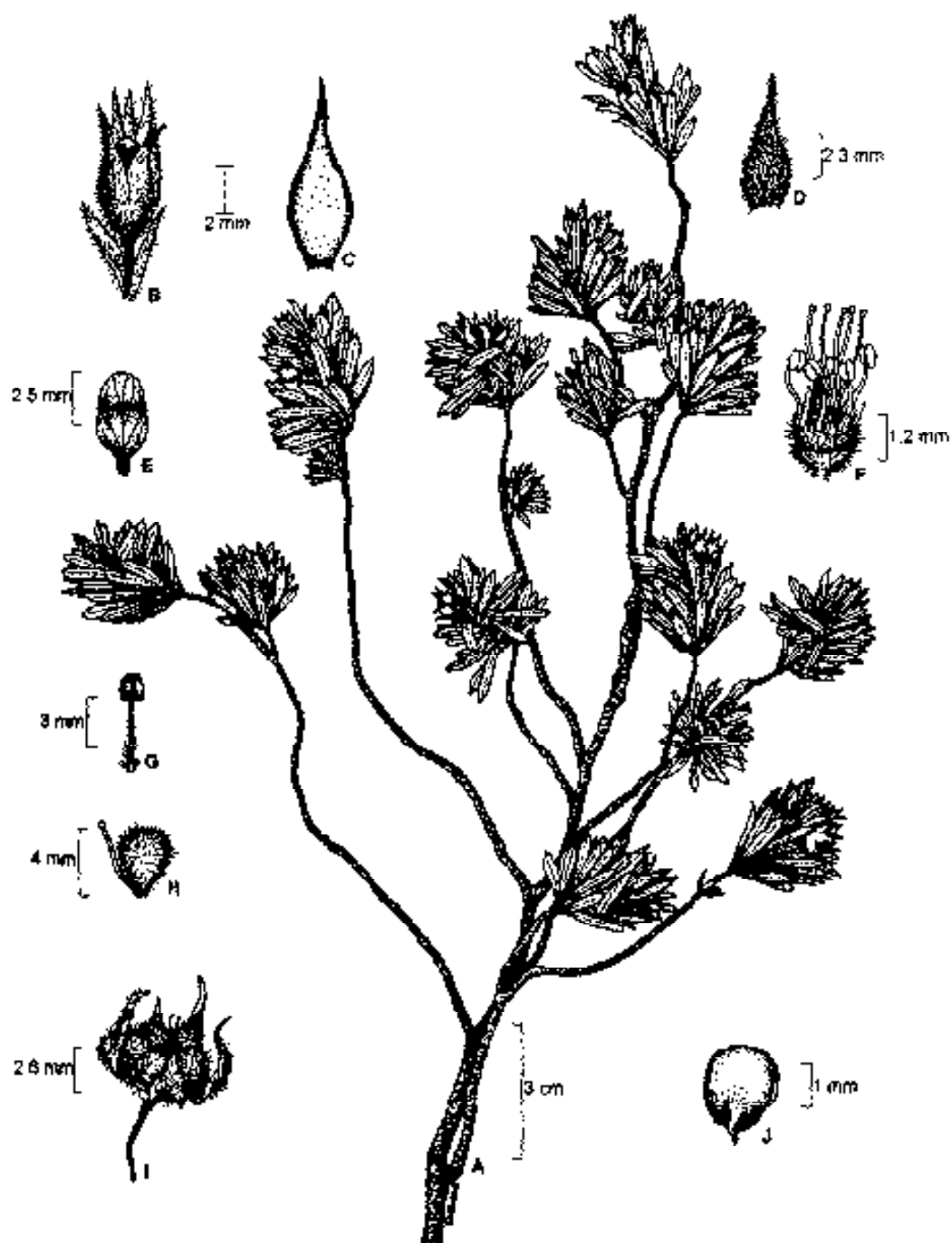


Fig. 7(A - J). *Soriana maritima* L.

A. Twig B. Flower C & D. Sepals E. Petal F. Androecium & gynoecium
G. Stamen H. Carpel & Fruit J. Seed

25. BURSERACEAE

Commiphora Jacq. nom. cons.

Africa and Madagascar, Arabia to W. India and S. America, ca 190 species, 6 in India, 3 in Tamil Nadu and one in GM.

C. berryi (Arn.) Engl. in DC., Monogr. Phan. 4: 17. 1883; FPM 170. 1915; FTC 3: 226. 1983; FTN 1: 65. 1983. *Balsamodendron berryi* Arn. in Ann. Nat. Hist. 3: 86. 1839; FBI 1: 529. 1875. [*Mulkiluvai*]

Armed shrub. Leaves 3-foliolate; leaflets obovate. Flowers in axillary clusters, 4-merous. Corolla creamy white. Drupes ovoid-globose, green with brown streaks; 2-seeded.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles, with *Dodonaea viscosa*, *Ziziphus mauritiana* etc.

Distrib.: India. Endemic. TN: Most districts. GM: Mainland coast, frequent. Collected near Koodankulam. Earlier reported from Hare Island (Sundararaj & Nagarajan, 1969), now part of the Tuticorin harbour.

Use: Yields a fragrant gum-resin.

Specimens examined: (Total 52) PD 100458.

26. MELIACEAE

Azadirachta A. Juss.

Indomalesia, 2 species and one in India.

A. indica A. Juss. in Mem. Mus. Hist. Nat. Paris 19: 221, t. 2, f. 5. 1832; Wight, Icon. t. 17. 1838; FPM 177. 1915; IFTC t. 125. 1982; FTC 3: 234. 1983; FTN 1: 67. 1983. *Melia azadirachta* L., Sp. Pl. 385. 1753; FBI 1: 544. 1875. [*Veppamaram*, *Vembu*]

Large tree. Leaves odd-pinnate; leaflets oblong-lanceolate, oblique, falcate, serrate. Panicles axillary. Corolla white. Drupes oblong, yellow when ripe, 1-seeded; seeds ellipsoid, surrounded by bitter-sweet pulp.

Fl. & Fr.: March - June.

Habitat: Scrub jungles; sandy interior of islands.

Distrib.: India: Throughout plains. TN: All districts. GM: Common on mainland, also cultivated and occurs on Moyal (abundant), Nallathanni (common), Upputhanni and Puluvinichalli Islands (rare). Moyal Island has a grove of large and small trees.

The common crow is known to feed on the fruits and the seeds pass through the guts intact. Crows are a common sight on both Moyal and Nallathanni Islands. They may visit the islands to pick up the left over food by the two families that stay here. A few plants might have been introduced initially.

Uses: Bark used in skin troubles. Leaves considered antiseptic, applied to boils in the form of poultice; decoction given for ulcers and eczema. Flowers tonic and stomachic. Berries purgative, emollient. Odour of burning leaves kills insects. Seeds yield a non-drying oil used for skin affections. This oil may be mixed with other oils and fats for the manufacture of washing soap.

Leaf is an ingredient in the herbal products, 'Amrycard' capsule, 'Canthalax' tablet and 'Acitron alkaliser'. Neem oil is an ingredient in 'Adeon' (body oil) and 'Advitamin' (body oil) (Anon., 1996a). Also an ingredient in the Ayurvedic preparation 'Baby oil' used in infantile rickets, 'Nimbaharidradi' used in eczema and 'Othroherb' used as antiageing (Tripathi & *al.*, 1996).

Specimens examined: (Total 26) VB 1329, 1361.

Melia azedarach L., the Persian lilac, a small tree, is sometimes planted along roadsides.

27. CELASTRACEAE

Key to the species

- | | |
|---|-------------------------|
| 1a. Plants armed; leaves alternate; capsules obovoid-globose | 2. <i>Maytenus</i> |
| b. Plants unarmed; leaves decussate; drupes oblong or ovoid-globose | 2 |
| 2a. Leaves crenate to deeply serrate; drupes oblong | 1. <i>Cassine</i> |
| b. Leaves entire; drupes ovoid-globose | 3. <i>Pleurostyliia</i> |

1. *Cassine* L.

Pantropical, ca 80 species, 3 in India and Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|---------------------|
| 1a. Shrub; leaves deeply serrate; flowers in dichasial cymes | 1. <i>C. balae</i> |
| b. Tree; leaves serrate-crenate; flowers in corymbose cymes | 2. <i>C. glauca</i> |

1. *C. balae* Kosterm. in Gard. Bull. Singapore 39: 185. 1987; JBNHS 96: 495. 1999. (Fig. 8)

Leaves ovate or elliptic-oblong. Corolla greenish. Ovary conical; disc cushion-like. Drupes ca 2 cm long.

Fl. & Fr.: Oct. - Jan.

Habitat: Scrub jungles, under shade of *Acacia planifrons* trees.

Distrib.: India and Sri Lanka. TN: Ramanathapuram. GM: Mainland coast, rare. Earlier collected near Pamban. This time around it was collected at Mandapam. Only about 10 plants were seen. Reported by Daniel & al. (1999) as an addition to the flora of India.

The putamen splits into two halves after a prolonged period of soaking and rotting (Kostermans, 1987). The fruits being green to boot and hence unlikely to be picked up by birds, the seeds might have reached the Indian shores by seawater. That the plant might have reached through human agency, the Tamil refugees from Sri Lanka, may also be not ruled out.

Specimens examined: PD & PU 106696.

2. *C. glauca* (Rottb.) Kuntze, Revis. Gen. Pl. 114. 1891; IFTC t. 141. 1982; FTC 3: 255. 1983; FTN 1: 72. 1983. *Mangifera glauca* Rottb. in Nye Saml. Köngel. Danske Vidensk. Selsk. Skr. 2: 534, t. 4, f. 1. 1783. *Elaeodendron glaucum* (Rottb.) Pers., Syn. Pl. 1: 241. 1806; FBI 1: 623. 1875, p.p., FPM 211. 1918. *Celastrus roxburghii* Wight & Arn., Prodr. 157. 1834; IIB 1: t. 71. 1840. [Karuvalli]

Leaves ovate-oblong. Corolla greenish. Ovary conical; disc cushion-like. Drupes ca 1 cm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Open places and road sides, with *Delonix elata*, *Pongamia pinnata* etc.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Specimens examined: (Total 50) KSK 103377; PD 100410.

2. *Maytenus* Molina

Tropics and subtropics, ca 225 species, 15 in India, 5 in Tamil Nadu and one in GM.

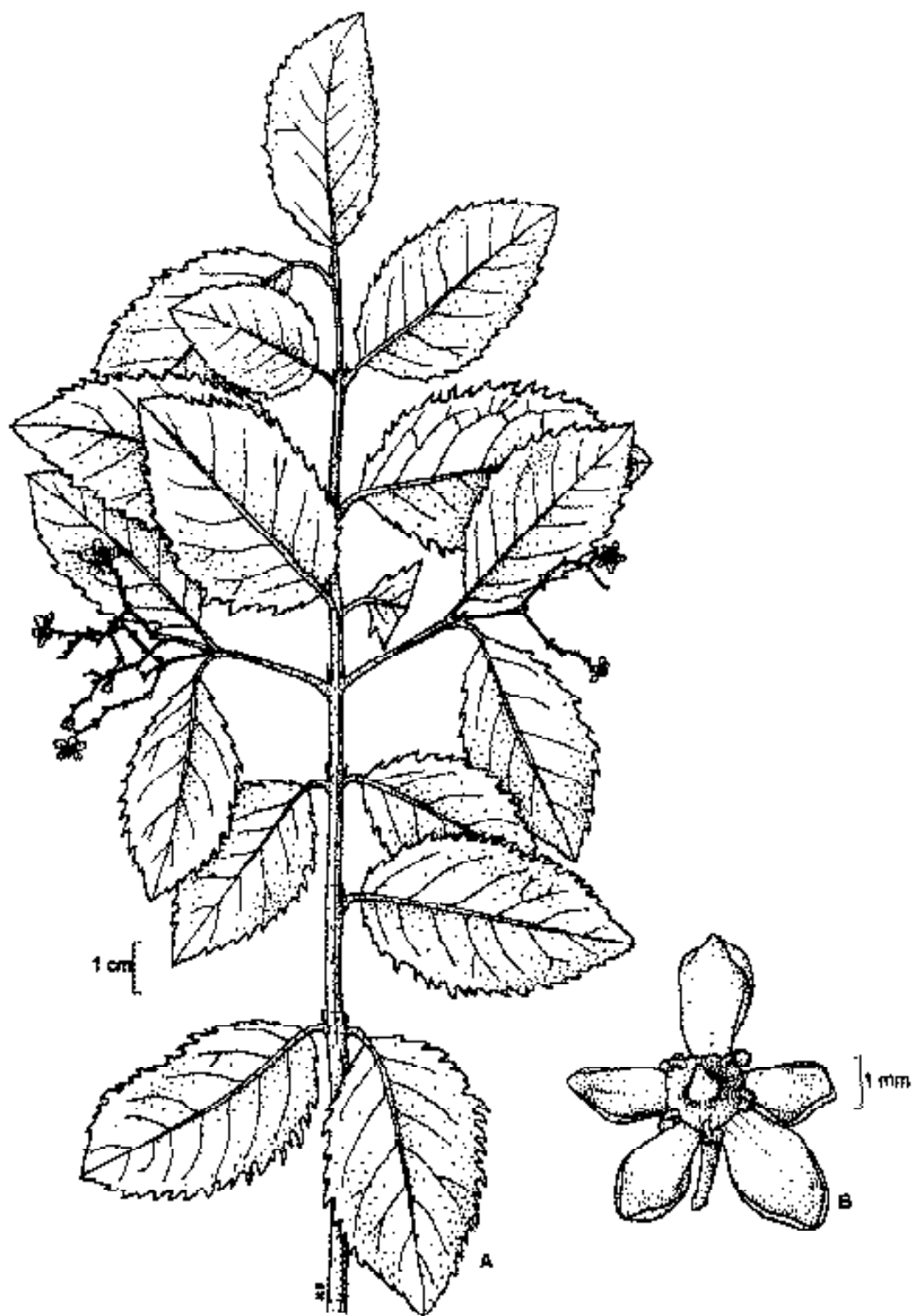


Fig. 8 (A & B). *Cassine bala* Kosterm.
A. Twig B. Flower

M. emarginata (Willd.) Ding Hou in Steenis, Fl. Males. 1, 6: 241. 1962; FTC 3: 258. 1983; FTN 1: 74. 1983. *Celastrus emarginatus* Willd., Sp. Pl. 1: 2. 1798. *C. montanus* Roth in Roem. & Schult., Syst. Veg. 5: 427. 1819; Wight, Icon. t. 382. 1840. *Gymnosporia montana* (Roth) Benth., Fl. Austral. 1: 400. 1863; FBI 1: 621. 1875; FPM 209. 1918.

Shrub. Leaves obovate or obovate-oblongate, entire or serrate. Cymes axillary or terminal. Corolla white. Disc sinuate-lobed. Capsules ca 7 mm; seeds ovoid; aril fleshy or membranous.

Fl. & Fr.: Dec. - March.

Habitat: Scrub jungles.

Distrib.: SE. Asia to N. Queensland and Sri Lanka. TN: Almost all districts. GM: Chacko & al. (1955) reported its presence on Kurusadai Island. There are no voucher specimens nor has it been collected again. It is not known whether this species disappeared from the island in the meantime.

3. *Pleurostylia* Wight & Arn.

Old World tropics, 6 species and one in India.

P. opposita (Wall.) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.): 48. 1931; IFTC t. 146. 1982; FTC 3: 261. 1983; FTN 1: 75. 1983. *Celastrus opposita* Wall. in Roxb., Fl. Ind. 2: 398. 1824. *Pleurostylia wightii* Wight & Arn., Prodr. 157. 1834; Wight, Icon. t. 155. 1839; FBI 1: 617. 1875; FPM 211. 1918. [*Sirupivart*]

Small tree. Leaves oblong-obovate or lanceolate, entire. Flowers in cymes. Corolla greenish. Disc faintly lobed. Seeds ovoid.

Fl. & Fr.: July - Nov.

Habitat: Sandy places, with *Capparis sepiaria*, *Manilkara hexandra* and *Phyllanthus reticulatus*.

Distrib.: India, Madagascar, Mauritius and Sri Lanka. TN: Coimbatore, Dharmapuri, Nilgiri, Ramanathapuram, Salem and Tiruchirapalli. GM: Frequent on Kurusadai, Muyal, Pullivasal and Pumarichan Islands. Not collected on mainland coast.

Occurs in the interior regions only. Mostly a plant of the hills (Gamble, 1918). Though there are collections from Thanjavur coast at MH, this area too is equally far away. It has never been collected on the Gulf of Mannar Coast. Red-vented and white-browed bulbuls are reported to eat the fruits and disperse the seeds (Balasubramanian, 1996). Since these

birds are found in the biosphere reserve, the plant might have been transported by them. But then, they are present only on 4 of the 7 islands of the Mandapam group.

Uses: Wood used for making furniture and also used for combs.

Specimens examined: (Total 64) Ku Is. PD 106613; Mu Is. PD 100311; Pu Is. PD 99747; Pv Is. KSK 103336.

28. RHAMNACEAE

Key to the genera

- | | |
|--|---------------------|
| 1a. Unarmed shrubs..... | 1. <i>Colubrina</i> |
| b. Armed shrubs or trees..... | 2 |
| 2a. Branches usually zig-zag; leaves alternate; petals not clawed..... | 3. <i>Ziziphus</i> |
| b. Branches not zig-zag; leaves opposite; petals clawed..... | 2. <i>Scutia</i> |

1. *Colubrina* Rich. ex Brongn.

Tropics and subtropics, 31 species, 2 in India and one in Tamil Nadu.

C. asiatica (L.) Brongn., Mem. Fam. Rhamn. 62. 1826; IIB 1: t. 74. 1840; FBI 1: 642. 1875; FPM 224. 1918; FTN 1: 76. 1983; FFI 20: 32. 1990. *Ceanothus-asiaticus* L., Sp. Pl. 196. 1753. [*Mayirmanikkam*] (Fig. 9)

Straggler. Leaves ovate, crenate-serrate. Cymes axillary. Petals pale yellowish. Disc 5-lobed, fleshy. Capsules globose, ca 1 cm; seeds 3, obovoid, brownish.

Fl. & Fr.: Dec. - March.

Habitat: Sandy localities, with *Dichrostachys cinerea*, *Manilkara hexandra* etc.

Distrib.: Australia, India, Indonesia, Myanmar, S. Africa and Sri Lanka. TN: Chengalpattu, Coimbatore, Ramanathapuram and Tiruchirapalli. GM: Occasional on mainland coast and Pullivasal Island. The limited number of specimens at MH may indicate that it is not common in this region.

Seeds are reported to float for months (Ridley, 1930). Hence, the seeds might have arrived on the island through water. But then, it occurs only on Pullivasal Island which needs further studies.

Specimens examined: (Total 9) KSK 102024; NCN 53132; VB 1580, 2192; Pu Is. PD 101407.

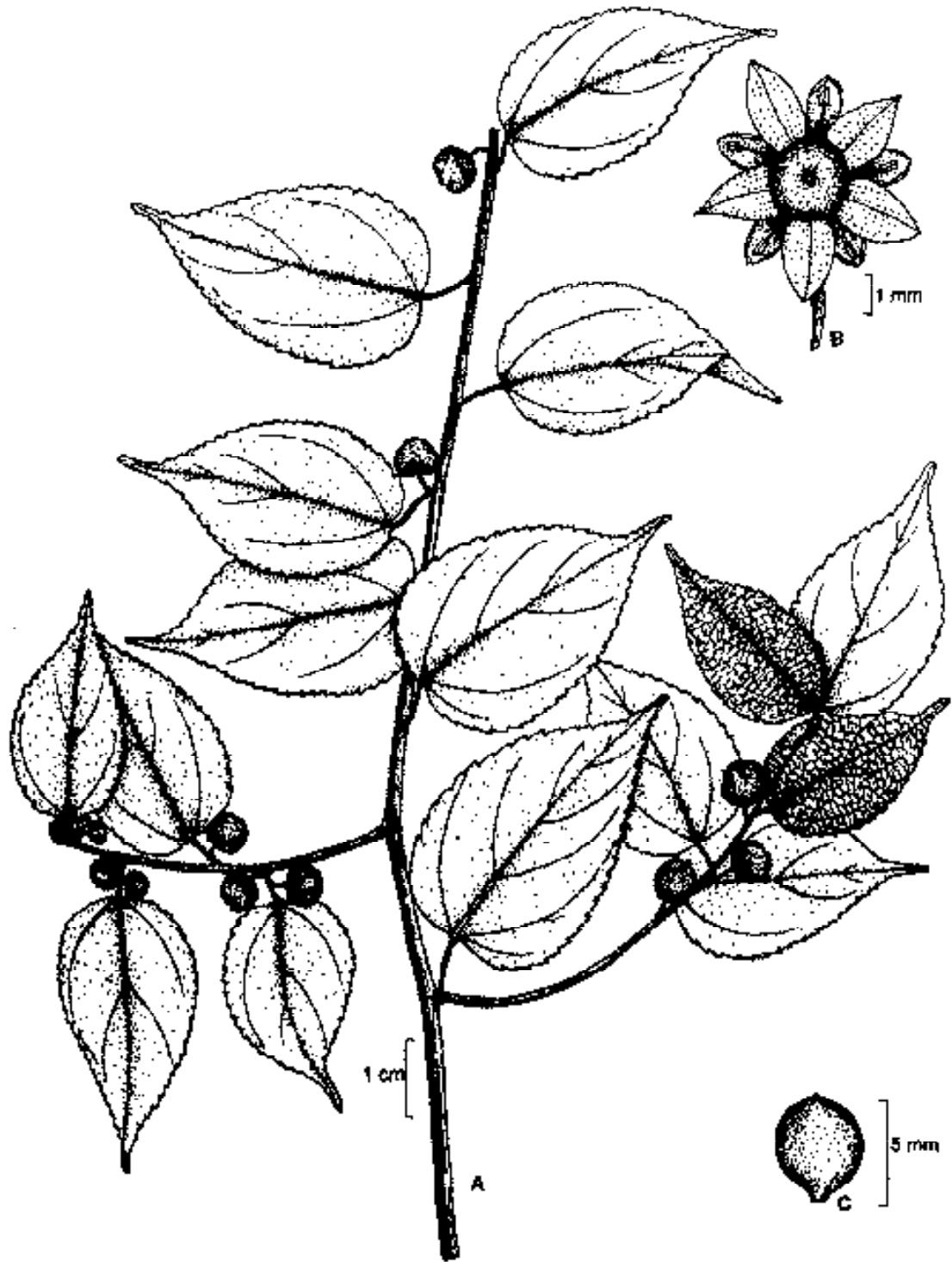


Fig. 9(A - C). *Calabrina asiatica* (L.) Brongn
 A. Twig B. Flower C. Seed

2. *Scutia* (DC.) Brongn.

Tropics, 4 species and one in India.

S. myrtina (Burm. f.) Kurz in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 44: 168. 1875; FPM 223. 1918; IFTC t. 152. 1982; FTC 3: 268. 1983; FTN 1: 77. 1983; FFI 20: 71. 1990. *Rhamnus myrtinus* Burm. f., Fl. Indica 60. 1768. *Scutia indica* Brongn., Mem. Fam. Rhamn. 56. 1826; IIB 1: t. 73. 1840; FBI 1: 640. 1875. [*Tuvadi*]

Shrub. Leaves ovate-elliptic or obovate, cuneate or rounded-cordate, entire to slightly crenate, acute or rounded, or emarginate at apex. Flowers in axillary clusters. Calyx turbinate, 5-lobed; lobes ovate. Petals 5, pale yellowish. Ovary globose, on a disc. Drupes subglobose or obovoid, apiculate; seeds 2 - 4, subglobose.

Key to the varieties

- | | |
|--|-----------------------------|
| 1a. Leaves ovate-elliptic, acute or rounded at apex..... | 2.2. var. <i>myrtina</i> |
| b. Leaves obovate, emarginate at apex | 2.1. var. <i>emarginata</i> |

2.1. var. *emarginata* Bhandari & Bhansal in Fasc. Fl. India 20: 71. 1990. (Fig. 10)

Fl. & Fr.: Jan. - March.

Habitat: Scrub jungles, with *Premna serratifolia*, *Securinea leucopyrus* etc.

Distrib.: India. Andhra Pradesh and Tamil Nadu. Endemic. TN: Ramanathapuram. GM: Rare on mainland coast and Moyal Island. Represented at MH by a few specimens only; appears rare in the region.

Fruits are eaten by birds (Ridley, 1930; Balasubramanian, 1996) and dispersed. Dispersal deserves further investigations.

Specimens examined: (Total 5) VB 1747; PD & PU 106915; Mu Is. KSK 102987B.

2.2. var. *myrtina*

Fl. & Fr.: Sept. - May

Habitat: Scrub jungles, with *Anisomeles malabarica*, *Tragia plukenetii* and *Vitex negundo*.

Distrib.: India, Mauritius and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional. Collected at Rameswaram.

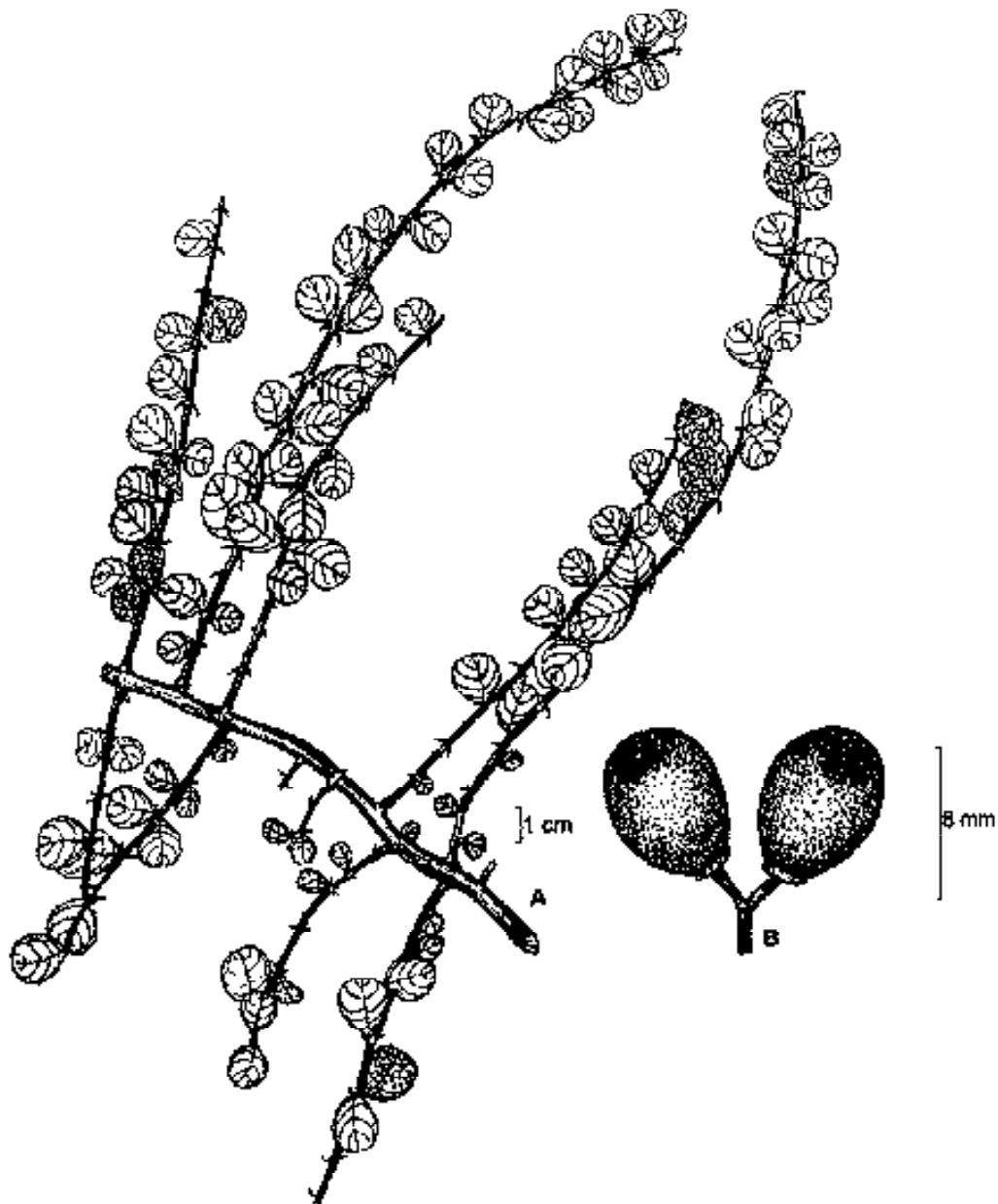


Fig. 18 (A - C). *Scaevola myrtina* (Burm. f.) Kuntz var. *emarginata* Bhandari & Bhanad
 A. Twig B. Fruits

Uses: Fruits eaten. Leaves form an ingredient of an ointment locally applied to hasten parturition.

Specimens examined: (Total 112) KSK 103321.

3. *Ziziphus* Mill.

Temperate and tropical regions, ca 135 species, 17 in India, 8 in Tamil Nadu and 4 in GM.

Key to the species

- | | |
|--|-------------------------|
| 1a. Drupes 1-seeded..... | 2 |
| b. Drupes 2- or 3-seeded..... | 3 |
| 2a. Tree; leaves orbicular; drupes 1.4 - 1.6 cm | 1. <i>Z. mauritiana</i> |
| b. Straggling shrub; leaves ovate; drupes 0.3 - 0.5 cm | 3. <i>Z. oenoplia</i> |
| 3a. Calyx lobes deltoid; drupes 0.7 - 0.9 cm | 2. <i>Z. nummularia</i> |
| b. Calyx-lobes triangular; drupes 1.8 - 2.5 cm | 4. <i>Z. xylopyrus</i> |

1. *Z. mauritiana* Lam., *Encycl.* 3: 319. 1789; *FTC* 3: 271. 1983, var. *mauritiana*: *FTN* 1: 78. 1983; *FFI* 20: 100. 1990. *Z. jujuba* (L.) Gaertn., *Fruct. Sem. Pl.* 1: 203. 1788, non Mill. 1768; *Wight, Icon.* t. 99. 1839; *FBI* 1: 832. 1875; *FPM* 219. 1918. *Rhamnus jujuba* L., *Sp. Pl.* 194. 1753. [*Hlanthai*]

Branchlets pubescent. Leaves minutely serrulate. Cymes axillary. Petals pale greenish. Disc 10-lobed, grooved. Drupes globose, fleshy, orange brown when ripe; seeds rugose.

Fl. & Fr.: July - Dec.

Habitat: Scrub jungles and among bushes in dry places, with *Calotropis gigantea*, *Capparis sepiaria*, *Toddalia asiatica* etc.

Distrib.: India and Sri Lanka. TN: All dry districts. GM: Frequent on mainland coast and Karaichalli, Nallathanni and Shingle Islands and Rameswaram. Earlier collected on Kurusadai Island. Not collected again.

Uses: Fruits edible. Timber used for agricultural implements, fuel and charcoal. Bark and roots are used as a dye and febrifuge respectively. Leaves much valued as a fodder.

Specimens examined: (Total 70) *PD* 100434; *SAM* 104769; *Ku Is.* *DD & SRR* 20542; *Kc Is.* *SAM* 104737; *Nt Is.* *PD & PU* 106628; *Sh Is.* *PD & PU* 106868.

2. *Z. nummularia* (Burm. f.) Wight & Arn. in Wight, Cat. Ind. Pl. 31. 1833 & Prodr. 162. 1834; FBI 1: 633. 1875; FPM 220. 1918; FTN 1: 78. 1983; FFI 20: 102. 1990. *Rhamnus nummularia* Burm. f., Fl. Indica 61. 1768. [Korgodi]

Straggling shrub; branchlets tomentose. Leaves ovate or rotund, serrulate. Cymes axillary. Petals pale greenish. Disc 10-lobed. Drupes globose, blackish red when ripe; seeds rugose.

Fl. & Fr.: March - Nov.

Habitat: Dry localities on mainland coast, with *Prosopis chilensis*, *Ricinus communis* etc.

Distrib.: Afghanistan, India, Iran, Iraq and Pakistan. TN: Coimbatore, Dharmapuri, Kanyakumari, Pudukkottai, Ramanathapuram, Tirunelveli and Tuticorin. GM: Mainland coast, rare. Earlier collected at Kanyakumari, now collected at Tuticorin port.

Uses: Commonly used for fencing. Leaves used as fodder, also used in curing scabies and boils. Fruits edible and used as an astringent.

Specimens examined: (Total 16) PD & PU 103527; VB 2077.

3. *Z. oenoplia* (L.) Mill., Gard. Dict. ed. 8, n. 3. 1768; FBI 1: 638. 1875; FPM 220. 1918; FTC 3: 272. 1983; FTN 1: 78. 1983; FFI 20: 103. 1990. *Rhamnus oenoplia* L., Sp. Pl. 194. 1753. [Kottei, Suraimullu]

Branches rusty-tomentose. Leaves oblique, denticulate, acute-acuminate. Cymes axillary. Petals greenish. Disc 10-lobed. Drupes globose, blackish red when ripe; seeds rugose.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles and open areas.

Distrib.: Australia, India, Malacca, Sri Lanka and Trop. Asia. TN: Almost all districts. As it is common a little away from the coast, it might occur on the coast.

Uses: Fruits edible, also used for stomachache. Bark used for tanning. Roots employed in hyperacidity and *Ascaris* infection.

Specimens examined: (Total 50) VB 1263.

4. *Z. xylopyrus* (Retz.) Willd., Sp. Pl. 1: 1104. 1797; FBI 1: 634. 1875; FPM 220. 1918; FTC 3: 273. 1983; FTN 1: 78. 1983; FFI 20: 112. 1990. *Rhamnus xylopyrus* Retz., Obs. Bot. 2: 11. 1781. [Kottei]

Tree; young branches rusty-tomentose. Leaves orbicular or broadly elliptic, obliquely subcordate, serrate. Cymes axillary, dichotomous. Petals greenish. Disc 10-lobed. Drupes globose, tomentose; seeds oblong, compressed, black.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles, with *Dichrostachys cinerea*, *Thespesia populnea* etc.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Rare. Once collected on Pullivasal Island, and not on mainland coast. Common in the interior.

Chacko & al. (1955) reported its presence on Kurusadai Island. This time around it was collected only on the adjoining Pullivasal Island. Not collected on other islands.

Bats and birds feed on the fruits of *Ziziphus* (Ridley, 1930). These agents might have transported them to the island.

Uses: Leaves used as fodder. Wood used for agricultural implements, also used as fuel.

Specimens examined: (Total 139) Pv Is. PD 101425.

29. VITACEAE

Key to the genera

- | | |
|---|-----------------------|
| 1a. Stems 4-angled, articulate..... | 2. <i>Cissus</i> |
| b. Stems neither angled nor articulate..... | 2 |
| 2a. Berries ovoid, reddish..... | 3. <i>Cyphostemma</i> |
| b. Berries obovoid, purplish black..... | 1. <i>Cayratia</i> |

1. *Cayratia* Juss.

Old World tropics, ca 45 species, 8 in India and Tamil Nadu and one in GM.

C. trifolia (L.) Domin in Biblioth. Bot. 89: 371. 1927; FTC 3: 279. 1783; RHFC 9: 457. 1995. *Vitis trifolia* L., Sp. Pl. 203. 1753. *Cayratia carnososa* (Lam.) Gagnep. in Lecomte, Notul. Syst. (Paris) 1: 344. 1911; FPM 237. 1918; FTN 1: 79. 1983. *Cissus carnososa* Lam., Encycl. 1: 31. 1789. *Vitis carnososa* (Lam.) Wight & Arn., Prodr. 127. 1834; Wight, Icon. t. 171. 1839; FBI 1: 654. 1875.

Tendrill-climbing shrub. Leaves 3-foliolate; leaflets ovate, serrate. Flowers in umbellate or corymbose cymes. Calyx obscurely 4-lobed. Petals greenish white. Disc obscurely lobed. Berries 2-seeded; seeds pyriform.

Fl. & Fr.: Almost throughout the year.

Habitat: Hedges on road sides and in sandy localities, with *Cucumis melo*, *Euphorbia antiquorum* etc.

Distrib.: India through SE. Asia to China, Malesia, Sri Lanka and Vietnam. TN: Almost all districts. GM: Frequent on mainland coast. Collected only on Appa Island.

Berries of this plant may be dispersed by birds (Ridley, 1930).

Uses: Roots astringent; ground with pepper applied to boils. Poultice of leaves rubefacient, applied to yolk-sore of bullocks.

Specimens examined: (Total 47) VB 1274; Ap Is. PD 101560.

2. *Cissus* L.

Tropics and subtropics, ca 350 species, 11 in India and Tamil Nadu and one in GM.

C. quadrangularis L., Mant. Pl. 39. 1767; FPM 233. 1918; FTC 3: 282. 1983; FTN 1: 81. 1983; Taxon 37: 172. 1988; RHFC 9: 476. 1995. *Vitis quadrangularis* (L.) Wall. ex Wight, Cat. Ind. Pl. 26. 1833 & Icon. t. 51. 1838; FBI 1: 645. 1875. [*Perandai*]

Tendrill-climbing, rambling shrub. Leaves caducous, ovate-suborbicular. Flowers in umbellate cymes. Petals greenish yellow, red-tipped. Disc 4-lobed. Berries globose, ca 8 mm, reddish.

Fl. & Fr.: Throughout the year.

Habitat: Hedges on road sides and interior of islands, usually on *Acacia planifrons*, *Euphorbia antiquorum*, *Salvadora persica* etc.

Distrib.: Widespread in the drier parts of Africa, Arabia and India. TN: All districts. GM: Common on mainland coast and most islands.

Uses: Juice prescribed in scurvy. Powdered root considered specific for fractures. Stem and root yield a strong fibre. Tender shoots are used in curries and in the preparation of papads.

Specimens examined: (Total 98) KSK 102850; PD 100430; SAM 104708.

3. *Cyphostemma* (Planch.) Alston

Tropics, ca 150 species and one in India.

C. setosum (Roxb.) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.): 53. 1931; FTN 1: 81. 1983; RHFC 9: 460. 1995. *Cissus setosa* Roxb., Fl. Ind. 1: 410. 1820; FPM 235. 1918; FTC 3: 283. 1983. *Vitis setosa* (Roxb.) Wall. ex Wight & Arn. in Wight, Cat. Ind. Pl. 26. 1833 & Prodr. 127. 1834; Wight, Icon. t. 170. 1839; FBI 1: 654. 1875.

Tendrill-climbing, scabrid shrub. Leaves 3 - 5-foliolate; leaflets obovate-oblong. Flowers in corymbs. Petals greenish. Berries ca 1.5 mm long; seeds ovoid, pitted.

Fl. & Fr.: Aug. - March.

Habitat: Sandy localities and hedges, on *Acacia* spp.

Distrib.: India and Sri Lanka. TN: All districts. GM: Mainland coast, frequent, particularly between Kanyakumari and Thiruchendur.

Uses: Leaves applied to ulcers for promoting suppuration and to assist in extraction of guinea worms.

Specimens examined: (Total 62) PD & PU 106507, 107238; SAM 106312.

Though the berries are either reddish or purplish, a colour attractive to birds, in all the 3 species of the Vitaceae, only was *Cissus quadrangularis* found on most islands. *Cayratia trifolia* was present only on Appa Island whereas *Cyphostemma setosum* was absent from islands.

30. SAPINDACEAE

Key to the genera

- | | |
|---|-------------------------|
| 1a. Tendril-climbers; fruits inflated..... | 1. <i>Cardiospermum</i> |
| b. Shrubs or trees; fruits not inflated..... | 2 |
| 2a. Shrubs; leaves simple, shiny; inflorescence a raceme..... | 2. <i>Dodonaea</i> |
| b. Tree; leaves compound, not shiny; inflorescence a panicle..... | 3. <i>Sapindus</i> |

1. *Cardiospermum* L.

Tropics, especially America, 14 species and 2 in India.

Key to the species

- | | |
|--|---------------------------|
| 1a. Leaves glabrous; flowers less than 0.5 cm across;
capsules ca 1.5 cm across, winged | 2. <i>C. halimifolium</i> |
| b. Leaves pubescent; flowers more than 0.5 cm
across; capsules ca 2.5 cm across, not winged | 1. <i>C. canescens</i> |

1. *C. canescens* Wall., Pl. Asiat. Rar. 1: 14. 1829; Wight, Icon. t. 74. 1838; FBI 1: 670. 1875; FPM 245. 1918; FTN 1: 83. 1983.

Leaflets ovate, cuneate, dentate, mucronate. Corymbs axillary. Petals creamy white. Capsules trigonous, ovoid-globose, greenish brown; seeds subglobose.

Fl. & Fr.: Dec. - Feb.

Habitat: Sandy soil, with *Aerva lanata*, *Pupalia lappacea* var. *orbiculata* etc.

Distrib.: Abyssinia and S. India. TN: Almost all districts. GM: Common on Anaipar, Karaichalli, Puluvnichalli and Upputhanni Islands and mainland coast in the vicinity. Elsewhere rare.

Specimens examined: (Total 83) PD & PU 106955; An Is. KSK 102375; Kc Is. PD 102070; Pc Is. PD & PU 106595; Ut Is. PD 101646.

2. *C. halicacabum* L., Sp. Pl. 366. 1753; Wight, Icon. t. 508. 1841; FBI 1: 670. 1875; FPM 244. 1918; FTC 3: 292. 1983; FTN 1: 83. 1983. [*Mudukattan*]

Leaflets elliptic-ovate, narrow at base, dentate, acuminate. Corymbs terminal or axillary. Petals white. Capsules pyriform, inflated, greenish; seeds globose.

Fl. & Fr.: Dec. - March.

Habitat: On bushes.

Distrib.: America, India, Malacca, Pakistan, Sri Lanka and Africa. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Roots diuretic and laxative; used in rheumatism and nervous diseases. Leaves rubefacient; used as a poultice in rheumatism.

Specimens examined: (Total 70) VB 1106, 1364.

The balloon-like fruits are said to be sea-dispersed (Ridley, 1930). *C. canescens* occurs on a few islands whereas *C. halicacabum* has not reached any island so far.

2. *Dodonaea* Mill.

Tropics and subtropics, ca 50 species and one in India.

D. viscosa (L.) Jacq., Enum. Syst. Pl. 19. 1760; FBI 1: 697. 1875; FPM 253. 1918; FTN 1: 84. 1983. *Ptelea viscosa* L., Sp. Pl. 118. 1753. [*Virali*]

Large shrub. Leaves lanceolate or elliptic-lanceolate, entire. Racemes axillary or terminal. Sepals 4, oblong. Petals absent. Capsules winged; seeds globose.

Fl. & Fr.: Sept. - March.

Habitat: Open sandy places and also in the hinterlands of mangrove swamps, with *Crotalaria retusa*, *Pleurostylia opposita* etc.

Distrib.: Tropics. TN: Almost all districts. GM: Frequent on mainland coast and Kurusadai, Pullivasal and Pumarichan Islands.

Uses: Wood used for tool-handles and walking sticks, and for engraving and turnery. Leaves a febrifuge; also used on burns, swellings and wounds. Fruits were once employed as a substitute for hops in the preparation of beer. Seeds edible, contain a semidrying oil.

Specimens examined: (Total 132) KSK 102980; Ku Is. PD & PU 106880; Pv Is. KSK 103335.

There is no unanimous opinion as to the dispersal of seeds of this plant to islands (Ridley, 1930). As it occurs only on Kurusadai Island which is frequented by humans and the adjoining Pullivasal and Pumarichan Islands, the plant might have initially arrived through humans on Kurusadai Island and then spread to the neighbouring islands.

3. *Sapindus* L.

Tropics and subtropics, 13 species, 7 in India, 2 in Tamil Nadu and one in GM.

S. emarginatus Vahl, Symb. Bot. 3: 54. 1794; FSSI t. 154. 1871; FPM 250. 1918; IFTC t. 167. 1982; FTC 3: 299. 1983; FTN 1: 85. 1983. *S. trifoliata* sensu Hiern in FBI 1: 682. 1875, p.p., non L. 1753. [*Puvamkottai*]

Tree, ca 6 m high. Leaves 3-foliolate; leaflets obovate, narrowly oblong, retuse or emarginate. Flowers in panicles. Male flowers: petals oblong, creamy, woolly; stamens 6; pistillode small. Bisexual flowers: ovary 3-gonous; drupes ovoid, lobed; seeds globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy soil, with *Atalantia racemosa*, *Cardiospermum canescens* and *Peltophorum pterocarpum*.

Distrib.: India, Myanmar and Sri Lanka. TN: Almost all districts. GM: Once collected on mainland coast at Mandapam, and on Upputhanni Island. On the island it is stunted. Whether the only tree at Mandapam is a remnant of a coastal jungle of the past or planted is not known.

Though found on the coasts, it is mostly a plant of the hills (Gamble, 1918). Apart from the single tree at Mandapam, another collection from the nearest place to coast at MH is from Sathur, then in Ramanathapuram plains. This is likely to be a cultivated one. All other collections are from the W. Ghats. Its presence on Upputhanni Island appears inexplicable as it is reportedly sea-dispersed (Ridley, 1930). But then, it is absent from even the nearest islands of the Mandapam group.

Uses: Wood occasionally used for making carts and small articles, also suitable for cabinet work and turnery. Root and bark expectorant and demulcent. Root bark is saponaceous and used as a detergent like the fruits. Also used as a fish-poison. Fruits emetic, tonic, astringent, and anthelmintic, used in asthma, colic due to indigestion, diarrhoea, cholera, paralysis of limbs and lumbago. Kernels yield a fixed oil used for soap manufacture.

Specimens examined: (Total 106) PD 101181; Ut Is. PD & PU 106616.

31. ANACARDIACEAE

Key to the genera

- | | |
|---|----------------------|
| 1a. Drupes on a fleshy hypocarp | 1. <i>Anacardium</i> |
| b. Drupes not on a fleshy hypocarp | 2 |
| 2a. Leaves simple; flowers 5-merous; drupes more than 2 cm long | 3. <i>Mangifera</i> |
| b. Leaves compound; flowers 4-merous; drupes ca 1 cm long | 2. <i>Lannea</i> |

1. *Anacardium* L.

Tropics, 8 species and one in India.

A. occidentale L., Sp. Pl. 383. 1753; FBI 2: 20. 1876; FPM 260. 1918; IFTC t. 170. 1982; RHFC 4: 8. 1983; FTC 3: 305. 1983; FTN 1: 87. 1983. [*Mundiri, Kollankottai*]

Tree. Leaves simple, obovate, cuneate, rounded, entire, obtuse. Panicles terminal or axillary. Flowers polygamous. Drupes reniform; hypocarp pyriform, yellow or red.

Fl. & Fr.: March - April.

Distrib.: Native of Trop. America. Cultivated for the cashew nut of commerce.

Uses: Kernels eaten. Used as a dessert and employed in sweetmeats and confectionary, highly nutritious. Cashew shells yield a drying oil.

2. *Lannea* A. Rich.

Trop. Africa and Indomalesia, ca 40 species and one in India.

L. coromandelica (Houtt.) Merr. in J. Arnold Arbor. 19: 353. 1938; RHFC 4: 21. 1983; FTC 3: 307. 1983; FTN 1: 88. 1983. *Dialium coromandelicum* Houtt., Nat. Hist. 2: 39, t. 5, f. 2. 1774. *Odina wodier* Roxb., Fl. Ind. 2: 293. 1832; Wight, Icon. t. 60. 1838; FBI 2: 29. 1876; FPM 263. 1918. [*Anaikarai, Kalasan*]

Large tree, leafless when in fruits. Leaves odd-pinnate; leaflets oblong-lanceolate. Catkins terminal, pendulous; flowers uni- or bisexual. Male flowers: petals 4, yellowish green; disc 8-lobed; stamens 8; pistillode 4-lobed. Bisexual flowers: stamens 8; ovary 1-loculed; drupes ovoid or obovoid, ca 1 cm long, greenish red, 1-seeded with yellow sap.

Fl. & Fr.: June - March.

Habitat: Road sides and sandy localities, with *Premna serratifolia*, *Terminalia catappa* etc.

Distrib.: China and India. TN: All districts. GM: Common on mainland coast and rare on Anaipar, Kurusadai, Muyal, Nallathanni, Pullivasal, Pumarichan and Valimunai Islands.

The fruits, eaten by birds like the common myna, house crow, red-vented and white-browed bulbuls (Balasubramanian, 1996), might be dispersed by them internally.

Uses: Wood is locally used for house-building, packing cases etc. Yields paper-pulp. Bark astringent; extract used for dyeing and textile printing.

Specimens examined: (Total 71) KSK 102055.

3. *Mangifera* L.

Indomalaysia, ca 35 species, 4 in India and one in Tamil Nadu.

M. indica L., Sp. Pl. 200. 1753; FBI 2: 13. 1876; FPM 259. 1918; IFTC tt. 173 & 967a. 1982; RHFC 4: 6. 1983; FTC 3: 308. 1983; FTN 1: 88. 1983 [*Maamaram*]

Large tree. Leaves oblong or elliptic-lanceolate, cuneate, entire, acuminate. Panicles terminal. Flowers polygamous. Drupes ovoid-oblong.

Fl. & Fr.: Jan. - Aug.

The mango tree with a number of varieties is cultivated for the sweet and delicious fruits. The sour varieties are used for pickles. Yields a good timber. A fodder tree as well.

32. MORINGACEAE

Moringa Adans.

Semiarid Africa to Asia. 14 species, 2 in India and Tamil Nadu and one in GM.

M. pterygosperma Gaertn., *Fruct. Sem. Pl.* 2: 314, 1791; *FBI* 2: 45, 1876; *FTN* 1: 90, 1983. *M. oleifera* auct. non Lam. 1785; *FSSIC* 80, 1871; *FPM* 269, 1918; *FM* 1, 4: 45, 1949; *FTC* 3: 314, 1983 [*Moringa*]

Tree. Leaves decomposed, 20 - 30 cm long; leaflets oblong-elliptic, cuneate, entire, obtuse. Flowers in axillary panicles. Corolla white. Capsules linear, 25 - 40 cm long, ribbed, 10 - 15-seeded; seeds triangular, winged.

Fl. & Fr.: March - Sept.

Distrib.: Cultivated on mainland coast. Also found on Appa and Nallathanni Islands.

It might have been brought to islands by humans.

Uses: Tender pods consumed as vegetable. Flowers and tender leaves eaten as potherb. Roots rubifacient and vesicant. Flowers tonic, diuretic. Seeds antipyretic.

33. FABACEAE (nom. alt. PAPILIONACEAE)

Key to the genera

- 1a. Leaves even-pinnate 2
- b. Leaves odd-pinnate 4
- 2a. Plants twiners; seeds brightly coloured **1. Abrus**
- b. Plants not twiners, seeds not brightly coloured 3
- 3a. Prostrate herbs, leaflets 2 **24. Zornia**
- b. Erect herbs or shrubs; leaflets numerous **19. Sesbania**
- 4a. Trees or stragglers 5
- b. Herbs, shrubs, twiners or climbers 9
- 5a. Leaves 3-foliolate 6
- b. Leaves many-foliolate 7
- 6a. Stragglers; corolla white, pods winged **8. Derris**
- b. Trees, corolla red, pods not winged **10. Erythrina**
- 7a. Corolla pale pink, pods dehiscent **12. Gliricidia**
- b. Corolla creamy or pinkish white; pods indehiscent 8
- 8a. Stamens 10; pods woody **16. Pongamia**
- b. Stamens 9, pods not woody **7. Dalbergia**
- 9a. Stamens monadelphous 10

b. Stamens diadelphous	17
10a. Twiners; alternate anthers fertile	22. <i>Teramnus</i>
b. Erect or prostrate herbs, shrubs or climbers; all anthers fertile	11
11a. Leaves cordate; stipules absent	13. <i>Goniogyna</i>
b. Leaves not cordate; stipules present	12
12a. Pods winged	4. <i>Canavalia</i>
b. Pods not winged	13
13a. Leaves simple	6. <i>Crotalaria</i> (p.p.)
b. Leaves compound	14
14a. Anthers dimorphic; pods subglobose or oblong	15
b. Anthers uniform; pods linear or subterete	16
15a. Inflorescence a terminal head; flowers less than 4 mm across	20. <i>Stylosanthes</i>
b. Inflorescence a lateral or terminal raceme; flowers more than 4 mm across	6. <i>Crotalaria</i> (p.p.)
16a. Leaflets oblanceolate; pods linear; seeds reniform	18. <i>Rothia</i>
b. Leaflets obovate; pods subterete; seeds oblong	23. <i>Vigna</i>
17a. Plants twiners	18
b. Plants not twiners	21
18a. Leaves odd-pinnate; leaflets 2 or 3 pairs; bracteoles orbicular	5. <i>Crotalaria</i>
b. Leaves 3-foliolate; bracteoles if present orbicular, or absent	19
19a. Bracteoles absent; flowers solitary or in pairs; corolla yellow	17. <i>Rhynchosia</i>
b. Bracteoles present; flowers in racemes; corolla purplish or pinkish violet	20
20a. Branchlets appressed-pubescent; flowers ca 1 cm across; pods somewhat falcate	11. <i>Galactia</i>
b. Branchlets glandular-hairy; flowers ca 2.5 cm across; pods oblong	15. <i>Labiab</i>
21a. Bracteoles absent	22
b. Bracteoles present	24
22a. Keel petals with lateral appendages; pods subterete, constricted, indehiscent; seeds suborbicular	3. <i>Alysicarpus</i>
b. Keel petals without lateral appendages; pods oblong or linear-oblong, dehiscent; seeds not suborbicular	23
23a. Branchlets with biramous hairs; anthers apiculate	14. <i>Indigofera</i>
b. Branchlets without biramous hairs; anthers not apiculate	21. <i>Tephrosia</i>
24a. Undershrubs; leaflets 15 - 25 pairs; flowers ca 6 mm across; corolla yellow-flame coloured	2. <i>Aeschynomene</i>
b. Prostrate herbs; leaves 3-foliolate; flowers ca 3 mm across; corolla pink-violet	9. <i>Desmodium</i>

1. *Abrus* Adans. nom. cons.

Pantropical, 17 species, 3 in India and Tamil Nadu and 2 in GM.

Key to the species

- 1a. Corolla pinkish yellow; pods flat; seeds oblong-ellipsoid,
blackish throughout, not shiny 1. *A. fruticosus*
- b. Corolla whitish pink; pods turgid; seeds subglobose
- ovoid, scarlet red with a black lateral blotch, shiny..... 2. *A. precatorius*

1. *A. fruticosus* Wall. ex Wight & Arn., Prodr. 236. 1834; Wight, Icon. t. 33. 1838; FBI 2: 176. 1876; FPM 349. 1918; FTN 1: 90. 1983.

Leaflets oblong-elliptic, rounded, entire, obtuse or acute. Calyx campanulate; lobes triangular. Pods oblong, greenish with pink tinge.

Fl. & Fr.: May - Feb.

Habitat: Hedges, with *Asparagus racemosus*, *Tinospora cordifolia* etc.

Distrib.: Tropics. S. India. TN: Coimbatore, Kanyakumari, Tiruchirapalli and Tirunelveli. GM: Rare, once collected near Koodankulam in Tirunelveli. Earlier collected in Kanyakumari. Appears rare in the interior too.

Specimens examined: (Total 20) ANH 61559; MSS 70309; PD 107637; PD & PU 107095.

2. *A. precatorius* L., Syst. Nat. ed. 12, 2: 472. 1767; FBI 2: 175. 1876; FPM 349. 1918; RHFC 1: 446. 1980; FTC 3: 333. 1983; FTN 1: 90. 1983. [*Kundumani*]

Leaflets oblong, truncate, entire, obtuse, apiculate. Calyx narrowly campanulate; lobes obscure. Pods oblong, greenish.

Fl. & Fr.: Throughout the year.

Habitat: Sandy soil, among bushes and on hedges, with *Asparagus racemosus* and *Thespesia populnea*.

Distrib.: Tropics. TN: All districts. GM: Mainland coast, frequent. Occasional on Pullivasal and Valai Islands.

Collected only on Pullivasal and Valai Islands. According to Guppy (cited in Ridley, 1930) the seeds are non-buoyant which may rule out the possibility of the seeds having floated to the islands. It is likely to have got there by human agency as children carry them about as a play thing.

Uses: Decoction of leaves and roots is used for coughs, colds and colic. Seeds are said to be poisonous. Also used as weights by goldsmiths.

Specimens examined: (Total 96) KSK 102843, 102921, 103364; Pv Is. PD 99757.

2. *Aeschynomene* L.

Tropics and subtropics, ca 150 species, 3 in India and Tamil Nadu and one in GM.

A. indica L., Sp. Pl. 713. 1753; Wight, Icon. t. 405. 1850; FBI 2: 151. 1876; RHFC 7: 162. 1991; FPM 331. 1918; IFTC t. 180. 1982; FTC 3: 335. 1983; FTN 1: 91. 1983. [*Thakkapundu, Nettihakkal*]

Leaflets oblong, obtuse, oblique, entire, acuminate. Racemes axillary. Pods linear-oblong; seeds reniform.

Fl. & Fr.: Jan. - March.

Habitat: Moist places, fallow fields, with *Cyperus* spp., *Crotalaria angulata* and *Physalis minima*.

Distrib.: Pantropical. TN: Almost all districts. GM: Mainland coast, frequent.

Specimens examined: (Total 103) PD & PU 106533, 106575, 107258.

3. *Alysicarpus* Desv. nom. cons.

Old World tropics, ca 25 species, 15 in India, 9 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|--------------------------|
| 1a. Erect herb; stem glabrous | 1. <i>A. longifolius</i> |
| b. Prostrate herbs; stem pubescent..... | 2 |
| 2a. Pods moniliform; seeds ovoid | 2. <i>A. monilifer</i> |
| b. Pods not moniliform; seeds suborbicular..... | 3. <i>A. rugosus</i> |

1. *A. longifolius* Wight & Arn., Prodr. 233. 1834; Wight, Icon. t. 251. 1840; FBI 2: 159. 1876; FPM 338. 1918; FTN 1: 91. 1983.

Leaves oblong-ovate, rounded, entire, obtuse. Racemes to 15 cm long, many-flowered. Calyx-lobes ovate. Corolla purplish. Pods constricted, compressed, pubescent; seeds suborbicular.

Fl. & Fr.: Sept. - Jan.

Habitat: Wet situations, with *Biophytum sensitivum*, *Eragrostis maderaspatana*, *Euphorbia thymifolia* etc.

Distrib.: India and Pakistan. TN: Coimbatore, Dharmapuri, Ramanathapuram, Tiruchirappalli, Tirunelveli and Tuticorin. GM: Mainland coast, rare. Once collected at Tuticorin port. Appears rare in the interior too.

Use: Roots are said to be sweet to taste. Plant used as fodder.

Specimens examined: (Total 9) PD & PU 107384; VB 2323.

2. *A. montifer* (L.) DC., Prodr. 2: 353. 1825; FBI 2: 157. 1876; FPM 338. 1918; FTC 3: 336. 1983; FTN 1: 91. 1983. *Hedysarum monilifer* L., Mant. Pl. 102. 1767.

Leaves elliptic-oblong, rounded or truncate, entire, obtuse or rounded with a short mucro. Racemes terminal or axillary. Calyx-lobes lanceolate. Corolla pinkish. Pods jointed, pubescent with hooked hairs.

Fl. & Fr.: Dec. - Feb.

Habitat: Sandy wastelands and dry places, with *Boerhavia diffusa*, *Euphorbia rosea*, *Polycarpaea spicata* etc.

Distrib.: Ethiopia, Pakistan and India. TN: Almost all districts. GM: Frequent on mainland coast of Pamban and Mukaiyur in Ramanathapuram. Appa Island, rare.

Use: Used as a fodder.

Specimens examined: (Total 30) KSK 103432; PD 101136; Ap Is. PD 101572.

3. *A. rugosus* (Willd.) DC., Prodr. 2: 353. 1825; FBI 2: 159. 1876; FPM 338. 1918; IFTC t. 181. 1982; FTC 3: 338. 1983; FTN 1: 92. 1983. *Hedysarum rugosum* Willd., Sp. Pl. 3: 1172. 1802.

Leaves oblong, subcordate or rounded, entire, obtuse or rounded. Racemes short, dense or lax. Calyx-lobes ovate-lanceolate, glabrous, ciliate along margins or in middle. Corolla purplish. Pods jointed, mucronate.

Key to the varieties

- | | |
|--|--------------------------------|
| 1a. Racemes lax; pedicels sparsely hirsute; calyx-lobes ciliate along margins..... | 3.1. var. <i>pilifer</i> |
| b. Racemes dense; pedicels densely hirsute; calyx-lobes ciliate in middle..... | 3.2. var. <i>styracifolius</i> |

3.1. var. pilifer Prain in J. Asiat. Soc. Bengal Pt. 2, Nat. Hist. 66: 384. 1898; FPM 339. 1918; FTN 1: 92. 1983. (Fig. 11)

Fl. & Fr.: Dec. - Feb.

Habitat: Open wastelands, with *Goniogyna hirta*, *Tephrosia spinosa*, *Vicoa indica* etc.

Distrib.: S. India. Endemic. TN: Chengalpattu, Coimbatore, S. Arcot and Ramanathapuram. GM: Mainland coast, rare. Once collected at Narikuli near Rameswaram.

Use: Used as a fodder.

Specimens examined: (Total 24) KSK 103315.

3.2. var. styracifolius (DC.) Baker in Fl. Brit. India 2: 159. 1876; FPM 339. 1918. FTN 1: 92. 1983. *A. styracifolius* DC., Prodr. 2: 353. 1825, excl. syn.

Fl. & Fr.: Dec. - June.

Habitat: Sandy soil, with *Alysicarpus monilifer*, *Boerhavia diffusa*, *Indigofera colutea* etc.

Distrib.: India and Sri Lanka. TN: Coimbatore, Dharmapuri, Kanyakumari, Ramanathapuram and S. Arcot. GM: Mainland coast, less frequent, collected at Pamban and Munaikadu in Ramanathapuram. Appa Island, rare.

Use: Used as a fodder.

Specimens examined: (Total 28) KSK 102959; PD 101133; Ap Is. PD 101568.

Seeds of *Alysicarpus* are eaten by birds (Ridley, 1930). Hence they may be dispersed by them.

4. *Canavalia* Adans.

Tropics, ca 50 species, 8 in India, 7 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|-----------------------|
| 1a. Climber; leaflets ovate; pods turgid; seeds 8 - 10 | 1. <i>C. gladiata</i> |
| b. Trailer; leaflets obovate-orbicular; pods flat; seeds 4 - 6 | 2. <i>C. rosea</i> |

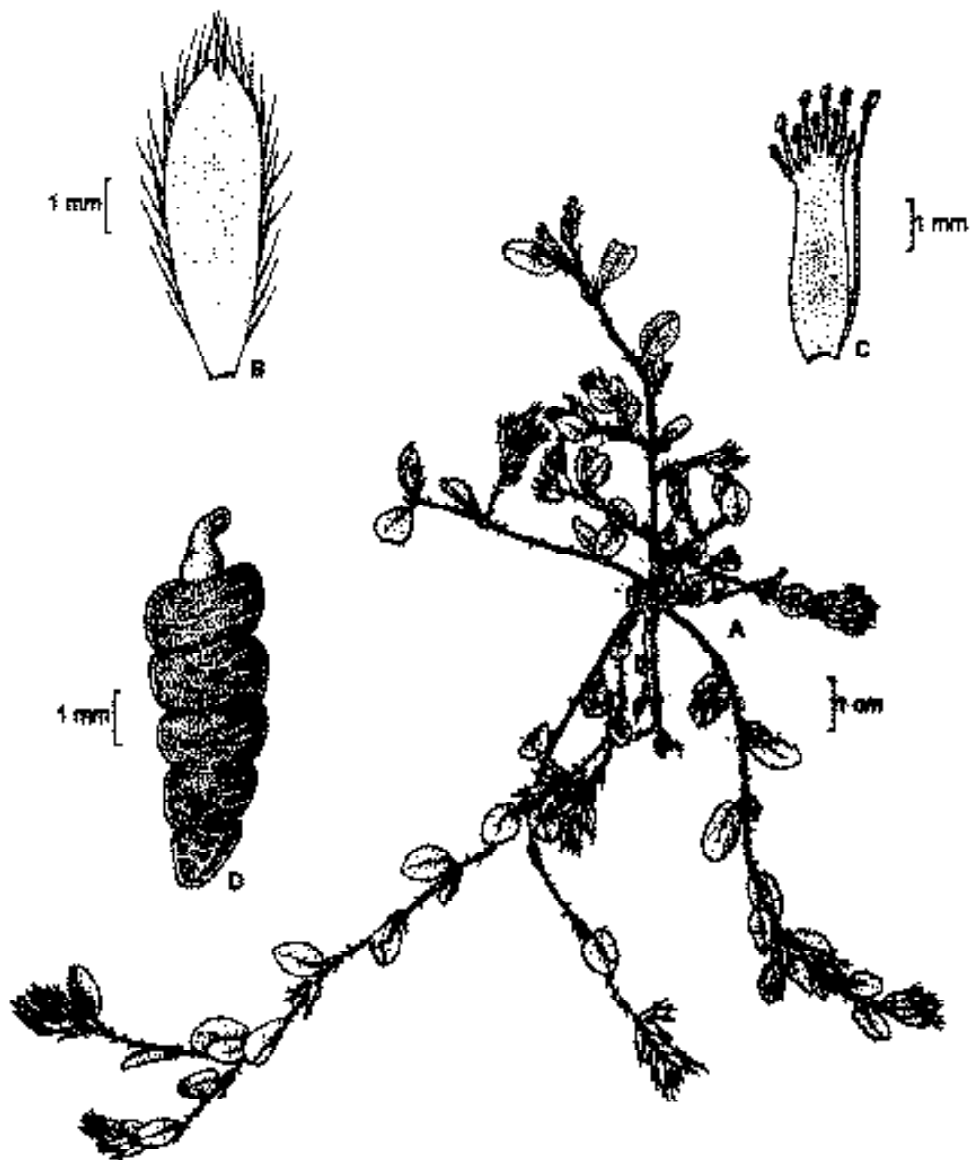


Fig. 11 (A-D), *Alysicarpus rugosus* (Willd.) DC. var. *pilifer* Poin
 A. Habit B. Sepal C. Androecium D. Fruit

1. *C. gladiata* (Jacq.) DC., Prodr. 2: 404. 1825; Wight, Icon. t. 753. 1844; FTN 1: 94. 1983; RHFC 7: 280. 1991. *Dolichos gladius* Jacq., Collectanea 2: 276. 1788. *Canavalia ensiformis* sensu Baker in FBI 2: 195. 1876, non DC. 1825; FPM 359. 1918.

Stems pubescent. Leaflets cuneate, entire, acute. Racemes to 20-flowered. Calyx 3-lobed. Corolla purplish. Pods 15 - 25 x 3 - 4 cm, mucronate; seeds elliptic-oblong, blackish.

Fl. & Fr.: Sept. - Feb.

Habitat: Hedges and road sides, on *Prosopis chilensis*.

Distrib.: Tropics, Himalayas to Sri Lanka. TN: Cultivated for its edible pods and run wild. GM: Mainland coast, frequent.

Use: Tender pods extensively used as a vegetable.

Specimens examined: (Total 59) NCN 60893; PD & PU 107018, 107057.

2. *C. rosea* (Sw.) DC., Prodr. 2: 404. 1825; RHFC 7: 274. 1991. *Dolichos roseus* Sw., Prodr. 105. 1788. *Canavalia lineata* DC., Prodr. 2: 404. 1825; FPM 360. 1918; FTC 3: 348. 1983; FTN 1: 94. 1983, p.p. *C. obtusifolia* sensu Baker in FBI 2: 196. 1876, non DC. 1825. (Fig. 12; Photo 17)

Stem glabrescent. Leaflets cuneate, entire, renuse or obtuse. Racemes ca 10-flowered. Calyx 3-lobed. Corolla pinkish. Pods 5 - 7 x 1.5 - 2 cm, mucronate, pubescent; seeds oblong, blackish.

Fl. & Fr.: Dec. - March.

Habitat: Sandy seashores, invariably with *Ipomoea pes-caprae* as pointed out by Gamble (1918).

Distrib.: Tropics, coasts of Malay peninsula, S. India and Sri Lanka. TN: Chengalpattu, Ramanathapuram and S. Arcot. GM: Collected at Sethukarai on mainland coast and Kurusadai Island; rare. An addition to the Gulf of Mannar.

Earlier collected on the East Coast in Nellore, Madras, Cuddalore and Thanjavur and represented at MH by a few specimens only. Never collected beyond Thanjavur on the East Coast. It is rare in the region in that it has been found to occur on one spot on the mainland coast and on one island and is represented by a few plants only. These populations need monitoring.

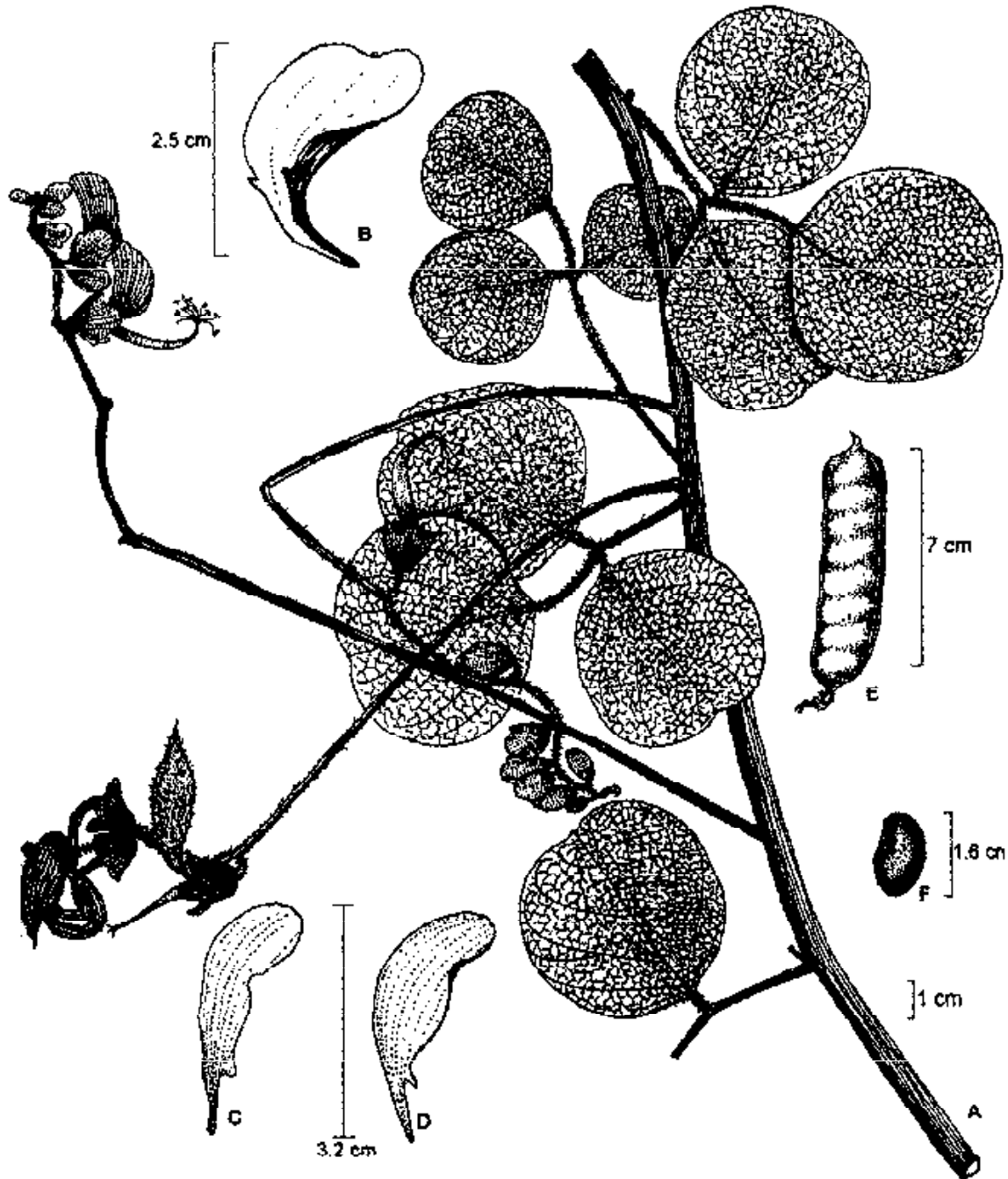


Fig. 12 (A - F). *Canavalia rosea* (Sw) DC
 A. Twig B. Standard petal C. Wing petal D. Keel petal
 E. Pod F. Seed

Note: Flower colour is so identical that it is likely to be missed for *Ipomoea pes-caprae* from a distance. However, unlike *Ipomoea pes-caprae* it does not root at the nodes.

Seeds of *Canavalia* can float unharmed for a very long period in the sea (Guppy in Ridley, 1930). Hence, it might have got conveyed to the island from the nearby mainland coast.

Specimens examined: CAB 16081; JSG 4887, 17147 (CAL photocopy!); without collector's name 46085; SR 441; PD & PU 106497; Ku Is. PD 100596, PD & PU 106887.

5. *Clitoria* L.

Tropics, ca 70 species, 27 in India and one in Tamil Nadu.

C. ternatea L., Sp. Pl. 753. 1753; FBI 2: 208. 1876; FPM 365. 1918; IFTC t. 188. 1982; FTC 3: 350. 1983; RHFC 7: 305. 1991. [*Sankupushpam*]

Strigose herb. Leaflets elliptic-oblong, cuneate, entire, obtuse. Flower solitary, axillary. Corolla white or dark blue. Pods linear-oblong, beaked; seeds reniform, pale brownish.

Fl. & Fr.: July - March.

Habitat: Among bushes and on hedges and on *Dichrostachys cinerea*, *Thespesia populnea* etc.

Distrib.: Tropics. TN: All districts. GM: Frequent on coastal wastelands and common on Kurusadai, Pullivasal and Pumarichan Islands.

Certain species of *Clitoria* are reported to have a viscid substance secreted on the seed for transport by fowl (Ridley, 1930). However, whether it can stick to the feathers of a bird or humans and get transported is not known.

Uses: Leaves may be used as a fodder for cattle. A blue dye from the corolla can be used as a substitute for litmus. Powdered seeds mixed with ginger are used as a laxative.

Specimens examined: (Total 94) KSK 102895; Pu Is. PD 99731; PD 102265; Pu Is. PD 101431.

6. *Crotalaria* L.

Tropics and subtropics, ca 800 species, 86 in India, 70 in Tamil Nadu and 7 in GM

Key to the species

1a. Leaves 3-foliolate	2
b. Leaves simple	3
2a. Prostrate herb; pods subglobose	5. <i>C. medicaginea</i>
b. Erect shrub; pods oblong	3. <i>C. laburnifolia</i>
3a. Erect herbs, undershrubs or shrubs	4
b. Prostrate herbs	6
4a. Leaves pubescent on both surfaces; corolla blue	7. <i>C. verrucosa</i>
b. Leaves strigose above only; corolla yellow	5
5a. Herb; pods ca 1 cm long	4. <i>C. linifolia</i>
b. Undershrub; pods 4 - 6 cm long	6. <i>C. retusa</i>
6a. Flower solitary; pods oblong; seeds 15 or 16	1. <i>C. angulata</i>
b. Flowers 1 - 3, in terminal racemes; pods subglobose; seeds 4 - 6 ...	2. <i>C. globosa</i>

1. *C. angulata* Mill., Gard. Dict. ed 8, n. 9. 1768; FTC 3: 361. 1983; FTN 1: 95. 1983; FIFTC t. 123. 1988; RHFC 7: 203. 1991. *C. biflora* (L.) L., Mant. Pl. 570. 1771; FBI 2: 66. 1876; FPM 292. 1918. *Astragalus biflorus* L., Mant. Pl. 273. 1771.

Leaves ovate-oblong, hairy. Calyx-lobes linear-lanceolate, hirsute. Corolla yellowish. Pods ca 1 cm long, hirsute, pale purplish green; seeds reniform.

Fl. & Fr.: Dec. - Feb.

Habitat: Road sides and wastelands, with *Cassia* spp., *Cleome aspera* and *Crotalaria globosa*.

Distrib.: India, Indonesia and Sri Lanka. TN: Chengalpattu, Coimbatore, Dharmapuri, Ramanathapuram, Salem, S. Arcot, Thanjavur, Tiruchirapalli and Tuticorin. GM: Mainland coast, frequent.

Specimens examined: (Total 53) KSK 102758; PD 101131; PD & PU 106544; SAM 104765.

2. *C. globosa* Wight & Arn., Prodr. 190. 1834; FBI 2: 66. 1876; FPM 292. 1918; FTN 1: 97. 1983; RDBIP 2: 112. 1988. (Fig. 13)

Leaves broadly ovate or suborbicular, silky-pubescent. Calyx-lobes linear-lanceolate. Corolla bright yellow. Pods pubescent; seeds subreniform.

Fl. & Fr.: Sept. - Jan.

Habitat: Open wastelands, with *Cassia* spp., *Cleome aspera*, *Crotalaria angulata* etc.

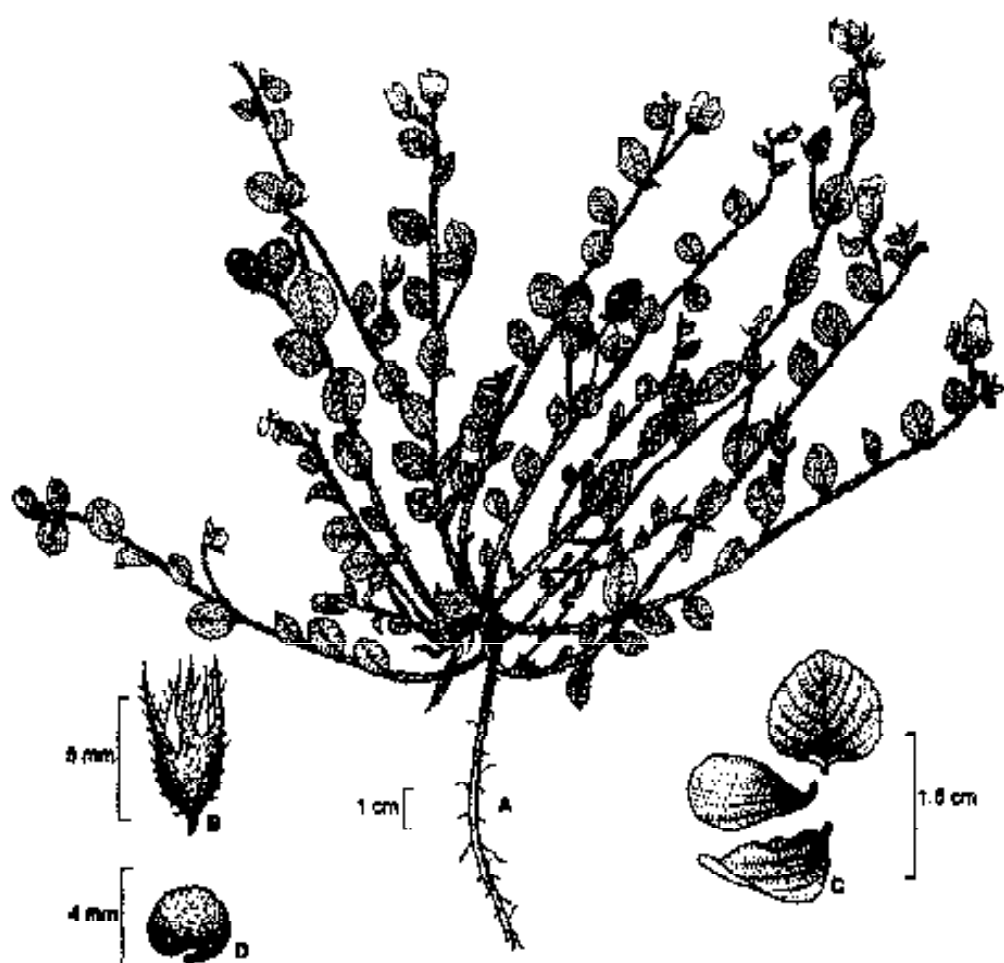


Fig. 13(A - D). *Crotalaria globosa* Wright & Arn
A. Habit B. Calyx C. Petals D. Seed

Distrib.: India (Bihar, Karnataka and Tamil Nadu). Endemic. TN: Madurai, Ramanathapuram, Tirunelveli and Tuticorin. GM: Mainland coast, occasional. Collected at Koodankulam, Mukkani and Tuticorin port.

This endemic species was earlier reported from hills of the Carnatic from Dindigul southwards (FBI 2: 66, 1876; FPM 292, 1918). Later it was collected in Ramanathapuram plains where too it is rare. Present collections in coastal places like Koodankulam in Tirunelveli, Tuticorin port and Mukkani in Tuticorin show its extended distribution towards coast, but nowhere is it common on the coast. Vajravelu and Daniel (in Jam & Sastry, Mat. Cat. Threat. Pl. India 16, 1983) enumerated this as a threatened plant based on the poor representation in herbaria and later Ansari and Thothathri too (RDBIP 2: 112, 1988). However, it is somewhat common in the Tirunelveli plains particularly around Palayankeottai. The plant usually prefers red gravelly soil. It is necessary to conduct further field studies particularly in Tirunelveli plains.

Specimens examined: (Total 7) PD & PU 107368; SAM 104699, 106442; RW 592.

3. *C. laburnifolia* L., Sp. Pl. 715, 1753; FBI 2: 84, 1876; FPM 301, 1918; FLC 3: 375, 1983; FTN 1: 97, 1983; FIFTC L 128, 1988; RHFC 7: 214, 1991.

Plant glabrous. Leaflets elliptic-ovate, cuneate, acute. Flowers in racemes. Calyx-lobes subequal. Corolla yellow. Pods ca 4 cm long, glabrous, many-seeded; seeds reniform.

Fl. & Fr.: Aug. - Dec.

Habitat: Road sides.

Distrib.: Australia, Bangladesh, India, Malasia, Sri Lanka and Trop. E. Africa. TN: All districts. GM: Earlier collected in subcoastal region at Samythoppu in Ramanathapuram and Kudiraimoli Theri in Tuticorin.

Use: Infusion of the plant used as a gargle.

Specimens examined: (Total 45) DD & SRR 20489; NCN 53111.

4. *C. linifolia* L., f. Suppl. Pl. 322, 1782; FBI 2: 72, 1876; FPM 294, 1918; FTN 1: 98, 1983; RHFC 7: 206, 1991.

Herb; stems strigose. Leaves simple, lanceolate or narrowly obovate. Flowers in racemes. Calyx-lobes unequal. Corolla yellow. Pods oblong; seeds reniform.

Fl. & Fr.: Sept. - Jan.

Habitat: Road sides, with *Cassipouira glabata*, *Mimosa pudica* and *Passiflora foetida*.

Distrib.: Australia, China, India, Malesia, Myanmar and Sri Lanka. TN: Chengalpattu, Coimbatore, Kanyakumari, S. Arcot and Tirunelveli. GM: Mainland coast, occasional.

Specimens examined: (Total 38) PD 102261; PD & PU 107059, 107221.

5. *C. medicaginea* Lam. var. *herniarioides* (Wight & Arn.) Baker in Fl. Brit. India 2: 81. 1876; FPM 300. 1918; FTN 1: 98. 1983. *C. herniarioides* Wight & Arn., Prodr. 192. 1834. *C. medicaginea* Lam., Encycl. 2: 201. 1786; FTC 3: 356. 1983. (Fig. 14)

Decumbent, strigose herb. Leaflets obovate, cuneate, entire, obtuse, mucronate, gland-dotted. Flowers in racemes. Calyx-lobes lanceolate, subequal. Corolla pale yellow. Pods pubescent, shortly beaked; seeds reniform.

Fl. & Fr.: Nov. - Feb.

Habitat: Sandy localities, with *Gisekia pharnaceoides*, *Eragrostis* spp., *Euphorbia rosea* etc.

Distrib.: India (Tamil Nadu and Karnataka) and Malesia. TN: Chengalpattu, Kanyakumari and Ramanathapuram. GM: Occasional on mainland coast and rare on Upputhanni Island. Earlier collected at Kanyakumari and Kannirajapuram in Ramanathapuram. Now collected at Vivekananthapuram in Kanyakumari and Pudumadam and on Upputhanni Island in Ramanathapuram. The populations are apparently few and far between. The factors that govern its distribution deserve further studies.

Use: Seeds used as a cattle feed.

Specimens examined: (Total 16) KSK 102721; SAM 106420; Ut Is. PD 101647; PD & PU 106601.

6. *C. retusa* L., Sp. Pl. 715. 1753; FBI 2: 75. 1876; FPM 293. 1918; FTC 3: 1983; FTN 1: 100. 1983; FIFTC t. 142. 1988; RHFC 7: 192. 1991.

Leaves sessile, attenuate, entire, obtuse or retuse. Flowers in racemes. Calyx-lobes lanceolate, subequal, connate at base. Pods oblong; seeds ca 5.

Fl. & Fr.: Almost throughout the year.

Habitat: Open wastelands and sandy localities, with *Cassia absus*, *Dodonaea viscosa*, *Indigofera oblongifolia* and *Phyllanthus rotundifolius*.

Distrib.: Throughout India and Sri Lanka TN: Almost throughout. GM: Frequent on mainland coast and Appa, Kaswari, Kurusadai, Manoliputti, Nallathanni, Pullivasal, Pumarichan and Thalairy Islands.

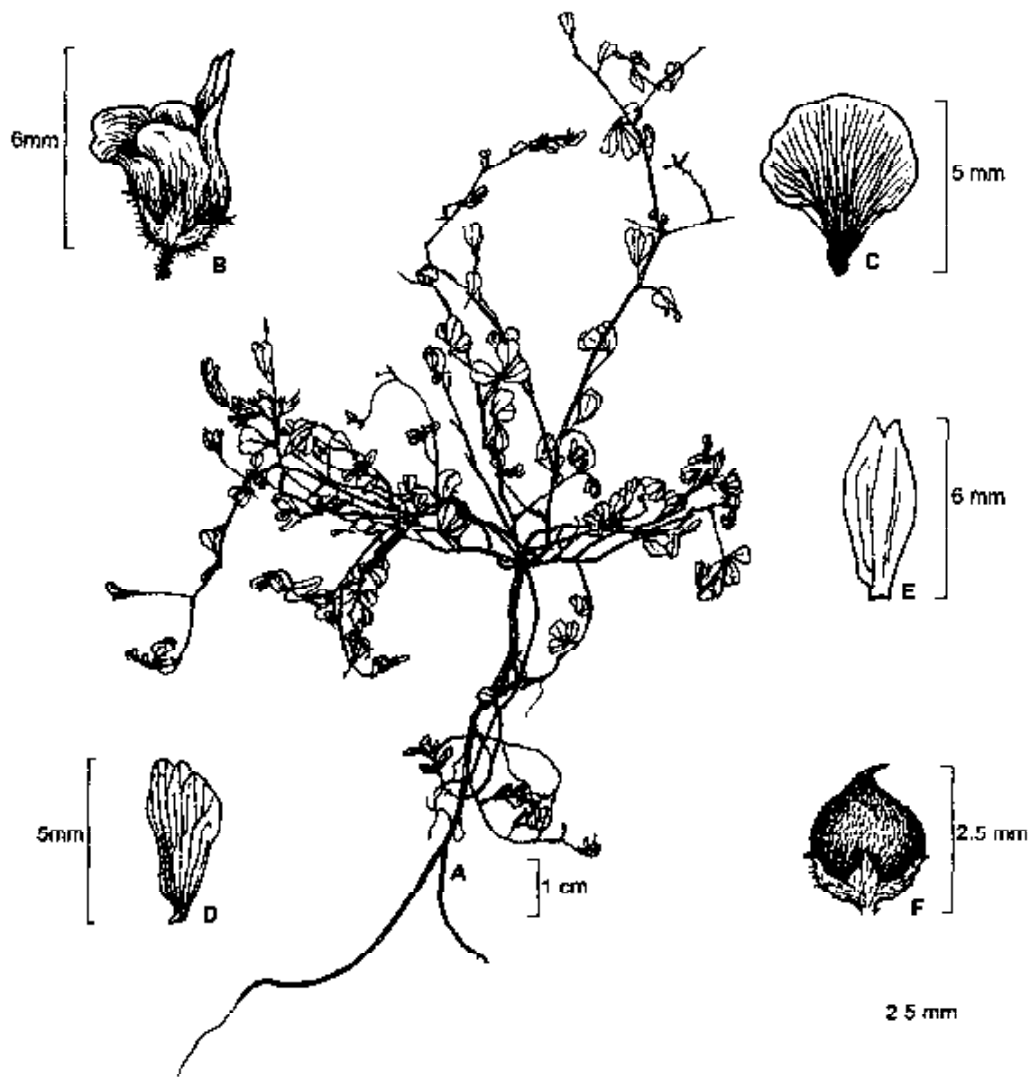


Fig. 14(A - E). *Crotalaria medicaginea* Lam var *herniarioides* (Wight & Arn) Baker
 A, Habit B, Flower C, Standard petal D, Wing petal E, Keel petal F, Fruit

Present collection from Vivekananthapuram forms an addition to MH from Kanyakumari District.

Uses: Plant yields a fibre, used in admixture with sun hemp for cordage and canvas. Plant used in scabies and impetigo.

Specimens examined: (Total 55) KSK 102836; PD 102142; Ap Is. PD 101656; Ku Is. PD 99788; Ka Is. PD & PU 102190; Mp Is. PD 101457; Nt Is. KSK 102358; Pu Is. PD 99730; Pv Is. KSK 103339; PD 101173; Th Is. PD 101478.

7. *C. verrucosa* L., Sp. Pl. 715. 1753; Wight, Icon. t. 200. 1839; FBI 2: 77. 1876; FPM 297. 1918; FTC 3: 374. 1983; FTN 1: 101. 1983; RHFC 7: 188. 1991.

Undershrub, appressed-pubescent. Leaves simple, subsessile, broadly ovate, attenuate, entire, subacute-obtuse. Flowers in racemes. Calyx-lobes lanceolate, hairy. Pods oblong, ca 4 cm long, pubescent; seeds many.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy loams and near water canals, with *Anisomeles malabarica*, *Hygrophila schulli* etc.

Distrib.: China, India, Malesia, Mauritius, Myanmar, Sri Lanka, Trop. Africa and America. TN: Almost throughout. GM: Mainland coast, occasional.

Use: Leaves used for scabies and impetigo.

Specimens examined: (Total 100) KSK 102013, 102267.

Crotalaria medicaginea var. *herniarioides* and *C. retusa* were collected on islands. The bladder fruits of these species may get transported by seawater. But then, how the other species have not reached any island so far remains inexplicable.

7. *Dalbergia* L. f.

Tropics, ca 100 species, 25 in India, 17 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|----------------------|
| 1a. Armed, straggling shrub; pods reniform | 1. <i>D. horrida</i> |
| b. Unarmed tree; pods oblong | 2. <i>D. sissoo</i> |

1. *D. horrida* (Dennst.) Mabb. in Taxon 26: 538. 1977; FTC 3: 382. 1983; FTN 1: 102. 1983. *Amerimnon horridum* Dennst., Schluess. Hortus Malab. 9, 18, 34. 1818 (as

"*Amerimum*"). *Dalbergia spinosa* Roxb., Fl. Ind. 3: 233. 1832; FBI 2: 238. 1876; FPM 381. 1918.

Leaves clustered; leaflets 3–5 pairs, oblanceolate, cuneate, entire, obtuse or retuse. Flowers in panicles. Corolla creamy. Pods ca 2 cm long; seeds 1 or 2.

Fl. & Fr.: March - July.

Habitat: Scrub jungles.

Distrib.: S. India. Endemic. TN: S. Arcot, Tirunelveli and Tuticorin. GM: Collected in the last century at Tuticorin by Wight and in Kudiraimoli Theri. Though reportedly a coastal species, this endemic seems very rare. Never collected again at Tuticorin. The kind of jungles that would have existed when Wight collected in the early part of the last century no longer exist around the highly industrialised city of Tuticorin.

Use: Roots powdered and taken with water to allay the effect of alcohol.

Specimens examined: (Total 12) DD & SRR 20453; Wight s.n. (K, photo!).

2. *D. sissoo* Roxb., Fl. Ind. 3: 223. 1832; FSSI t. 25. 1869; FBI 2: 231. 1876; FPM 383. 1918; FTC 3: 386. 1983; FTN 1: 103. 1983. [*Gette, Sisu-itti*]

Leaflets obovate, cuneate, entire, cuspidate, glabrous. Flowers in panicles. Corolla creamy. Pods ca 7 cm long, apiculate; seeds 1 or 2.

Fl. & Fr.: Jan.- April.

Habitat: Along road sides.

Distrib.: Afghanistan, Bangladesh, Bhutan, India, Iran, Iraq, Myanmar and Pakistan. Elsewhere cultivated. TN: Chengalpattu, Dharmapuri, Ramanathapuram, Salem, S. Arcot and Tiruchirapalli. GM: Mainland coast, occasional.

Uses: Used for high class furniture and cabinet wood; also used for railway sleepers, musical instruments. Leaves used as a fodder. Wood used for charcoal-making.

Specimens examined: (Total 16) VB 1733.

8. *Derris* Lour.

SE. Asia to N. Australia, ca 40 species, 25 in India, 7 in Tamil Nadu and one in GM.

D. trifoliata Lour., Fl. Cochinch. 433. 1790; BOBSI 3: 181. 1961; FFI 8: 30. 1982; IFTC t. 194. 1982; FTC 3: 389. 1983; FTN 1: 105. 1983. *D. uliginosa* (Roxb.) Benth. in Miq., Pl. Jungh. 1: 252. 1852; FBI 2: 241. 1868; FPM 387. 1918; RHFC 7: 232. 1991. *Galedupa uliginosa* Roxb., Fl. Ind. 3: 243. 1832.

Leaflets lanceolate, obtuse, entire, acuminate. Racemes axillary. Calyx-lobes obscure. Pods ovoid or orbicular, glabrous; seeds 1 or 2.

Fl. & Fr.: Oct. - Nov.

Habitat: Reportedly along mangrove swamps (Rao, 1963a).

Distrib.: Asia, Australia and Africa. TN: Chengalpattu, Coimbatore, Madurai, S. Arcot. Thanjavur and Ramanathapuram. GM: Earlier collected at Rameswaram.

Uses: Used as a stimulant, antispasmodic and counter-irritant. Leaves lopped for fodder. Stems used for rough cordage.

Specimens examined: (Total 4) TAR 1420(CAL).

9. *Desmodium* Desv.

Warmer parts especially of E. Australia, Brazil and Mexico, ca 300 species, 42 in India, 23 in Tamil Nadu and one in GM.

D. triflorum (L.) DC., Prodr. 2: 334. 1825; FBI 2: 173. 1876; FPM 347. 1918; FTC 3: 399. 1983; FTN 1: 107. 1983. *Hedysarum triflorum* L., Sp. Pl. 749. 1753. *Desmodium triflorum* (L.) DC. var. *minus* Wight & Arn., Prodr. 229. 1834; Wight, Icon. t. 292. 1840.

Leaflets obovate, cuneate, entire, obtuse-retuse. Flowers 3-5, in axillary clusters. Calyx: lobes unequal. Pods oblong with lower margin deeply indented, hooked-hairy, 4-6-seeded; seeds oblong.

Fl. & Fr.: Dec. - Feb.

Habitat: Wastelands and moist localities.

Distrib.: Tropics. TN: All districts. GM: Subcoastal regions, occasional. Earlier collected a little interior, might occur on the coast.

Uses: Used for lawns and pastures, a good fodder. Leaves used in dysentery, diarrhoea and convulsions and as a galactagogue.

Specimens examined: (Total 53) VB 1094, 2124.

10. *Erythrina* L.

Warm temperate regions, 108 species, 8 in India, 5 in Tamil Nadu and one in GM.

E. variegata L., Herb. Amb. 10. 1754; FTN 1: 109. 1983; RHFC 7: 251. 1991. *E. indica* Lam., Encycl. 2: 391. 1786; Wight, Icon. t. 58. 1838; FBI 2: 188. 1876; FPM 353. 1918. *E. variegata* L. var. *orientalis* Merr., Interpr. Herb. Amboin. 276. 1917; FTC 3: 406. 1983. [*Kalyanamurungai*]

Leaflets rhomboid-ovate, truncate-obtuse, entire, acuminate. Flowers in racemes. Calyx 5-toothed. Corolla dark red. Pods stipitate, falcate, torulose, 15 - 18 cm long, many-seeded; seeds ovoid.

Fl. & Fr.: March - June.

Distrib.: India, Malaysia, Myanmar, Polynesia and Sri Lanka. TN: Most districts. GM: Mainland coast, planted.

Uses: Leaves and tender shoots consumed as a potherb; leaves a good fodder; considered as laxative, diuretic, anthelmintic, galactagogue and emmenagogue. Seeds are poisonous when raw, may be eaten after boiling and roasting.

Specimens examined: (Total 9) VB 2384.

11. *Galactia* P. Browne

Warm temperate regions, ca 50 species, 4 in India, 3 in Tamil Nadu and one in GM.

G. tenuiflora (Jacq.) Urb., Symb. Ant. 2: 320. 1900; RHFC 7: 286. 1991. *Glycine striata* Jacq., Hort. Bot. Vindob. 1: 32, t. 76. 1771. *Galactia tenuiflora* (Klein ex Willd.) Wight & Arn., Prodr. 206. 1834; FBI 2: 192. 1876; FPM 356. 1918; IFTC t. 202. 1982; FTC 3: 409. 1983; FTN 1: 110. 1983. *Glycine tenuiflora* Klein ex Willd., Sp. Pl. 3: 1059. 1802.

Twining herb. Leaflets elliptic-oblong, obtuse, entire, obtuse with a mucro. Flowers solitary or 2. Calyx-lobes unequal. Corolla bluish violet. Pods oblong, 3 - 6 cm long, mucronate, silky-pubescent, 3 - 8-seeded; seeds oblong.

Fl. & Fr.: Nov. - Jan.

Habitat: On hedges, with *Acacia* spp. and *Capparis* spp.

Distrib.: Africa, Australia, China, India, Malaysia and Sri Lanka. TN: Chengalpattu, Coimbatore, Kanyakumari, Madurai, Ramanathapuram, S. Arcot, Thanjavur and Tiruchirappalli. GM: Mainland coast, occasional.

Specimens examined: (Total 48) MSS 70312; PD & PU 106581, 106982; VB 1868.

12. *Gilricidia* Kunth

Tropics, 4 species and one in India.

G. sepium (Jacq.) Kunth ex Walp., *Repert. Bot. Syst.* 1: 679. 1842; IFTC t. 203. 1982; FTC 3: 411. 1983; FTN 1: 110. 1983; RHFC 7: 143. 1991. *Robinia sepium* Jacq., *Enum. Pl. Syst.* 28. 1760. [*Vivasaayathagarai*]

Small tree. Leaflets 6 - 8 pairs, lanceolate-elliptic, obtuse, entire, acuminate. Racemes to 20 cm long. Pods oblong, ca 15 cm long.

Fl. & Fr.: Feb. - April

Native of S. America. Cultivated. Leaves used as a green manure.

13. *Gonologyna* DC.

Asia, unispecific.

G. hirta (Willd.) Ali in *Taxon* 16: 464. 1967; FTC 3: 412. 1983; FTN 1: 110. 1983. *Hallia hirta* Willd., *Sp. Pl.* 3: 1169. 1802. *Heylandia latebrosa* sensu Baker in *FBI* 2: 65. 1876, non (L.) DC. 1825; FPM 280. 1918; IFTC t. 190. 1982 (as *Crotalaria* sp.).

Prostrate, hispid herb. Leaves truncate, entire, subacute, ciliate. Flower solitary, axillary. Calyx-lobes lanceolate, pubescent. Corolla yellow. Pods flat, oblong, ca 4 mm long, hirtute; seeds reniform.

Fl. & Fr.: Sept. - Feb.

Habitat: Open wet localities, with *Indigofera linnaei*, *Leucas aspera* and *Mollugo nudicaulis*.

Distrib.: India, Pakistan and Sri Lanka. TN: Chengalpattu, Coimbatore, N. Arcot, Ramanathapuram, Salem, S. Arcot and Tirunelveli. GM: Mainland coast, frequent. Appears rare in the interior too.

Specimens examined: (Total 8) KSK 103316; PD 101129; PD & PU 106917.

14. *Indigofera* L.

Tropics and subtropics, ca 700 species, 50 in India, 32 in Tamil Nadu and 11 in GM.

Key to the species

1a. Prostrate herb	6. <i>I. linnaei</i>
b. Shrubs or undershrubs	2
2a. Branchlets viscid-hairy or not	3
b. Branchlets glabrous	9. <i>I. thrunelvelica</i>
3a. Flowers in axillary racemes or spikes.....	4
b. Flower solitary	1. <i>I. aspalathoides</i>
4a. Corolla red	5
b. Corolla pinkish	8
5a. Pods cylindrical	6
b. Pods 4-gonous	5. <i>I. hirsuta</i>
6a. Leaflets oblong or oblong-elliptic	7
b. Leaflets obovate	2. <i>I. caerulea</i>
7a. Plant viscous	3. <i>I. colutea</i>
b. Plant not viscous	7. <i>I. oblongifolia</i>
8a. Leaves 3-foliolate	9
b. Leaflets 3 - 5 pairs	8. <i>I. tinctoria</i>
9a. Pods 6 - 10-seeded; seeds cuboid	10
b. Pods 2-seeded; seeds ovoid	4. <i>I. glandulosa</i>
10a. Leaves gland-dotted; inflorescence a raceme	10. <i>I. trifoliata</i>
b. Leaves not gland-dotted; inflorescence a spike	11. <i>I. trita</i>

1. *I. aspalathoides* Vahl ex DC., Prodr. 2: 231. 1825; Wight, Icon. t. 332. 1840; FBI 2: 94. 1876; FPM 309. 1918; FTC 3: 414. 1983; FTN 1: 111. 1983; RHFC 7: 121. 1991; FFI 21: 16. 1995.

Undershrub, silvery-hairy. Leaflets linear, cuneate, entire, obtuse, apiculate. Calyxlobes linear. Pods cylindrical, glabrous; seeds ca 8, cuboid, smooth.

Fl. & Fr.: July - March.

Habitat: Wet localities, with *Aerva lanata*, *Allmania nodiflora* and *Indigofera tinctoria*.

Distrib.: S. India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Leaves, flowers and tender shoots demulcent; their decoction used in cancerous affections and leprosy. Leaves are also applied to abscesses.

Specimens examined: (Total 75) KSK 102817, 102859; PD & PU 106989; SAM 104771.

2. *I. caerulea* Roxb., Fl. Ind. 2: 377. 1832; Wight, Icon. t. 366. 1840; FTC 3: 415. 1983; FTN 1: 111. 1983; FFI 21: 34. 1995. *I. argentea* L. var. *caerulea* (Roxb.) Baker in Fl. Brit. India 2: 99. 1876. *I. articulata* auct. non Gouan 1773: FPM 312. 1918.

Undershrub. Leaflets obovate, cuneate, entire, obtuse or emarginate. Racemes axillary. Calyx-lobes deltoid, pubescent. Pods curved, silvery-pubescent, torulose, 2-4 seeded; seeds orbicular, striate.

Fl. & Fr.: Oct. - March.

Habitat: Wastelands.

Distrib.: Ethiopia, Eritrea, India, Saudi Arabia, Somaliland, Sri Lanka and Sudan. TN: Coimbatore, Ramanathapuram, Tiruchirapalli, Tirunelveli and Tuticorin. GM: Mainland coast, frequent. Earlier collected at Tuticorin. Represented by very few specimens at MH. Appears rare.

Uses: Roots and leaves a bitter tonic. Seeds anthelmintic, also used as a food in times of scarcity.

Specimens examined: (Total 11) Without collector's name & date 13710; VB 1547.

3. *I. colutea* (Burm. f.) Merr. in Philipp. J. Sci. 19: 355. 1921; FTC 3: 418. 1983; FTN 1: 111. 1983; RHFC 7: 132. 1991; FFI 21: 39. 1995. *Galega colutea* Burm. f., Fl. Indica 172. 1768, non Willd. 1803. *Indigofera viscosa* Lam., Encycl. 3: 247. 1789; Wight, Icon. t. 404. 1840; FBI 2: 95. 1876; FPM 311. 1918.

Undershrub. Leaflets oblong-elliptic, obtuse, entire, obtuse. Racemes 4 - 6-flowered. Calyx-lobes setaceous, hairy. Corolla red. Pods torulose, 1.5 - 2 cm long, hispid, ca 15-seeded; seeds cuboid, pitted.

Fl. & Fr.: July - Feb.

Habitat: Open places, with *Aerva persica*, *Cleome viscosa* and *Hedyotis graminifolia*.

Distrib.: Afghanistan, Trop. Africa, N. Australia, India, Malaysia, Myanmar, New Zealand and Sri Lanka. TN: Chengalpattu, Coimbatore, Dharmapuri, Madurai, Nilgiri, Ramanathapuram, Salem, Tiruchirapalli, Tirunelveli and Tuticorin. GM: Frequent on mainland coast and Appa and Nallathanni Islands.

Specimens examined: (Total 80) PD & PU 103573; SAM 106359; Ap Is PD 101557; Nt Is PD 101608; PD & PU 106642.

4. *I. glandulosa* Roxb. ex Willd., Sp. Pl. 3: 1227. 1803; Wight, Icon. t. 330. 1840; FBI 2: 94. 1876; FPM 309. 1918; FTC 3: 420. 1983; FTN 1: 111. 1983; FFI 21. 66. 1995.

Undershrub. Leaflets oblanceolate, cuneate, entire, obtuse or retuse, pellucid-punctate. Inflorescence racemose or capitate, dense, axillary. Calyx-lobes setaceous. Corolla pink. Pods oblong, deflexed, ca 5 mm long, torulose; seeds smooth.

Fl. & Fr.: Sept. - March.

Habitat: Bunds of cultivated fields, with *Spermacoce hispida*, *Hedyotis puberula* etc.

Distrib.: S. India. Endemic. TN: Coimbatore, Ramanathapuram, Salem, S. Arcot, Tiruchirapalli and Tirunelveli. GM: Mainland coast, occasional. Rare in the interior.

Uses: Seeds sometimes used as a food in times of scarcity; they contain about 3 times as much protein as wheat. A good fodder, highly palatable as green before flowering. May also be used as a green manure.

Specimens examined: (Total 11) PD & PU 106477.

5. *I. hirsuta* L., Sp. Pl. 751. 1753; FBI 2: 98. 1876, p.p.; FPM 312. 1918; FTC 3: 420. 1983; FTN 1: 111. 1983; RHFC 7: 133. 1991; FFI 21: 81. 1995.

Undershrub. Leaflets oblanceolate-elliptic, subacute, entire, obtuse. Racemes axillary, 20 - 30 flowered, deflexed. Calyx-lobes linear. Pods deflexed, ca 1.5 cm long, mucronate, 5-seeded; seeds cuboid, pitted.

Fl. & Fr.: Oct.- Feb.

Habitat: Sandy soil along road sides.

Distrib.: Tropics. TN: Most districts. GM: Earlier collected at Pattanamkathan and Uchipuli in Ramanathapuram, a little away from the coast. May occur on the coast.

Uses: Good for pastures, but in some cases doubtfully toxic to cattle. Decoction of the leaves is stomachic and used in diarrhoea.

Specimens examined: (Total 38) VB 1259, 1674, 1863.

6. *I. linnaei* Ali in Bot. Not. 111: 549. 1958; FTC 3: 421. 1983; FTN 1: 112. 1983; RHFC 7: 120. 1991; FFI 21: 96. 1995. *I. enneaphylla* L., Mant. Pl. 272. 1771, nom. illeg.; Wight, Icon. t. 403. 1840; FBI 2: 94. 1876; FPM 309. 1918.

Leaflets 3 or 4 pairs, oblanceolate, cuneate, entire, emarginate or retuse. Racemes axillary or subcapitate, 10 - 20-flowered. Calyx-lobes setaceous. Corolla red. Pods ellipsoid, turgid, ca 4 mm long, hirsute; seeds 2, cuboid, angular.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and also on road sides, with *Acanthospermum hispidum*, *Euphorbia hirta*, *Micrococca mercurialis* and *Vernonia cinerea*.

Distrib.: Asia and Australia. TN: Most districts. GM: Mainland coast, common.

Uses: Used as green manure. Plant juice diuretic and antiscorbutic; used in chronic venereal diseases. Decoction given in epilepsy and insanity.

Specimens examined: (Total 107) KSK 102785; PD 101127; PD & PU 106970; SAM 106375.

7. *I. oblongifolia* Forssk., Fl. Aegypt.-Arab. 137. 1775; FPM 311. 1918; FTN 1: 112. 1983; RHFC 7: 122. 1991; FFI 21: 108. 1995. *I. paucifolia* Delile, Descr. Egypte, Hist. Nat. 251. 1812; Wight, Icon. t. 331. 1840; FBI 2: 97. 1876.

Leaflets oblong, cuneate, entire, acute. Racemes axillary, many-flowered. Calyx-lobes ovate. Corolla reddish orange. Pods moniliform, deflexed; seeds 5 - 10, truncate, smooth.

Fl. & Fr.: June - Feb.

Habitat: Sandy localities, with *Aerva lanata*, *Blumea obliqua*, *Cymbopogon caesius*, *Fimbristylis* spp. and *Suaeda* spp.

Distrib.: Asia, Australia and Trop. Africa. TN: Ramanathapuram, Thanjavur, Tirunelveli and Tuticorin. GM: Common on most islands, rare on mainland coast.

Uses: Useful in enlargement of liver and spleen; improves appetite.

Specimens examined: (Total 30) SAM 104664; Kc Is. PD 100577; Mu Is. KSK 102046; PD 100301; Pu Is. PD 101412; Th Is. PD 101510; Ut Is. PD 101664; Va Is. KSK 102026.

8. *I. tinctoria* L., Sp. Pl. 751. 1753; Wight, Icon. t. 365. 1840; FBI 2: 99. 1876; FPM 312. 1918; FTN 1: 113. 1983; RHFC 7: 128. 1991; FFI 21: 133. 1995. *I. sumatrana* Gaertn., Fruct. Sem. Pl. 3: 317, t. 148, f. 4. 1791; FPM 312. 1918. [*Averi*]

Undershrub. Leaflets oblong-elliptic, linear. Calyx-lobes linear. Pods cylindrical, ca 1.5 cm long, hirsute, shortly apiculate; seeds 5-12, rectangular, pitted.

Fl. & Fr.: July - Feb.

Habitat: Wastelands and road sides, with *Aerva persica*, *Cassia senna*, *Pedaliium murex* etc.

Distrib.: Pantropical. TN: Chengalpattu, Coimbatore, Dharmapuri, Nilgiri, N. & S. Arcot, Ramanathapuram, Tiruchirapalli and Tirunelveli. GM: Common on mainland coast and rare on islands. Collected only on Pumarichan Island.

Uses: A green manure. Earlier grown for Indigo. Extract used in epilepsy and other nervous disorders. Roots used in urinary complaints and hepatitis.

Specimens examined: (Total 90) KSK 102719; Pu Is. PD & PU 106830.

9. *L. tirunelvelica* Sanjappa in J. Bombay Nat. Hist. Soc. 79: 647. 1982; FTN 1: 113. 1983; FFI 21: 137. 1995.

Undershrub. Leaflets oblong-obovate, cuneate, entire, obtuse. Racemes axillary. Calyx-lobes linear. Corolla pink. Pods clustered, 5 -10, oblong, torulose, ca 0.5 cm long, pubescent, beaked; seeds 2, ellipsoid.

Fl. & Fr.: Nov. - March.

Habitat: Road sides and wastelands.

Distrib.: S. India. Endemic. TN: Ramanathapuram and Tirunelveli.

Earlier collected at Pattanamkathan in Ramanathapuram, a little away from the coast. May occur on mainland coast.

Specimen examined: VB 1673.

10. *L. trifoliata* L., Cent. Pl. 2: 29. 1756; Wight, Icon. t. 314. 1840; FBI 2: 96. 1876; FPM 310. 1918; FTC 3: 428. 1983; FTN 1: 113. 1983; RHFC 7: 124. 1991; FFI 21: 138. 1995. *L. prostrata* Willd., Sp. Pl. 3: 1226. 1803; FPM 310. 1918.

Undershrub. Leaflets oblanceolate, cuneate, entire, obtuse. Racemes axillary, 6 10-flowered. Calyx-lobes setaceous. Corolla pink. Pods linear, ca 2 cm long, winged along margins; seeds 6, cuboid, angular, smooth.

Fl. & Fr.: Dec. - Jan.

Habitat: Wet localities, with *Dicanthium annulatum*, *Justicia prostrata* and *Sida cordifolia*.

Distrib.: Asia and Australia. TN: Coimbatore, Dharmapuri, Kanyakumari, Madurai, Salem, S. Arcot, Thanjavur, Tiruchirapalli and Tuticorin. GM: Mainland coast, frequent. Now collected at Periyathalai and Tuticorin port.

Uses: Seeds restorative, astringent and aphrodisiac, used in rheumatism and leucorrhoea.

Specimens examined: (Total 30) KSK 102916; SAM 106363.

11. *I. trita* L. f., Suppl. Pl. 335. 1782; Wight, Icon. tt. 315 & 386. 1840; FBI 2: 96. 1876; FPM 310. 1918; FTC 3: 428. 1983; FTN 1: 113. 1983; RHFC 7: 125. 1991; FFI 21: 143. 1995.

Undershrub. Leaflets obovate, cuneate, entire, emarginate. Spikes axillary, many-flowered. Calyx-lobes linear. Corolla pinkish violet. Pods 4-angular, divaricate, oblong, 2 - 3 cm long, shortly apiculate; seeds 6-10, rectangular, smooth.

Fl. & Fr.: Sept. - Feb.

Habitat: Wastelands and road sides, with *Crotalaria retusa*, *Spermacoce ocymoides* etc.

Distrib.: Asia and Australia. TN: Most districts. GM: Frequent on mainland coast and Kurusadai, Pumarichan and Pullivasal Islands.

Use: Seeds used as a nutritive tonic.

Specimens examined: (Total 70) VB 1325; Ku Is. PD 99768; PD & PU 206882; Pu Is. PD 99712; Pv Is. KSK 103340.

Of the 11 species, only 4 viz., *I. colutea*, *I. oblongifolia*, *I. tinctoria* and *I. trita* are found on islands and *I. oblongifolia* occurs on most islands and sometimes locally abundant as on Muyal Island and those of the Tuticorin group. *Indigofera* spp. are reported to be dispersed by ants (Ridely, 1930). However, in the present instance, it appears unlikely. The pods may be transported by seawater. But then, how certain species have not yet reached the islands and that *I. oblongifolia* alone is abundant at times need explanation.

15. Lablab Adans.

Trop. Africa. Probably unispecific.

L. purpureus (L.) Sweet, Hort. Brit. ed. 1, 481. 1827; RHFC 7: 310. 1991, var. *purpureus*: Verdc. in Kew. Bull. 24: 410. 1970; FTC 3: 430. 1983; FTN 1: 114. 1983.

Dolichos purpureus L., Sp. Pl. ed. 2, 2: 1021. 1763. *D. lablab* L., Sp. Pl. 725. 1753; FBI 2: 209. 1876, p.p.; FPM 367. 1918. [Avarai]

Climber. Leaflets broadly ovate, truncate, entire, acute. Racemes terminal, ca 20-flowered. Calyx-lobes oblong. Corolla pinkish violet. Pods 4 - 5 cm long; seeds 5 or 6, oblong, ca 1 cm long.

Fl. & Fr.: July - Feb.

Habitat: A gregarious climber in sandy localities, usually on *Thespesia populnea* with another gregarious climber *Ipomoea violacea*.

Distrib.: TN: All districts, cultivated. GM: All islands, particularly common on that of the Mandapam group.

Sometimes cultivated on the mainland coast. But quite frequent on the Keelakarai group of islands and exceptionally abundant on that of the Mandapam group but absent from that of the Tuticorin group. Not seen as an escape on mainland coast. Might have been brought to the islands by the local fisherfolk initially. However, this needs further investigations. This is one of the economically important species which attracts humans from the mainland coast for collecting the tender pods which are commonly used as a vegetable. Flowering and fruiting is prolific. Plants do not seem to be infested by any pathogen or insect. Its adaptation to the insular situation is indeed remarkable and needs further studies.

Uses: Used as a fodder; tender pods an excellent vegetable. Seeds considered febrifuge, stomachic, antispasmodic and aphrodisiac.

Specimens examined: (Total 65) Ap Is. KSK 102377; Ma Is. KSK 102324; PD 101103; Pu Is. PD 99716; Pv Is. PD 101434; Sh Is. PD & PU 106867; Th Is. PD 101434; Va Is. KSK 102037.

16. *Pongamia* Vent.

Old World tropics, probably unispecific.

P. pinnata (L.) Pierre, Fl. Forest. Cochinch. t. 385. 1899; IFTC t. 212. 1982; FTC 3: 441. 1983; FTN 1:117. 1983. *Cytisus pinnatus* L., Sp. Pl. 741. 1753. *Pongamia glabra* Vent., Jard. Malmaison t. 28. 1803; Wight, Icon. t. 59. 1838; FBI 2: 240. 1876; FPM 385. 1918. *Derris indica* (Lam.) Bennet in J. Bombay Nat. Hist. Soc. 68: 303. 1971. *Galedupa indica* Lam., Encycl. 2: 594. 1788. [Pungam]

Tree. Leaflets 3 - 5 pairs, ovate, obtuse-cuneate, entire, acuminate. Flowers in pseudoracemes or panicles. Calyx-lobes obscure. Corolla pinkish white. Pods obliquely oblong, ca 4 cm long, compressed; seeds reniform.

Fl. & Fr.: Feb. - Oct.

Habitat: Planted on roadsides, also along streams.

Distrib.: Asian tropics and Australia. TN: Most districts. GM: Mainland coast, frequent. Also found on Nallathanni Island.

Uses: As a medicinal plant it has a number of uses. Seed oil is used in tanning and in the preparation of washing soaps and candles.

Specimens examined: (Total 35) PD 100402.

17. *Rhynchosia* Lour.

Tropics, ca 200 species, 22 in India, 15 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|--|-------------------------|
| 1a. Plants pubescent; racemes 5 - 12- flowered..... | 2 |
| b. Plant hirsute; racemes 3-flowered | 3. <i>R. velutina</i> |
| 2a. Calyx-lobes gland-dotted; pods oblong | 1. <i>R. minima</i> |
| b. Calyx-lobes not gland-dotted; pods orbicular..... | 2. <i>R. nummularia</i> |

1. *R. minima* (L.) DC., Prodr. 2: 385. 1825; FBI 2: 223. 1876; FPM 375. 1918; FTC 3: 452. 1983; FTN 1: 119. 1983; FIFTC t. 193. 1988; RHFC 7: 376. 1991. *Dolichos minimus* L., Sp. Pl. 726. 1753. *Rhynchosia medicaginea* (Lam.) DC., Prodr. 2: 386. 1825. *Dolichos medicagineus* Lam., Encycl. 2: 297. 1786.

Spreading to climbing herb. Leaflets obovate, cuneate, entire, obtuse. Calyx-lobes subequal. Corolla yellow. Pods falcate, ca 2 cm long; seeds 1 or 2, oblong, smooth.

Fl. & Fr.: Almost throughout the year.

Habitat: Hedges and wet places, with *Achyranthes aspera*, *Euphorbia hirta*, *Gomphrena serrata* and *Leucas aspera*.

Distrib.: Pantropical. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Good fodder. Toxic to fish. Seeds poisonous. Leaves used as an abortifacient.

Specimens examined: (Total 50) SAM 106343, 106402; VB 1322.

2. *R. nummularia* DC., Prodr. 2: 238. 1825; FBI 2: 221. 1876; FPM 374. 1918; FTN 1: 119. 1983; JETB 14: 49. 1990; RHFC 7: 370. 1991. *Nomismia nummularia* (DC.) Wight & Arn., Prodr. 237. 1834; Wight, Icon. t. 203. 1840. [*Kodi avarai*]

Trailer. Leaflets obovate or orbicular, cuneate, entire, rounded-emarginate. Calyx-lobes subequal. Corolla yellow. Pods mucronate, ca 1 cm long, hairy; seed 1, subglobose.

Fl. & Fr.: Oct. - Jan.

Habitat: Sandy soil.

Distrib.: India and Sri Lanka. TN: Ramanathapuram and Tirunelveli. GM: Earlier collected at Uchipuli, a little away from the coast. May occur on the coast.

Specimens examined: (Total 4) DD 86700; VB 1861, 2002.

3. *R. velutina* Wight & Arn., Prodr. 238. 1834; FBI 2: 224. 1876; FPM 375. 1918; FTN 1: 120. 1983; RHFC 7: 378. 1991; Sanjappa, Legumes India 241. 1992. (Fig.15)

Twiner. Leaflets obovate-rhomboid, cuneate, entire, subacute or obtuse. Calyx-lobes unequal. Corolla yellow. Pods oblong, ca 3 cm long; seeds 2, reniform, brownish.

Fl. & Fr.: Nov. - Jan.

Habitat: On hedges, with *Abrus fruticulosus*, *Galactia tenuiflora* etc.

Distrib.: Comoro Islands, Madagascar, Mozambique and S. India. TN: Nilgiri, Kanyakumari, Ramanathapuram and Thanjavur. GM: Mainland coast, rare. Collected only at Vivekananthapuram in Kanyakumari and rare on islands. Collected on Upputhanni Island only.

It is reportedly endemic to coastal Tamil Nadu (Ahmedullah & Nayar, 1987). But it occurs in Madagascar, Mozambique, Comoro Islands as well (Sanjappa, 1992). It has now been collected on Upputhanni Island in Ramanathapuram from where it is added to MH. In all these places, however, it was rare. Field studies are required to fix the causal factors for the rarity.

Specimens examined: (Total 6) Foulkes s.n. (K photo!); KSK 102819; PD & PU 106962; RW 832 (K type, photo!); Ut Is. PD & PU 106605; Walther s.n. (K photo!).

18. *Rothia* Pers. nom. cons.

Africa, Baluchistan to Australia, unispecific.

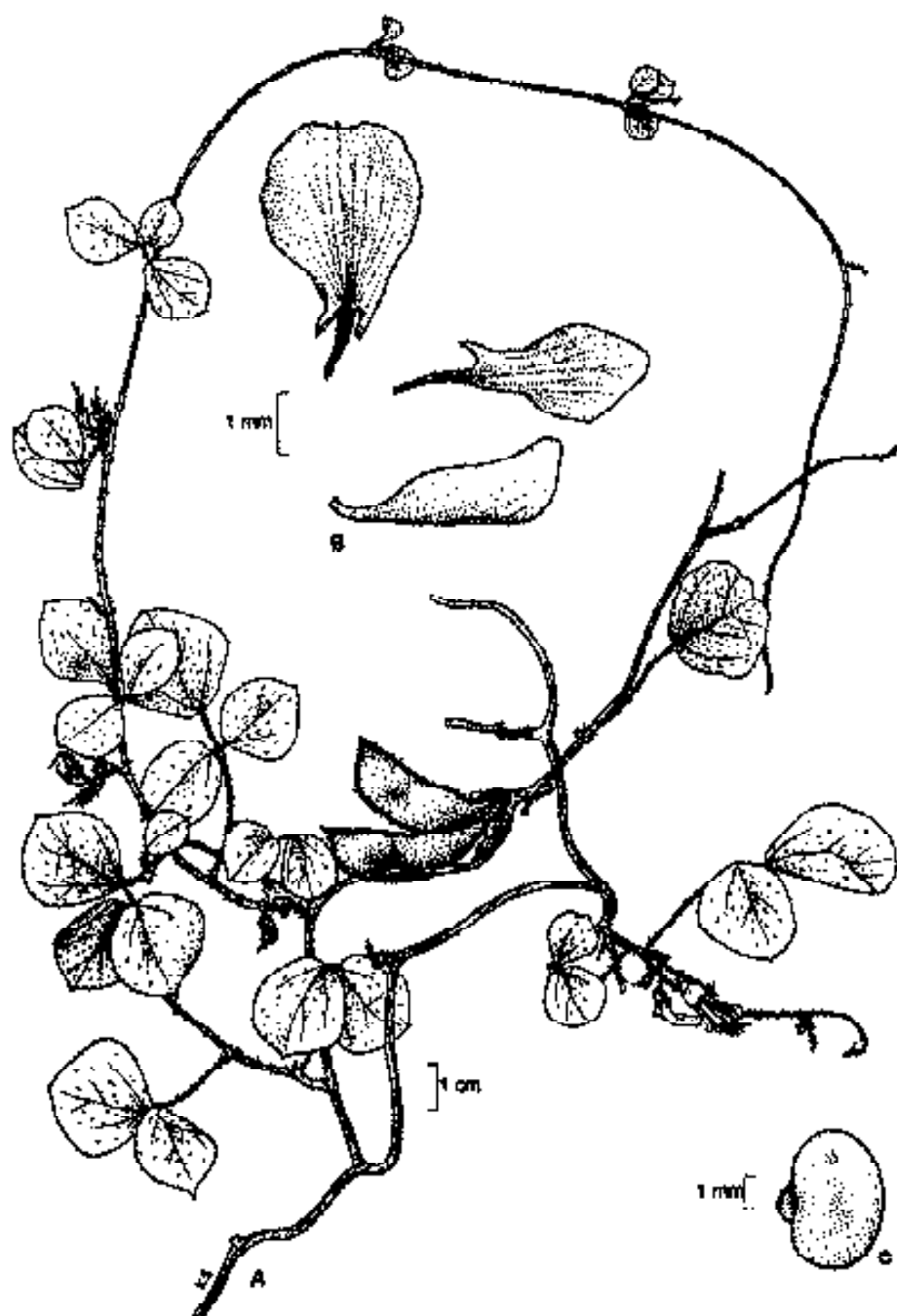


Fig. 15(A - C). *Rhysochloa valatana* Wight & Arn.
A. Habit B. Petals C. Seed

R. indica (L.) Druce in Bot. Exch. Club Soc. Brit. Isles 3: 423. 1914; IFTC t. 219. 1982; FTC 3: 456. 1983; FTN 1: 120. 1983. *Trigonella indica* L., Sp.Pl. 778. 1753. *Rothia trifoliata* (Roth.) Pers., Syn. Pl. 2: 302. 1807; Wight, Icon. t. 799. 1893; FBI 2: 63. 1876; FPM 279. 1918. *Dillwynia trifoliata* Roth, Cat. Bot. 3: 71. 1806.

Trailing herb. Leaflets oblanceolate, attenuate, obtuse. Flower solitary, axillary. Calyx-lobes subequal, linear, 5 - 6 cm long, mucronate. Seeds many, reniform, ca 1 mm long, stramineous.

Fl. & Fr.: July - Jan.

Habitat: Wet situations, with *Cleome aspera*, *Corchorus* spp., *Tribulus terrestris* etc.

Distrib.: TN: Most districts. GM: Mainland coast, occasional..

Uses: Leaves and pods boiled and eaten as a vegetable in times of scarcity. It can stand salinity well and may be used as green manure in alkaline and saline soils.

Specimens examined: (Total 52) DD 86682; PD & PU 106984, 107375.

19. Sesbania Scop. nom. cons.

Warm temperate regions, ca 50 species, 6 in India, 5 in Tamil Nadu and 4 in GM.

Key to the species

- 1a. Branchlets prickly 1. *S. bispinosa*
- b. Branchlets not prickly 2
- 2a. Shrubs; pods 30 - 60 cm long, 20 - 35-seeded 3
- b. Herb; pods 5 - 7 cm long, 12 - 15-seeded 3. *S. procumbens*
- 3a. Branchlets pubescent; flowers ca 5 cm across 2. *S. grandiflora*
- b. Branchlets glabrous; flowers ca 1.5 cm across 4. *S. sesban*

1. *S. bispinosa* (Jacq.) W. F. Wight in U.S.D.A. Bur. Pl. Industr. Bull. 137: 15. 1909; FTC 3: 457. 1983; FTN 1: 120. 1983; FIFTC t. 197. 1988; RHFC 7: 139. 1991. *Aeschynomene bispinosa* Jacq., Icon. Pl. Rar. 3: t. 564. 1792. *Sesbania aculeata* (Willd.) Poir. in Lam., Encycl. 7: 128. 1806, p.p. (as "*Sesban aculeatus*"); FBI 2: 114. 1876; FPM 323. 1918. *Coronilla aculeata* Willd., Sp. Pl. 3: 1147. 1802.

Shrub. Leaflets oblong, cuneate, entire, obtuse, apiculate. Racemes axillary. Calyx-lobes obscure. Corolla yellow. Pods subterete, ca 20 cm long, torulose, ca 35-seeded.

Fl. & Fr.: Oct. - Feb.

Habitat: Wet and marshy localities, with *Cenchrus* spp., *Sauropus bccciformis*, *Spigelia anthelmia* etc.

Distrib.: Trop. Africa and Asia. TN: Chengalpattu, Coimbatore, Dharmapuri, Salem, Thanjavur, Tirunelveli and Tuticorin. GM: Mainland coast, occasional.

Uses: Used as a green manure for rice, sugarcane, cotton and coconut crops.

Specimens examined: (Total 25) PD & PU 107374.

2. *S. grandiflora* (L.) Poir. in Lam., *Encycl.* 7: 127. 1806; FBI 2: 115. 1876; FPM 323. 1918; FTC 3: 458. 1983; FTN 1: 120. 1983; RHFC 7: 136. 1991. *Robinia grandiflora* L., *Sp. Pl.* 722. 1753. [Agathi]

Leaflets oblong, obtuse, entire, emarginate. Racemes axillary. Calyx-lobes triangular. Corolla creamy. Pods linear, to 60 cm long, 25 - 35-seeded.

Fl. & Fr.: Dec. - March.

Distrib.: Native of Indonesia. Elsewhere cultivated.

Grown as a support for betel vine, particularly in the vicinity of Athur in Tuticorin. Leaves and flowers used as a vegetable.

3. *S. procumbens* (Roxb.) Wight & Arn., *Prodr.* 215. 1834; FBI 2: 115. 1876; FPM 323. 1918; FTN 1: 120. 1983. *Aeschynomene procumbens* Roxb., *Fl. Ind.* 3: 337. 1832.

(Fig. 16)

Leaflets linear-oblong, rounded, entire, obtuse. Racemes axillary. Calyx-lobes ovate. Corolla yellow. Pods linear; seeds oblong.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet places and on bunds of rice fields.

Distrib.: S. India. Endemic. TN: Chengalpattu, Ramanathapuram, Tirunelveli and Tuticorin. GM: Earlier collected in the Tambraparani river delta.

Uses: Grazed by cattle. Seeds used as food in times of scarcity.

Specimens examined: (Total 9) DD s.n.

4. *S. sesban* (L.) Merr. in *Philipp. J. Sci.* 7: 235. 1912; FTC 3: 458. 1983; FTN 1: 120. 1983; RHFC 7: 138. 1991. *Aeschynomene sesban* L., *Sp. Pl.* 714. 1753. *Sesbania aegyptiaca*

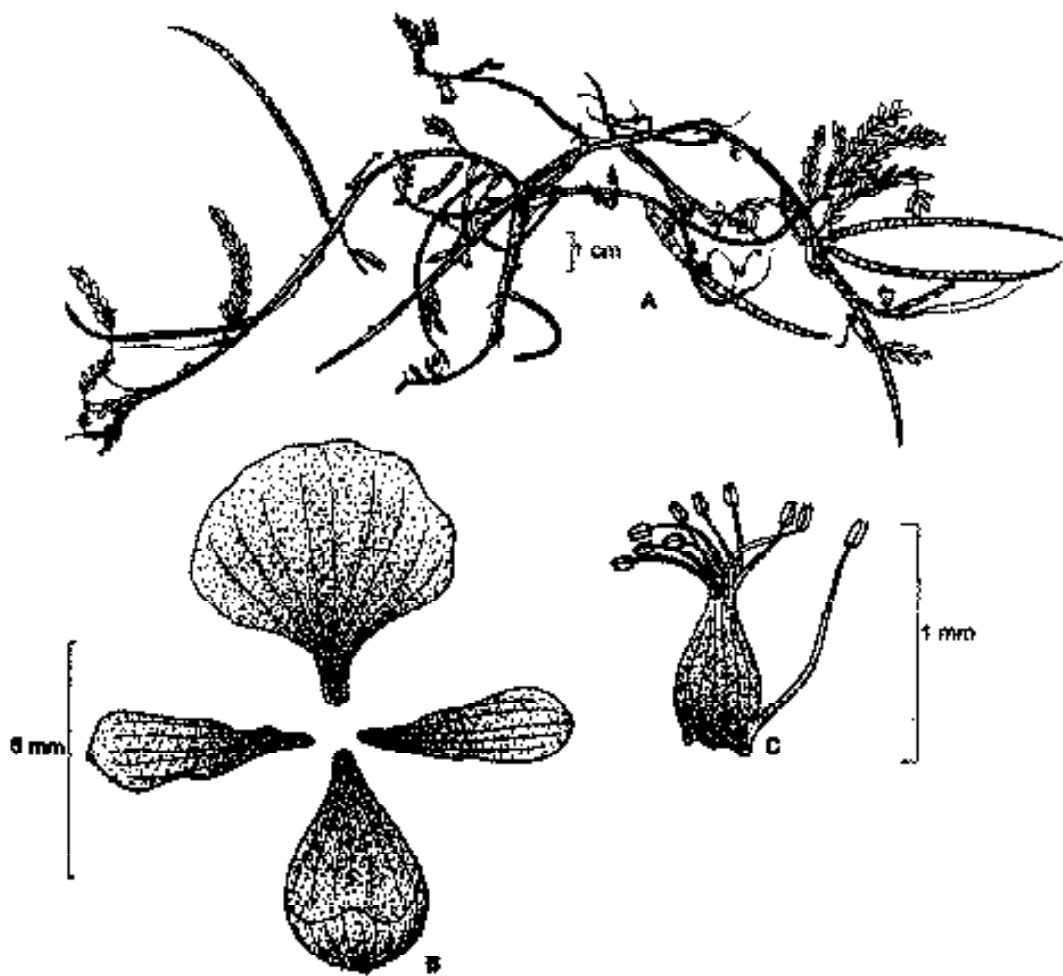


Fig. 16(A - C). *Sebania procumbens* (Roxb.) Wight & Arn.
 A. Habit B. Petals C. Androecium

(Poir.) Pers., Syn. Pl. 2: 316. 1807; Wight, Icon. t. 32. 1838; FBI 2: 114. 1876; FPM 323. 1918. *Sesban aegyptiacus* Poir. in Lam., Encycl. 7: 128. 1806. [*Chittahatti*]

Leaflets linear-oblong, oblique, entire, obtuse. Racemes axillary. Calyx-lobes obscure. Corolla yellow. Pods linear, ca 30 cm long, torulose, beaked; seeds ca 25, oblong.

Fl. & Fr.: Nov. - March.

Habitat: Occasionally planted on bunds of cultivated lands.

Distrib.: Trop. Africa and Asia. TN: Cultivated. GM: Occasionally cultivated on mainland coast. May run wild.

Uses: Leaves and flowers eaten. Bark is a source of fibre used for ropes. Pith used for fishing-floats. Seeds stimulant, emmenagogue and astringent, used in diarrhoea, and spleen enlargement.

Specimens examined: (Total 20) VB 2334.

20. *Stylosanthes* Sw.

Tropics and subtropics, ca 25 species, 2 in India and Tamil Nadu and one in GM.

S. fruticosa (Retz.) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.): 77. 1931; IFTC t. 224. 1982; FTC 3: 463. 1983; FTN 1: 122. 1983; RHFC 7: 178. 1991. *Arachis fruticosa* Retz., Obs. Bot. 5: 26. 1789. *Stylosanthes mucronata* Willd., Sp. Pl. 3: 116. 1802, nom. illeg.; Bedd., Icon. t. 294. 1868 - 1874; FBI 2: 148. 1876; FPM 326. 1918.

Undershrub. Leaflets oblong-elliptic, subacute, entire. Calyx-lobes lanceolate. Corolla yellow. Pods oblong, beaked, ca 4 mm long, 1- or 2-seeded; seeds reniform.

Fl. & Fr.: July - Jan.

Habitat: Dry sandy localities, with *Alysicarpus monilifer*, *Barleria cuspidata* etc.

Distrib.: Malesia, S. India, Sri Lanka and Trop. Africa. TN: Chengalpattu, Dharmapuri, Kanyakumari, Pudukkottai, Ramanathapuram, S. Arcot, Thanjavur and Tirunelveli. GM: Mainland coast, less frequent. Collection now added to MH from Vivekananthapuram in Kanyakumari.

Uses: Recommended as a fodder for domestic animals. Infusion of herb given in colds. Leaves smoked like tobacco.

Specimens examined: (Total 50) PD & PU 106985; SAM 106431.

21. *Tephrosia* Pers. nom. cons.

Tropics, ca 400 species, 25 in India, 15 in Tamil Nadu and 6 in GM.

Key to the species

1a. Undershubs	2
b. Erect or procumbent herbs	4
2a. Branchlets spiny	5. <i>T. spinosa</i>
b. Branchlets not spiny	3
3a. Branchlets pubescent; pods puberulous; seeds ovoid	4. <i>T. purpurea</i>
b. Branchlets villous; pods sericeous; seeds subquadrate	6. <i>T. villosa</i>
4a. Flowers in racemes, more than 3	5
b. Flowers in clusters, 1 - 3	3. <i>T. pumila</i>
5a. Leaflets emarginate; pods 4 - or 5-seeded; seeds oblong	1. <i>T. barberi</i>
b. Leaflets mucronate; pods 14-seeded; seeds rectangular	2. <i>T. maxima</i>

1. *T. barberi* J. R. Drumm. in Gamble, Fl. Madras 320. 1918; FTN 1: 122. 1983; RDBIP 3: 150. 1990.

Procumbent herb. Leaflets 2 - 4 pairs, obovate, cuneate, entire. Racemes axillary. Calyx-lobes linear. Corolla purplish blue. Pods oblong, 2 - 2.5 cm long, shortly beaked.

Fl. & Fr.: Nov. - Jan.

Habitat: Open wastelands, on red soil.

Distrib.: Ramanathapuram and Tuticorin. Endemic. GM: Mainland coast, very rare.

Das and Thothathri (RDBIP 3: 150. 1990) stated, "It grows usually up to an elevation of 75 m in hill slopes". It is a plant of the coastal and subcoastal plains of the Gulf of Mannar; never collected on hills. The type is from the subcoastal Kudiraimoli Theri in Tuticorin. Now collected at Periathalai on Gulf of Mannar Coast. Populations are few and far between. Plants seem to prefer red soil. The fewer seeds in pods may be one of the reasons for its rarity. Further field studies on ecology and reproductive biology are essential.

Specimens examined: (Total 10) CAB 630; DD 87170; GJT 4; RW 682; VB 2321.

2. *T. maxima* (L.) Pers., Syn. Pl. 2: 329. 1807; FPM 319. 1918; FTC 3: 466. 1983; FTN 1: 122. 1983; FIFTC t. 202. 1988; RHFC 7: 149. 1991. *Galega maxima* L., Syst. Nat. ed. 10, 1172. 1759. *Tephrosia purpurea* (L.) Pers. var. *maxima* (L.) Baker in Fl. Brit. India 2: 113. 1876.

Erect herb. Leaflets 2 - 3 pairs, oblanceolate, cuneate, entire. Racemes leaf-opposed. Calyx-lobes lanceolate. Corolla purplish pink. Pods oblong, mucronate, to 6 cm long, minutely hirsute.

Fl. & Fr.: Almost throughout the year.

Habitat: Open wastelands, with *Amaranthus tricolor*, *Euphorbia hirta* etc.

Distrib.: S. India and Sri Lanka. TN: Most districts. GM: Frequent on mainland coast and rare on islands. Once collected on Appa Island.

Uses: Used as a green manure. Also yields a dye.

Specimens examined: (Total 90) KSK 103437; MSS 70310; PD & PU 106673; Ap Is. PD 101563.

3. *T. pumila* (Lam.) Pers., Syn. Pl. 2: 330. 1807; FTC 3: 468. 1983; FTN 1: 123. 1983; RHFC 7: 154. 1991. *Galega pumila* Lam., Encycl. 2: 599. 1786. *Tephrosia purpurea* (L.) Pers. var. *pumila* (Lam.) Baker in Fl. Brit. India 2: 113. 1876. *Galega procumbens* Buch.-Ham. ex J. R. Drumm. in Gamble, Fl. Madras 318. 1918.

Procumbent herb. Leaflets 4 - 6 pairs, obovate-oblanceolate, cuneate, entire, truncate. Calyx-lobes lanceolate. Corolla white or purplish. Pods oblong, 2.5 - 3 cm long, 5-10-seeded; seeds trapezoid.

Fl. & Fr.: Oct. - Feb.

Habitat: Open wastelands, with *Aerva lanata*, *Aristida setacea* and *Eragrostis viscosa*.

Distrib.: Africa, C. America, Mauritius, S. Asia and the W. Indies. TN: Chengalpattu, Coimbatore, Dharmapuri, Kanyakumari, Nilgiri and Ramanathapuram. GM: Mainland coast, occasional. Collected at Anjukramam in Kanyakumari.

Specimens examined: (Total 50) KSK 102655; PD & PU 106903.

4. *T. purpurea* (L.) Pers., Syn. Pl. 2: 329. 1807; FBI 2: 112. 1876, p.p.; FPM 320. 1918; FTC 3: 470. 1983; FTN 1: 123. 1983; RHFC 7: 152. 1991. *Cracca purpurea* L., Sp. Pl. 752. 1753. *Tephrosia hamiltonii* J. R. Drumm. in Gamble, Fl. Madras 320. 1918. [Kolingi]

Undershrub. Leaflets 4 - 9 pairs, obovate, cuneate, entire, obtuse. Flowers in pseudoracemes. Calyx-lobes lanceolate. Corolla purplish pink. Pods ca 4 cm long, ca 7-seeded.

Fl. & Fr.: Almost throughout the year.

Habitat: Open wastelands, also in sandy localities, with *Dactyloctenium aegyptium*, *Cassia* spp., *Mollugo* spp. etc.

Distrib.: Tropics. TN: All districts. GM: Common on mainland coast and occasional on Kurusadai and Van Islands.

Uses: Plant used as tonic, laxative and diuretic. Roots and seeds insecticidal. Decoction of roots given in dyspepsia, diarrhoea, rheumatism, asthma and urinary disorders. Plant used as a green manure.

Specimens examined: (Total 161) KSK 102715; PD 102121; Ku Is. PD & PU 106900.

5. *T. spinosa* (L. f.) Pers., Syn. Pl. 2: 330. 1807; Wight, Icon. t. 372. 1840; FBI 2: 112. 1876; FPM 320. 1918; FTC 3: 472. 1983; FTN 1: 123. 1983; RHFC 7: 151. 1991. *Galega spinosa* L. f., Suppl. Pl. 385. 1782. [*Mulkolingi*]

Undershrub. Leaflets 4 or 5 pairs, obovate, cuneate, entire, obtuse, mucronate. Flowers 1 or 2, axillary. Calyx-lobes oblanceolate. Corolla pink-purple. Pods oblong; seeds ca 7, ellipsoid.

Fl. & Fr.: Jan. - Apr.

Habitat: Scrub jungles, with *Asystasia gangetica*, *Blepharis maderaspatensis*, *Hibiscus ovalifolius* etc.

Distrib.: S. India and Sri Lanka. TN: Most districts. GM: Mainland coast, occasional.

Uses: Decoction of roots given in rheumatism, indigestion, diarrhoea and fevers and to control excessive thirst; herb also used in application for swelling.

Specimens examined: (Total 20) KSK 103314, 103406.

6. *T. villosa* (L.) Pers., Syn. Pl. 2: 329. 1807; FBI 2: 113. 1876; FTC 3: 473. 1983; FTN 1: 123. 1983; RHFC 7: 155. 1991. *Cracca villosa* L., Sp. Pl. 752. 1753. *Tephrosia hirta* Buch.-Ham. in Trans. Linn. Soc. London, Bot. 13: 546. 1822; FPM 318. 1918.

Undershrub. Leaflets 5 - 7 pairs, obovate-oblanceolate, cuneate, entire, obtuse or retuse. Pseudoracemes axillary. Calyx-lobes lanceolate. Corolla pink. Pods slightly falcate, 2.5 - 3 cm long, ca 8-seeded.

Fl. & Fr.: Oct. - March.

Habitat: Open places and near hedges, with *Barleria* spp., *Indigofera aspalathoides* etc.

Distrib.: S. Asia. TN: Most districts. GM: Mainland coast, occasional.

Uses: Juice of leaves given in dropsy and fresh roots considered hypoglycaemic. Plant a good green manure.

Specimens examined: (Total 100) PD & PU 107389; SAM 104774, 106432.

22. *Teramnus* P. Browne

Tropics, 8 species, 2 in India and Tamil Nadu and one in GM.

T. labialis (L. f.) Spreng., Syst. Veg. 3: 235. 1826; FBI 2: 184. 1876; FPM 352. 1918; IFTC t. 226. 1982; FTC 3: 474. 1983; FTN 1: 123. 1983; RHFC 7: 296. 1991. *Glycine labialis* L. f., Suppl. Pl. 325. 1782; Wight, Icon. t. 168. 1840.

Leaflets obovate-lanceolate, cuneate, entire, obtuse. Racemes axillary. Calyx-lobes unequal. Corolla pink. Pods linear, straight, ca 4 cm long; seeds 10, oblong.

Fl. & Fr.: Nov. - Feb.

Habitat: On hedges, with *Canavalia gladiata*, *Passiflora foetida* etc.

Distrib.: Tropics. W. Himalayas to Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Used in rheumatism, tuberculosis, nervous affections and catarrh. Fruits astringent, stomachic and febrifuge. Young leaves eaten. The plant may be grown for grazing, for green manure and as a cover-crop.

Specimens examined: (Total 60) PD & PU 107009; VB 1868.

23. *Vigna* Savi

Tropics, especially Old World, ca 150 species, 14 in India and Tamil Nadu and one in GM.

V. trilobata (L.) Verdc. in Taxon 17: 172. 1968 & KB 24: 560. 1970; FTC 3: 479. 1983; FTN 1: 126. 1983; RHFC 7: 332. 1991. *Dolichos trilobatus* L., Mant. Pl. 101. 1767; FBI 2: 201. 1876. *Phaseolus trilobatus* (L.) Schreb. in Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 4: 132. 1770; Wight, Icon. t. 94. 1838; FPM 362. 1918. [*Panipayir*]

Prostrate herb; branchlets angular, pubescent. Leaves 3-foliolate; leaflets obovate or oblong, oblique, entire, obtuse-subacute. Racemes axillary. Calyx-lobes unequal. Corolla yellow. Pods subterete, 2 - 3.5 cm long, pubescent, 7 - or 8-seeded; seeds oblong.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Alysicarpus* spp., *Glinus oppositifolius*, *Launaea sarmentosa* etc.

Distrib.: Abyssinia, Afghanistan, India, Malesia, Myanmar, Nubia, Pakistan and Sri Lanka. TN: Most districts. GM: Common on mainland coast and most islands.

The fruits/seeds of *Vigna* spp. which can drift in ocean for long periods (Carlquist, 1974) can explain the presence of this species on most islands.

Uses: Seeds, though highly nutritious, is generally consumed only by the poor. Roots yield a kind of arrowroot. Plants used as green fodder, much relished by cattle. Leaves sedative, used in cataplasm for weak eyes.

Specimens examined: (Total 70) KSK 102892; PD 100541, 102118; SAM 103585; Sh Is. PD 100358.

V. aconitifolia (Jacq.) Mirechal [*Tulkapayir*], *V. mungo* (L.) Hepper [*Uhundu*], *V. radiata* (L.) R. Wilkzek [*Pachapayaru*] and *V. unguiculata* (L.) Walp. [*Thattapayir*] are cultivated for fodder and their seeds.

24. *Zornia* J. F. Gmel.

Subtropics ca 75 species and 2 in India.

Key to the species

- | | |
|---|-----------------------|
| 1a. Stem glabrescent; leaflets broadly ovate, glabrous;
pods with glochidiate prickles | 1. <i>Z. diphylla</i> |
| b. Stem pubescent; leaflets lanceolate, pubescent;
pods with retrorsely scabrid prickles | 2. <i>Z. gibbosa</i> |

1. *Z. diphylla* (L.) Pers., Syn. Pl. 2: 318. 1807; FBI 2: 147. 1876, p.p; FPM 325. 1918; IFTC t. 228. 1982; FTC 3: 481. 1983; FTN 1: 127. 1983; RHFC 7: 174. 1991. *Hedysarum diphyllum* L., Sp. Pl. 747. 1753. *Zornia diphylla* (L.) Pers. var. *zeylonensis* (Pers.) Baker in Fl. Brit. India 2: 148. 1876. *Z. zeylonensis* Pers., Syn. Pl. 2: 318. 1807; FPM 325. 1918.

Leaflets obtuse, entire, apiculate. Racemes 5 - 13-flowered. Calyx-lobes unequal. Corolla yellow. Pods oblong, ca 2 cm long; seeds subreniform.

Fl. & Fr.: July - Feb.

Habitat: Open wastelands, with *Cleome angustifolia*, *Blepharis maderaspatensis* and *Indigofera linnaei*.

Distrib.: Tropics. TN: Kanyakumari, Ramanathapuram, S. Arcot, Tirunelveli and Tuticorin. GM: Mainland coast, frequent.

Uses: Yields a nutritious fodder, but may cause impairment of sight in horses. Plant used for dysentery and root given to children as a soporific.

Specimens examined: (Total 20) PD & PU 106513, 106969, 107335; SAM 106410.

2. *Z. gibbosa* Span. in *Linnaea* 15: 192. 1841; FTC 3: 482. 1983; FTN 1: 127. 1983; FIFTC t. 214. 1988; RHFC 7: 175. 1991. *Z. diphylla* auct. non (L.) Pers. 1807; FBI 2: 147. 1876, p.p.; FPM 325. 1918.

Leaflets obtuse, entire, acute, apiculate. Racemes 3-12-flowered. Calyx-lobes unequal. Corolla yellow. Pods oblong, ca 8 mm long; seeds subreniform.

Fl. & Fr.: July - Feb.

Habitat: Open wastelands.

Distrib.: Australia, India to China and Malesia. TN: Most districts. GM: Earlier collected at Rameswaram. Common in the interior and hills. Rare on the coast.

Specimens examined: (Total 90) VB 2000.

Cyamopsis tetragonoloba (L.) Taub. [*Kothavarankai*], the cluster bean and *Macrotyloma uniflorum* (Lam.) Verdc. (= *Dolichos biflora*) [Kollu], horsegram, may be cultivated

34. CAESALPINIACEAE

Key to the genera

- | | |
|--|-----------------------|
| 1a. Plants armed | 2 |
| b. Plants unarmed | 3 |
| 2a. Stragglers; spines recurved; leaflets 5 - 8 pairs; pods
not torulose, densely spiny | 2. <i>Caesipinia</i> |
| b. Shrubs or small trees; spines erect; leaflets numerous;
pods torulose, not spiny | 5. <i>Parkinsonia</i> |
| 3a. Leaves simple, bilobed; pods twisted | 1. <i>Bauhinia</i> |
| b. Leaves compound; pods not twisted | 4 |

4a. Flowers in panicles; pods copper-coloured, winged	6. <i>Peltophorum</i>
b. Flowers in racemes or corymbs; pods neither copper-coloured nor winged	5
5a. Leaves bipinnate; flowers in corymbs.....	4. <i>Delonix</i>
b. Leaves unipinnate; flowers in racemes.....	6
6a. Stamens 3; pods with a pulpy mesocarp, edible	7. <i>Tamarindus</i>
b. Stamens 5 or 10; pods without pulpy mesocarp, not edible	3. <i>Cassia</i>

1. *Bauhinia* L.

Pantropical, ca 250 species, 37 in India, 11 in Tamil Nadu and one in GM.

B. racemosa Lam., *Encycl.* 1: 390. 1785; *FSSI* t. 182. 1872; *FBI* 2: 276. 1878; *FPM* 406. 1919; *FTC* 3: 485. 1983; *FTN* 1: 128. 1983; *RHFC* 7: 39. 1991. *Piliostigma racemosa* (Lam.) Benth. in *Miq.*, *Pl. Jungh.* 262. 1852. [*Archi*, *Kokkumantharai*]

Small tree. Leaves simple, ovate-orbicular, cordate-truncate, entire. Racemes terminal or axillary. Calyx-lobes oblong. Corolla white. Pods oblong, stalked, ca 15 cm long, 12 - 20-seeded; seeds oblong, compressed.

Fl. & Fr.: Sept. - Dec.

Habitat: Scrub jungles, with *Dodonaea viscosa*, *Syzygium cumini*, *Ziziphus mauritiana* etc.

Distrib.: China, India, Malasia, Sri Lanka and Timor. TN: Most districts. GM: Mainland coast, occasional.

Uses: Leaves given with onions in diarrhoea and as an anthelmintic. Decoction of leaves used in malaria. Bark astringent, used in dysentery.

Specimens examined: (Total 90) *PD* 100443; *VB* 1927, 1913.

B. purpurea L. and *B. variegata* L. may occasionally be cultivated as ornamental trees.

2. *Caesalpinia* L.

Tropics, ca 100 species, 10 in India, 7 in Tamil Nadu and one in GM.

C. bonduc (L.) Roxb., *Fl. Ind.* 2: 362. 1832, emend. Dandy & Exell in *J. Bot.* 76: 115. 1938; *FTC* 3: 488. 1983; *FTN* 1: Addenda ii. 1983; *RHFC* 7: 48. 1991. *Guilandina bonduc* L., *Sp. Pl.* 381. 1753. *Caesalpinia crista* L., *Sp. Pl.* 380. 1753, p.p.; *FPM* 393. 1919. *C. bonducella* (L.) Fleming in *Asiat. Res.* 11: 159. 1810; *FBI* 2: 254. 1878. *Guilandina bonducella* L., *Sp. Pl. ed. 2*, 1: 545. 1762. [*Kazharchikai*]

Leaves compound; leaflets linear-oblong, truncate-rotund, entire, obtuse, mucronate. Racemes axillary. Calyx-lobes obovate. Corolla yellow. Pods oblong, ca 7 cm long, shortly stalked, beaked, prickly, 1 or 2-seeded; seeds subglobose.

Fl. & Fr.: Aug. - Feb.

Habitat: On sandy soil among bushes, with *Breynia vitis-idaea*, *Ziziphus mauritiana* etc.

Distrib.: Pantropical. TN: Most districts. GM: Frequent on mainland coast and on Kurusadai, Moyal, Pumarichan, Pullivasal, Thalaiyari and Valai Islands.

Seeds are dispersed by seawater and can float for 2½ years (Guppy in Ridley, 1930). However, its occurrence only on a few islands of the Mandapam and Keelakarai groups only is indeed puzzling.

Uses: Leaves and bark febrifuge, emmenagogue and anthelmintic. Fruits tonic and antipyretic. Seed oil used in cosmetics, also employed for colic.

Specimens examined: (Total 38) KSK 102006; NCN 53130; VB 1581; Ku Is. DD & SRR 20543; PD 100368; Mu Is. PD & PU 106807.

C. pulcherrima (L.) Sw. is cultivated in gardens as an ornamental.

3. Cassia L.

Tropics and warm temperate regions, ca 535 species, 30 in India, 29 in Tamil Nadu and 12 in GM.

Key to the species

1a. Trees.....	2
b. Herbs, undershrub or shrubs	3
2a. Racemes terminal, drooping; pods cylindrical	4. <i>C. fistula</i>
b. Racemes terminal, corymbose, not drooping; pods flat	10. <i>C. stamea</i>
3a. Prostrate herbs.....	4
b. Erect herbs, undershrubs or shrubs.....	5
4a. Leaflets 3 - 6 pairs; flowers in axillary racemes.....	5. <i>C. italica</i>
b. Leaflets 10 - 20 pairs; flower solitary, axillary	8. <i>C. pumila</i>
5a. Plant viscid; leaflets 2 pairs; pods strigose	1. <i>C. absus</i>
b. Plants not viscid; leaflets more than 2 pairs; pods not strigose	6
6a. Leaves 5 - 15 cm long; corolla pale to bright yellow	7
b. Leaves 25 - 50 cm long; corolla orange.....	2. <i>C. alata</i>

7a. Branchlets pubescent; flower solitary.....	6. <i>C. nigricans</i>
b. Branchlets densely tomentose or glabrous-glabrescent; flower not solitary.....	8
8a. Seeds oblong.....	12. <i>C. tora</i>
b. Seeds ovoid.....	9
9a. Inflorescence a raceme.....	10
b. Inflorescence a corymb.....	11
10a. Leaflets 5 - 8 pairs, apiculate; pods 3 - 6 cm long, 5 - 8-seeded.....	9. <i>C. senna</i>
b. Leaflets 4 - 5 pairs, acute-acuminate; pods 10 - 15 cm long, many-seeded.....	7. <i>C. occidentalis</i>
11a. Branchlets tomentose; leaflets mucronate; corolla golden yellow.....	3. <i>C. auriculata</i>
b. Branchlets glabrous; leaflets acute; corolla light yellow.....	11. <i>C. sophera</i>

1. *C. absus* L., Sp. Pl. 376. 1753; FBI 2: 265. 1878; FPM 403. 1919; IFTC t. 231. 1982; FTC 3: 496. 1983; FTN 1: 129. 1983; RHFC 7: 86. 1991. [*Mulaipalyirai*]

Decumbent herb. Leaves 1 - 4 cm long; leaflets ovate or obovate, oblique, entire, obtuse. Racemes axillary. Calyx-lobes oblong. Corolla reddish. Pods falcate, flat, compressed, mucronate, 5 or 6-seeded; seeds trapezoid.

Fl. & Fr.: Sept. - Jan.

Habitat: Sandy soil and wastelands, with *Asystasia gangetica*, *Crotalaria retusa* and *Hibiscus ovalifolius*.

Distrib.: Old World tropics. India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Seeds used in ophthalmia and skin troubles, also used as a cathartic. Leaves used in cough.

Specimens examined: (Total 57) KSK 102834; PD & PU 106690, 107366; SAM 106423.

2. *C. alata* L., Sp. Pl. 378. 1753; Wight, Icon. t. 253. 1840; FBI 2: 264. 1878; FPM 404. 1919; FTC 3: 497. 1983; FTN 1: 129. 1983; RHFC 7: 68. 1991. [*Seemaiyagathi*]

Large shrub. Leaflets 8 - 12 pairs, oblong-elliptic, obovate, truncate, entire, obtuse, apiculate. Racemes terminal. Calyx-lobes oblong. Pods oblong, ca 15 cm long, winged along margins; seeds many.

Fl. & Fr.: Nov. - Feb.

Habitat: On red soil, with *Indigofera tinctoria*, *Solanum trilobatum*, *Tinospora cordifolia* etc.

Distrib.: Tropics. Bengal, Malacca, Myanmar, S. India and Sri Lanka. GM: Mainland coast. Cultivated. May run wild.

Uses: Leaf juice used for skin troubles. Seeds used as vermifuge.

Specimens examined: (Total 10) SAM 104691.

3. *C. auriculata* L., Sp. Pl. 379. 1753; FBI 2: 263. 1878; FPM 402. 1919; FTC 3: 497. 1983; FTN 1: 129. 1983; RHFC 7: 79. 1991. [*Avarai*, *Avaram*]

Shrub. Leaves 5 - 8 cm long; leaflets 6 - 10 pairs, oblong-obovate, cuneate-truncate, entire, obtuse. Corymbs terminal. Calyx-lobes ovate. Pods flat, mucronate, 7 - 9 cm long, 12 - 20-seeded; seeds ovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and dry localities, with *Aerva* spp., *Tephrosia purpurea* etc..

Distrib.: India, Myanmar and Sri Lanka. TN: All districts. GM: Common on mainland coast and frequent on Mullai, Pullivasal and Valimunai Islands. Very common in the dry interior mainland.

Uses: Leaves and fruits anthelmintic. Seeds used in eye troubles and diabetes. Roots employed in skin troubles.

Specimens examined: (Total 109) KSK 102251, 102848; Mu Is. KSK 102044; Pu Is. KSK 101190; Vm Is. KSK 102400.

4. *C. fistula* L., Sp. Pl. 377. 1753; FBI 2: 261. 1878; FPM 400. 1919; FTC 3: 499. 1983; FTN 1: 129. 1983; RHFC 7: 62. 1991. *C. rhombifolia* Roxb., Fl. Ind. 3: 334. 1832; Wight, Icon. t. 269. 1840. [*Sarakkonnai*]

Tree. Leaves 15 - 30 cm long; leaflets 2 - 5 pairs, oblong to broadly ovate, cuneate, entire, acute or emarginate. Calyx-lobes reflexed, ovate. Corolla golden yellow. Pods 30 - 40 cm long, terete; seeds ovoid.

Fl. & Fr.: Aug. - Feb.

Habitat: Planted as an ornamental and also in sandy localities, with *Azima tetraantha* and *Salvadora persica*.

Distrib.: China, India, Malesia and Sri Lanka. TN: Most districts. GM: Frequent on mainland coast and rare on Pumarichan Island.

Uses: Bark used in admixture with *Cassia auriculata* bark for tanning. Dried fruits used as purgative, laxative in habitual constipation. Wood used for agricultural implements.

Specimens examined: (Total 52) PD 100530, 101177; Pu Is. KSK 101696.

5. *C. italica* (Mill.) Lam. ex F.W. Andrews, Fl. Pl. Anglo-Egypt. Sudan 2: 117. 1952; FTN 1: 129. 1983; RHFC 7: 71. 1991. *Senna italica* Mill., Gard. Dict. ed. 8, n. 2. 1768. *Cassia obtusis* Roxb., Fl. Ind. 2: 344. 1824; Wight, Icon. t. 757. 1844; FPM 402. 1919; FTC 3: 504. 1983 (as "*obtusis*"). *C. obovata* Collad., Hist. Nat. Méd. Casses 92, t. 15A. 1816; FBI 2: 264. 1878. [Nilavahai]

Prostrate herb. Leaves to 7 cm long; leaflets oblong or obovate, cuneate, entire, obtuse, mucronate. Calyx-lobes oblong-obovate. Corolla pale yellow or greenish yellow. Pods flat, lunate, papery, glabrous, 2 - 5 cm long, 8 - 10-seeded; seeds ovoid.

Fl. & Fr.: Throughout the year.

Habitat: Sandy soil and dry localities near seashore, with *Aristida setacea*, *Cleome viscosa* etc.

Distrib.: Africa through SW. Asia to India. TN: Most districts. GM: Mainland coast, frequent.

Use: Used as an adulterant of Tinnevely senna (*Cassia senna*).

Specimens examined: (Total 53) KSK 102825; PD 102255; PD & PU 106934; SAM 106321.

6. *C. nigricans* Vahl, Symb. Bot. 1: 30. 1790; FPM 286 1919; FTN 1: 130. 1983. *C. procumbens* sensu Forssk., Fl. Aegypt.-Arab. CXI. 1775, non L. 1753. [Suriyanvanangi] (Fig.17)

Herb. Leaves 5 - 10 cm long; leaflets 8 - 18 pairs, linear-oblong, oblique, entire, obtuse, mucronate. Calyx-lobes oblong. Corolla yellowish. Pods linear-oblong, erect, 2 - 3 cm long, 6 - 8-seeded; seeds trapezoid-ovoid.

Fl. & Fr.: July - Jan.

Habitat: Prefers red gravelly soil, rarely on sandy localities, with *Boerhavia erecta*, *Cassia italica*, *Trianthema portulacastrum* etc.

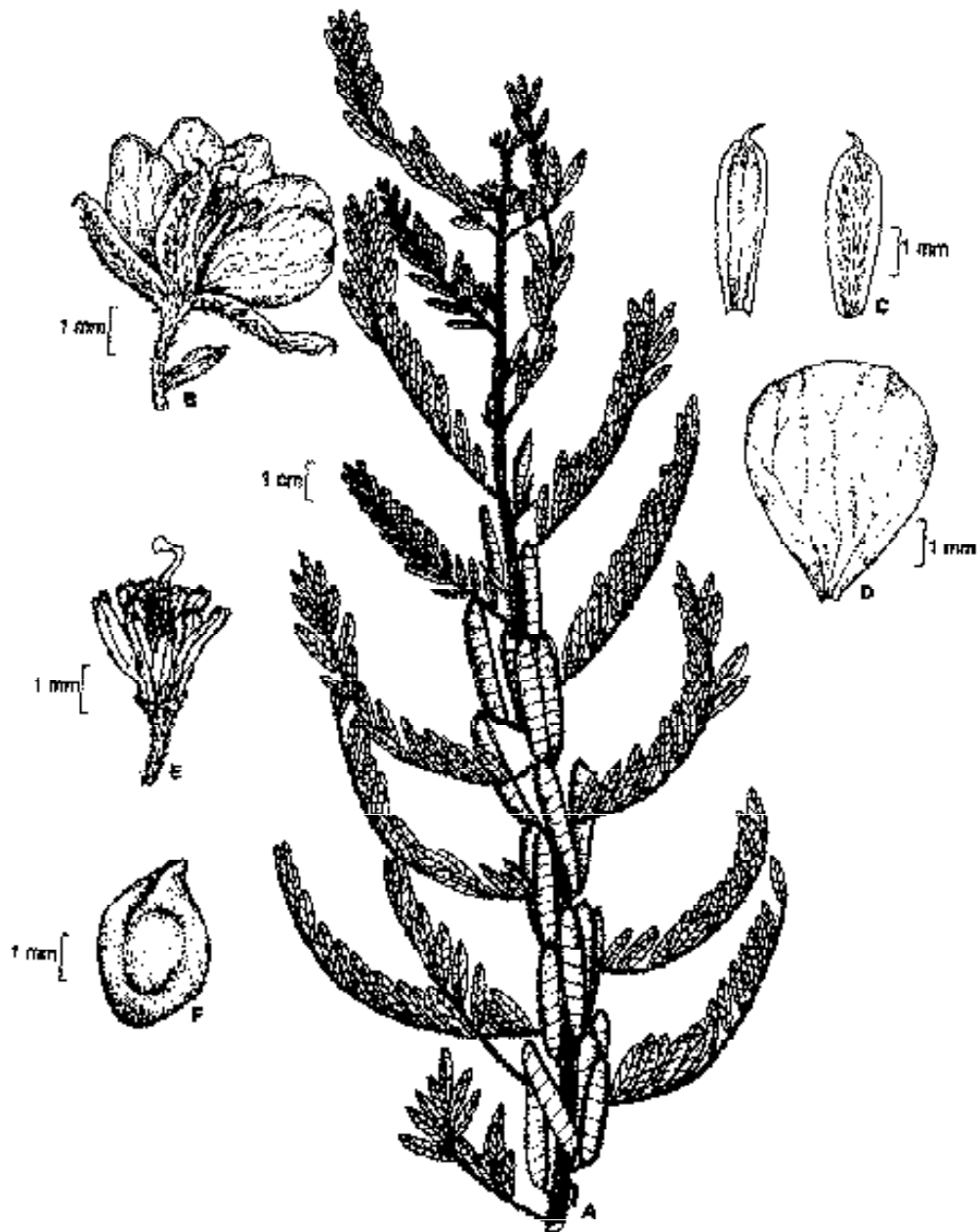


Fig. 17 (A - F). *Cassia nigricans* Vahl
 A. Twig B. Flower C. Sapa dorsal & ventral views
 D. Petal E. Pistil & stamens F. Seed

Distrib.: Arabia, India (Karnataka and Tamil Nadu) and Trop. Africa. TN: Tirunelveli and Tuticorin. GM: Frequent on mainland coast. Collected at Tuticorin port, Koodankulam, Periyathala and near Padukkapathu. Very common in the far interior in Tirunelveli and goes up to the base of the W. Ghats. It is likely to have been initially introduced in ballast.

Appears to be restricted to these regions in India. Earlier there were only 2 collections at MH.

Specimens examined: (Total 7) Herb. *Forsskal* Addit. No. 1057 & 1058 (G type, photocopy!); *DD* 94125; *KMS* 13682; *PD & PU* 103502, 107228, 107399; *RW* 862, 2410 (K photo!); *SAM* 106437.

7. *C. occidentalis* L., Sp. Pl. 377. 1753; FBI 2: 262. 1878; FPM 401. 1919; FTC 3. 505. 1983; FTN 1: 130. 1983; FIFTC t. 232. 1988. [*Peyavarai*]

Undershrub. Leaves to 15 cm long; leaflets 4 - 5 pairs, ovate-lanceolate, rounded, entire. Racemes terminal. Calyx-lobes ovate-oblong. Corolla yellow. Pods torulose, slightly curved, 50-seeded; seeds ovoid.

Fl. & Fr.: Sept. - May.

Habitat: Loose sandy soil in wastelands and along road sides, with *Argemone mexicana*, *Sida cordifolia*, *Vicoa indica* etc.

Distrib.: Tropics. TN: Most districts. GM: Mainland coast, frequent. Also on Puluvinichalli Island.

Uses: Seeds used as a substitute for coffee, also used in external applications on skin affections. Leaves and seeds used as a purgative.

Specimens examined: (Total 75) *KSK* 102782, 102793; *PD* 101139; *SAM* 106327.

8. *C. pumila* Lam., Encycl. 1: 651. 1785; FBI 2: 266. 1878; FPM 403. 1919; FTC 3: 506. 1983; FTN 1: 130. 1983; FIFTC t. 233. 1988.

Prostrate herb. Leaves 2 - 4 cm long; leaflets oblong-elliptic, cuneate, entire, obtuse, mucronate. Calyx-lobes lanceolate. Corolla yellow. Pods flat, compressed, 2.5 - 3.5 cm long, 10 - 15-seeded; seeds ellipsoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and wet localities, with *Cleome aspera*, *Crotalaria angulata* and *Rothia indica*.

Distrib.: India, Malesia, Sri Lanka and Trop. Australia. TN: Most districts. GM: Mainland coast, occasional. Appears a little common in the interior but rare on the coast. Collected at Tuticorin port and near Koodankulam.

Use: Seeds used as a purgative.

Specimens examined: (Total 28) PD & PU 107364; SAM 106427.

9. *C. senna* L., Sp. Pl. 377. 1753; FTC 3: 507. 1983; FTN 1: 131. 1983; IFTC t. 235. 1988; RHFC 7: 70. 1991. *C. angustifolia* Vahl, Symb. Bot. 1: 29. 1790; FBI 2: 264. 1878; FPM 404. 1919. [*Tinnevely senna*, *Ponnavaarai*]

Undershrub. Leaves to 12 cm long; leaflets ovate-lanceolate, cuneate, entire, acute. Racemes terminal. Calyx-lobes obovate-spatulate. Corolla bright yellow. Pods flat, falcate; 5 - 8-seeded; seeds ovoid.

Fl. & Fr.: Throughout the year.

Habitat: Sandy wastelands, with *Aerva lanata*, *Indigofera trifoliata*, *Lopholepis ornithocephala* and *Sida cordifolia*.

Distrib.: Trop. Africa, Arabia and Asia. TN: Usually cultivated, also naturalised in Ramanathapuram, Tirunelveli and Tuticorin. GM: Common on mainland coast and occasional on Moyal Island. A little common in the subcoastal regions. It is likely to have been initially introduced in ballast.

Uses: Leaves and pods used as a laxative and purgative.

Specimens examined: (Total 27) KSK 102727; PD & PU 102114; Mu Is. PD & PU 106808.

10. *C. stamea* Lam., Encycl. 1: 648. 1785; FBI 2: 264. 1878; FPM 402. 1919; FTC 3: 508. 1983; FTN 1: 131. 1983; RHFC 7: 71. 1991. *C. florida* Vahl, Symb. Bot. 3: 57. 1794; FSSI t. 179. 1872. [*Manjakonnai*]

Tree. Leaves 15 - 20 cm long; leaflets 7 - 10 pairs, ovate-oblong, obtuse, entire, obtuse. Calyx-lobes ovate. Corolla yellow. Pods flat, ca 25 cm long, woody, compressed, 20 30-seeded.

Fl. & Fr.: Almost throughout the year.

Habitat: An avenue tree.

Distrib.: Native of SE. Asia. TN: Avenue tree, now naturalised in forest areas. GM: Mainland coast.

Uses: Old wood almost black, very strong, hard and heavy, deserves to be used for furniture, inlaying etc. Flowers used as a vegetable and leaves as a manure.

Specimens examined: (Total 53) VB 1280.

11. *C. sophora* L., Sp. Pl. 379. 1753; FBI 2: 262. 1878; FPM 401. 1919; FTN 1: 131. 1983; RHFC 7: 74. 1991. [*Ponnavaṛai*]

Undershrub. Leaves 10 - 15 cm long; leaflets 3 - 5 pairs, elliptic-lanceolate, cuneate, entire. Corymbs axillary. Calyx-lobes obovate. Pods linear, flat, 9 - 11 cm long, mucronate, ca 25-seeded; seeds ovoid.

Fl. & Fr.: Aug. - Jan.

Habitat: Wastelands, with *Boerhavia diffusa*, *Pedaliium murex*, *Spermacoce hispida* etc.

Distrib.: Tropics. Himalayas to Sri Lanka. TN: Chengalpattu, Coimbatore, Nilgiri and Ramanathapuram. GM: Mainland coast, frequent.

Uses: Leaves, bark and seeds cathartic.

Specimens examined: (Total 11) PD 100528.

12. *C. tora* L., Sp. Pl. 376. 1753; FBI 2: 263. 1878, p.p.; FPM 401. 1919; FTC 3: 510. 1983; FTN 1: 134. 1983; FIFTC t. 238. 1988; RHFC 7: 83. 1991. [*Tagaraḷ*]

Diffuse undershrub. Leaves to 4 cm long; leaflets 3 pairs, obovate, oblique, entire, obtuse, apiculate. Racemes terminal, corymbose. Calyx-lobes ovate. Corolla pale yellow. Pods falcate, 15 - 20 cm long, subtetragonous, glabrous, 25 - 30-seeded.

Fl. & Fr.: Oct. - May.

Habitat: Wastelands and road sides, with *Aerva lanata*, *Cassia auriculata*, *Martynia annua* etc.

Distrib.: Tropics. TN: Almost all districts. GM: Mainland coast. Common in the interior but appears rare on the coast. Collected only at Rameswaram and Vattakottai in Kanyakumari.

Uses: Leaves purgative, used in ringworm and other skin troubles. Seeds used as a substitute for coffee and as a mordant in dyeing.

Specimens examined: (Total 72) KSK 102769; PD & PU 106935.

4. *Delonix* Raf.

Tropics, ca 10 species, 2 in India.

Key to the species

- | | |
|--|--------------------|
| 1a. Corolla yellowish white; pods less than 15 cm long | 1. <i>D. elata</i> |
| b. Corolla crimson; pods more than 20 cm long | 2. <i>D. regia</i> |

1. *D. elata* (L.) Gamble, Fl. Madras 369. 1919; IFTC t. 232. 1982; FTC 3: 512. 1983; FTN 1: 131. 1983; RHFC 7: 104. 1991. *Poinciana elata* L., Cent. Pl. 2: 16. 1756; FSSI t. 178. 1872; FBI 2: 260. 1878. [*Vaathamudakki*]

Tree. Leaves to 13 cm long; leaflets 12–25 pairs, oblong, truncate, entire, obtuse. Corymbs terminal. Calyx-lobes elliptic-lanceolate. Pods oblong, woody; seeds oblong.

Fl. & Fr.: Almost throughout the year.

Distrib.: Arabia, W. Trop. Africa and India. TN: Most districts. GM: Frequent along road sides and also on Nallathanni Island. Usually cultivated. Appears planted on the island.

Uses: Leaves used in rheumatism and flatulence. Wood used for churns, combs and matches. Seeds eaten by parrots. Also roasted and eaten in times of scarcity.

Specimens examined: (Total 10) KSK 103379; VB 1678; Nt Is. PD 101591.

2. *D. regia* (Bojer ex Hook.) Raf., Fl. Tellur. 2: 92. 1837; FPM 396. 1919; FTC 3: 512. 1983; FTN 1: 132. 1983; FIFTC t. 239. 1988. *Poinciana regia* Bojer ex Hook. in Bot. Mag. t. 2884. 1829; FBI 2: 260. 1878.

Tree. Leaves to 25 cm long; leaflets 12–18 pairs, oblong, unequal, entire, obtuse. Corymbs terminal. Calyx-lobes oblong-ovate. Pods flattened; seeds oblong.

Fl. & Fr.: March - Aug.

Distrib.: Native of Madagascar. Now cultivated throughout the tropics as an avenue tree.

5. *Parkinsonia* L.

America, 19 species and one in India.

P. aculeata L., Sp. Pl. 375. 1753; FSSI t. 91. 1871; FBI 2: 260. 1878; FPM 397. 1919; IFTC t. 235. 1982; FTC 3: 514. 1983; FTN 1: 132. 1983; RHFC 7: 44. 1991.

Shrub or small tree; phyllodes 18 - 42 cm long, linear. Leaflets numerous, subopposite, oblanceolate, cuneate, entire, obtuse. Racemes axillary. Calyx-lobes oblong. Corolla yellow. Pods to 10 cm long, 5 or 6-seeded; seeds oblong.

Fl. & Fr.: Throughout the year.

Habitat: Along road sides.

Distrib.: Native of Trop. America, cultivated elsewhere and run wild. TN: All dry districts. GM: Mainland coast, frequent.

Uses: Tree lopped for fodder. Seeds edible. Bark yields a fibre suitable for mixing with paper-pulp. Wood used for charcoal and fuel.

Specimens examined: (Total 53) VB 1337, 2086.

6. *Peltophorum* (Vogel) Benth. nom. cons.

Tropics, 8 species, 3 in India and one in GM.

P. pterocarpum (DC.) Backer ex K. Heyne, Nutt. Pl. Ned.-Ind. 2: 755. 1927; IFTC t. 236. 1982; FTC 3: 514. 1983; FTN 1: 132. 1983; RHFC 7: 57. 1991. *Inga pterocarpa* DC., Prodr. 2: 441. 1825. [*Ivalvagai*, *Perunkondrai*]

Lofty tree. Leaves to 30 cm long; leaflets 8 - 16 pairs, oblong, oblique, entire, notched. Calyx-lobes ovate. Corolla yellow. Pods ellipsoid-oblong, flattened, 5 - 6 cm long; seeds 5-6, flat.

Fl. & Fr.: Jan. - April.

Distrib.: Native of Indomalaya. Cultivated. GM: Mainland coast, cultivated.

Uses: Bark used in dysentery. It is a constituent of gargles and tooth-powders and lotions used for eye troubles, muscular pain and sores. Leaves rich in proteins used as a cattle feed.

Specimens examined: (Total 11) KSK 101180; PD 102153; VB 2442.

7. *Tamarindus* L.

Tropical Africa, unispecific.

T. indica L., Sp. Pl. 34. 1753; FSSI t. 184. 1872; FBI 2: 273. 1878; FPM 409. 1919; FTC 3: 516. 1983; FTN 1: 133. 1983; RHFC 7: 96. 1991. [*Puli*]

Tree; branchlets warty. Leaves to 15 - 20 cm; leaflets 15 - 17 pairs, oblong, obtuse, entire. Calyx-lobes lanceolate. Petals pale yellow with red stripes. Pods oblong, curved, ca 10 cm long; seeds obovoid-orbicular, compressed.

Fl. & Fr.: April - Dec.

Habitat: Along road sides.

Distrib.: GM: Planted on mainland coast and also on Muvai, Nallathanni, Pullivasal, Puluvinchalli, Shingle and Upputhanni Islands. There is a grove of them, big and small, on Nallathanni Island.

Tamarind is an important ingredient in south Indian cuisine. Seeds might have been brought by humans initially who quite often cook on the islands.

Uses: Fruit pulp is edible and used in cooking. Cotyledons edible. Leaves and flowers used in dyeing. Bark contains tannin. Wood usually used by butchers as chopping blocks.

Specimens examined: (Total 38) VB 1742.

35. MIMOSACEAE

Key to the genera

1a. Plants armed	2
b. Plants unarmed	6
2a. Spreading herb, sensitive to touch	5. <i>Mimosa</i>
b. Shrubs, small or large trees, not sensitive	3
3a. Inflorescence bi-coloured	3. <i>Dichrotaechys</i>
b. Inflorescence single-coloured	4
4a. Shrub or small tree; stamens 10; pods pale yellow	7. <i>Prosopis</i>
b. Large trees; stamens numerous; pods not pale yellow	5
5a. Seeds arillate; leaves 2-pinnate	6. <i>Pithecellobium</i>
b. Seeds exarillate; leaves not 2-pinnate	1. <i>Acacia</i>
6a. Small trees, to 6 m high; stamens 10	4. <i>Leucaena</i>
b. Large trees, 8 - 20 m high; stamens numerous.....	7

- 7a. Branchlets tomentose; pods with a sweet pulp;
seeds biseriate 8. *Saranea*
- b. Branchlets pubescent; pods without sweet pulp;
seeds uniseriate..... 2. *Albizia*

1. Acacia Mill.

Tropics and subtropics, ca 1200 species, 42 in India and Tamil Nadu and 5 in GM.

Key to the species

- 1a. Branchlets warty 2
- b. Branchlets not warty 3
- 2a. Stipular spines hollow; flowers in spikes 2. *A. horrida*
- b. Stipular spines not hollow; flowers in heads 5. *A. planifrons*
- 3a. Branchlets glabrous; leaflets 35 - 50 pairs;
pod-sutures wavy 1. *A. chundra*
- b. Branchlets velvety or pubescent; leaflets 15 - 30
pairs; pod-sutures not wavy 4
- 4a. Branchlets yellowish-velvety; stamens 25 - 30;
pods flat 3. *A. leucophloea*
- b. Branchlets grey-pubescent; stamens 60 - 70;
pods moniliform 4. *A. nilotica*

1. *A. chundra* (Roxb. ex Rottler) Willd., Sp. Pl. 4: 1078. 1806; FSSI t. 50. 1870 (as "*sandra*"); FBI 2: 295. 1878; FPM 428. 1919 (as "*sundra*"); RHFC 1: 482. 1980; FTC 3: 524. 1983; FTN 1: 133. 1983. *Mimosa chundra* Roxb. ex Rottler in Ges. Naturf. Freunde Berlin Neue Schriften 4: 207. 1803. [*Karungali*]

Tree. Leaves 6 - 15 cm long; leaflets, elliptic, oblique, entire, subacute. Corolla white. Pods flat, thin, ca 10 cm long, ca 6-seeded; seeds ovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Coastal scrub jungles.

Distrib.: Myanmar, S. India and Sri Lanka. TN: Most districts. GM: Mainland coast. ~~rare.~~ This plant which is common in the interior is a little rare on the coast. Collected on the coast for the first time. An addition to the flora of Gulf of Mannar.

Uses: Wood used for beams, posts and agricultural implements.

Specimens examined: (Total 36) PD & PU 107237.

2. *A. horrida* (L. f.) Willd., Sp. Pl. 4: 1082. 1806; FTC 3: 526. 1983; FTN 1: 134. 1983. *Mimosa horrida* L. f., Suppl. Pl. 438. 1782. *Acacia latronum* (L. f.) Willd., Sp. Pl. 4: 1077. 1806; Wight, Icon. t. 1157. 1846; FBI 2: 296. 1878; FPM 427. 1919. *Mimosa latronum* L. f., Suppl. Pl. 438. 1782. [*Karodei, Odasithai*]

Tree. Leaves to 2 cm long; leaflets 10 - 15 pairs, elliptic, oblique, truncate, entire, sparsely ciliate along margins, obtuse. Spikes axillary. Corolla cream. Pods flat, curved, ca 3.5 cm long, ca 10-seeded; seeds ovoid.

Fl. & Fr.: July - Nov.

Habitat: Usually in sandy areas, with *Acacia planifrons*.

Distrib.: Africa and India. TN: Most districts. GM: Mainland coast, occasional.

Uses: Wood used for tent-pegs; an excellent fuel. Also yields a fibre.

Specimens examined: (Total 53) PD & PU 106560, 107224.

3. *A. leucophloea* (Roxb.) Willd., Sp. Pl. 4: 1083. 1806; FSSI t. 48. 1870; FBI 2: 294. 1878; FPM 427. 1919; RHFC 1: 486. 1980; FTC 3: 527. 1983; FTN 1: 135. 1983. *Mimosa leucophloea* Roxb., Pl. Coromandel t. 150. 1800. [*Velvelam*]

Tree; branchlets velvety. Leaves 2.5 - 4 cm long; leaflets 20 - 30 pairs, elliptic, obtuse, entire, acute. Heads terminal, 2 - or 3-clustered. Corolla creamy yellow. Pods flat, straight, ca 10 cm long, ca 10-seeded; seeds angular, ovoid.

Fl. & Fr.: Aug. - Feb.

Habitat: Along road sides.

Distrib.: India, Malasia, Myanmar and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional. Collected near Anjukramam in Kanyakumari. Though common in the interior appears rare on the coast.

Uses: Wood used for agricultural implements. Bark used for tanning; yields a fibre used for cordage and fishing-nets; also employed in the preparation of alcohol from palm juice.

Specimens examined: (Total 75) PD & PU 107079.

4. *A. nilotica* (L.) Willd. ex Delile subsp. *indica* (Benth.) Brenan in Kew Bull. 12: 84. 1957; RHFC 1: 488. 1980; FTC 3: 528. 1983; FTN 1: 135. 1983. *A. arabica* (Lam.) Willd. var. *indica* Benth. in London J. Bot. 1: 500. 1842. *A. arabica* auct. non (Lam.) Willd. 1806; FSSI t. 47. 1870; FBI 2: 293. 1878; FPM 425. 1919. [*Karuvelum*]

Tree. Leaves 1 - 4.5 cm long; leaflets 15 - 20 pairs, elliptic, oblique, obtuse, entire, round. Heads globose, solitary or, 2 or 3 in axillary clusters. Corolla bright yellow. Pods moniliform, ca 18 cm long; seeds suborbicular.

Fl. & Fr.: June - Dec.

Habitat: Coastal scrub jungles, usually on black cotton soil.

Distrib.: Pantropical. TN: Most districts. GM: Mainland coast, common. Also cultivated.

Uses: Wood used for agricultural implements. Pods, when green, used as fodder. Decoction of bark used as a gargle, and that of pods in urino-genital diseases. Twigs used as tooth-brush by villagers. Used in making tooth paste.

Specimens examined: (Total 50) PD & PU 106672; VB 1368;.

S. A. planifrons Wight & Arn., Prodr. 276. 1834; FBI 2: 293. 1878, p.p.; FPM 426. 1919; RHFC 1: 491. 1980; FTC 3: 531. 1983; FTN 1: 135. 1983; FIFTC t. 250. 1983. [Kodaivelam, Odai] (Fig. 18)

Tree. Leaves 1 - 2.5 cm long; leaflets 4 - 13 pairs, elliptic, oblique, entire, round. Flowers in heads. Corolla creamy. Pods subterete, circinate, 5 - 6-seeded; seeds ovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities and wastelands as pure stands or with palmyra palm.

Distrib.: India and Sri Lanka. TN: Most districts. GM: Ubiquitous on mainland coast and Moyal and Keelakarai group of islands. Abundant on Nallathanni Island.

This tree is common throughout the coastal and subcoastal regions and most of the islands. The pods being a good fodder the plant may be dispersed by animals particularly goats and sheep. As the pods can float they can be transported by seawater to the islands. There is a large scale felling of this tree on the mainland coast. That it is fast-vanishing in this part of the country due to over exploitation was pointed out by Daniel (1980).

Uses: Wood used for agricultural implements. Pods contain tannin; also used as fodder. Excellent fuelwood, once used in S. Railway for running steam engines. Also used for paper pulp.

Specimens examined: (Total 36) NCN 57342; PD & PU 106992; Nt Is. PD & PU 106623.

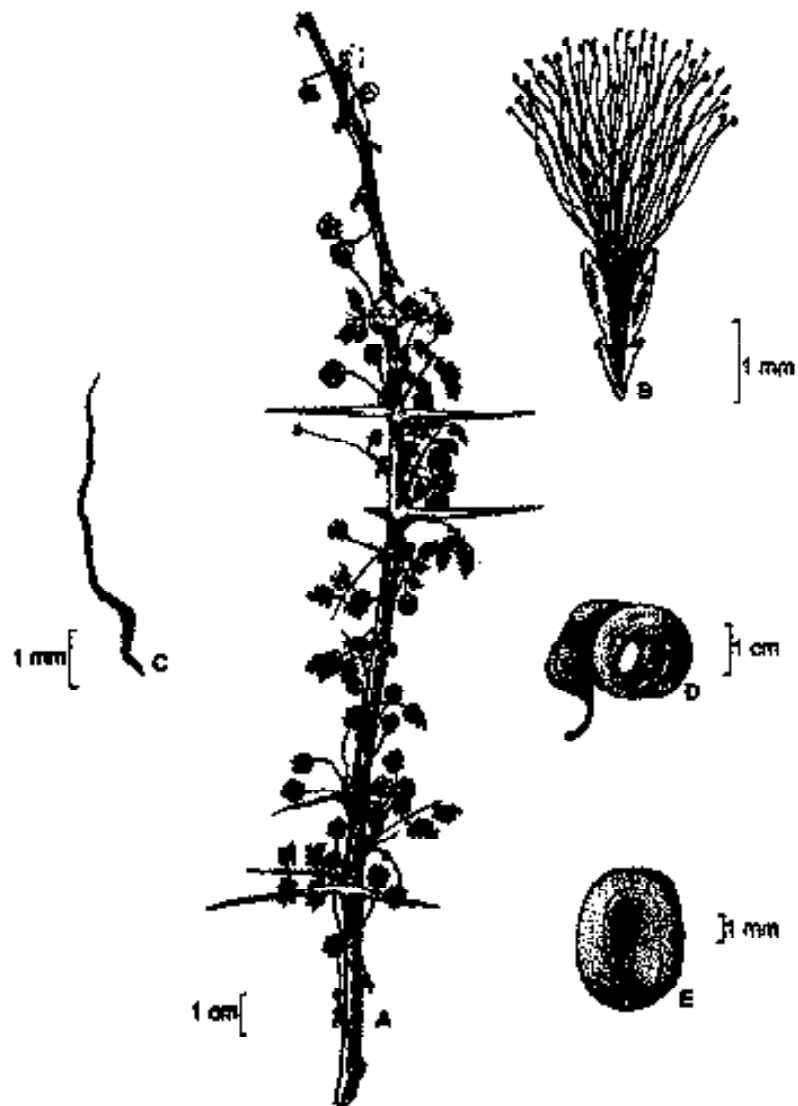


Fig. 18 (A - F). *Acacia plumifera* Wight & Arn.
A. Twig B. Flower C. Pistil D. Fruit E. Seed

2. *Albizia* Durazz.

Subtropics of the Old World and S. America, ca 150 species, 20 in India, 10 in Tamil Nadu and 2 in GM.

Key to the species

- 1a. Leaflets 20 - 25 pairs; corolla creamy; stamens 35 - 40..... **1. *A. amara***
 b. Leaflets 4 - 8 pairs; corolla greenish; stamens 20 - 25..... **2. *A. lebbeck***

1. *A. amara* (Roxb.) Boivin, Encycl. 19: 34. 1838; FSSI t. 61. 1870; FBI 2: 301. 1878; FPM 432. 1919; RHFC 1: 498. 1980; FTN 1: 136. 1983, subsp. *amara*: Brenan in Kew Bull. 10: 189. 1955; FTC 3: 535. 1983. [*Arappu. Usil, Wunja*]

Tree, 8 - 12 m high. Leaves 11 - 13 cm long; leaflets narrow-elliptic, subacute, entire, obtuse. Heads ca 2 cm across, 2 or 3 in axillary clusters. Pods flat, 8 - 20 cm long, ca 15-seeded; seeds ovoid.

Fl. & Fr.: Sept. - June.

Habitat: Road sides, with *Pongamia pinnata*, *Tamarindus indica* etc.

Distrib.: E. Africa, India and Sri Lanka. TN: Most districts. GM: Mainland coast, frequent. Earlier once collected on Pullivasal Island.

Uses: Wood employed for agricultural implements and cabinets. Also provides green manure. Powdered dry leaves, sold in the market, is used as a shampoo.

Specimens examined: (Total 89) PD 100406; VB 1912; Pu Is. DDS 94071.

2. *A. lebbeck* (L.) Willd., Sp. Pl. 4: 1066. 1806; FSSI t. 53. 1870; FBI 2: 298. 1878; FPM 432. 1919; RHFC 1: 502. 1980; IFTC t. 241. 1982; FTC 3: 538. 1983; FTN 1: 137. 1983. *Mimosa lebbeck* L., Sp. Pl. 516. 1753. [*Vahal*]

Tree, 15 - 20 m high. Leaves 10 - 20 cm long; leaflets oblong-elliptic, oblique, entire, obtuse-retuse. Heads ca 3 cm across, axillary, in umbellate clusters. Pods flat, 10 - 20 cm long, ca 10-seeded; seeds oblong.

Fl. & Fr.: Feb. - April.

Habitat: Road sides.

Distrib.: India, S. China, SE. Asia, Sri Lanka and Trop. Himalayas. Extensively cultivated in the tropics and subtropics. TN: Most districts. GM: Mainland coast, occasional.

Uses: Wood excellent for high class furniture and railway carriage work. Tree yields a gum used as an adulterant of gum arabic.

Specimens examined: (Total 58) VB 1692, 1820.

3. *Dichrostachys* (DC.) Wight & Arn.

Old World tropics, 9 species and 2 in India.

Key to the species

- | | |
|--|-----------------------|
| 1a. Pinnae 6 - 8 pairs; leaflets 12 - 18 pairs | 1. <i>D. cinerea</i> |
| b. Pinnae 1 - 3 pairs; leaflets 7 - 11 pairs | 2. <i>D. muelleri</i> |

1. *D. cinerea* (L.) Wight & Arn., Prodr. 271. 1834; FSSI t. 185. 1872; FBI 2: 288. 1878; FPM 419. 1919; IFTC t. 242. 1982; FTC 3: 540. 1983; FTN 1: 138. 1983. *Mimosa cinerea* L., Sp. Pl. 520. 1753. [*Vedatalla, Vidathalan*]

Small tree. Leaves 2 - 4 cm long; leaflets 12 - 18 pairs, elliptic, obtuse, entire, acute. Spikes axillary, solitary. Upper flowers bisexual, yellow; the lower neuter, pink. Pods flat, coiled, 4 - 6-seeded; seeds ovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and sandy localities, with *Ehretia laevis*, *Premna serratifolia*, *Thespesia populnea* etc.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Frequent on mainland coast and Anaiapar, Kurusadai, Mullai, Pullivasal, Pumarichan, Thalaiyari and Valai Islands.

Perhaps the pods can float and get transported to the islands by seawater (Ridley, 1930).

Uses: Root used in rheumatism. Tender shoots are bruised and used in ophthalmia. Wood used for cog-wheels, walking sticks and tent-pegs. Leaves used as a fodder.

Specimens examined: (Total 135) Mul Is. KSK 102039; Pv Is. PD 101408; Th Is. PD 101492.

2. *D. muelleri* Benth., Fl. Austral. 2: 299. 1864; JBNHS 63: 227. 1966; FTN 1: 138. 1983. *D. santapauli* Sebastine & Ramam. in Bull. Bot. Surv. India 3: 359. 1960; FTN 1: 138. 1983.

Small tree. Leaves 5 - 7 cm long; leaflets linear-oblong, truncate, entire, mucronate. Spikes axillary, solitary. Flowers polygamous; upper flowers bisexual, yellow; the lower neuter, pink. Pods linear, 12 - 14 cm long, twisted, 6 - 10-seeded; seeds obovoid.

Fl. & Fr.: May - Dec.

Habitat: Sandy localities, with *Calotropis gigantea*, *Premna serratifolia* etc.

Distrib.: Native of Australia. Introduced and naturalized in S. India. TN: Ramanathapuram, Tirunelveli and Tuticorin. GM: Kuruadai and Pumarcihan Islands, rare. Somewhat common in the Kudiraimoli Theri, a subcoastal region.

Specimens examined: (Total 5) Ku Is. PD 100584; VB 1736, 1800; Po Is. PD 99719.

4. *Leucaena* Benth.

Trop. America, ca 40 species and one in India.

L. latisiliqua (L.) Gillis in *Taxon* 23: 190. 1974; FTN 1: 138. 1983. *Mimosa latisiliqua* L., Sp. Pl. 519. 1753. *Leucaena leucocephala* (Lam.) de Wit in *Taxon* 10: 53. 1961; IFTC t. 245. 1982; FTC 3: 543. 1983. *Mimosa leucocephala* Lam., *Encycl.* 1: 12. 1783. *Leucaena glauca* Nutt. non Benth. 1842; FBI 2: 290. 1878; FPM 419. 1919.

Tree. Leaves to 12 cm long; leaflets 8 - 12 pairs. Flowers in heads. Corolla cream. Pods flat, straight, 10 - 15 cm long, 12 - 15-seeded; seeds ovoid.

Fl. & Fr.: Nov. - May.

Planted on road sides and in gardens.

Uses: Plant used as a green manure, fodder and fuel.

Specimens examined: (Total 34) PD 101178.

5. *Mimosa* L.

Tropics and subtropics, ca 400 species, 8 in India, 3 in Tamil Nadu and one in GM.

M. pudica L., Sp. Pl. 518. 1753; FBI 2: 291. 1878; FPM 421. 1919; RHFC 1: 463. 1980; IFTC t. 246. 1982; FTC 3: 545. 1983; FTN 1: 138. 1983. [*Thottalchinungi*]

Herb. Leaves 1 - 4 cm long; leaflets 14 - 20 pairs, elliptic-oblong, truncate-obtuse, entire, acute. Heads axillary. Corolla pink. Pods clustered, flat, undulate, ca 1.5 cm long, bristly, 2 - 5-seeded.

Fl. & Fr.: Nov. - March.

Habitat: Wet localities, with *Cleome viscosa*, *Euphorbia hirta* etc.

Distrib.: Native of S. America, now a pantropical weed. TN: Most districts. GM: Mainland coast, common.

Uses: Decoction of root used in urinary complaints. Juice of leaves used in dressings for sinus and also for sores and piles.

Specimens examined: (Total 44) KSK 102804.

6. *Pithecellobium* Mart.

Trop. America, ca 20 species, 5 in India and Tamil Nadu and one in GM.

P. dulce (Roxb.) Benth. in London J. Bot. 3: 199. 1844; FSSI t. 188. 1872; FBI 2: 302. 1878; FPM 434. 1919; RHFC 1: 495. 1980; IFTC t. 249. 1982; FTC 3: 548. 1983; FTN 1: 139. 1983. *Mimosa dulcis* Roxb., Pl. Coromandel t. 99. 1798. [*Kodukkapuli*]

Leaflets paired, oblong-lanceolate, obtuse, entire, obtuse. Flower-heads in terminal panicles. Corolla cream. Pods circinate and moniliform; seeds trapezoid, black, shiny.

Fl. & Fr.: Dec. - March.

Native of Trop. America. Cultivated for its sweet pink to white arils. Leaves and pods used as fodder. Crows feed on the aril. Sometimes cultivated on mainland coast.

There are a few plants on Nallathanni Island.

7. *Prosopis* L.

Subtrop. America, 44 species, 3 in India and Tamil Nadu and one in GM.

P. chilensis (Molina) Stuntz in U.S.D.A. Bur. Pl. Industr. Invent. Seeds 31: 85. 1914; FTN 1: 139. 1983. *Ceratonia chilensis* Molina, Sag. Stor. Nat. Chili. 172. 1782. *Prosopis juliflora* (Sw.) DC., Prodr. 2: 447. 1825; FTC 3: 549. 1983. *Mimosa juliflora* Sw., Prodr. 85. 1788. [*Cheemai odai*, *Vaelikkaruvai*]

Tree. Leaves to 8 cm long; leaflets 15 - 18 pairs, oblong, obtuse, entire, obtuse. Flowers in axillary spikes. Corolla cream. Pods oblong, ca 15 cm long, creamy, 20 - 22-seeded; seeds ovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, mostly as pure stands.

Distrib.: Introduced from the New World, widely naturalized in Trop. Asia. TN: All districts. GM: Common on mainland coast; frequent on Kurusadai and Keelakarai groups of islands but not so on that of the Tuticorin group.

Pods are eaten by cattle, horses and pigs (Ridley, 1930) and stock are therefore solely responsible for the rapid and wide-spread of this tree. Until recently the locals used to take goats to Appa Island for grazing which may explain its abundance there.

Uses: Leaves and pods used as fodder. Charcoal is made from the wood.

Specimens examined: (Total 20) PD 10040, 102105; Ap Is. PD 101551.

8. *Samanea* (DC.) Merr.

Trop. America, ca 30 species, elsewhere cultivated.

S. saman (Jacq.) Merr. in J. Wash. Acad. Sci. 6: 47. 1916; FTC 3: 550. 1983; FTN 1: 140. 1983. *Mimosa saman* Jacq., *Fragm. Bot.* 15, t. 19. 1809. *Enterolobium saman* (Jacq.) Prain ex King in J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 252. 1898; FPM 435. 1919; RHFC 1: 477. 1980; IFTC t. 244. 1982. [*Thungumoonji maram*]

Large tree. Leaves 15 - 20 cm long; leaflets 3 - 7 pairs, oblong-elliptic, truncate, entire, obtuse. Flower-heads in axillary or terminal corymbs. Corolla creamy white. Pods oblong, ca 20 cm long, black.

Fl. & Fr.: March - June.

Planted on road sides. An excellent avenue tree.

Uses: Leaves and pods used as a fodder. Tree yields a gum.

Specimens examined: (Total 9) PD 101179.

36. ROSACEAE

Rosa indica L., [*Roja*], is cultivated for its fragrant flowers of different colours.

37. VAHLIACEAE

Vahlia Thunb.

Tropics, 5 species and one in India.

V. dichotoma (Murray) Kuntze, Revis. Gen. Pl. 227. 1891; KB 30: 164. 1975; FTC 3: 557. 1983; RHFC 7: 439. 1991. *Heuchera dichotoma* Murray in Novi Comment. Soc. Regiae Sci. Gott. 3: 64, t. 1. 1772. *Bistella dichotoma* (Murray) Bullock in Acta Bot. Neerl. 15: 85. 1966; FTN 1: 144. 1983. *Vahlia oldenlandtioides* Roxb., Fl. Ind. 2: 89. 1832; Wight, Icon. t. 562. 1842; FBI 2: 399. 1878; FPM 447. 1919.

Erect herb. Leaves linear or oblanceolate, attenuate, entire, subacute. Flowers in pairs, terminal. Calyx-lobes ovate. Petals 5, greenish yellow. Capsules subglobose, puberulous; seeds many, ovoid.

Fl. & Fr.: Jan. - July.

Habitat: Sandy localities, with *Leucas aspera*, *Sida cordata* and *Vicoa indica*.

Distrib.: S. India, Sri Lanka and Trop. Africa. TN: Almost all districts. GM: Mainland coast, less frequent.

Specimens examined: (Total 31) KSK 10299; VB 1037.

38. CRASSULACEAE

Kalanchoe pinnata (Lam.) Pers. [*Babakalli*], an ornamental herb, is cultivated in gardens for its showy foliage.

39. RHIZOPHORACEAE

Key to the genera

- | | |
|--|----------------------|
| 1a. Hypocotyle striate or ridged | 2 |
| b. Hypocotyle neither striate nor ridged | 3. <i>Rhizophora</i> |
| 2a. Cymes more than 3-flowered; flowers 5-merous; stamens twice as many as petals; hypocotyle ridged, more than 10 cm long | 2. <i>Cerlops</i> |
| b. Cymes 3-flowered; flowers 4-merous; stamens as many as petals; hypocotyle striate, less than 10 cm long | 1. <i>Bruguiera</i> |

1. *Bruguiera* Lam.

E. Africa to the Pacific, 6 species, 5 in India, 2 in Tamil Nadu and one in GM.

B. cylindrica (L.) Blume, Enum. Pl. Javæ 1: 93. 1827; FPM 459. 1919; FM 1, 5: 467. 1958; RHFC 2: 492. 1981; FTC 3: 570. 1983; FTN 1: 147. 1983. *Rhizophora cylindrica* L., Sp. Pl. 443. 1753. *Bruguiera caryophylloides* (Burm. f.) Blume, Enum. Pl. Javæ 1: 93. 1827; FBI 2: 438. 1878. *B. malabarica* Arn. in Ann. Nat.Hist.1:369.1838; FBI 2:438.1878. [*Kakandan*] (Fig. 19)

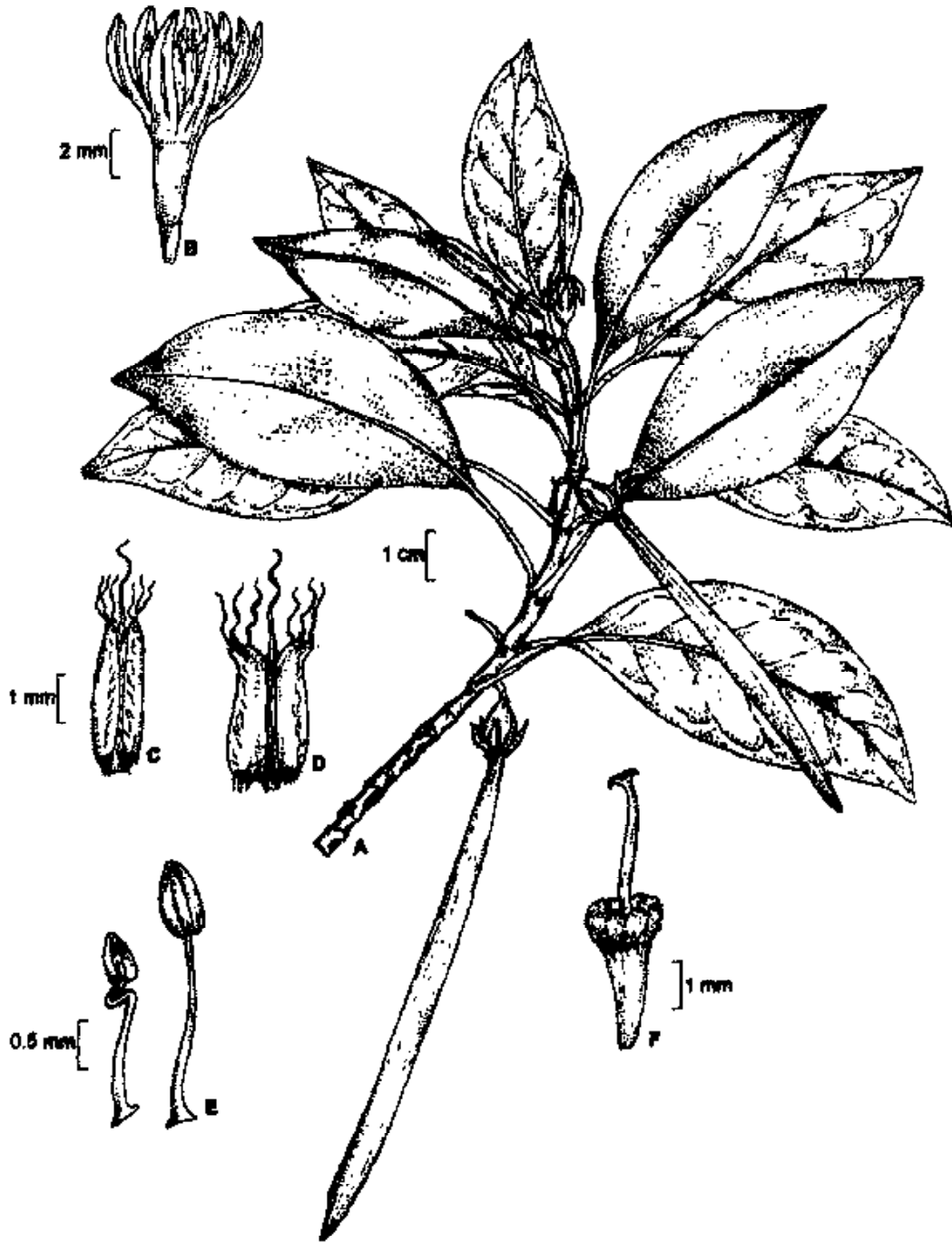


Fig. 19 (A - F). *Brugierea cylindrica* (L.) Blume
 A. Twig B. Flower C & D. Perianth E. Stamens F. Pistil

Tree, ca 4 m high. Leaves elliptic, cuneate, entire, acute. Calyx-lobes 8, linear, leathery. Petals 8, appendaged, notched at apex, hairy outside, white. Stamens 8; anthers hooked at tip. Ovary linear-oblong. Fruits drupaceous, oblong-ovoid.

Fl. & Fr.: Jan. - Oct.

Habitat: Marshy swamps, usually with *Avicennia marina*, *Ceriops tagal*, *Rhizophora apiculata* and *R. mucronata*.

Distrib.: SE. Asia to N. Queensland. Tidal forests of India. TN: Ramanathapuram and S. Arcot. GM: Frequent on Kurusadai, Manoli, Pullivasal and Pumarichan Islands.

Uses: Poles used as rafters. Bark contains tannin.

Specimens examined: (Total 21) Ma Is. KSK 102323; PD 100679; Pu Is. KSK 101690, 102339; PD & PU 106828; Pv Is. KSK 103342; PD 99755.

2. *Ceriops* Arn.

Trop. coasts of Indian and W. Pacific Oceans, 2 species, 2 in India and Tamil Nadu and one in GM.

C. tagal (Perr.) C. B. Rob. in Philipp. J. Sci. 3: 306. 1908; RHFC 2: 494. 1981; FTN 1: 148. 1983. *Rhizophora tagal* Perr. in Mém. Soc. Linn. Paris 3: 138. 1824. *Ceriops candolleana* Arn. in Ann. Nat. Hist. 1: 364. 1838, nom. illeg.; FBI 2: 436. 1878; FPM 457. 1919. [*Pandi-kutti*] (Fig. 20)

Tree, ca 4 m high. Leaves ovate-oblong, coriaceous, glabrous. Cymes condensed. Calyx-lobes 5, oblong. Petals 5, white, emarginate, with 3-clavate appendages. Stamens 10, inserted on a disc. Ovary half-inferior, linear-oblong. Fruits conical; hypocotyle ridged, reddish brown.

Fl. & Fr.: Sept. - Jan.

Habitat: Swamps, backwaters and mudflats, with *Avicennia marina*, *Bruguiera cylindrica*, *Rhizophora mucronata* etc.

Distrib.: India: W and E. Coasts. TN: Ramanathapuram and S. Arcot. GM: Mainland coast, collected at Kundhukal and common in tidal swamps of Kurusadai, Manoli, Manoliputti, Pullivasal and Pumarichan Islands.

Uses: Bark highly valued in the tanning industry. Decoction used to stop haemorrhage, also employed in lotions for malignant ulcers. Extract used for toughening fishing-lines, nets and sail-cloth. It is the source of the mangrove cutch, used as a dye.

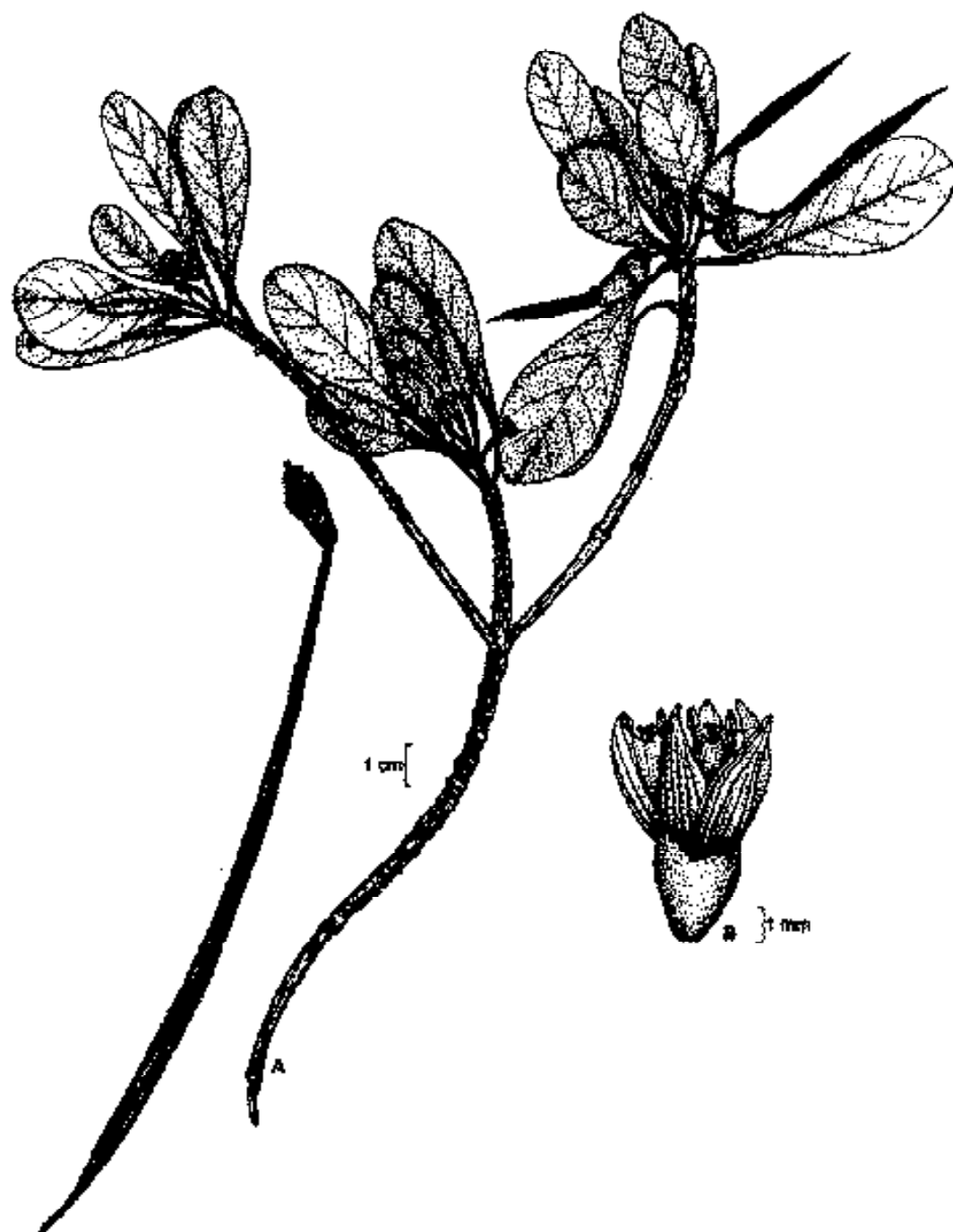


Fig. 20(A & B). *Coriaria rugulosa* (Perr.) C.B. Hob
 A. Twig & hypocotyle B. Flower

Specimens examined: (Total 28) KSK 102978; PD 100448, 100449; Ku Is. PD 100384, 100592, 100594; Ma Is. KSK 102321; Mp Is. PD 101455; Pu Is. PD 99734; Pv Is. PD 99754, 101415, PD & PU 106827.

3. *Rhizophora* L.

Tropics, 6 - 9 species and 2 in India.

Key to the species

- | | |
|--|------------------------|
| 1a. Leaves apiculate; cymes 2-flowered; stamens 12 | 1. <i>R. apiculata</i> |
| b. Leaves mucronate; cymes 4-flowered; stamens 8 | 2. <i>R. mucronata</i> |

1. *R. apiculata* Blume, Enum. Pl. Javae 1: 91. 1827; RHFC 2: 490. 1981; FTC 3: 573. 1983; FTN 1: 148. 1983. *R. candelaria* DC., Prodr. 3: 32. 1828; FPM 456. 1919. *R. conjugata* auct. non L. 1753; IIB 1: t. 209. 1840; FBI 2: 436. 1878. [*Kandal*] (Fig. 21)

Tree, ca 10 m high, with stilt roots. Leaves elliptic-oblong, cuneate, entire. Cymes axillary, sessile. Calyx-lobes 4, ovate, concave. Petals 4, creamy, caducous. Fruits conical-ovoid, brownish, 2 - 3 cm long; hypocotyle club-shaped, to 20 cm long, pale yellowish.

Fl. & Fr.: March - Oct.

Habitat: Swampy and marshy localities and backwaters, with *Avicennia marina*, *Ceriops tagal*, *Rhizophora mucronata* etc.

Distrib.: SE. Asia, Sri Lanka and throughout Malesia. TN: Ramanathapuram and S. Arcot. GM: Rare. Collected only at Kundhukal near Pamban.

Uses: Bark contains tannin. Wood used for heavy construction; yields a pulp suitable for blotting and corrugating papers.

Specimens examined: (Total 14) KSK 102977; PD 100452.

2. *R. mucronata* Poir. in Lam., Encycl. 2: 517. 1794 & Lam., Tabl. Encycl. 1: t. 396. f. 2. 1797; Wight, IIB 1: 209. 1840 & Icon. t. 238. 1840; FBI 2: 435. 1870; FPM 456. 1919; FM 1, 5: 453. 1958; RHFC 2: 491. 1981; IFTC t. 260. 1982; FTC 3: 574. 1983; FTN 1: 148. 1983. [*Kandal*] (Fig. 22; Photo 6)

Tree, ca 8 m high, with stilt roots. Leaves broadly elliptic, cuneate. Calyx-lobes 4, lanceolate, concave. Petals 4, lanceolate, creamy, caducous, pubescent along margins. Fruits obovate, dark brown, 4 - 5 cm long; hypocotyle cylindrical, to 30 cm long.

Fl. & Fr.: June - Jan.

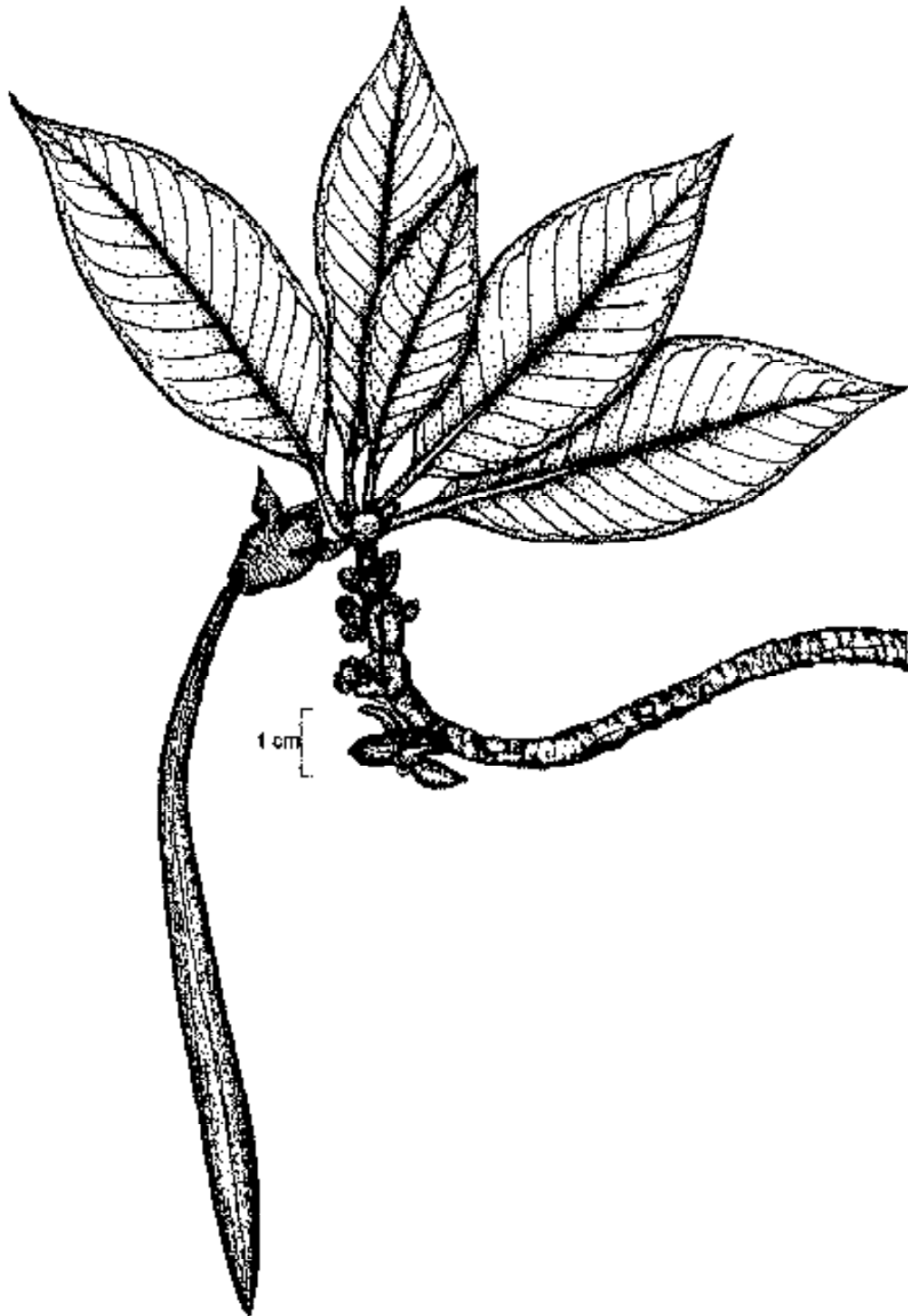


Fig. 21. *Rhizophora spiculata* Blume
Twig & hypocotyle

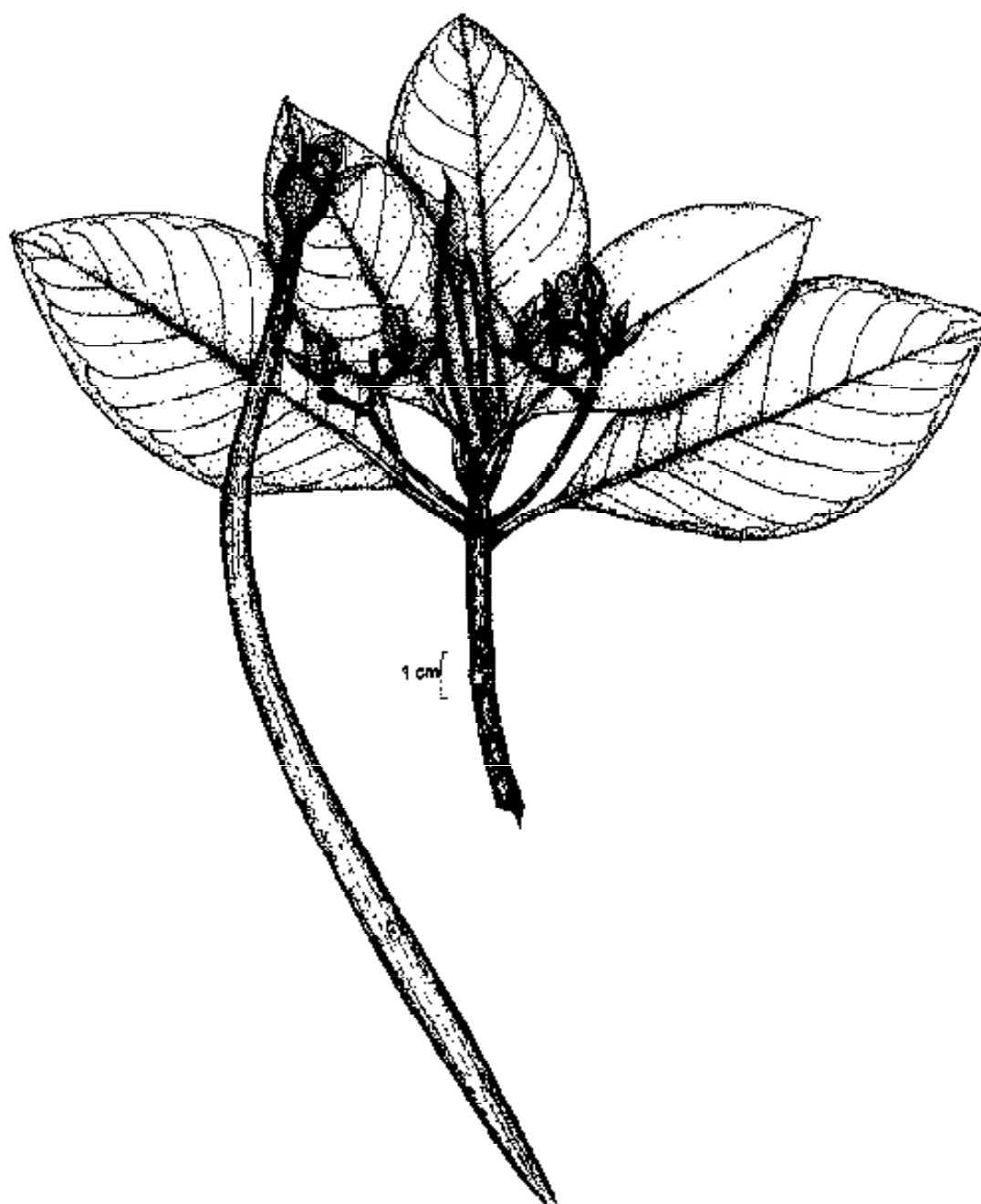


Fig. 22. *Rhizophora mucronata* Poir.
Twig & hypocotyle

Habitat: Marshy habitats, with *Avicennia marina*, *Bruguiera cylindrica*, *Ceriops tagal*, *Rhizophora apiculata* etc.

Distrib.: Mouths of the Indus to Malacca, shores of Africa, Asia, Australia and Sri Lanka. TN: Chengalpattu, Ramanathapuram and S. Arcot. GM: Common on Kurusadai, Manoli, Manoliputti, Pullivasal and Pumarichan Islands and Kundhukal near Pamban.

Uses: Bark contains tannin. Bark astringent and used in haemorrhage, hematuria and angina. Young shoots cooked and eaten. Wood used for heavy construction. Logs used as piles for temporary bridges, buffers, mine- and pit-props etc.

Specimens examined: (Total 23) KSK 102976; PD 100451; Ku Is. PD 100593; Ma Is. PD 100676; Pu Is. KSK 101688; Pv Is. PD 101195.

The seedlings of the Rhizophoraceous members can float in the sea and might last for many months if covered by debris and sand, before germinating (Ridley, 1930). However, only Kurusadai, Pumarichan, Pullivasal, Manoli and Manoliputti of the Mandapam group harbour all the species except *R. apiculata* which occurs only at Kundhukal near Pamban. The littoral/insular factors that limit the distribution of these species need further investigations.

40. COMBRETACEAE

Key to the genera

- | | |
|---|----------------------|
| 1a. Petals absent; flowers polygamous | 3. <i>Terminalia</i> |
| b. Petals present; flowers not polygamous | 2 |
| 2a. Mangroves; small trees; corolla white | 1. <i>Lumnitzera</i> |
| b. Nonmangroves; climbing shrubs; corolla pink to red | 2. <i>Quisqualis</i> |

1. *Lumnitzera* Willd.

E. Africa to the Pacific, 2 species, 2 in India and one in Tamil Nadu.

L. racemosa Willd. in Ges. Naturf. Freunde Berlin Neue Schriften 4: 187. 1803; FBI 2: 452. 1878; FPM 468. 1919; IFTC t. 264. 1982; FTN 1: 149. 1983, var. *racemosa*: Exell in Steenis, Fl. Males. 1, 4: 589. 1954; FTC 3: 578. 1983. [*Thipparathai*] (Fig. 23)

Branchlets glabrous. Leaves oblong or oblanceolate to obovate, attenuate, entire, obtuse to rounded, leathery. Spikes axillary. Calyx-lobes 5, triangular. Corolla 5. Stamens 10. Disc present. Drupes oblong-ellipsoid, greenish.

Fl. & Fr.: Sept. - April.

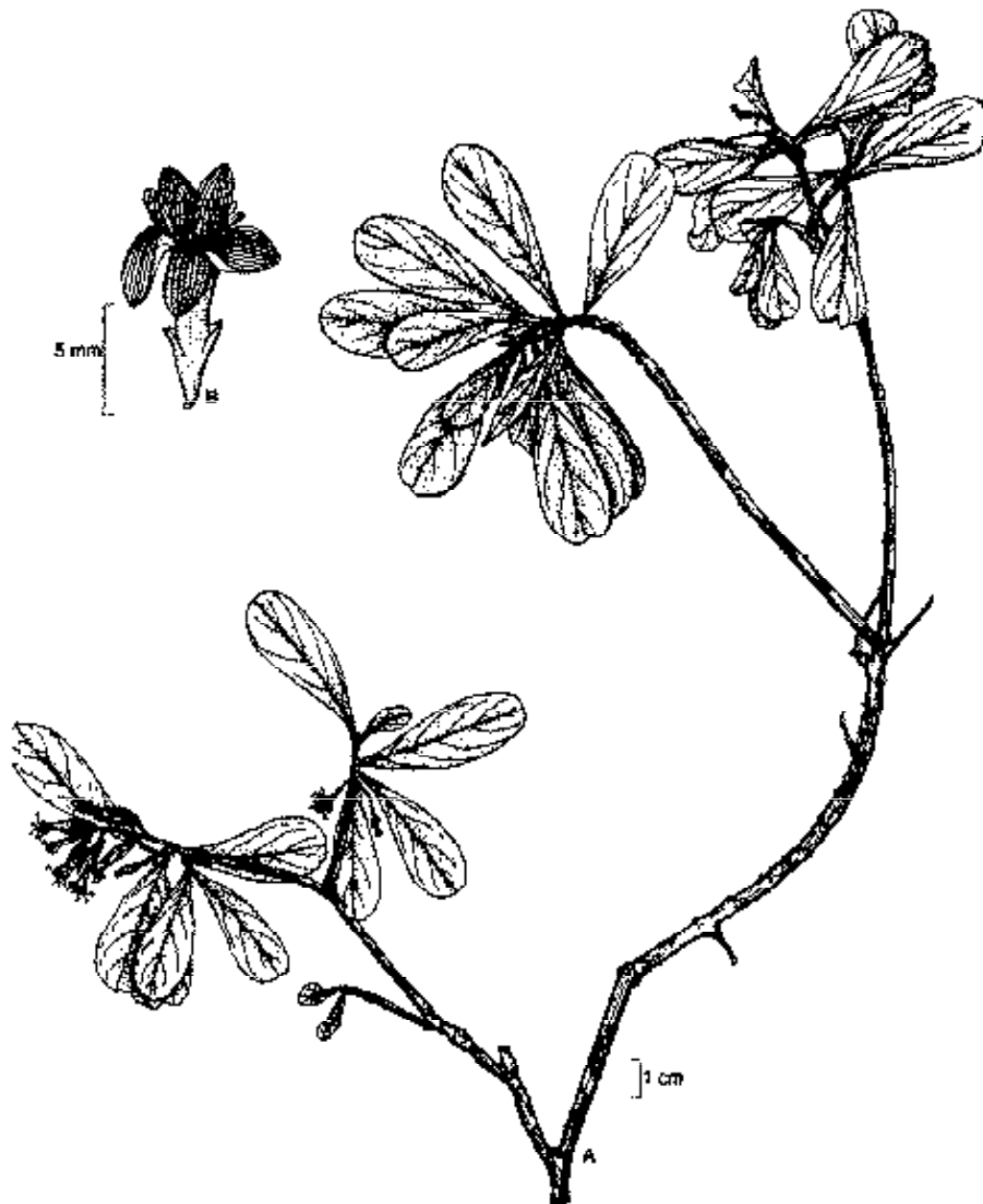


Fig. 23(A & B). *Eumilzora racemosa* Willd
A. Twig B. Flower

Habitat: Marshy localities and sandy areas with calcareous substratum, with *Avicennia marina*, *Pemphis acidula*, *Rhizophora* spp. etc. Sometimes only with *Pemphis acidula* as on Muyal and Shingle Islands.

Distrib.: India, Malesia, N. Australia, Polynesia, Sri Lanka and Trop. Africa. TN: Chengalpattu, Ramanathapuram and S. Arcot. GM: Common on Kurusadai, Manoli, Manoliputti, Muyal, Pullivasal, Pumarichan, Shingle and Thalaiyari Islands and rare at Kundhukal near Pamban.

It is one of the more common species on the islands of the Mandapam group. That the buoyant fruits of *Lumnitzera* can float for months (Ridley, 1930) can explain its successful survival. But then, its absence from the islands away from Mandapam needs explanation.

Uses: Wood used for piles, posts, wharves, canoes, general construction, flooring, furniture, sleepers, cabinet-work and tool-handles.

Specimens examined: (Total 22) PD 100450; Ku Is. PD 100591; Ma Is. PD 101464; Mu Is. PD 100313; Pu Is. KSK 102345; PD 99740; Pv Is. KSK 103343; Th Is. PD 101476.

2. *Quisqualis* L.

Old World tropics, 16 species, 2 in India and in Tamil Nadu and one in GM.

Q. indica L., Sp. Pl. ed. 2, 1: 556. 1762; IIB t. 92. 1840; FBI 2: 459. 1876; FPM 469. 1919; IFTC t. 265. 1982; FTC 3: 579. 1983; FTN 1: 149. 1983. [*Rangoon malihai*]

Climbing shrub. Leaves oblong-elliptic, subcordate, entire, acuminate. Flowers in spikes, fragrant. Calyx-lobes triangular. Corolla pink to red. Drupe 5-angled, 1-seeded.

Fl. & Fr.: Almost throughout the year.

Cultivated as an ornamental. Rarely an escape.

Uses: Fruits and seeds anthelmintic. Ripe seeds roasted and given in diarrhoea and fever. Stems used for basket making, fish-wires and fish-traps.

3. *Terminalia* L. nom. cons.

Tropics, ca 150 species, 12 in India, 11 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|----------------------|
| 1a. Leaves glabrous on both surfaces; drupes ovoid, winged | 1. <i>T. arjuna</i> |
| b. Leaves glabrous above, tomentose beneath; drupes ellipsoid, not winged | 2. <i>T. catappa</i> |

1. *T. arjuna* (Roxb. ex DC.) Wight & Arn., Prodr. 314. 1834; FSSI t. 28. 1869; FBI 2: 447. 1878; FPM 465. 1919; FTC 3: 581. 1983; FTN 1: 149. 1983. *Pentaptera arjuna* Roxb. ex DC., Prodr. 3: 14. 1828. [*Kulammaruthu, Vellamarudu*]

Large tree. Leaves oblong or obovate-oblongate, obtuse-subcordate, crenate-serrate, obtuse. Spikes axillary or terminal. Calyx-lobes triangular. Ovary ovoid. Drupes 5-ridged.

Fl. & Fr.: March - Sept.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, common. Usually planted on road sides. Unusually lofty trees exist on the banks of the Tambraparani river.

Uses: Wood used for agricultural implements and boat-building. Bark used for tanning. It is styptic, tonic, febrifuge and antidyenteric. Leaves fed to silkworms.

Specimens examined: (Total 43) VB 1826.

2. *T. catappa* L., Syst. Nat. ed. 12, 2: 674. 1767; Wight, Icon. t. 172. 1839; FBI 2: 444. 1878; FPM 463. 1919; FTC 3: 582. 1983; FTN 1: 150. 1983. [*Vadumai*]

Large tree. Leaves obovate, subcordate-cuneate, entire, obtuse-round or retuse. Spikes axillary. Calyx-lobes triangular. Ovary ellipsoid. Drupes 2-ridged.

Fl. & Fr.: July - Oct.

Habitat: Planted in gardens, also found on road sides.

Distrib.: India, Malesia, Sri Lanka and Trop. Asia. TN: Almost all districts. GM: Mainland coast, frequent.

Fruits usually dispersed by bats. Pericarp has a thin sweet pulp.

Uses: Wood used for house-building and general carpentry work. A good timber, suitable for rafters, scantlings etc. Kernels edible. Bark diuretic and cardiotoxic; also used in dysentery. Tassar silkworms are fed on the leaves.

Specimens examined: (Total 19) KSK 102054; PD 102159.

41. MYRTACEAE

Key to the genera

1a. Fruit a capsule, ovoid; leaves aromatic

1. *Eucalyptus*

- b. Fruit a berry, globose; leaves not aromatic 2
- 2a. Flower solitary; berries many-seeded 2. *Psidium*
- b. Flowers in paniculate cymes; berries 1-seeded 3. *Syzygium*

1. *Eucalyptus* L'Her.

Australia, ca 450 specie; elsewhere introduced.

E. tereticornis Sm., Spec. Bot. New Holland 41.1795; FTC 3: 591. 1983; FTN 1: 153. 1983.

Large tree. Leaves lanceolate-ovate or elliptic, cuneate, oblique, entire, acuminate. Umbels axillary. Flowers white. Hypanthium campanulate. Capsules ovoid, 4-valved; seeds, ovoid-cuboid.

Fl. & Fr.: April - Sept.

Sometimes planted on mainland coast.

2. *Psidium* L.

Tropics, ca 100 species, 2 in Tamil Nadu and one in GM.

P. guajava L., Sp. Pl. 470. 1753; FBI 2: 468. 1878 (as "guyava"); FPM 472. 1919; RHFC 2: 406. 1981; IFTC t. 270. 1982; FTC 3: 593. 1983; FTN 1: 154. 1983. [*Koyya*]

Small tree. Leaves oblong or ovate-lanceolate, obtuse-cuneate, entire, acute. Flowers solitary or in pairs, axillary. Calyx-lobes ovate. Petals white. Berries globose, 5 - 6 cm; seeds many.

Fl. & Fr.: April - Aug.

Native of Trop. America.

Uses: Cultivated for its edible fruits. Leaves used as an astringent in bowel troubles, also used for tanning. Decoction of bark given in diarrhoea. Fruits tonic, cooling and laxative.

3. *Syzygium* Gaertn. nom. cons.

Old World tropics, ca 500 species, 50 in India, 30 in Tamil Nadu and one in GM.

S. cumini (L.) Skeels in U.S.D.A. Bur. Pl. Industr. Bull. 248: 25. 1912; RHFC 2: 443. 1981; FTC 3: 594. 1983; FTN: 1: 156. 1983. *Myrtus cumini* L., Sp. Pl. 471. 1753. *Eugenia*

jambolana Lam., Encycl. 3: 198. 1789; Wight, Icon. t. 535. 1842; FBI 2: 499. 1879.
Syzygium jambolanum (Lam.) DC., Prodr. 3: 259. 1828; FPM 481. 1919. [*Navaf*]

Large tree. Leaves elliptic or ovate-lanceolate, cuneate, entire, acuminate. Paniculate cymes axillary or terminal. Corolla creamy. Berries globose, dark purple.

Fl. & Fr.: June - Dec.

Habitat: Scrub jungles, with *Bauhinia racemosa*, *Dodonaea viscosa*, *Ziziphus mauritiana* etc.

Distrib.: Australia, India, Malesia and Sri Lanka. TN: Almost all districts. GM: Mainland coast, frequent. Also found to occur on Kurusadai Island.

Uses: Ripe fruits edible, also used for making preserves, jams, squashes, jellies. Wood used for construction, boat-building. Leaves form a palatable fodder, also used as a green manure. Silkworms feed on foliage. Decoctions of bark and that of powdered seeds are used in diabetes which is reportedly very effective.

Specimens examined: (Total 121) *NCN* 57335; *PD* 100441; *VB* 1795.

42. LYTHRACEAE

Key to the genera

- | | |
|---|--------------------|
| 1a. Herbs | 2 |
| b. Shrubs or small trees | 4 |
| 2a. Flower solitary; bracteoles minute | 5. <i>Rotala</i> |
| b. Flowers in axillary cymes; bracteoles prominent | 3 |
| 3a. Leaves attenuate at base, obtuse at apex; seeds hollowed on one side | 3. <i>Nesaea</i> |
| b. Leaves cuneate or auriculate at base, acute to acuminate at apex; seeds not hollowed | 1. <i>Ammannia</i> |
| 4a. Branchlets spine-tipped; flowers 4-merous; corolla yellow | 2. <i>Lawsonia</i> |
| b. Branchlets not spine-tipped; flowers 3-merous; corolla white | 4. <i>Pemphis</i> |

1. *Ammannia* L.

Cosmopolitan, ca 30 species, 18 in India, 3 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|--------------------------|
| 1a. Petals absent; stamens 4; capsules ca 1 mm across | 1. <i>A. bacillifera</i> |
| b. Petals present, pinkish red; stamens 8; capsules ca 4 mm across | 2. <i>A. octandra</i> |

1. *A. baccifera* L., Sp. Pl. 120. 1753; FBI 2: 569. 1879; FPM 510. 1919; FTC 3: 605. 1983; FTN 1: 165. 1983. *A. salicifolia* sensu C. B. Clarke in FBI 2: 569. 1879, non Blume 1856. [*Kallurvi, Nirmel-neruppu*]

Small herb. Leaves oblong-elliptic or oblanceolate, cuneate, entire, acute. Cymes dichasial, axillary. Calyx-lobes triangular, pinkish. Capsules globose, pinkish; seeds ovoid, blackish.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet and marshy places, with *Fimbristylis miliacea*, *Heliotropium indicum*, *Monochoria vaginalis* etc.

Distrib.: Afghanistan, Australia, China, India, Malesia and Trop. Africa. TN: Almost all districts. GM: Common on mainland coast and Kurusadai, Manoli, Muyal, Nallathanni and Thalaiyari Islands.

Uses: Dried leaves used in ringworm and other parasitic skin affections. Herb is reported to possess anti-typhoid and anti-tuberculosis properties.

Being a marshy plant it might be transported by birds externally; seeds in mud may get stuck to the feet of birds and transported. However, whether it is a chance or any other factor that has enabled only *A. baccifera* to be present on some of the islands and not the other species needs further studies.

Specimens examined: (Total 146) KSK 102965; PD & PU 107040, 107251; Ku Is. PD 99777; Ma Is. PD 100683; Mu Is. PD 100630; Nt Is. PD 101596; Th Is. PD 101506.

2. *A. octandra* L. f., Suppl. Pl. 127. 1782; Roxb., Pl. Coromandel t. 133. 1800; FBI 2: 571. 1879; FPM 510. 1919; FTC 3: 606. 1989; FTN 1: 165. 1983.

Small herb. Leaves oblong-lanceolate, auriculate-subcordate, entire, acute-acuminate. Cymes axillary. Calyx-lobes triangular. Capsules globose, pinkish; seeds ovoid, blackish.

Fl. & Fr.: Oct. - Jan.

Habitat: Wet and marshy localities.

Distrib.: Malesia, S. India and Sri Lanka. TN: Almost all districts. Earlier collected on mainland, a little away from the coast. May occur on the coast.

Specimens examined: (Total 27) VB 1932, 1132, 1170.

2. *Lawsonia* L.

Africa, Asia and India, unispecific.

L. inermis L., Sp. Pl. 349. 1753; FPM 514: 1919; FTC 3: 609. 1983; FTN 1: 165. 1983.
L. alba Lam., Encycl. 3: 106. 1789; IIB 1: t. 87. 1840; FBI 2: 573. 1879. [*Maruthani*]

Shrub. Leaves obovate-elliptic, attenuate, entire, acute. Cymes paniculate, terminal. Calyx cupular. Petals 4, orbicular or obovate, fragrant. Capsules globose; seeds many, turbinate.

Fl. & Fr.: Dec. - June.

Commonly cultivated as a hedge plant.

Uses: Leaves contain a dye (henna) used for colouring palms, soles, and nails by womenfolk; also for dyeing hair. Flowers as well as leaves yield an essential oil.

Specimens examined: (Total 40) DDS 94139; KSK 101698; NCN 53137.

3. *Nesaea* Comm. ex Kunth

Tropics and S. Africa, 56 species, 2 in India and Tamil Nadu and one in GM.

N. prostrata (Ham. ex Dillwyn) Suresh in Nicolson & al. in *Regnum Veg.* 119: 168. 1988. *Ammannia prostrata* Ham. ex Dillwyn., *Rev. Hortus Malab.* 47. 1839. *Nesaea lanceolata* (Heyne ex C. B. Clarke) Köhne in *Bot. Jahrb. Syst.* 3: 325. 1882; FPM 510. 1919; FTC 3: 610. 1983; FTN 1: 166. 1983; FIFTC t. 272. 1988. *Ammannia lanceolata* Heyne ex C. B. Clarke in *Fl. Brit. India* 2: 570. 1879.

Decumbent herb. Leaves oblanceolate, attenuate, entire, acute. Cymes axillary. Calyxlobes triangular. Petals pink, obovoid. Capsules globose; seeds many, subglobose.

Fl. & Fr.: July - Dec.

Habitat: Wet and marshy localities including rice fields.

Distrib.: S. India and Sri Lanka. TN: Most districts. GM: Though earlier collected a little away from the coast, it is likely to occur on the coast.

Specimens examined: (Total 20) NCN 53194; VB 2349.

4. Pemphis J. R. & G. Forst.

Old World tropics, 2 species and one in India.

P. acidula J.R. Forst., Char. Gen. Pl. 68, t. 34. 1776; FBI 2: 573. 1879; FPM 511. 1919; FTN 1: 166. 1983; JETB 11: 207. 1987. [*Keerichedi*] (Fig. 24)

Small tree or large shrub. Leaves fleshy, oblong-elliptic, cuneate, entire, subacute, white-pubescent. Flower solitary, axillary. Calyx-lobes ovate. Capsules globose; seeds angular, cuneate, stramineous yellow.

Fl. & Fr.: Almost throughout the year.

Habitat: Foreshore sandy habitat, with *Suriana maritima*, and mangrove species particularly *Lumnitzera racemosa*.

Distrib.: Trop. coasts of the Old World. Southern coast of both peninsular India and Sri Lanka. TN: Ramanathapuram and Tuticorin. GM: Common on almost all islands except Appa, Karaichalli, Puluvichalli and Upputhanni.

One of the most successful insular species which occurs abundantly on some islands of the Mandapam group particularly Muyal. The seeds that can float on seawater for months (Ridley, 1930) can be easily transported to islands. Further studies are needed to find out what prevents it from establishing on some of the islands and the mainland coast.

Uses: Local fishermen use as a fuel wood. Leaves acidic. Wood used for stakes, anchors, nails and pestles. Bark used for tanning.

Specimens examined: (Total 11) without collector's name 21894, 13711; Ka Is. PD 102188; Ku Is. NP & KR 85353; Ma Is. PD 100695; Mu Is. PD 100303; Nt Is. PD & PU 106636; Pu Is. PD 99732.

5. Rotala L.

Temperate regions to tropics, 44 species, 14 in India, 8 in Tamil Nadu and one in GM.

R. rosea (Poir.) Cook in Boissiera 29: 86. 1979; IFTC t. 283. 1982; FTC 3: 614. 1983. *Ammannia rosea* Poir. in Lam., Encycl. (Suppl.) 329. 1810. *Rotala leptopetala* (Blume) Koehne in Bot. Jahrb. Syst. 1: 162. 1880; FPM 508. 1919. *Ammannia leptopetala* Blume, Mus. Bot. 2: 134. 1856. *Rotala pentandra* (Roxb.) Blatt. & Hallb. in J. Bombay Nat. Hist. Soc. 25: 707. 1918, p.p.; FTN 1: 166. 1983. *Ammannia pentandra* Roxb., Fl. Ind. 1: 427. 1832; FBI 2: 568. 1879.

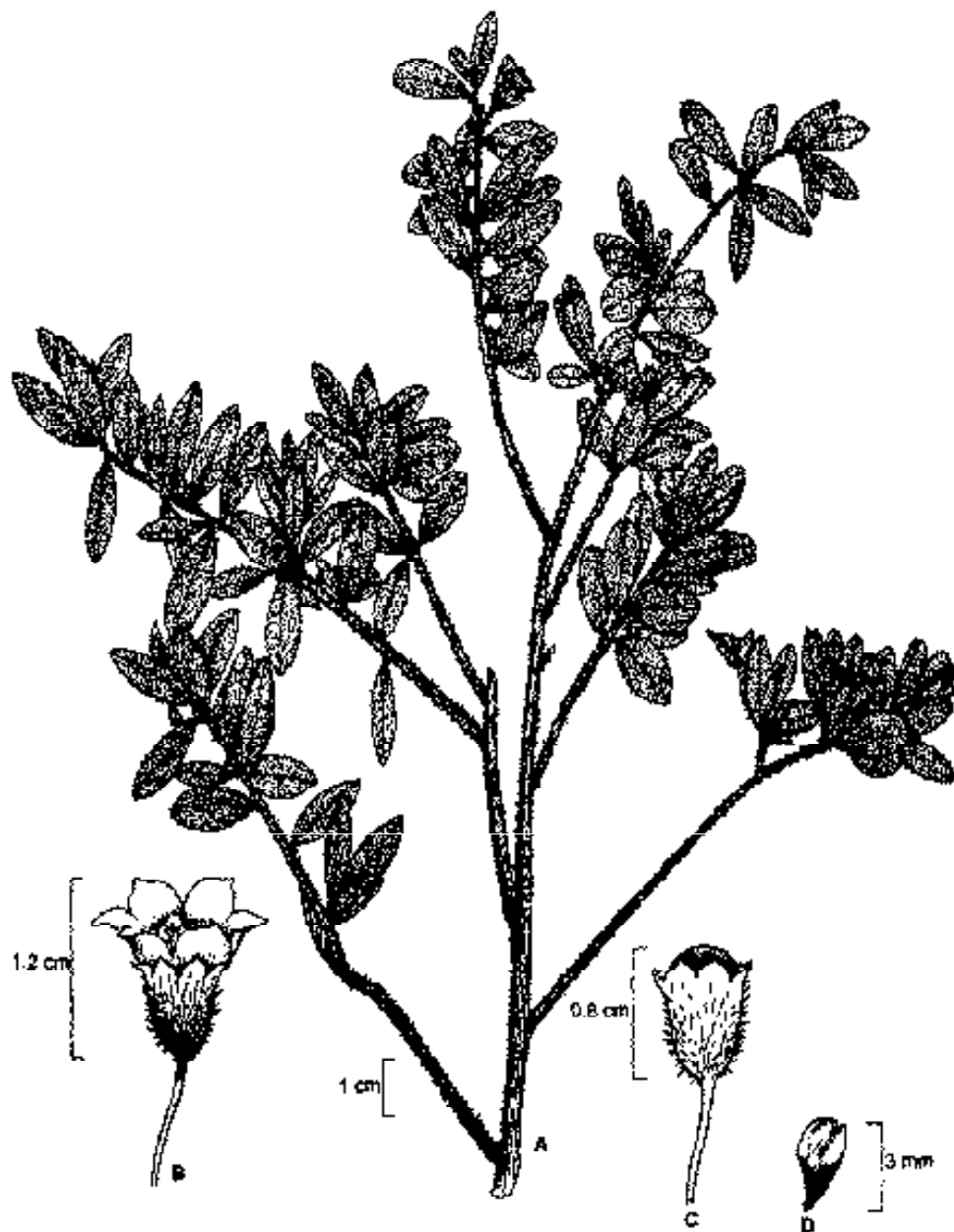


Fig. 24(A - D). *Ficus acida* J.R. Forst
A. Twig B. Flower C. Fruit D. Seed

Herb. Leaves linear-lanceolate, cuneate, entire, obtuse. Calyx-lobes ovate, appendaged. Petals obovate, pinkish. Capsules globose; seeds semi-ovoid, brownish.

Fl. & Fr.: Dec. - April.

Habitat: Wet and marshy localities.

Distrib.: Australia, China, India, Malesia and Trop. Africa. TN: Almost all districts. Though earlier collected a little away from the coast, it is likely to occur on the coast.

Specimens examined: (Total 17) VB 2350, 2013.

Lagerstroemia indica L., a shrub, may be cultivated in gardens as an ornamental.

43. PUNICACEAE

Punica L.

SE. Europe to Himalayas, 2 species and one in India.

P. granatum L., Sp. Pl. 472. 1753; IIB 1: t. 97. 1840; FBI 2: 581. 1879; FTC 3: 619. 1983; FTN 1: 167. 1983; RHFC 6: 319. 1987. [*Madurai*]

Shrub. Leaves oblanceolate, cuneate, entire, acute. Flowers solitary, axillary or in few-flowered cymes. Calyx-lobes ovate-deltoid, persistent. Petals reddish-orange. Berries subglobose; seeds angular, juicy, pink, many.

Fl. & Fr.: March - June.

Planted in kitchen gardens for its delicious fruits.

Uses: Fleshy testa edible. Rind is used as an astringent in diarrhoea and dysentery. Flower-buds used in bronchitis.

44. ONAGRACEAE

Ludwigia L.

Cosmopolitan, ca 75 species, 6 in India and Tamil Nadu and 3 in GM.

Key to the species

- 1a. Floating herb; flowers 5-merous; stamens 10; seeds uniseriate 1. *L. adscendens*
- b. Non-floating herbs or shrubs; flowers 4-merous; stamens 4 or 8;

- seeds multiseriate 2
- 2a. Capsules dialated; stamens 8; seeds ellipsoid, purplish 2. *L. hyssopifolia*
- b. Capsules not dialated; stamens 4; seeds ovoid, stramineous yellow 3. *L. perennis*

1. *L. adscendens* (L.) Hara in J. Jap. Bot. 28: 290. 1953; FTC 3: 621. 1983; FTN 1: 167. 1983. *Jussiaea adscendens* L., Mant. Pl. 1: 69. 1767. *J. repens* L., Sp. Pl. 388. 1753, non *Ludwigia repens* J.R. Forst. 1771; FBI 2: 587. 1879; FPM 516. 1919.

Herb. Leaves obovate, attenuate, entire, retuse or rounded, glabrous. Flower solitary, axillary. Calyx-lobes ovate. Petals white with yellow base. Capsules cylindric, 10-ribbed.

Fl. & Fr.: Almost throughout the year.

Habitat: Marshy areas and along edges of streams and river banks as pure patches or with *Hydrolea zeylanica*.

Distrib.: India, Sri Lanka and warmer parts of the world. TN: Almost all districts. GM: Mainland coast, occasional. Collected along edges of the Tambraparani river in Tuticorin.

Specimens examined: (Total 39) PD & PU 107277.

2. *L. hyssopifolia* (G. Don) Exell in Garcia de Orta 5: 471. 1957; FTC 3: 622. 1983; FTN 1: 167. 1983; FIFTC t. 277. 1988. *Jussiaea hyssopifolia* G. Don, Gen. Syst. 2: 693. 1832. *J. linifolia* Vahl, Ecol. Amer. 2: 32. 1798, non *Ludwigia linifolia* Poir. 1813; FPM 1875. 1936. *Fissendocarpa linifolia* (Vahl) Bennet in J. Bombay Nat. Hist. Soc. 67: 126. 1970.

Herb. Leaves lanceolate or elliptic, attenuate, entire, acute. Flower solitary, axillary. Calyx-lobes lanceolate. Petals yellowish. Capsules subterete, 8-ribbed.

Fl. & Fr.: Dec. - Jan.

Habitat: Wet localities, with *Ammannia baccifera*, *Lindernia pusilla* and *Monochoria vaginalis*.

Distrib.: Malesia to Micronesia, N. Australia, SE. Asia and Trop. Africa. TN: Coimbatore, Madurai, Nilgiri, N. & S. Arcot, Salem, Tiruchirapalli and Tirunelveli. GM: Mainland coast, less frequent.

Specimens examined: (Total 32) PD 101675; PD & PU 106524.

3. *L. perennis* L., Sp. Pl. 119. 1753; FTC 3: 623. 1983; FTN 1: 168. 1983. *L. parviflora* Roxb., Fl. Ind. 1: 440. 1820; IIB 2: t. 101. 1850; FBI 2: 588. 1879; FPM 517. 1919.

Herb. Leaves lanceolate, attenuate, entire, acute. Flower solitary, axillary. Calyx-lobes ovate. Petals yellow with white patches. Capsules subterete, 4-ribbed.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet localities, with *Bhumea lacera*, *Euphorbia indica* etc.

Distrib.: Abyssinia, Australia, India, Iran, Malesia and Sri Lanka. TN: Almost all districts. GM: Mainland coast, less frequent.

Use: Plant boiled in oil is applied to the body to relieve pain.

Specimens examined: (Total 73) ANH 49507; PD 102293; VB 1040.

45 PASSIFLORACEAE

Passiflora L.

Tropics and subtropics, ca 350 species, 23 in India, 11 in Tamil Nadu and 2 in GM.

Key to the species

- | | | |
|-----|---|-----------------------------|
| 1a. | Stem glabrous, leaves glabrous; involucrel bracts entire;
berries 2.5 – 3.5 cm across | 1. <i>P. edulis</i> |
| b. | Stem hispid; leaves glandular-pubescent; involucrel bracts finely divided;
berries 4 – 6 cm across | 2. <i>P. foetida</i> |

1. *P. edulis* Sims in Bot. Mag. t. 1989, 1818; FPM 524, 1919; Fyson. Fl. S. Indian Hill St. 2; t. 187, 1932; FTC 3: 629, 1983; FTN 1: 169, 1983.

Tendril-climber. Leaflets cordate; lobes ovate, crenulate-serrate, acute. Calyx-lobes ovate-lanceolate. Petals purplish white; corona hairs white. Berries globose.

Fl. & Fr.: Almost throughout the year.

Distrib.: Native of Brazil. GM: Occasionally planted in homesteads for the edible fruits.

Earlier collected at Rameswaram.

Specimens examined: (Total 32) VB 1725.

2. *P. foetida* L., Sp. Pl. 959, 1753; FPM 524, 1919; IFTC t. 289, 1982; FTC 3: 630, 1983; FTN 1: 169, 1983. [*Sirapnauikali*]

Tendrils-climber. Leaflets suborbicular-ovate, cordate, subentire, acute. Calyx-lobes ovate-lanceolate. Petals purplish white; corona hairs violet. Berries subglobose.

Fl. & Fr.: Almost throughout the year.

Habitat: Waste places, open areas on hedges, with *Canavalia gladiata*, *Coccinia grandis* etc.

Distrib.: Native of Trop. and S. America, now naturalised. TN: Almost all districts. GM: Mainland coast, common.

Uses: Ripe fruits edible, their decoction used in asthma and biliousness.

Specimens examined: (Total 108) PD 102258; PD & PU 104625, 106465, 107006.

46. CARICACEAE

Carica papaya L. [*Pappali*], a small dioecious tree of Trop. America, is very commonly cultivated in homesteads for its delicious fruits.

47. CUCURBITACEAE

Key to the genera

1a. Prostrate herbs	2
b. Climbing herbs	3
2a. Plants trailing; fruits globose, yellow when ripe	1. <i>Citrullus</i>
b. Plants creeping; fruits ellipsoid-oblong, pale green with white stripes	5. <i>Cucumis</i>
3a. Plants dioecious	4
b. Plants monoecious	5
4a. Corolla white; fruits oblong, reddish when ripe, smooth	2. <i>Coccoloba</i>
b. Corolla yellow; fruits ellipsoid, yellowish when ripe, papillose	7. <i>Momordica</i>
5a. Fruits beaked	6
b. Fruits not beaked	7
6a. Tendrils simple; fruits reddish when ripe; seeds smooth	3. <i>Corallocarpus</i>
b. Tendrils branched; fruits yellowish when ripe; seeds pitted	9. <i>Trichosanthes</i>
7a. Plants scabrid or glabrous; seeds smooth	8
b. Plants hispid; seeds pitted	8. <i>Melastoma</i>
8a. Plants scabrid; fruits ca 4.5 cm across; seeds ellipsoid or oblong	4. <i>Ctenolepis</i>
b. Plants glabrous; fruits ca 1.5 cm across; seeds ovoid	6. <i>Diplocyclos</i>

1. *Citrullus* Schrad.

Tropics, 3 species and 2 in India.

C. colocynthis (L.) Schrad. in *Linnaea* 12: 414. 1838; Wight, *Icon.* t. 498. 1841; FBI 2: 620. 1879; FPM 536. 1919; FFI 11: 20. 1982; FTC 3: 636. 1983; FTN 1: 170. 1983. *Cucumis colocynthis* L., *Sp. Pl.* 1011. 1753. *Colocynthis vulgaris* Schrad., *Pl. Sem. Hort. Gotting.* 2. 1883. [*Peykkumatti*]

Leaves ovate-triangular, 3 - 5-lobed, pinnatifid, truncate. Flower solitary. Corolla pale yellow. Stamens 3 in male flowers. Seeds ovoid, stramineous.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy seashores and sand dunes, with *Eragrostis* spp., *Hedyotis puberula*, *Spinifex littoreus* etc.

Distrib.: Africa, Arabia, India, Spain and W. Asia. TN: Most districts. GM: Mainland coast, frequent. Occasional on Appa, Manoliputti, Nallathanni, Thalaiyari and Van Islands.

The floating fruits may be transported by seawater. However, it is rare on the islands.

Uses: Roots purgative, used in jaundice, rheumatism, and urinary troubles.

Specimens examined: (Total 66) KSK 102902; PD 102228; PD & PU 103599; Ap Is. PD 101541.

C. lanatus (Thunb.) Matsum. & Nakai [*Daarbooshani*] is cultivated for its fruits.

2. *Coccinia* Wight & Arn.

Tropics and S. Africa, ca 30 species and one in India.

C. grandis (L.) Voigt, *Hort. Suburb. Calcutt.* 59. 1845; IFTC t. 293. 1982; FFI 11: 24. 1982; FTC 3: 637. 1983; FTN 1: 170. 1983. *Bryonia grandis* L., *Mant. Pl.* 126. 1767. *Coccinia indica* Wight & Arn., *Prodr.* 347. 1834, nom. illeg.; IIB 2: t. 105. 1850, p.p.; FPM 537. 1919. *Cephalandra indica* Naudin in *Ann. Sci. Nat. Bot.* 5: 16. 1866, nom. illeg.; FBI 2: 621. 1879, excl. syn. *Coccinia cordifolia* auct. non (L.) Cogn.: A & C. DC., *Monogr. Phan.* 3: 529. 1881. [*Kovai*]

Leaves 3 - 5-lobed, cordate, denticulate, obtuse. Flower solitary. Male flower: calyx campanulate; lobes subulate, villous; stamens 3; pistillode absent. Female flower: staminodes 3; fruits ca 4 cm long; seeds oblong-ovoid, granular.

Fl. & Fr.: Almost throughout the year.

Habitat: On *Dodonaea viscosa*, *Thespesia populnea* etc.

Distrib.: Africa, India and Malesia. TN: Almost all districts. GM: Common on Anaipar, Appa, Kurusadai, Manoli, Muyal Nallathanni, Pumarichan, Pullivasal, Thalaiyari, Up-puthanni and Valimunai Islands and frequent on mainland coast.

Birds which feed on the bright red fruits may disperse the plant. Humans, who consume the fruits, may also be involved.

Uses: Tender fruit used as a vegetable, ripe ones eaten. Tender shoots used as a potherb.

Specimens examined: (Total 96) KSK 102137, 102734, 102924; SAM 104766; Ku Is. VB 1462; Ma Is. PD 101106; Mu Is. PD 108308; Pu Is. PD 99714.

3. *Corallocarpus* Hook. f.

Tropics, 13 species, 5 in India and one in Tamil Nadu.

C. epigaeus (Rottler) C. B. Clarke in Fl. Brit. India 2: 628. 1879; FPM 541. 1919; FFI 11: 28. 1982; FTC 3: 638. 1983; FTN 1: 170. 1983. *Bryonia epigaea* Rottler in Ges. Naturf. Freunde Berlin Neue. Schriften 4: 212. 1803. *Aechmandra epigaea* (Rottler) Arn. in J. Bot. (Hooker) 3: 274. 1841; Wight, Icon. t. 503. 1841. *Corallocarpus gracilipes* (Naudin) Cogn. in A. & DC., Monogr. Phan. 3: 650. 1881; FPM 541. 1919. *Rhynchoscurpa epigaea* (Rottler) C. B. Clarke var. *gracilipes* Naudin in Ann. Sci. Nat. Bot. 16: 179. 1862. [*Akashagaruden*]

Leaves broadly suborbicular, 3 - 5-lobed, cordate, irregularly dentate, obtuse, apiculate. Male flowers in racemes; corolla greenish yellow; stamens 3, free; pistillode obscure. Female flower solitary; corolla yellow; fruits ellipsoid; seeds ovoid or subglobose, smooth.

Fl. & Fr.: Aug. - Feb.

Habitat: Dry localities, usually on *Euphorbia antiquorum*.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional. Once collected near Koodankularn in Tirunelveli. Earlier collected at Samythoppu in Ramanathapuram.

Uses: Roots used in chronic mucous enteritis and dysentery. It also enters into liniments for rheumatism.

Specimens examined: (Total 55) NCN 5310; PD & PU 107205.

4. *Ctenolepis* Hook. f.

Trop. Africa and India, 2 species and one in Tamil Nadu.

C. garcinii (Burm. f.) C. B. Clarke in Fl. Brit. India 2: 629. 1879; IFTC t. 295. 1982; FTC 3: 639. 1983; FTN 1: 171. 1983. *Sicyos garcinii* Burm. f., Fl. Indica 211. 1768. *Blastania garcinii* (Burm. f.) Cogn. in A. & DC., Monogr. Phan. 3: 629. 1881; FPM 540. 1919; FFI 11: 13. 1982. *Bryonia garcinii* (Burm. f.) Willd., Sp. Pl. 4: 623. 1805.

Leaves (3-) 5-lobed; lobes obovate, cordate, crenulate-denticulate, obtuse, mucronulate. Male flowers in racemes; corolla greenish; stamens 3; pistillode absent. Female flower solitary; staminodes absent; fruits globose, subreniform; seeds ellipsoid or oblong, smooth.

Fl. & Fr.: Sept. - March.

Habitat: Scrub jungles, and on hedges, usually on *Euphorbia antiquorum*.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, not common.

Specimens examined: (Total 45) ANH 61564; DD 86679; VB 2030.

5. *Cucumis* L.

Old World tropics, ca 30 species, 7 in India, 3 in Tamil Nadu and 2 in GM.

C. melo L., Sp. Pl. 1011. 1753; FBI 2: 620. 1879; FFI 11: 32. 1982; IFTC t. 296. 1982; FTC 3: 641. 1983; FTN 1: 171. 1983. *C. pubescens* Willd., Sp. Pl. 4: 614. 1805; Wight, Icon. t. 496. 1841; FPM 535. 1919. [*Chukkarigai*, *Murukkanpalam*, *Puttumurungai*]

Leaves suborbicular, 3-5-lobed or cordate, denticulate, obtuse or rounded. Male flowers in a cluster; corolla yellow; stamens 3; pistillode globose, trifid. Female flower solitary; staminodes ligulate; fruits ellipsoid-oblong, pale green with white stripes.

Fl. & Fr.: June - Feb.

Habitat: Sandy localities, with *Corchorus* spp., *Launaea intybacea*, *Pedaliium murex* etc.

Distrib.: East & NE. Trop. Africa and India. TN: Almost all districts. GM: Frequent on mainland coast and Appa, Karaichalli, Kurusadai, Manoli, Manoliputti, Moyal, Nallathanni and Pumarichan islands.

Uses: The somewhat sweet fruits are edible; sometimes a little bitter. Unripe fruits are salted, dried, roasted and eaten. Fresh ripe fruits as well as dried ones are sold in the market. Seeds diuretic, refrigerant and nutritious. Pulp useful in chronic eczema.

The seeds may be dispersed by humans as the fruits are edible.

Specimens examined: (Total 15) KSK 102731; PD 100523; Ap Is. PD 101561; Kc Is. KSK 102072; Ku Is. PD 99780; Ma Is. PD 101110; Mu Is. PD 100664; Pu Is. KSK 101694.

C. sativus L., the common cucumber sold in the market, is cultivated for its fruits

6. *Diplocyclus* (Endl.) Post & Kuntze

Trop. Africa to Trop. Asia, 4 species and one in India.

D. palmatus (L.) C. Jeffrey in Kew Bull. 15: 352. 1983; IFTC t. 297. 1982; FTC 3: 644. 1983; FTN 1: 172. 1983. *Bryonia palmata* L., Sp. Pl. 1012. 1753. *B. laciniosa* L., Sp. Pl. 1013. 1753, p.p., excl. type; Wight, Icon. t. 500. 1841; FBI 2: 622. 1879. *Bryonopsis laciniosa* auct. non (L.) Naudin 1859: FPM 534. 1919; RBSI 17: 135. 1959.

Leaves 5-lobed; lobes elliptic-oblong, cordate, denticulate. Male and female flowers in a cluster. Corolla greenish yellow. Stamens 3 in male flower; pistillode absent. Fruits globose, reddish with white lines; seeds ovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: On hedges and in scrub jungles, on *Acacia planifrons*, and with *Ipomoea alba*, *Tylophora indica* etc.

Distrib.: Trop. Africa, Australia, India, Malasia and Mauritius. TN: Almost all districts. GM: Mainland coast, frequent.

Specimens examined: (Total 113) KSK 102814; PD & PU 106481, 106990.

7. *Momordica* L.

Old World tropics, ca 45 species, 7 in India, 4 in Tamil Nadu and one in GM.

M. dioica Roxb. ex Willd., Sp. Pl. 4: 605. 1805; Wight, Icon. tt. 505 & 506. 1841; FBI 2: 617. 1879; FPM 532. 1919; FFI 11: 94. 1982; FTC 3: 648. 1983; FTN 1: 173. 1983. [*Thohupaval*]

Leaves ovate, 3 - 5-lobed, cordate, denticulate, subacute-obtuse. Flower solitary; stamens 3; pistillode glanduliform, or absent in male flowers. Fruits ellipsoid, papillose, yellowish when ripe; seeds pyriform.

Fl. & Fr.: June - Feb.

Habitat: Scrub jungles and also in sandy localities, on *Thespesia populnea*.

Distrib.: East to W. China, India, Myanmar and Sri Lanka. TN: Almost all districts. GM: Frequent on mainland coast and Kurusadai, Pullivasal and Pumarichan Islands.

The seeds may be dispersed by birds as the fruit has a red pulp inside when mature.

Uses: Fruits used as a vegetable. Visitors to the islands collect them. Kernel oil is used in paint and varnish industry. Roots used in bleeding piles, bowel affections and urinary complaints.

Specimens examined: (Total 51) NCN 53100; SAM 104718; Ku Is. PD 100378, 100379, 99760; Pu Is. PD 99705, 99715.

M. charantia L. [*Paharkai*] is cultivated in kitchen gardens for its fruits used as a vegetable.

8. *Mukia* Arn.

Old World tropics, 4 species, 2 in India and one in Tamil Nadu.

M. maderaspatana (L.) M. Roem., Fam. Nat. Syn. Monogr. 247. 1846; FFI 11: 83. 1982; FTC 3: 650. 1983; FTN 1: 173. 1983. *Cucumis maderaspatanus* L., Sp. Pl. 1012. 1753. *Mukia scabrella* (L. f.) Arn. in J. Bot. (Hooker) 3: 276. 1841; FBI 2: 623. 1879, excl. syn. *Melothria maderaspatana* (L.) Cogn. in A. & C. DC., Monogr. Phan. 3: 623. 1881; FPM 539. 1919. *Bryonia scabrella* L. f., Suppl. Pl. 424. 1782; Wight, Icon. t. 501. 1841. [*Musumusukkai*]

Leaves ovate, 3 - 5-lobed; lobes angular, ovate, cordate, denticulate, acuminate. Male and female flowers in clusters. Corolla yellow; stamens 3; pistillode present. Fruits globose, red when ripe; seeds ovoid, pitted.

Fl. & Fr.: Almost throughout the year.

Habitat: On bushes and also on *Cadaba fruticosa*.

Distrib.: Africa, Australia, India and Malesia. TN: Almost all districts. GM: Mainland coast, frequent. Also occurs on Shingle Island.

The seeds may be dispersed by birds as the fruit is red in colour.

Uses: Tender shoots and leaves used as an aperient. Roots masticated for relief from toothache; their decoction given in flatulence. Decoction of seeds sudorific.

Specimens examined: (Total 47) KSK 102133, 103328, 103362; NCN 53103; PD 101141.

9. *Trichosanthes* L.

Indomalesia to Pacific, ca 50 species, 24 in India, 5 in Tamil Nadu and one in GM.

T. cucumerina L., Sp. Pl. 1008.1753; FBI 2: 609. 1879; FPM 529. 1919; FTC 3: 653. 1983; FTN 1: 174. 1983. *T. anguina* L., Sp. Pl. 1008. 1753; FBI 2: 610. 1879; FPM 529. 1919. [*Peyppudalai, Pudalai*]

Leaves orbicular to broadly ovate, cordate, 3 - 5-lobed; lobes obovate. Male flowers in racemes; corolla white, fimbriate; stamens 3; pistillodes 3. Female flower solitary; fruits ovoid, beaked, yellowish when ripe; seeds oblong, pitted.

Fl. & Fr.: Jan. - March.

Habitat: Wet and sandy localities, with *Aloe vera*, *Ipomoea violacea*, *Momordica dioica* etc.

Distrib.: Australia, India, Malesia and Sri Lanka. TN: All districts. GM: Mainland coast, frequent. Also collected on Kurusadai Island.

Seeds are reportedly dispersed by crow (Ridley, 1930). However, on Moyal and Nallathanni Islands where crows are a common sight this plant is not found.

Uses: Fruits consumed as a vegetable. They improve appetite and are beneficial in biliousness. Roots and seeds are used in diarrhoea, and as a vermifuge.

Specimens examined: (Total 20) PD 101176; Ku Is. PD 99759.

Benincasa hispida (Thunb.) Cogn. [*Poosani*], *Cucurbita maxima* Duchesne ex Lam. [*Parangikai*], *Lagenaria stercaria* (Molina) Standl. [*Surai*], *Luffa acutangula* (L.) Roxb. and *L. cylindrica* (L.) Roem. [*Nuraipeerku*] are cultivated for their fruits used as a vegetable.

48. CACTACEAE

Opuntia Mill.

Massachusetts and British Columbia to Galapagos and Straits of Magellan, ca 300 species, 3 in India and Tamil Nadu and one in GM.

O. dillenii (Ker Gawl.) Haw., Suppl. Pl. Succ. 79. 1819; FBI 2: 657. 1879; FPM 548. 1919; FTN 1: 176. 1983. *Cactus dilleni* Ker Gawl. in Bot. Reg. 3: t. 255. 1818. *O. stricta* (Haw.) Haw. var. *dilleni* (Ker Gawl.) L. D. Benson in Cact. Succ. J. (Los Angeles) 41: 126. 1969; FTC 3: 661. 1983. [*Sappathikalli*]

Shrub. Stems jointed, fleshy, flattened; areoles densely tufted, glochidiate; spines 5 - 7. Leaves deciduous. Tepals obovate, yellow, mucronate. Stamens numerous. Berries obovoid, glochidiate, purple when ripe; seeds many.

Fl. & Fr.: Throughout the year.

Habitat: Dry localities and sandy open places, with *Indigofera oblongifolia*, *Premna serratifolia*, *Sporobolus maderaspatanus* etc.

Distrib.: Native of America; introduced, now run wild. TN: All districts. GM: Mainland coast, common; also on Appa, Karaichalli, Kaswari, Moyal and Van Islands.

The detached stem is reported to float in rivers (Ridley, 1930). The fruit being purple birds may feed on them and disperse the seeds.

Uses: Fruits edible. Baked fruit is used in whooping cough. Mashed up stems are used as a poultice to allay inflammation and hot ones applied to boils to hasten suppuration. Pulp also applied in ophthalmia.

Specimens examined: (Total 10) PD 102249; Ka Is. PD 102194; Mu Is. PD 100619.

Acanthocereus tetragonus (L.) Humlk., a native of Trop. America, is cultivated as a hedge plant.

49. AIZOACEAE

Key to the genera

- | | |
|--|----------------------|
| 1a. Stamens 5 - 20; capsules 1 - 6-seeded | 2. <i>Trianthema</i> |
| 1b. Stamens more than 20; capsules many-seeded | 1. <i>Sesuvium</i> |

1. *Sesuvium* L.

Tropics, 6 species and one in India.

S. portulacastrum (L.) L., Syst. Nat. ed. 10, 1058. 1759; FBI 2: 659. 1876; FPM 550. 1919; IFTC t. 312.1982; FTC 3: 668. 1983; FTN 1: 176. 1983. *Portulaca portulacastrum* L., Sp. Pl. 446. 1753.

Succulent herb; rooting at nodes. Leaves linear-oblong, attenuate, entire, obtuse, fleshy. Flower solitary, axillary. Calyx tube turbinate; lobes 5 or (6), pinkish. Petals absent. Capsules oblong.

Fl. & Fr.: Sept. - May.

Habitat: Foreshore sandy habitat, with *Atriplex repens*, *Ipomoea pes-caprae* etc., sometimes forming dense mats as on Moyal Island. (Photo 7)

Distrib.: Pantropical. TN: Chengalpattu, Coimbatore, Ramanathapuram, S. Arcot, Tirunelveli and Tuticorin. GM: Frequent on mainland coast. Common on all islands.

Seeds of *Sesuvium portulacastrum* are carried by drifting logs and pumice (Ridley, 1930). Detached branches also freely float on water.

There is a collection from Coimbatore (*M. Chandrabose* 30224) at MH which is reportedly from the Agricultural College Garden.

Use: Stems and leaves eaten after boiling well to remove excess salt.

Specimens examined: (Total 58) KSK 102065; Ap Is. PD 101550; Ka Is. KSK 102196; Ku Is. PD 100610; Ma Is. PD 100678; Mu Is. PD 100657; Pv Is. PD 99756; Ut Is. PD 101657; Va Is. KSK 102169.

2. *Trianthema* L.

Tropics, especially Australia, 9 species and 4 in India.

Key to the species

- | | |
|---|-----------------------------|
| 1a. Plant glandular-pubescent; flower solitary | 2. <i>T. portulacastrum</i> |
| b. Plants not glandular-pubescent; flowers clustered | 2 |
| 2a. Stamens 5 | 3 |
| b. Stamens 10 | 1. <i>T. decandra</i> |
| 3a. Leaves oblong, more than 5 mm long; calyx-lobes ca 2 mm long with a mucro | 3. <i>T. salsoides</i> |
| b. Leaves linear, less than 5 mm long; calyx-lobes ca 0.5 mm long without a mucro | 4. <i>T. triquetra</i> |

1. *T. decandra* L., Mant. Pl. 70. 1767; Wight, Icon. t. 296. 1840; FBI 2: 661. 1879; FPM 551. 1919; IFTC t. 313. 1982; FTC 3: 670. 1983; FTN 1: 176. 1983. [*Vellai chaaruvaelal*]

Prostrate herb. Leaves oblong, acute, entire, obtuse, semisucculent. Flowers 5-10. Calyx-lobes 5, pinkish. Capsules subterete; seeds 4, concentrically ribbed.

Fl. & Fr.: Dec. - April.

Habitat: Open wastelands, with *Boerhavia* spp., *Phyllanthus amarus* and *Physalis minima*.

Distrib.: Australia, India, Malesia and Sri Lanka. TN: Most districts. GM: Mainland coast, occasional.

Uses: Roots used in asthma and hepatitis. Decoction of root-bark aperient. Leaves eaten during times of scarcity.

Specimens examined: (Total 54) NCN 53163; PD 102127.

2. *T. portulacastrum* L., Sp. Pl. 223. 1753; FPM 550. 1919; FTC 3: 670. 1983; FTN 1: 177. 1983. *T. monogyna* L., Mant. Pl. 69. 1767; Wight, Icon. t. 288. 1840; FBI 2: 660. 1879.

Prostrate herb. Leaves obovate-suborbicular, cuneate, entire, obtuse. Flowers axillary. Calyx-lobes 5, pinkish white. Stamens ca 20. Capsules turbinate; seeds ca 10, papillose, concentrically ridged.

Fl. & Fr.: July - March.

Habitat: Wastelands, with *Boerhavia erecta*, *Cenchrus ciliaris* etc.

Distrib.: Pantropical. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Roots cathartic, irritant and abortifacient, used in asthma, amenorrhoea and obstruction of the liver. Also used as a green manure, sometimes used as a vegetable and fodder.

Specimens examined: (Total 46) PD & PU 103499; SAM 104654.

3. *T. salsoloides* Oliv., Fl. Trop. Africa 2: 588. 1871. *T. triquetra* Willd. ex Spreng. var. *oblongifolia* Gamble, Fl. Madras 551. 1919; FTC 3: 672. 1983; FTN 1: 177. 1983. (Fig. 25)

Prostrate herb. Leaves cuneate, entire, obtuse. Flowers axillary. Calyx-lobes 5, greenish. Capsules obconical; seeds 1 or 2, reniform, striate.

Fl. & Fr.: Nov. - Feb.

Habitat: Roadsides on hard gravelly soil, with *Portulaca wightiana*, *Trianthema triquetra* etc.

Distrib.: Ethiopia, India, Rhodesia, Sudan and S. Africa (Transvaal). TN: Coimbatore, Ramanathapuram and Tuticorin. GM: Mainland coast, occasional.

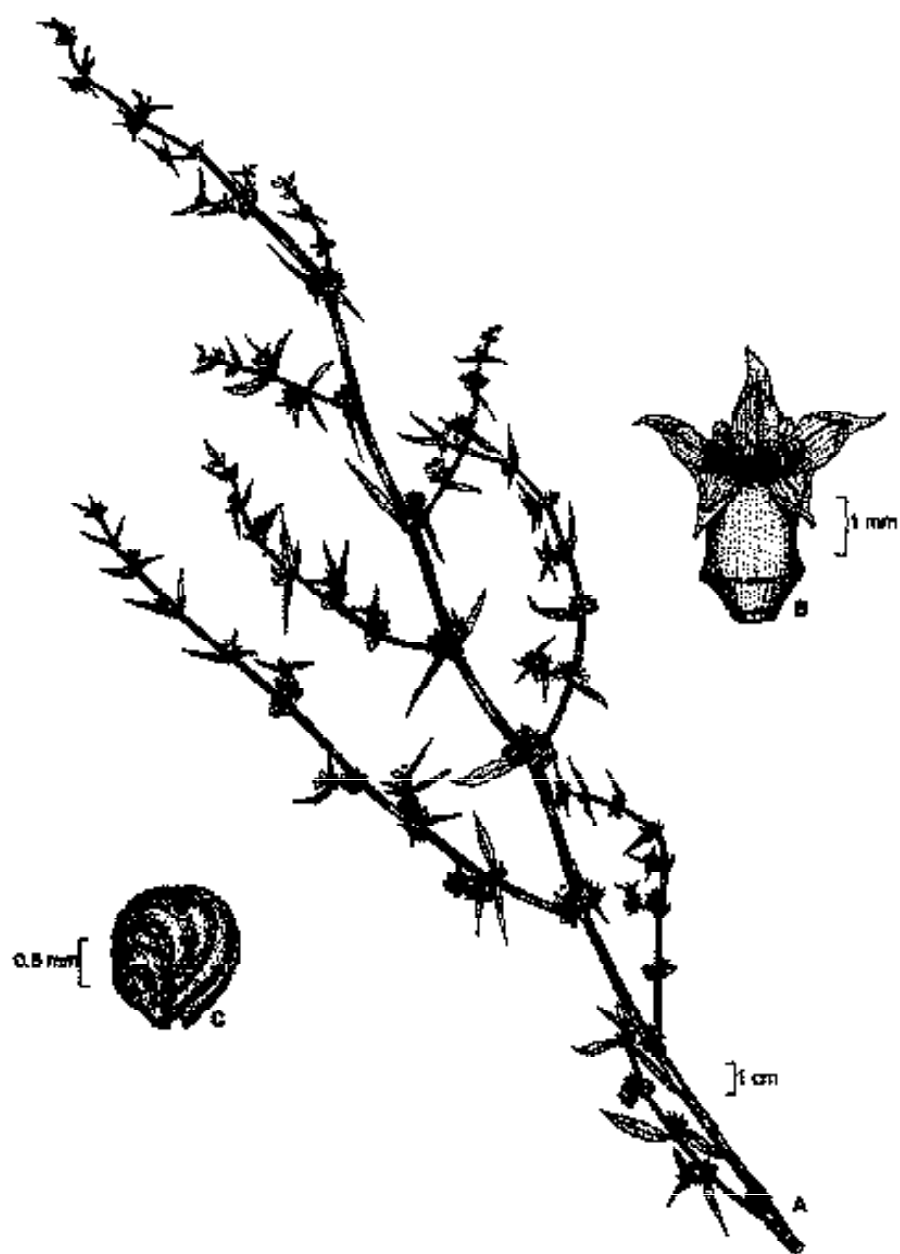


Fig. 28(A - C). *Trianchema microtoides* Otrv.
A. Twig B. Flower C. Seed

Earlier collected at Tuticorin (*Bourne s.n.*) and Tambraparani river delta (*DD 86681*, 2 sheets), in Tuticorin and Tirupullani, a subcoastal region in Ramanathapuram. Collected only at Tuticorin this time around. Rare in the region. Might have initially arrived on the Indian shore in ballast. The specimen from Coimbatore (*DD 93799*) is reported to have been introduced from Australia with *Atriplex* seeds. Matthew (1983) reported from subcoastal Tamilnadu Carnatic.

Specimens examined: (Total 7) *Bourne s.n.*(K, photo!); *DD 93799*; *DD 86681*; *PD & PU 103508*, *107349*; *RW1158*; *SAM 104768*; *SNC & SVP 87131*.

4. *T. triquetra* Willd. [in Ges. Naturf. Freude Berlin Neue Schriften 4: 181. 1803, nom. nud.] ex Spreng., Syst. Veg. 2: 381. 1825; C. Jeffery in Turrill & Milne-Redh., Fl. Trop. E. Africa 25. 1961, var. *triquetra*: Gamble, Fl. Madras 551. 1919; FTC 3: 672. 1983; FTN 1: 177. 1983. *T. crystallina* auct. non Vahl 1790: FBI 2: 660. 1879.

Leaves linear, subacute, entire, obtuse. Flowers axillary. Capsules obconical; seeds 1 or 2, reniform, striate.

Fl. & Fr.: Nov. - Jan.

Habitat: Open wastelands, with *Portulaca tuberosa*, *Trianthema triquetra* and *T. portulacastrum*.

Distrib.: Arabia, Australia, Ethiopia, India, Malesia, Somaliland and Sudan. TN: Most districts. GM: Mainland coast, frequent. Also found on Karaichalli Island.

Note: The name *T. triquetra* was validly published only by Sprengel (1825) and not Willdenow (1803) as given by most authors. The type was collected by Rottler in Coromandel (Daniel & Umamaheswari, 1999).

Use: Forms a green carpet on sandy and dry soils and may be tried as a sand binder, but is suspected of poisoning livestock.

Specimens examined: (Total 57) *PD & PU 103497*, *103560*, *107351*; *SAM 104651*, *104797*.

50. MOLLUGINACEAE

Key to the genera

- | | |
|--|-------------------|
| 1a. Placentation basal; capsules papillose | 1. <i>Gleekia</i> |
| b. Placentation axile; capsules not papillose | 2 |
| 2a. Leaves radical; flowers in dichasial to polychasial cymes..... | 3. <i>Mollugo</i> |
| b. Leaves not radical; flowers in clusters | 2. <i>Glinus</i> |

1. Gisekia L.

Africa and Old World tropics, 2 species and one in India.

G. pharnaceoides L., Mant. Pl. 562. 1771; Wight, Icon. t. 1167. 1848; FBI 2: 664. 1873; FPM 513. 1919; FTC 3: 663. 1983; FTN 1: 177. 1983. [*Manalkeera*]

Diffuse herb. Leaves oblong, cuneate, entire, obtuse, apiculate. Cymes axillary, umbellate. Sepals 5, greenish. Petals absent. Capsules globose, 5-seeded; seeds rounded, granular.

Fl. & Fr.: July - March.

Habitat: Sandy localities, with *Aerva persica*, *Eragrostis* spp., *Launaea sarmentosa* etc.

Distrib.: Africa, India, S. America and Mascarene Islands and Sri Lanka. TN: Most districts. GM: Common on mainland coast and occasional on Appa, Nallathanni and Upputhanni Islands.

Uses: Plant aperient and anthelmintic, used in taenia. Eaten as a potherb in times of scarcity, also grazed by goats.

Specimens examined: (Total 93) KSK 102242, 102905; PD 100427; PD & PU 104610; SAM 106309; Ap Is. PD 101584; Nt Is. PD 101604; Ut Is. PD 101653, 101662.

2. Glinus L.

Tropics and subtropics, 6 species and 2 in India.

Key to the species

- | | |
|---|-----------------------------|
| 1a. Branches stellate-tomentose; leaves suborbicular or spatulate | 1. <i>G. lotoides</i> |
| b. Branches glabrous; leaves oblong or elliptic | 2. <i>G. oppositifolius</i> |

1. **G. lotoides** L., Sp. Pl. 463. 1753; FTC 3: 664. 1983; FTN 1: 177. 1983. *Mollugo hirta* Thunb., Prodr. Fl. Cap. 24. 1794; FBI 2: 662. 1879. *M. lotoides* (L.) Kuntze, Revis. Gen. Pl. 214. 1891; FPM 552. 1919.

Erect or spreading herb. Leaves 3 - 5 in a cluster, subacute, entire, obtuse or rounded. Flowers 3 - 5. Sepals 5, greenish. Capsules globose; seeds ovoid-subreniform, granular, blackish.

Fl. & Fr.: Jan. - March.

Habitat: Clayey wet soil, with *Brachiaria ramosa*, *Heliotropium supinum* etc.

Distrib.: Tropics and subtropics. TN: Most districts. GM: Mainland coast, occasional.

Uses: Tender shoots eaten as a potherb. Used in abdominal disorders.

Specimens examined: (Total 56) PD & PU 104631.

2. *G. oppositifolius* (L.) A. DC. in Bull. Herb. Boissier Ser. 2, 1: 552. 1901; IFTC t. 310. 1980; FTC 3: 665. 1983; FTN 1: 177. 1983. *Mollugo oppositifolia* L., Sp. Pl. 89. 1753; FPM 552. 1919. *M. spergula* L., Syst. Nat. ed. 10, 881. 1759; FBI 2: 662. 1879. [*Therupoondu*]

Prostrate herb. Leaves 3 - 5 in a whorl, cuneate, entire, acute, apiculate. Flowers 5 - 7 in a cluster. Sepals 5, greenish. Capsules oblong; seeds subreniform, granular, reddish.

Fl. & Fr.: Almost throughout the year.

Habitat: Open wastelands and also in sandy localities, with *Corchorus aestuans*, *Enicostema axillare*, *Sida cordifolia* etc.

Distrib.: Pantropical. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Plant considered stomachic, aperient and antiseptic; efficacious in suppressed lochia. Juice applied to itch and other such skin troubles.

Specimens examined: (Total 88) DD 87143; KR 21924; KSK 102016, 102879; VB 1029.

3. *Mollugo* L.

Tropics and subtropics, ca 15 species, 5 in India and Tamil Nadu and 4 in GM.

Key to the species

- | | |
|--|--------------------------|
| 1a. Plants glabrous | 2 |
| b. Plant pubescent | 2. <i>M. disticha</i> |
| 2a. Capsules ellipsoid, 28 - 30-seeded | 3 |
| b. Capsules oblong, 15 - 20-seeded | 4. <i>M. pentaphylla</i> |
| 3a. Leaves linear, apiculate | 1. <i>M. cerviana</i> |
| b. Leaves spatulate, obtuse-retuse | 3. <i>M. nudicaulis</i> |

1. *M. cerviana* (L.) Ser. in DC., Prodr. 1: 392. 1824; FBI 2: 663. 1879; FPM 553. 1915; FTC 3: 666. 1983; FTN 1: 177. 1983; FIFTC t. 288. 1988. *Pharnaceum cerviana* L., Sp. Pl. 272. 1753.

Leaves radical and cauline, 5 - 7 in a cluster, attenuate, entire, obtuse, apiculate. Flowers in umbellate cymes. Sepals 5, greenish white. Seeds ovoid, minutely granular.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Cleome angustifolia*, *Hybanthus ennaespermus* and *Spermacoce hispida*.

Distrib.: Old World tropics. TN: Most districts. GM: Mainland coast, common.

Uses: Plant stomachic, aperient and antiseptic. Flowers and tender shoots diaphoretic and febrifuge. Roots are boiled in oil for application in gout and rheumatism.

Specimens examined: (Total 65) KSK 103449; PD 100518; PD & PU 100421; SAM 104680.

2. *M. disticha* (L.) Ser. in DC., Prodr. 1: 392. 1824; Wight, Icon. t. 3. 1838; FBI 2: 663. 1879; FPM 553. 1919; FTC 3: 667. 1983; FTN 1: 177. 1983. *Pharnaceum distichum* L., Mant. Pl. 221. 1771.

Leaves cauline, 3 - 5 in a cluster, obovate-oblongate, cuneate, entire, acute. Flowers leaf-opposed. Sepals 5, greenish white. Capsules ovoid; seeds ca 30, compressed, minutely granular.

Fl. & Fr.: Sept. - June.

Habitat: Sandy localities, with *Indigofera tinctoria*, *Launaea sarmentosa*, *Spermacoce hispida* etc.

Distrib.: S. India and Sri Lanka. TN: Dharmapuri, Kanyakumari, Pudukkottai, Ramanathapuram, Salem, S. Arcot, Thanjavur and Tiruchirapalli. GM: Mainland coast, common.

Specimens examined: (Total 47) KSK 102720, 102862, 103444; PD 100420, 101146.

3. *M. nudicaulis* Lam., Encycl. 4: 234. 1797; FBI 2: 664. 1879; FPM 553. 1919; IFTC t. 311. 1982; FTC 3: 667. 1983; FTN 1: 177. 1983.

Leaves radical, attenuate, entire, glabrous. Cymes corymbose. Sepals 5, white, hooded. Capsules ellipsoid; seeds ovoid, granular.

Fl. & Fr.: May - Dec.

Habitat: Sandy localities, with *Cyperus* spp., *Mollugo* spp., *Portulaca oleracea* etc.

Distrib.: Pantropical. TN: Most districts. GM: Mainland coast, occasional.

Uses: Plant pectoral, used in whooping cough. Leaves applied to boils for suppuration.

Specimens examined: (Total 64) KSK 102883; PD 100418, 101135; VB 175.

4. *M. pentaphylla* L., Sp. Pl. 89. 1753; FPM 553. 1919; FTC 3: 668. 1983; FTN 1: 178. 1983; FIFTC t. 290. 1988. *M. stricta* sensu C.B. Clarke in FBI 2: 663. 1879, p.p., non L. 1762. [*Parpadakam*]

Radical leaves oblanceolate-spatulate; upper leaves obovate or elliptic, cuneate, entire, obtuse-subacute, apiculate. Cymes polychasial, terminal or leaf-opposed. Sepals 5, white. Seeds ovoid, granular.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and sandy localities, with *Achyranthes aspera*, *Spermacoce hispida* etc.

Distrib.: Old World tropics. TN: Most districts. GMBR: Mainland coast, frequent.

Uses: Plant eaten as a potherb. Stomachic, aperient, antiseptic and emmenagogue.

Specimens examined: (Total 123) KSK 102940; SAM 104682, 106328; VB 1327.

51. APIACEAE (nom. alt. UMBELLIFERAE)

Centella L.

Mostly S. Africa, ca 20 species and one in India.

C. asiatica (L.) Urb. in Mart., Fl. Bras. 11: 287, t. 78, f. 1. 1879; FPM 556. 1919; IFTC t. 315. 1982; FTC 3: 676. 1983; FTN 1: 179. 1983. *Hydrocotyle asiatica* L., Sp. Pl. 234. 1753; Wight, Icon. t. 565. 1842; FBI 2: 669. 1879. [*Vallara*]

Stoloniferous herb, rooting at nodes. Leaves reniform, crenate, rounded. Flowers in umbels. Petals 5, purplish. Mericarps flattened, ca 1.5 mm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet localities, with *Bacopa monnieri*, *Kyllinga monocephala* etc.

Distrib.: Tropics and subtropics. TN: All districts. GM: Mainland coast, occasional; collected near Kanyakumari. Common in the interior.

Uses: Plant diuretic and tonic; also used in leprosy. A glycoside, asiaticoside, shown to be active in the treatment of leprosy, has been isolated.

Specimens examined: (Total 55) PD & PU 107000.

Coriandrum sativum L., coriander, is sometimes cultivated for its leaves and seeds used as a condiment and flavouring agent.

52. RUBIACEAE

Key to the genera

1a. Trees	2
b. Herbs or shrubs	3
2a. Inflorescence a head; flowers 5-merous; fruit a syncarpium of cartilaginous pyrenes	5. <i>Morinda</i>
b. Inflorescence a corymbose cyme; flowers 4-merous; berries drupaceous	6. <i>Pavetta</i>
3a. Shrubs	4
b. Herbs	6
4a. Plants armed; leaves 1.5 - 2 cm long; flower solitary	1. <i>Catunaregam</i>
b. Plants unarmed; leaves 6 - 15 cm long; flowers in cymes	5
5a. Cymes 3-chotomously branched; corolla creamy; stamens 5	8. <i>Tareana</i>
b. Cymes not 3-chotomously branched; corolla deep red; stamens 4 ...	4. <i>Ixora</i>
6a. Decumbent herb; leaves succulent, shiny; flower solitary	3. <i>Hydrophyllax</i>
b. Erect or diffuse herbs; leaves neither succulent nor shiny; flower not solitary	7
7a. Ovule and seed one in each locule	7. <i>Spermacoce</i>
b. Ovules and seeds many in each locule	8
8a. Calyx cupular; seeds reticulate	2. <i>Hedyotis</i>
b. Calyx truncate; seeds pitted	9. <i>Thecagoum</i>

1. *Catunaregam* Wolf

Trop. Africa to Australia, 5 or 6 species, 2 in India and one in Tamil Nadu.

C. spinosa (Thunb.) Tirveng. in Bull. Mus. Hist. Nat. (Paris) 35: 13. 1978 & in Taxon 27: 515. 1978; FTN 2: 3. 1987. *Gardenia spinosa* Thunb., *Gardenia* 7: 16, t. 2, f. 4. 1780. *Randia dumetorum* (Retz.) Poir. in Lam., Encycl. Suppl. 2: 829. 1811; Wight, Icon. t. 580. 1842; FBI 3: 110. 1880; FPM 615. 1921; FTC 3: 738. 1983. *Gardenia dumetorum* Retz., Obs. Bot. 2: 14. 1781. *Randia dumetorum* (Retz.) Poir. var. *floribunda* (DC.) Gamble, Fl. Madras 616. 1921. *R. floribunda* DC., Prodr. 4: 386. 1830. *R. longispina* (Roxb.) DC., Prodr. 4: 386. 1830; Wight, Icon. t. 582. 1842; FPM 616. 1921. *Posoqueria longispina* Roxb., Fl. Ind. 2: 566. 1824. *Randia brandisii* Gamble, Fl. Madras 616. 1921. [*Kalagam*]

Leaves lanceolate or broadly ovate-orbicular, attenuate, entire, subacute or rounded. Flower axillary. Corolla white. Berries oblong, woody, rugose; seeds obovoid.

Fl. & Fr.: March - Dec.

Habitat: Scrub jungles.

Distrib.: E. Trop. Africa, India, Malesia and Sri Lanka. TN: All districts. GM: Earlier once collected at Rameswaram. Very common in the interior.

Specimens examined: (Total 100) TAR 552 (CAL).

2. *Hedyotis* L.

Tropical and temperate regions, ca 150 species, 40 in India, 34 in Tamil Nadu and 6 in GM.

Key to the species

1a. Branches 4-gonous	4. <i>H. herbacea</i>
b. Branches cylindric	2
2a. Stipules broadly ovate with an awn-like tip	3
b. Stipules neither broadly ovate nor with an awn-like tip	4
3a. Branches white-papillose; capsules ca 3 mm across; seeds reticulate ...	1. <i>H. aspera</i>
b. Branches glabrous; capsules ca 2 mm across; seeds not reticulate but grooved on one side	6. <i>H. pumila</i>
4a. Stipules pectinate; calyx-lobes triangular, longer than capsules	5. <i>H. puberula</i>
b. Stipules not pectinate; calyx-lobes ovate, shorter than capsules	5
5a. Stipules fimbriate; corolla hairy at throat inside; capsules globose, 2 - 2.5 mm long.....	2. <i>H. corymbosa</i>
b. Stipules truncate; corolla glabrous; capsules oblong-obovoid, 3.5 - 4.5 mm long	3. <i>H. graminifolia</i>

1. *H. aspera* Heyne ex Roth, Nov. Pl. Sp. 94. 1821; IF 99: 375. 1973; FTN 2: 6. 1987. *Oldenlandia aspera* (Heyne ex Roth) DC., Prodr. 4: 428. 1830; FBI 3: 68. 1880; FPM 602. 1921. *Kohautia aspera* (Heyne ex Roth) Bremek. in Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Tweede Sect. Ser. 2, 48: 113. 1952; FTC 3: 714. 1983.

Herb. Leaves whorled, linear, attenuate, revolute, acute. Racemes branched, lax. Corolla white or purplish. Capsules loculicidal, white-dotted.

Fl. & Fr.: Sept. - April.

Habitat: Disturbed grounds, wastelands and cultivated fields.

Distrib.: Africa, Australia, Cape Verde Islands and India. TN: Most districts. GM: Earlier collected at Perunali, a little interior in Ramanathapuram. May occur on the coast.

Specimens examined: (Total 48) VB 2068.

2. *H. corymbosa* (L.) Lam., Encycl. 1: 272. 1792; IF 99: 375. 1973; FTN 2: 7. 1987. *Oldenlandia corymbosa* L., Sp. Pl. 119. 1753; FBI 3: 64. 1880; FPM 600. 1921; FTC 3: 727. 1983. [*Parpadagam*]

Herb. Leaves linear-lanceolate, decurrent, revolute, acute-apiculate. Umbels 3-flowered. Corolla pinkish white. Capsules loculicidal; seeds reticulate.

Fl. & Fr.: Nov. - May.

Habitat: Wet localities, with *Cyanotis cristata*, *Euphorbia rosea*, *Spermacoce ocyroides* etc.

Distrib.: Africa, America and Trop. Asia. TN: All districts. GM: Common on mainland coast and rare on Manoliputti and Thalaiyari Islands.

Uses: Plant stomachic, pectoral and refrigerant. Decoction prescribed in remittent fever with gastric irritability, also used in jaundice and other liver troubles.

Specimens examined: (Total 80) PD 101161; SAM 104681; Mp Is. PD 101453; Th Is. PD 101499.

3. *H. graminifolia* L. f., Suppl. Pl. 119. 1782, var. *graminifolia*; Deb & Dutta in Taxon 32: 285. 1983; FTN 2: 8. 1987. *Oldenlandia stricta* L., Mant., Pl. 200. 1771; FBI 3: 68. 1880; FPM 602. 1921; FTC 3: 728. 1983. *Hedyotis stricta* (L.) R. S. Rao & Hemadri in Indian Forester 99: 378. 1973, non Sm. 1811, nec Wall. 1820. *H. maritima* Wall. ex Wight & Arn., Prodr. 417. 1834.

Herb. Leaves linear-lanceolate, decurrent, entire, acute. Cymes monochasial. Corolla pinkish. Capsules oblong, loculicidal; seeds smooth.

Fl. & Fr.: Dec. - March.

Habitat: Sandy localities, with *Acrachne henrardiana*, *Phyllanthus maderaspatensis* etc.

Distrib.: India and Sri Lanka. TN: Chengalpattu, Kanyakumari, Ramanathapuram, S. Arcot, Thanjavur and Tirunelveli. GM: Mainland coast, common. Rare on Nallathanni and Upputhanni Islands.

Common on mainland coast particularly opposite Nallathanni Island. The floating capsules might have drifted in seawater.

Specimens examined: (Total 44) KSK 103400; PD & PU 103574, 106464; SAM 106325; Nt Is. KSK 102705; PD & PU 106620; Ut Is. PD 101672; PD & PU 106604.

4. *H. herbacea* L., Sp. Pl. 102. 1753; IF 99: 376. 1976; FTN 2: 8. 1987. *Oldenlandia heyneii* R. Br. ex G. Don, Gen. Syst. 3: 531. 1834; FBI 3: 65. 1880. *O. herbacea* (L.) Roxb., Fl. Ind. 1: 445. 1820; FPM 601. 1921; FTC 3: 728. 1983.

Herb. Leaves linear-lanceolate, decurrent, revolute, acute. Flowers solitary or 2, axillary. Corolla white. Capsules loculicidal; seeds reticulate.

Fl. & Fr.: Nov. - March.

Habitat: Wastelands, with *Celosia argentea*, *Chloris barbata* etc.

Distrib.: Africa and Asia. TN: All districts. GM: Mainland coast, occasional. Once collected at Munaikadu in Ramanathapuram. Also found on Manoli, MuyaI and Thalaiyari Islands. Appears very common in the interior.

Uses: Decoction of plant used in malaria; also used in rheumatism and elephantiasis. Leaves employed as an expectorant.

Specimens examined: (Total 132) KSK 102955.

5. *H. puberula* (G. Don) Arn., Pugill, Pl. Ind. Or. 342. 1836; JBNHS 81: 232. 1984; FTN 2: 8. 1987. *Oldenlandia puberula* G. Don, Gen. Syst. 3: 530. 1834. *O. umbellata* L., Sp. Pl. 119. 1753; FBI 3: 66. 1880; FPM 601. 1921; FTC 3: 730. 1983. *Hedyotis umbellata* (L.) Lam., Tabl. Encycl. 1: 272. 1792, non Wall. 1848. *Oldenlandia wightii* Hook. f., Fl. Brit. India 3: 66. 1880; FPM 601. 1921. [*Chiruver*]

Herb. Leaves fascicled, linear, decurrent, revolute, acute-apiculate. Cymes terminal, umbellate. Corolla white. Capsules loculicidal; seeds reticulate.

Fl. & Fr.: Almost throughout the year.

Habitat: Open wastelands and sandy localities, with *Cyperus arenarius*, *Launaea sarmentosa* etc.

Distrib.: India to Myanmar and Sri Lanka. TN: All districts. GM: Common on mainland coast and most islands.

Uses: Leaves and roots expectorant, given in asthma, bronchitis and consumption.

Specimens examined: (Total 144) PD & PU 106476; An Is. KSK 102378; Ap Is. PD 101555; Kc Is. SAM 104734; Ku Is. PD 100373; Ma Is. PD 101109; Mu Is. PD 100330; Nt Is. PD 101597; Pc Is. PD & PU 106596; Pu Is. PD 99703; Pv Is. PD 101421; Ut Is. PD 101641; Va Is. KSK 102027; Vm Is. KSK 102394.

6. *H. pumila* L. f., Suppl. Pl. 119. 1782; IF 99: 377. 1973; FTN 2: 9. 1987. *Oldenlandia crystallina* Roxb., Fl. Ind. 1: 443. 1820; FBI 3: 65. 1880; FPM 424. 1921. *O. pumila* (L. f.) DC., Prodr. 4: 425. 1830. *O. maheshwarii* sensu Ayyang. & al. in JBNHS 64: 390. 1967, non Santapau & Merchant 1964.

Herb. Leaves linear-oblong, attenuate, entire, acute. Cymes branched. Corolla white. Capsules loculicidal.

Fl. & Fr.: Oct. - Jan.

Habitat: Wet localities, with *Enicostema axillare*, *Micrococca mercurialis* etc.

Distrib.: India and Java. TN: Most districts. GM: Rare on Manoliputti and Thalaiyari Islands. Not collected on mainland coast.

It is mostly a plant of the interior, particularly E. & W. Ghats. Earlier recorded only for Madras (Livingstone & Henry, 1994). There is one collection by (Barber 136) made in 1899. It is an addition to the Gulf of Mannar.

Specimens examined: (Total 10) Mp Is. PD 101453; Th Is. PD 101499.

The seeds of *Hedyotis* spp. are likely to be dispersed by birds as they usually occur in wet situations.

3. *Hydrophylax* L. f.

Coasts of E. & S. Africa to Thailand, 3 species and one in India.

H. maritima L. f., Suppl. Pl. 126. 1782; Wight, Icon. t. 760. 1844; FBI 3: 199. 1881; FPM 653. 1921; FTC 3: 709. 1983; FTN 2: 10. 1987; G. Suryan. & al., Fl. Sriharikota Isl. 96. 1998. (Fig. 26; Photo 18)

Profusely branched herb. Leaves obovate or oblong, attenuate or narrow, entire, acute. Flower solitary, axillary. Corolla pinkish white. Capsules ellipsoid, 1.5 - 2 cm long, indehiscent, 2-seeded; seeds linear-oblong.

Fl. & Fr.: Dec. - March.

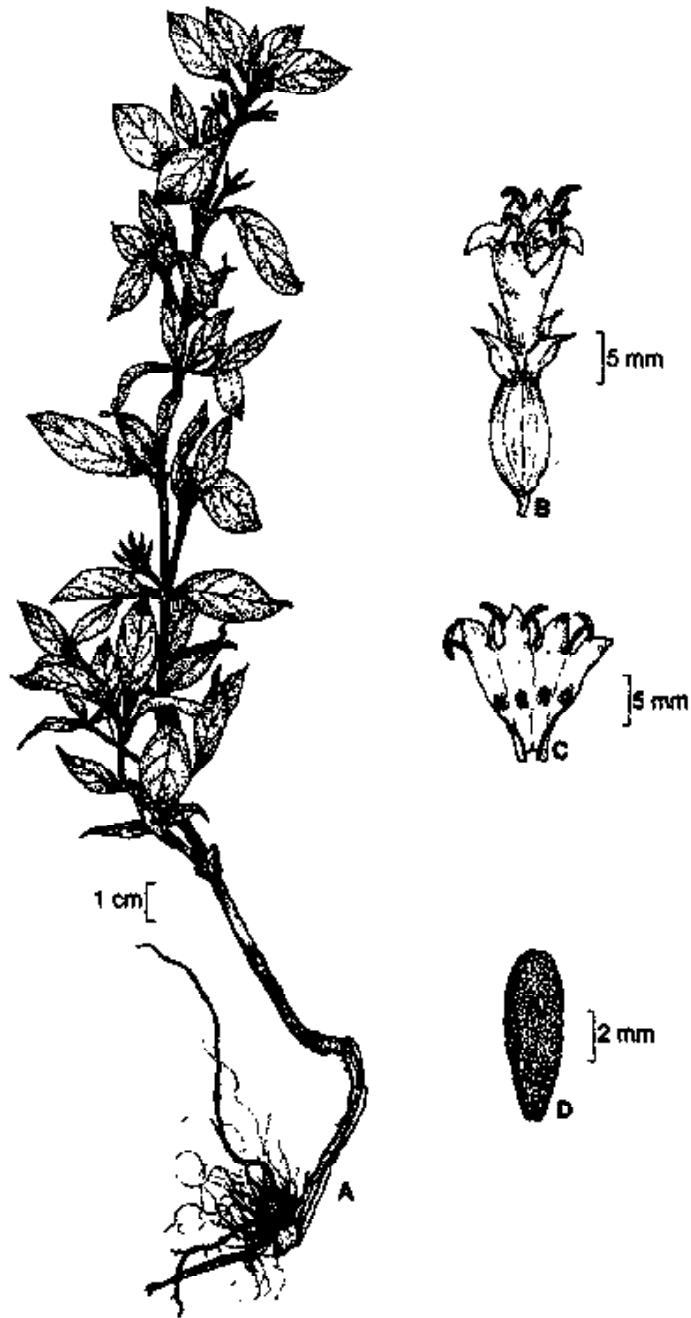


Fig. 26(A - D). *Hydrophylax maritima* L.
 A. Habit B. Flower C. Corolla split open D. Seed

Habitat: Foreshore sandy localities as pure formations or rarely with *Ipomoea pes-caprae*.

Distrib.: India and Sri Lanka. TN: Chengalpattu, Kanyakumari, Ramanathapuram, S. Arcot and Thanjavur. GM: Rare on mainland coast and Nallathanni and Upputhanni Islands. Earlier collected at Kanyakumari and Valinokkam in Ramanathapuram on mainland coast. Now collected on Nallathanni and Upputhanni Islands for the first time.

Occurs on both the coasts, but rare. On the East Coast it has been collected at Nellore in Andhra Pradesh, Madras, S. Arcot, Thanjavur, Ramanathapuram and Kanyakumari in Tamil Nadu. It was collected on Nallathanni and Upputhanni Islands where also it is rare. The turgid pods might be transported by seawater.

Use: Good sand binder.

Specimens examined: (Total 14) ANH 61594; NCN 57348; Nt Is. PD & PU 106631; Ut Is. PD 101631; PD & PU 106600.

4. *Ixora* L.

Tropics, especially Africa and Australia, ca 300 species, 30 in India, 12 in Tamil Nadu and one in GM.

I. coccinea L., Sp. Pl. 110. 1753; Wight, Icon. t. 53. 1839; FBI 3: 145. 1880; FPM 631. 1921; FTC 3: 711. 1983; FTN 2: 10. 1987. [*Kullai, Sedaram*]

Shrub. Leaves elliptic-oblong. Flowers in dense corymbose cymes. Corolla scarlet red. Drupes globose, 1- or 2-seeded.

Native of Trop. Africa, now widely cultivated throughout the tropics.

Uses: Roots stomachic and sedative, used in loss of appetite, diarrhoea and dysentery, also possesses astringent and antiseptic properties.

5. *Morinda* L.

Old World tropics, ca 50 species, 8 in India, 4 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|-------------------------|
| 1a. Stipules obtuse; corolla-lobes lanceolate, hairy inside at mouth; seeds obovoid | 1. <i>M. citrifolia</i> |
| b. Stipules bifid; corolla lobes linear-oblong, glabrous inside at mouth; seeds oblong | 2. <i>M. pubescens</i> |

1. *M. citrifolia* L., Sp. Pl. 176. 1753; FBI 3: 155. 1880; FPM 651. 1921; FTN 2: 14. 1987. *M. bracteata* Roxb., Fl. Ind. 1: 544. 1832; IIB 2: t. 126. 1850. [*Manjanetti*]

Small tree. Leaves broadly elliptic, acute, entire, oblique. Heads dense. Corolla white. Syncarpium oblong.

Fl. & Fr.: May - Aug.

Habitat: Sandy localities.

Distrib.: Australia, India, Malay and Pacific Islands and Sri Lanka. TN: Ramanathapuram. GM: Earlier collected on Kurusadai Island. Not re-collected.

Uses: Tender leaves a famine food, also a fodder; fruits are also eaten. Silkworms are reared on the leaves. Roots cathartic and febrifuge.

Specimens examined: (Total 4) Ku Is. DD & JSR 93558.

2. *M. pubescens* Sm. in Rees, Cycl. 24: n. 3. 1813, var. *pubescens*: Verdc. in Kew Bull. 37: 543. 1983; FTN 2: 14. 1987. *M. tinctoria* Roxb., Fl. Ind. 2: 197. 1824, non Noronha 1790; FBI 3: 156. 1880; FPM 651. 1921. *M. tinctoria* Roxb. var. *tomentosa* (Heyne ex Roth) Hook. f., Fl. Brit. India 3: 156. 1880; FPM 651. 1921. *M. coreia* Buch.-Ham. in Trans. Linn. Soc. London, Bot. 13: 537. 1822; IFTC t. 341. 1982; FTC 3: 718. 1983. [*Manjanetti*]

Tree. Leaves elliptic-oblong, narrow at base, entire, acuminate. Heads terminal, axillary or leaf-opposed. Corolla white. Syncarpium globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Roadsides and wastelands.

Distrib.: India, Malay Islands and Sri Lanka. TN: All districts. GM: Mainland coast, occasional. Common in the interior.

Uses: Tree lopped for fodder. Roots yield a dye. Wood used for agricultural implements.

Specimens examined: (Total 91) KSK 102262, 101700; PD & PU 107075.

6. Pavetta L.

Old World tropics, ca 400 species, 30 in India, 15 in Tamil Nadu and one in GM.

P. indica L., Sp. Pl. 110. 1753; Wight & Arn., Prodr. 431. 1834; FBI 3: 150. 1880; FPM 633. 1921; FTC 3: 732. 1983; FTN 2: 20. 1987. [*Araniya, Pavattai*]

Small tree. Leaves lanceolate or obovate, cuneate, entire, obtuse. Cymes corymbose, terminal. Corolla white. Berries globose, purple, 1-seeded.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles, with *Cadaba fruticosa*, *Grewia rhamnifolia* etc.

Distrib.: India, Malesia, N. Australia, S. China and Sri Lanka. TN: All districts. GM: Mainland coast, occasional. Rare on Kurusadai Island.

The purple-coloured berries are dispersed by white-browed bulbul (Balasubramanian, 1996) which is found in the Gulf of Mannar (Deshmukh & Venkataramani, 1994).

Uses: Fruits eaten raw or pickled. Flowers eaten, their infusion used as a cosmetic. Roots tonic, purgative and diuretic, also used in urinary diseases, jaundice and dropsical affections.

Specimens examined: (Total 117) KSK 103361; VB 2186; Ku Is. PD 100586.

7. Spermaceae L.

Subtrop. America, ca 100 species, 7 in India, 4 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|--|------------------------|
| 1a. Branches terete; corolla pinkish white; capsules globose | 1. <i>S. hispida</i> |
| b. Branches angular; corolla white; capsules oblong or ellipsoid | 2 |
| 2a. Leaves obovate; calyx-lobes truncate; corolla-lobes ovate;
capsules oblong, 2-seeded | 2. <i>S. ocymoides</i> |
| b. Leaves linear; calyx-lobes linear; corolla-lobes oblong;
capsules ellipsoid, many-seeded | 3. <i>S. pusilla</i> |

1. *S. hispida* L., Sp. Pl. 102. 1753; FBI 3: 200. 1881; KB 30: 307. 1975; FTC 3: 742. 1983; FTN 2: 24. 1987. *Borreria hispida* (L.) K. Schum. in Engl. & Prantl, Nat. Pflanzenfam. 4(4): 144. 1891, non Spruce ex K. Schum. 1888; FPM 654. 1921. *B. articularis* (L. f.) F.N. Williams in Bull. Herb. Boissier Ser. 2, 5: 946. 1905; IFTC t. 327. 1982. *Spermaceae articularis* L. f., Suppl. Pl. 119. 1782. [*Nattaichuri*]

Diffuse herb. Leaves elliptic-obovate, attenuate, entire, acute. Cymes axillary. Corolla pinkish white. Capsules globose; seeds oblong.

Fl. & Fr.: Sept. - Feb.

Habitat: Wastelands, with *Aerva persica*, *Gisekia pharnaceoides* and *Launaea sarmen-tosa*.

Distrib.: China, India and Vietnam. TN: All districts. GM: Common on mainland coast and Karaichalli, Moyal, Nallathanni, Puluvnichalli and Upputhanni Islands.

Uses: Used as a fodder; also consumed as a vegetable in times of scarcity. Leaf extract given for haemorrhoids and gall stones. Seeds demulcent, used in diarrhoea and dysentery.

Specimens examined: (Total 150) KSK 102938; PD 100525; Kc Is. KSK 102069; Mu Is. PD 100620; Nt Is. PD 101610; Ut Is. PD 101668.

2. *S. ocymoides* Burm. f., Fl. Indica 34, t. 13, f. 1. 1768; FBI 3: 200. 1881; FTC 3: 743. 1983; FTN 2: 24. 1987. *Borreria ocymoides* (Burm. f.)DC., Prodr. 4: 544. 1830; FPM 654. 1921.

Erect herb. Leaves attenuate, entire, obtuse-subacute. Flowers in axillary whorls or terminal heads. Corolla white. Seeds oblong.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Hedyotis puberula*, *Vernonia cinerea* etc.

Distrib.: Trop. America and Africa and India to Malesia. TN: Most districts. GM: Frequent on mainland coast and Karaichalli, Kurusadai, Pullivasal, Pumarichan, Thalajyari and Upputhanni Islands.

Specimens examined: (Total 50) PD & PU 106463; Kc Is. SAM 104744; Ku Is. PD 100372; Pu Is. PD 99704; Pv Is. PD 99752; Ut Is. PD 101633.

The capsules and seeds of *S. hispida* and *S. ocymoides* may be dispersed by seawater.

3. *S. pusilla* Wall. ex Roxb., Fl. Ind. 1: 379. 1820; FTC 3: 743. 1983; FTN 2: 25. 1987. *S. stricta* sensu Hook. f., FBI 3: 200. 1881, non L. f. 1782. *Borreria stricta* sensu Gamble, FPM 654. 1921, non (L. f.) K. Schum. 1891, nec. G. Mey. 1818. *B. pusilla* (Wall. ex Roxb.) DC., Prodr. 4: 543. 1830.

Erect herb. Leaves attenuate, entire, acute. Flowers in axillary whorls or in terminal heads. Corolla white. Seeds oblong.

Fl. & Fr.: Almost throughout the year.

Habitat: Dry localities.

Distrib.: Madagascar, Malesia, Trop. Africa and Trop. Asia to Japan. TN: Chengalpattu, Coimbatore, Nilgiri, N. Arcot, Ramanathapuram, Salem and Tiruchirapalli. GM: Earlier collected a little interior. Likely to occur on the coast.

Specimens examined: (Total 29) VB 2305.

8. *Tarenna* Gaertn.

Old World tropics, ca 180 species, 9 in India, 5 in Tamil Nadu and one in GM.

T. asiatica (L.) Kuntze ex K. Schum. in Bot. Tidsskr. 24: 332. 1902; FTC 3: 744. 1983; FTN 2: 25. 1987. *Rondeletia asiatica* L., Sp. Pl. 172. 1753. *Weberia corymbosa* Willd., Sp. Pl. 1: 1224. 1798; FBI 3: 102. 1880. *Chomelia asiatica* (L.) Kuntze, Revis. Gen. Pl. 1: 278. 1891; FPM 613. 1921. *Stylocareya weberia* A. Rich. in Mem. Soc. Hist. Nat. Paris 5: 248. 1834; Wight, Icon. t. 309. 1840 & t. 584. 1842. [Kura]

Shrub. Leaves elliptic-lanceolate, cuneate, entire, acuminate. Cymes corymbose, terminal. Corolla creamy white. Berries globose, with persistent calyx-lobes.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles, with *Dodonaea viscosa*, *Premna serratifolia* etc.

Distrib.: India, Malesia and Sri Lanka. TN: All districts. GM: Occasional on mainland coast and Pullivasal Island. Earlier collected on Kurusadai Island.

The dark blue berries may be dispersed by birds. Rare on islands. Collected only on Pullivasal Island and not collected again on Kurusadai Island.

Uses: Fruits mashed and applied to boils to promote suppuration. Wood used for fishingboats.

Specimens examined: (Total 150) DD 94006; Ku Is. DD & SRR 88216; Pv Is. PD 101189.

9. *Thecagonum* Babu

E. Australia, Indomalesia and W. Pacific, 4 species, all 4 in India, 3 in Tamil Nadu and one in GM.

T. biflorum (L.) Babu in Bull. Bot. Surv. India 11: 214. 1969; FTN 2: 26. 1987. *Oldenlandia biflora* L., Sp. Pl. 119. 1753; FBI 3: 70. 1880; FPM 602. 1921; IFTC t. 342. 1982; FTC 3: 724. 1983. *O. paniculata* L., Sp. Pl. ed. 2, 2: 1667. 1763; FBI 3: 69. 1880.

Diffuse or erect herb. Leaves elliptic or obovate, narrowed at base, entire, acute. Racemes axillary or terminal. Corolla white. Capsules globose; seeds obovoid, pitted.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and wet localities, with *Echinochloa colona*, *Eclipta prostrata* and *Phyla nodiflora*.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, frequent. Collected only on Ramanathapuram and Tuticorin coasts. Common in the interior.

Specimens examined: (Total 69) KSK 102008, 102285; PD & PU 107260; VB 1726.

53. ASTERACEAE (nom. alt. COMPOSITAE)

Key to the genera

1a. Capitula homogamous	2
b. Capitula heterogamous	6
2a. Capitula monoecious; achenes with glandular-hispidulous prickles	17. <i>Xanthium</i>
b. Capitula dioecious; achenes not with glandular-hispidulous prickles	3
3a. Succulent shrubs with prominent leaf-scars; corolla greenish white.....	8. <i>Kleinhia</i>
b. Herbs, neither succulent nor with leaf-scars; corolla not greenish white	4
4a. Leaves simple; phyllaries multiseriate; achenes smooth, villous.....	14. <i>Vernonia</i>
b. Leaves lyrate-pinnatifid; phyllaries 1 - 3-seriate; achenes ribbed, pubescent or glabrous	5
5a. Capitulum solitary; corolla yellow or pink; achenes ellipsoid; pappus yellowish white or white	9. <i>Launaea</i>
b. Capitula corymbose; corolla purple; achenes oblong; pappus white	5. <i>Emilia</i>
6a. Pappus present	7
b. Pappus absent	13
7a. Plants rooting at nodes	4. <i>Eclipta</i>
b. Plants not rooting at nodes	8
8a. Straggling shrubs; stem ribbed; pappus cup-like	16. <i>Wedelia</i>
b. Herbs; stem not ribbed; pappus hair-like	9
9a. Plants viscid-pubescent; leaves amplexicaul	15. <i>Vicoa</i>
b. Plants not viscid-pubescent; leaves not amplexicaul	10
10a. Decumbent herbs; achenes obconical, densely pilose	13. <i>Tridax</i>
b. Erect herbs; achenes neither obconical nor pilose	11
11a. Stem white-tomentose; leaves pinnately dissected downwards;	

corolla white	10. <i>Parthenium</i>
b. Stem not white-tomentose; leaves simple; corolla yellow	12
12a. Phyllaries rhomboid; achenes obovoid, triquetrous, transversely rugose	2. <i>Blainvillea</i>
b. Phyllaries linear-lanceolate; achenes oblong, angled or ribbed	3. <i>Biumea</i>
13a. Stem hispid-hairy; achenes enclosed by echinate phyllaries	1. <i>Acanthospermum</i>
b. Stem not hispid-hairy; achenes not enclosed by echinate phyllaries.....	14
14a. Stem winged; leaves alternate	15
b. Stem not winged; leaves opposite	16
15a. Wings entire; phyllaries multiseriate	6. <i>Epaltes</i>
b. Wings dentate; phyllaries 2-seriate	11. <i>Sphaeranthus</i>
16a. inflorescence of 1-flowered capitula clustered in cymes; achenes of ray florets not lacerate-winged	7. <i>Flaveria</i>
b. Inflorescence of solitary capitulum; achenes of ray florets lacerate-winged	12. <i>Synedrella</i>

1. *Acanthospermum* Schrank

Trop. America, introduced into the Old World, 6 species and one in India.

A. hispidum DC., Prodr. 5: 522. 1836; FPM 704. 1921; RHFC 1: 206. 1980; IFTC t. 350. 1982; FTC 3: 758. 1983; FTN 2: 28. 1987; FI 12: 361. 1995. [*Kombu mul*]

Erect, dichotomously branched herb. Leaves obovate. Capitulum solitary in branch axils. Corolla pale yellow; phyllaries 2-seriate. Achenes 5-10 together, compressed, star-shaped.

Fl. & Fr.: June - March.

Habitat: Road sides and wastelands, with *Cassia auriculata*, *Leucas aspera*, *Sida cordifolia* etc.

Distrib.: Native of S. America, a weed throughout India. TN: All districts. GM: Mainland coast, common.

Uses: Oil of the herb has antibacterial and antifungal activities and the herb is used in dermatological medicaments.

Specimens examined: (Total 96) KSK 102744, 102894; SAM 106342.

2. *Blainvillea* Cass.

Tropics, ca 10 species and one in India.

B. acmella (L.) Philipson in *Blumea* 6: 350. 1950; RHFC 1: 213. 1980; FTC 3: 767. 1983; FTN 2: 31. 1987; FI 12: 377. 1995. *Verbesina acmella* L., Sp. Pl. 901. 1753. *Blainvillea latifolia* (L. f.) DC. in Wight, Contr. Bot. India 17. 1834; FBI 3: 305. 1881. *Eclipta latifolia* L. f., Suppl. Pl. 378. 1782. *Blainvillea rhomboidea* Cass. in F. Cuvier, Dict. Sci. Nat. 29: 494. 1823; FPM 706. 1921.

Erect herb. Leaves ovate-lanceolate. Capitula terminal or axillary. Corolla yellow; phyllaries 3-seriate. Achenes pubescent, brownish black; pappus 2 - 5, plumose, unequal.

Fl. & Fr.: July - Jan.

Habitat: Wastelands, with *Indigofera aspalathoides*, *Pedaliium murex*, *Spermacoce hispida* etc.

Distrib.: S. India and Sri Lanka. TN: All districts. GM: Once collected at Vivekananthapuram near Kanyakumari, rare.

Specimens examined: (Total 75) SAM 106422.

3. *Blumea* DC.

Old World tropics, ca 75 species, 29 in India, 17 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|------------------------|
| 1a. Phyllaries 2-seriate | 3. <i>B. obliqua</i> |
| b. Phyllaries more than 2-seriate..... | 2 |
| 2a. Plant viscid, not aromatic; pappus less than 3 mm long, pale yellow | 1. <i>B. bifoliata</i> |
| b. Plant not viscid, aromatic; pappus more than 3 mm long, white | 2. <i>B. lacera</i> |

1. ***B. bifoliata*** (L.) DC. in Wight, Contr. Bot. India 14. 1834; FBI 3: 261. 1881; FPM 686. 1921; *Blumea* 10: 288. 1960; RHFC 1: 176. 1980; FTC 3: 769. 1983; FTN 2: 32. 1987; FI 13: 120. 1995. *Conyza bifoliata* L., Sp. Pl. ed. 2, 2: 1207. 1763.

Annual. Leaves elliptic-oblong, serrate, acute. Capitulum solitary, axillary or terminal. Corolla yellow; phyllaries 5-seriate. Achenes oblong, angled, dark brownish.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet sandy soil, with *Heliotropium* spp. and *Suaeda* spp.

Distrib.: India, Myanmar, Pakistan and Sri Lanka. TN: Almost all districts. GM: Mainland coast, rare. Collected at Tuticorin port and Valinokkam in Ramanathapuram.

Specimens examined: (Total 34) KSK 103397; PD 102161.

2. *B. lacera* (Burm. f.) DC. in Wight, Contr. Bot. India 14. 1834; FBI 3: 263. 1881; FTC 3: 770. 1983; FTN 2: 33. 1987; FI 13: 128. 1995. *Conyza lacera* Burm. f., Fl. Indica 180, t. 59, f. 1. 1768. *Blumea glandulosa* DC. in Wight, Contr. Bot. India 14. 1834. *B. lacera* (Burm. f.) DC. var. *glandulosa* (DC.) Hook. f., Fl. Brit. India 3: 263. 1881; FPM 687. 1921. [Navakkarandai]

Annual. Leaves obovate, oblong-elliptic, serrate-dentate, obtuse or subacute. Capitula 2 - 5, in short axillary panicles. Corolla yellow; phyllaries 3-seriate. Achenes oblong, 6 - 8-ribbed, hairy.

Fl. & Fr.: Jan. - April.

Habitat: Wet clayey soil, with *Commelina benghalensis*, *Eclipta prostrata* etc.

Distrib.: China, India, Malesia, Sri Lanka and Trop. Africa. TN: Most districts. GM: Once collected at Athur in Tuticorin, rare.

Uses: Plant yields an essential oil. Leaf juice is used as an anthelmintic. Plant is also used as a febrifuge, diuretic and antiscorbutic.

Specimens examined: (Total 36) PD 102292.

3. *B. obliqua* (L.) Druce in Bot. Soc. Exch. Club Brit. Isles 4: 609. 1917; RHFC 1: 174. 1980; FTC 3: 772. 1983; FTN 2: 34. 1987; FI 13: 137. 1995. *Erigeron obliquum* L., Mant. Pl. 573. 1771. *Blumea amplexens* DC. in Wight, Contr. Bot. India 13. 1834; FBI 3: 260. 1881; FPM 686. 1921. *B. arenaria* DC. in Wight, Contr. Bot. India 13. 1834. *Blumea amplexens* DC. var. *arenaria* (DC.) C.B. Clarke, Compos. Ind. 69, 71. 1876; FBI 3: 260. 1881.

Annual, divaricately branched. Leaves sessile, elliptic-oblong or spatulate, dentate or serrate, acute. Capitulum solitary, terminal. Corolla yellow; phyllaries 2-seriate, linear. Achenes oblong, pubescent; pappus pink.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and sandy soils, with *Hedyotis puberula*, *Vigna trilobata*, grasses and sedges.

Distrib.: India, Myanmar, Pakistan and Sri Lanka. TN: Almost all districts. GM: Common on mainland coast and Karaichalli, Manoli, Moyal, Pullivasal, Shingle, Thalaiyari and Van Islands.

Specimens examined: (Total 98). KSK 102726, 102875, 103469; Ku Is. PD 99798; Ma Is. PD 100688; Mu Is. PD 100315; Pu Is. KSK 203352; Sh Is. PD 100354, 101437.

The plumed achenes of *Blumea spectabilis* of the Malayan region is reported to be transferred to islands miles away by gales (Ridley, 1930). Out of the 3 species here only *B. obliqua* occurs on some islands. Whether it is chance or some other factor that has enabled this species alone to be successful is not known.

4. *Eclipta* L.

Tropics, 4 species and one in India.

E. prostrata (L.) L., Mant. Pl. 286. 1771; JBNHS 54: 475. 1957; RHFC 1: 212. 1980; IFTC t. 365. 1982; FTC 3: 783. 1983; FTN 2: 37. 1987; FI 12: 381. 1995. *Verbesina prostrata* L., Sp. Pl. 92. 1753. *V. alba* L., Sp. Pl. 902. 1753. *Eclipta alba* (L.) Hassk., Pl. Jav. Rar. 528. 1848; FBI 3: 304. 1881; FPM 705. 1921. [*Karisilankanni*]

Annual, erect or prostrate herb. Leaves sessile, oblong-lanceolate, acute, serrate. Capitula solitary or 2, terminal; phyllaries 2-seriate. Ray floret corolla white. Disc floret corolla bright yellow. Achenes oblong, 3-angled, pubescent; pappus a ring of thick ciliate scales.

Fl. & Fr.: Throughout the year.

Habitat: Usually along water courses, with *Spermacoce hispida*, *Vigna trilobata* etc.

Distrib.: Pantropical weed. TN: All districts. GM: Mainland coast and Kurusadai, Manoli, Moyal, Nallathanni and Thalayiari Islands.

On islands the plant is stunted especially in the dry seasons. It hardly reaches 2 cm high.

Uses: Plant tonic and deobstruent, used in hepatic and spleen enlargements and skin troubles. Black stain from this plant is used for darkening hair. Root is emetic and purgative, also applied to wounds in cattle. An ingredient in the Ayurvedic syrup, "bonlive" (Anon., 1996). It is also an ingredient in Ayurvedic preparations, "Cawery-100" used in gastrointestinal disorders and as an anti-ulcerogenic and "Suepentine" and "Vinomyn forte" used as anti-ageing (Tripathi & al., 1996).

Specimens examined: (Total 109) KSK 102755, 102884, 103486; PD 102275; Ku Is. DD & SRR 88217; Ma Is. PD 100685; Mu Is. PD 100621; Nt Is. PD 101609; Th Is. PD 101531.

5. *Emilia* Cass.

Old World tropics, ca 100 species, 8 in India, 5 in Tamil Nadu and one in GM.

E. sonchifolia (L.) DC. in Wight, Contr. Bot. India 24. 1834; FBI 3: 336. 1881; FPM 716. 1921; RHFC 1: 251. 1980; IFTC t. 367. 1982; FTC 3: 787. 1983; FTN 2: 38. 1987; FI 13: 212. 1995. *Cacalia sonchifolia* L., Sp. Pl. 835. 1753.

Erect or diffuse herb. Leaves lyrate, amplexicaul, toothed or dentate. Phyllaries 1-seriate. Achenes ca 3 mm long, 4-ribbed, scabrid along ribs, brownish; pappus ca 6 mm long.

Fl. & Fr.: Sept. - Feb.

Habitat: Sandy localities, with *Phyllanthus maderaspatensis*, *Portulaca tuberosa*, *Spermacoce hispida* etc.

Disturb.: Africa, Asia, India and Sri Lanka. TN: Almost all districts. GM: Once collected at CMFRI Campus at Mandapam, occasional.

Uses: Leaves are used as greens. Decoction of the herb used as a febrifuge and also in bowel complaints. Juice of leaves used for sore eyes and night blindness.

Specimens examined: (Total 35) KSK 102747.

6. *Epaltes* Cass.

Tropics, ca 15 species, 2 in India and Tamil Nadu and one in GM.

E. divaricata (L.) Cass. in Bull. Sci. Soc. Philom. Paris 139. 1818; FBI 3: 274. 1881; FPM 691. 1921; RHFC 1: 178. 1980; IFTC. t. 368. 1982; FTC 3: 788. 1983; FTN 2: 38. 1987; FI 13: 147. 1995. *Ethulia divaricata* L., Mant. Pl. 110. 1767.

Annual. Leaves sessile, decurrent, linear-oblong, acute. Capitulum solitary, terminal. Corolla pink-purple. Achenes obovoid, ribbed; pappus absent.

Fl. & Fr. : Nov. - March.

Habitat: Wet places, with *Aerva persica*, *Pedaliium murex* and *Peplidium maritimum*.

Distrib.: China, India, Indonesia, Myanmar and Sri Lanka. TN: Most districts. GM: Common on mainland coast. Earlier collected at Pamban. Now collected on Moyal, Nallathanni and Thalaiyari Islands.

The pappusless achenes in mud might get dispersed by birds since the plant occurs in marshy places.

Specimens examined: (Total 35) Mu Is. PD 100622; Nt Is. PD 101621; Th Is. PD 101480.

7. *Flaveria* Juss.

America and Australia, ca 18 species, 2 in India and one in GM.

F. trinervia (Spreng.) C. Mohr in Contr. U.S. Natl. Herb. 6: 810. 1901; IFTC t. 370. 1982; FTC 3: 789. 1983; FTN 2: 39. 1987; FI 12: 386. 1995. *Oedera trinervia* Spreng., Bot. Gart. Halle 63. 1800. *Flaveria australasica* Hook. in T. Mitch., J. Exped. Trop. Australia 118. 1848; FPM 711. 1921.

Erect or diffuse herb; branches dichotomous. Leaves oblong-lanceolate, acute, serrate or dentate. Corolla whitish yellow; phyllaries 1-seriate. Achenes obovoid, 8 - 10-ribbed, blackish.

Fl. & Fr.: March - Oct.

Habitat: Sandy and wet localities.

Distrib.: Africa, America, Asia, Mexico and W. Indies. TN: Chengalpattu, Coimbatore, Dharmapuri, Salem, Tiruchirappalli and Tuticorin. GM: Mainland coast, rare. Earlier once collected at Vijayapathi in Tirunelveli.

Specimens examined: (Total 26) DDS *s.n.*

8. *Kleinia* Mill.

Tropics and S. Africa, ca 50 species, 4 in India and one in Tamil Nadu.

K. grandiflora (Wall. ex DC.) N. Rani in K.M. Mathew, Fl. Tamilnadu Carnatic 3: 801. 1983; FTN 2: 43. 1987; FI 13: 226. 1995. *Notonia grandiflora* Wall. ex DC. in Wight, Contr. Bot. India 24. 1834; FBI 3: 337. 1881; FPM 717. 1921; RHFC 1: 263. 1980.

(Fig. 27)

Leaves short-petiolate, lanceolate or ovate-elliptic, entire, obtuse, fleshy. Capitula 2 or 3, in terminal corymbs; phyllaries 1-seriate. Achenes narrowly oblong, 10-ribbed or striate, glabrous; pappus white, ca 1.4 cm long.

Fl. & Fr.: Sept. - Feb.

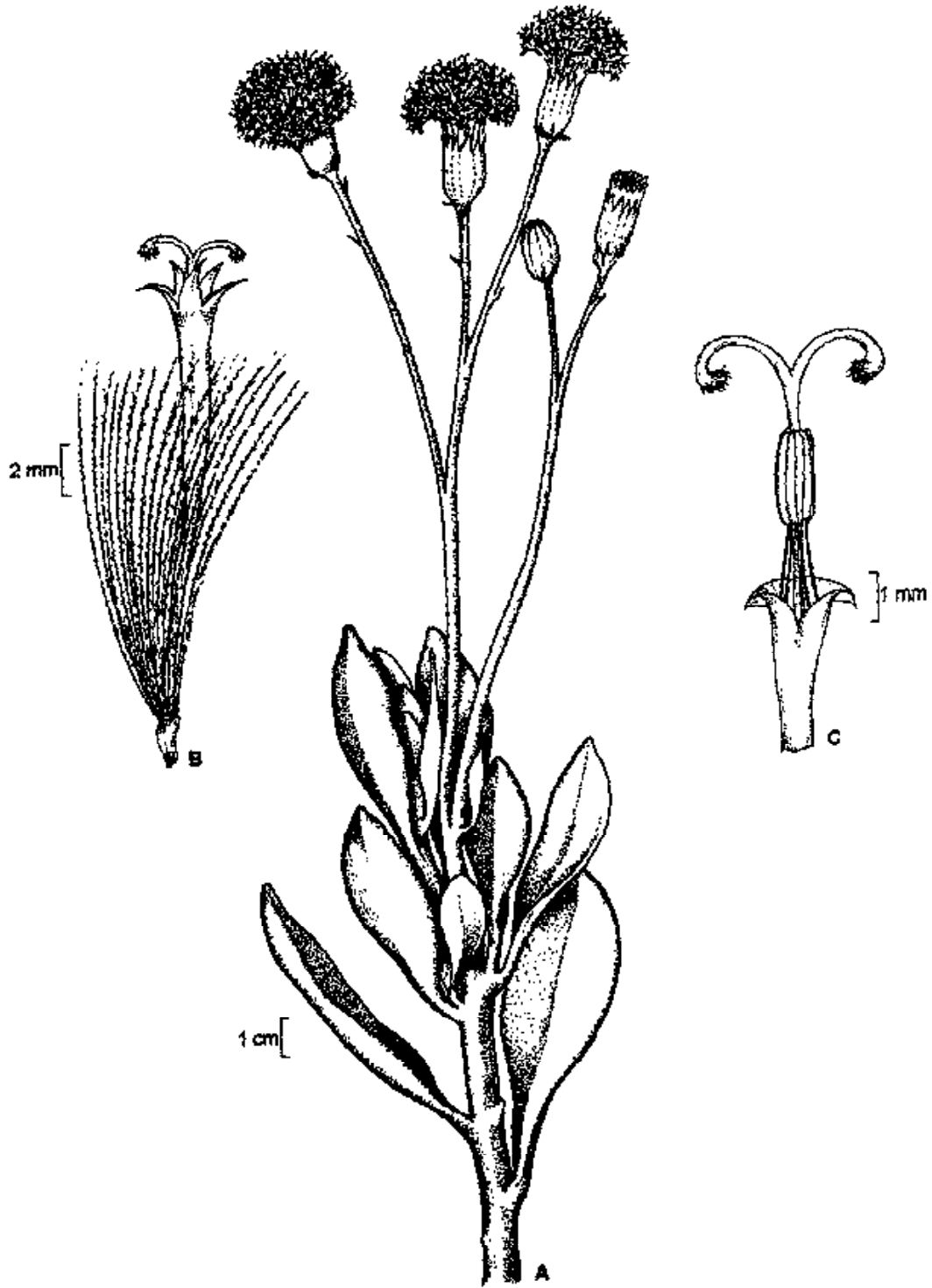


Fig. 27(A - C). *Kleinia grandiflora* (Wall. ex DC.) N. Rani
 A. Twig B. Floret C. Corolla cut to show stamens

Habitat: Coastal scrub jungles in shades of shrubs like *Barleria longiflora*, *Euphorbia antiquorum* etc. Prefers loose sandy soil.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: On mainland coast of Kanyakumari and Tirunelveli, not common.

Use: It can be introduced as an ornamental.

Specimens examined: (Total 100) KSK 102799, 102838; PD & PU 107092.

9. *Launaea* Cass.

SE. and C.Asia, Europe and Africa, ca 45 species, 9 in India, 4 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|-------------------------|
| 1a. Plant prostrate; corolla yellow | 2. <i>L. sarmentosa</i> |
| b. Plant erect; corolla pinkish | 1. <i>L. intybacea</i> |

1. *L. intybacea* (Jacq.) Beauverd in Bull. Soc. Bot. Genève 2: 114. 1910; RHFC 1: 277. 1980; FTN 2: 43. 1987. *Lactuca intybacea* Jacq., Icon. Pl. Rar. 1: 16, t. 12. 1784. *L. runcinata* DC. in Wight, Contr. Bot. India 26. 1834; FPM 731. 1921.

Annual; stem erect, much branched, hollow. Leaves sessile, usually radical, amplexicaul, obovate, spinose along margins. Phyllaries oblong, obtuse. Pappus silky, white.

Fl. & Fr.: Dec. - Jan.

Habitat: Sandy localities, with *Aerva lanata*, *Atriplex repens* and *Vicoa indica*.

Distrib.: Egypt, E. Africa, Mauritius and India. TN: Chengalpattu, Coimbatore, Dharmapuri, Madurai, Ramanathapuram and Tirunelveli. GM: Common on mainland coast and Appa, Kurusadai, Mullai, Muyal, Nallathanni, Pullivasal, Pumarichan and Thalaiyari Islands.

Uses: Leaves used as greens in times of scarcity. It is a tonic, soporific, diuretic and aperient.

Specimens examined: (Total 32) PD 100575; Mu Is. PD 100666; Nt Is. PD 101599; Pu Is. PD 99724; Pv Is. PD 101433; Th Is. PD 101533.

2. *L. sarmentosa* (Willd.) Sch. Bip. ex Kuntze, Revis. Gen. Pl. 1: 350. 1891; RHFC 1: 276. 1980; FTC 3: 807. 1983; FTN 2: 44. 1987; FI 12: 310. 1995. *Prenanthes*

sarmentosa Willd., Phytographia 10, t. 6, f. 2, 1794 & Sp. Pl. 3: 1540. 1893. *Launaea pinnatifida* Cass. in Ann. Sci. Nat. (Paris) 23: 85. 1831; FBI 3: 416. 1881; FPM 733. 1921. *Microrhynchus sarmentosa* (Willd.) DC., Prodr. 7: 181. 1838; IIB 2: t. 133. 1850.

Perennial; stem rooting at nodes. Leaves radical and cauline, sinuate-toothed or lobed. Phyllaries linear-lanceolate. Pappus yellowish white.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy foreshore habitats, usually with *Cyperus arenarius*, *Vernonia cinerea*, *Vigna trilobata* etc.

Distrib.: India and Pakistan. TN: Chengalpattu, Ramanathapuram and Tuticorin. GM: Frequent on mainland coast, but very common on all islands. Earlier collection at MH is only from Shingle Island. Now collected on Kaswari, Karaichalli, Muyal, Nallathanni, Pullivasal, Puluvinichalli, Thalayiari and Van islands.

Uses: A good sand binder. Locally used as a remedy for fresh bruises and cuts. Said to be very effective.

Specimens examined: (Total 41) KSK 102716, 103473; PD 102111; PD & PU 104608, 106469; SAM 106362; Ka Is. PD 102183; Mu Is. PD 100332; Sh Is. PD 100347; Va Is. PD 102174.

Both species are common on islands. The achene with pappus may be dispersed by wind. However, as stated by Ridley (1930) sea currents may also be involved.

10. *Parthenium* L.

N. America, 16 species and one in India.

P. hysterophorus L., Sp. Pl. 988. 1753; JBNHS 66. 233. 1963; IFTC t. 382. 1982; FTC 3: 809. 1983; FTN 2: 45. 1987; FI 12: 403. 1995.

Erect herb; stem much branched. Leaves decurrent, lanceolate-oblong. Capitula in terminal panicles; phyllaries 2-seriate. Achenes obovoid, triquetrous; pappus with reflected awns.

Fl. & Fr.: Throughout the year.

Habitat: Common weed on road sides.

Distrib.: Naturalized in India. GM: Mainland coast, frequent.

Specimens examined: (Total 40) PD 101128.

11. *Sphaeranthus* L.

Old World tropics to Iran and Egypt, 38 species, 4 in India, 3 in Tamil Nadu and one in GM.

S. indicus L., Sp. Pl. 927. 1753; FBI 3: 275. 1881, p.p.; FPM 692. 1921; RHFC 1: 181. 1980; FTC 3: 816. 1983; FTN 2: 49. 1987; FI 13: 160. 1995. *S. hirtus* Willd., Sp. Pl. 3: 2395. 1802; Wight, Icon. t. 1094. 1846. [*Kottakkarandai*]

Small herb. Leaves oblong-obovate. Capitulum solitary, globose. Corolla pink-purplish; phyllaries linear, acuminate. Achenes oblong, ca 1 mm long, glabrous; pappus absent.

Fl. & Fr.: Jan. - May.

Habitat: Frequent in wet localities and bunds of rice fields with *Eragrostis japonica*, *Fimbristylis bisumbellata*, *Setaria verticillata* etc.

Distrib.: Africa, Australia, India and Malesia. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Leaf juice used in hepatic and gastric disorders. Pulverized seeds and roots used as an anthelmintic. Decoction of the herb used in cough and other chest troubles.

Specimens examined: (Total 73) KSK 103372; PD & PU 107020, 107331.

12. *Synedrella* Gaertn.

Trop. America, naturalized elsewhere, ca 50 species, 2 in India and one in Tamil Nadu.

S. nodiflora (L.) Gaertn., Fruct. Sem. Pl. 2: 456, t. 171, f. 7. 1791; FBI 3: 308. 1881; FPM 708. 1921; IFTC t. 388. 1982; FTC 3: 818. 1983; FTN 2: 50. 1987; FI 12: 413. 1995. *Verbesina nodiflora* L., Cent. Pl. 1: 28. 1755 & Amoen. Acad. 4: 290. 1759.

Annual, dichotomously branched herb. Leaves short-petiolate, ovate-lanceolate, serrate, acute. Capitula sessile, axillary or terminal. Corolla yellow; phyllaries 1 - 2- seriate. Achenes compressed.

Fl. & Fr.: July - March.

Habitat: Weed in cultivated fields, with *Acalypha indica*, *Cyperus stoloniferus*, *Euphorbia hirta* etc.

Distrib.: Naturalized in India. TN: Almost all districts. GM: Mainland coast, frequent. Perhaps common in the interior. Collected at Vattakottai and Kootapuli in Kanyakumari and Tirunelveli respectively.

Uses: Leaves eaten, considered laxative and used in rheumatism. Also used as a fodder.

Specimens examined: (Total 68) KSK 102779, 102866.

13. *Tridax* L.

Pantropical, 26 species and one in India.

T. procumbens L., Sp. Pl. 900. 1753; FBI 3: 311. 1881; FPM 711. 1921; RHFC 1: 232.1980; IFTC t. 391. 1982; FTC 3: 821. 1983; FTN 2: 51. 1987; FI 12: 418. 1995. [*Muyalthalai. Vettukkayapoondu*]

Hispid herb. Leaves ovate-acute, dentate. Disc floret corolla yellow. Ray floret corolla creamy-yellow to white. Phyllaries 2-3-seriate. Achenes blackish; pappus 15-20, unequal, setose.

Fl. & Fr.: Throughout the year.

Habitat: Road sides and wet localities, with *Acalypha indica*, *Aerva lanata*, *Dactyloctenium aegyptium* etc.

Distrib.: Native of America, naturalised elsewhere. TN: All districts. GM: Common, mainland coast; also collected on Moyal Island.

Uses: Leaves used in bronchial catarrh, dysentery and diarrhoea. Leaf juice insecticidal and pesticidal, also used to check hemorrhage of wounds. Rabbits kept as pets are fed with the leaves.

Specimens examined: (Total 65) KSK 102778; PD 100535; Mu Is. PD 100663.

14. *Vernonia* Schreb.

Tropics, ca 1000 species, 52 in India, 29 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|-----------------------|
| 1a. Stem white-tomentose; achenes oblong | 1. <i>V. albicans</i> |
| b. Stem glabrous; achenes obovoid | 2. <i>V. cinerea</i> |

1. *V. albicans* DC. in Wight, Contr. Bot. India 6. 1834; FPM 676. 1921; FTN 2: 51. 1987; FI 13: 351. 1995. *V. cinerea* sensu C. B. Clarke in FBI 3: 233. 1881, p.p., non Less. 1829.

Herb. Leaves broadly ovate-rhomboid, dentate-crenate, white-tomentose, rounded or subacute. Capitula violet. Pappus unequal, white.

Fl. & Fr.: July - Oct.

Habitat: Sandy localities, with *Launaea sarmentosa*, *Phyllanthus maderaspatensis* etc.

Distrib.: India. TN: Most districts. GM: Occasional on mainland coast and rare on islands. Once collected on Karaichalli Island.

Specimens examined: (Total 29) PD 102134; Kc Is. PD 102075.

2. *V. cinerea* (L.) Less. in Linnaea 4: 291. 1829; FBI 3: 233. 1881, p.p.; FPM 676. 1921; RHFC 1: 133. 1980; FTC 3: 827. 1983; FTN 2: 52. 1987; FI 13: 367. 1995. *Conyza cinerea* L., Sp. Pl. 862. 1753. [*Mukuttipundu*]

Herb. Leaves variable, ovate, broadly elliptic or lanceolate, obtuse or acute. Capitula pinkish purple. Pappus unequal, white.

Fl. & Fr.: Throughout the year.

Habitat: Road sides and sandy localities, with *Boerhavia erecta*, *Encostema axillare*, *Phyllanthus maderaspatensis* etc.

Distrib.: Trop. Asia, Africa and Australia and throughout India. TN: Almost all districts. GM: Common on mainland coast and almost all islands.

Uses: Infusion of the herb makes a useful combination with quinine against malaria. Roots and seeds used as anthelmintic. Decoction of roots is given in diarrhoea and stomachache, cough and colic. Seed is also used in cough, intestinal colic and leucoderma.

It is also an ingredient in the Ayurvedic tablet, "cystone" (Anon., 1996).

Specimens examined: (Total 107) KSK 102763, 102784; PD & PU 102131, 100502; Ka Is. PD 102184; Ma Is. PD 101114; Mu Is. PD 100624; Pu Is. PD 99702; Pv Is. PD 101432.

Both species are wind-dispersed. However, what makes one common on islands and not the other is not known.

15. *Vicoa* Cass.

Africa to India, ca 10 species, 3 in India, 2 in Tamil Nadu and one in GM.

V. indica (L.) DC. in Wight, Contr. Bot. India 10. 1834; Wight, Icon. t. 1148. 1846; FPM 701. 1921; RHFC 1: 200. 1980; FTC 3: 830. 1983; FTN 2: 54. 1987. *Inula indica* L., Sp. Pl. ed. 2, 2: 1237. 1763. *Vicoa auriculata* Cass. in Ann. Sci. Nat. (Paris) Ser. 1, 17: 418. 1829; FBI 3: 297. 1881. [*Jimikipoo*]

Erect herb; stem striate. Leaves ovate-lanceolate, auricled, serrulate, acute. Capitulum solitary. Corolla yellow; phyllaries 3-seriate, linear, sharply acuminate. Achenes linear-oblong, sparsely hairy, brownish; pappus white.

Fl. & Fr.: April - Jan.

Habitat: Open wastelands and cultivated fields, with *Euphorbia hirta*, *E. indica*, *Cleome angustifolia* and *Sporobolus coromandelianus*.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Common on mainland coast and occasional on Mullai, Muyal, Pullivasal and Pumarichan Islands.

Use: Used as a fodder.

Specimens examined: (Total 80) KSK 102004; Pu Is. PD 99718; Pv Is. PD 101413.

16. *Wedella* Jacq.

Tropics and subtropics, ca 70 species, 5 in India, 4 in Tamil Nadu and one in GM.

W. biflora (L.) DC. in Wight, Contr. Bot. India 18. 1834; FBI 3: 306. 1881; FPM 707. 1921; RHFC 1: 216. 1980; FTN 3: 54. 1987; FI 12: 422. 1995. *Verbesina biflora* L., Sp. Pl. ed. 2, 2: 1272. 1763. *Wollastonia biflora* (L.) DC., Prodr. 5: 546. 1836; Wight, Icon. t. 1108. 1846. (Fig. 28)

Straggling shrub. Leaves ovate, cuneate, serrate, acuminate, strigose. Capitula terminal; phyllaries 3-seriate. Ray florets ligulate, oblong, tridentate. Disc florets 4 - 4.5 mm long; limb linear, acute. Achenes narrowly linear, 3-ribbed or angular, pubescent along ridges; epigynous disc or cup 5-toothed; pappus a minute dentate cup with one or 2 bristles.

Fl. & Fr.: Jan. - March.

Habitat: Sandy seashores, with *Atriplex repens*, *Pemphis acidula*, *Scaevola plumieri* and *Sesuvium portulacastrum*.

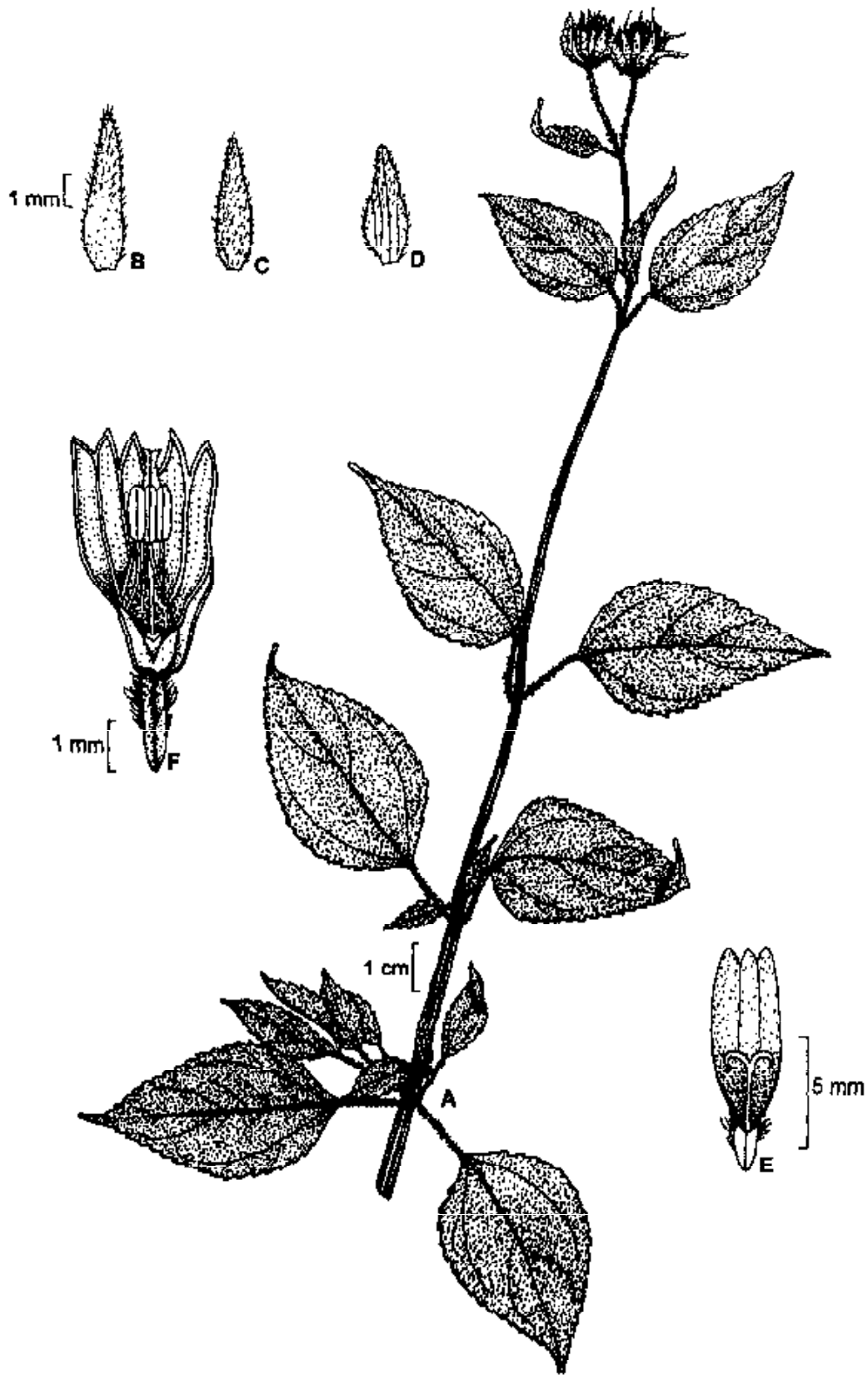


Fig. 28(A - F). *Wedelia biflora* (L.) DC.
A. Twig B - D. Involucral bracts E. Ray floret
F. Disc floret

Distrib.: Old World tropics. TN: Chengalpattu and Ramanathapuram. GM: Rare. Collected only on Pullivasal Island. Addition to the flora of Gulf of Mannar.

The pappusless corky achenes are likely to be sea-dispersed (Ridley, 1930) since the plant has not been collected on the mainland coast. As it occurs only on one island with limited number of individuals, it may be a recent entrant.

Uses: Young leaves are cooked and eaten with other foods as a flavouring agent. Pounded leaves are used as a poultice on cuts, ulcers, sores and varicose veins. Decoction of roots and leaves is prescribed for stomach-ache, also used as a diuretic; flowers purgative. Leaves and stems are toxic to goats.

Specimens examined: (Total 4) Pv Is. KSK 103347; PD 101200.

17. *Xanthium* L.

Cosmopolitan, 2 species, 2 in India and one in Tamil Nadu.

X. indicum J. König in Roxb., Fl. Ind. 3: 601. 1832; DC. in Wight, Contr. Bot. India 17. 1834 & Prodr. 5: 523. 1836; Wight, Icon. t. 1104. 1846; RHFC 1: 209. 1980; IFTC t. 397. 1982; FTC 3: 833. 1983; FTN 2: 54. 1987; FI 12: 427. 1995. *X. strumarium* L., Sp. Pl. 987. 1753, p.p.; FBI 3: 303. 1881; FPM 703. 1921. [*Ottarachedi*]

Undershrub; stem hispid-pubescent. Leaves 3 - 5-lobed, acute, hispidulous. Flowers in axillary or terminal clusters; phyllaries 2-seriate, ovate, acute. Male capitulum 1-flowered, sessile; stamens 5. Female capitulum solitary, 2-flowered. Achenes 2.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands and roadsides.

Distrib.: India, Malay peninsula and Sri Lanka. TN: All districts. GM: Common in the interior. Earlier collected at Perunali and Uchipulli in Ramanathapuram and Nagercoil in Kanyakumari. Likely to occur on the coast.

Uses: Tender shoots eaten as vegetable. It has sudorific and sedative properties. Leaves yield a yellow dye. Plant harmful to domestic animals.

Specimens examined: (Total 57) ANH 49536; VB 1296.

Helianthus annuus L. [*Surya kanthi*], an undershrub, is cultivated for the seeds, a source of an edible oil. *Chrysanthemum indicum* L., *Tagetes erecta* L. [*Thulukasamanthi*], subshrubs, *Calendula officinalis* L. and *Zinnia elegans* Jacq., herbs, are cultivated in gardens.

54. GOODENIACEAE

Scaevola L.

Tropics, especially Australia, ca 130 species and 2 in India.

Key to the species

- | | |
|---|-----------------------|
| 1a. Decumbent undershrub; stems leafy throughout; leaves 2.5 - 4 cm long;
leaf-axil not pilose; calyx-lobes ca 1 mm long; drupes dark purplish, juicy | 1. <i>S. plumieri</i> |
| b. Erect shrub; leaves crowded at ends of branches; leaves 9 - 16 cm long;
leaf-axil pilose; calyx-lobes ca 3 mm long; drupes white, shiny | 2. <i>S. taccada</i> |

1. *S. plumieri* (L.) Vahl, Symb. Bot. 2: 36. 1791; FPM 734. 1921; KB 34: 543. 1980; FTN 2: 55. 1987. *Lobelia plumieri* L., Sp. Pl. 929. 1753. *Scaevola lobelia* Murray, Syst. Veg. ed. 13, 178. 1774; FBI 3: 421. 1881. *S. uvifera* Stocks in Wight, Icon. t. 1613. 1850. (Fig. 29)

Leaves obovate or spatulate, decurrent, obtuse, dark green. Cymes axillary. Corolla dull white. Drupes globose, ca 2 cm.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy foreshores and also interior on islands as pure formations or with *Cyperus* spp., *Ipomoea pes-caprae*, *Sesuvium portulacastrum* etc.

Distrib.: Indo-Atlantic, S. India and Sri Lanka. TN: Ramanathapuram and Tuticorin. GM: Occasional on mainland coast and common on all islands particularly that of the Tuticorin group.

Specimens examined: (Total 25) KSK 102056; PD 102180; An Is. KSK 102368; Ap Is. PD 101540; Kc Is. PD 102090; Ku Is. KSK 102314; Mu Is. KSK 102047; Pc Is. KSK 102346; Pu Is. KSK 102343; Pv Is. PD 101194; Sh Is. PD 100345; Th Is. PD 101484; Ut Is. PD 101634; Va Is. PD 102168; Val Is. KSK 102036; Vm Is. KSK 102395.

2. *S. taccada* (Gaertn.) Roxb., Hort. Bengal. 15. 1814; IIB 2: t. 137. 1850. *Lobelia taccada* Gaertn., Fruct. Sem. Pl. 1: 119, t. 5. 1788. *Scaevola sericea* Vahl, Symb. Bot. 2: 27. 1791; FM 1, 5: 339. 1957; FTN 2: 55. 1987. *S. königii* Vahl, Symb. Bot. 3: 36. 1794; FBI 3: 421. 1881. *S. frutescens* K. Krause in Engl., Pflanzenr. 54: 125. 1912; FPM 734. 1921. (Fig. 30; Photo 9)

Leaves obovate, cuneate, obtuse or rounded, light green. Cymes axillary. Corolla dull white. Drupes globose, ca 2 cm.

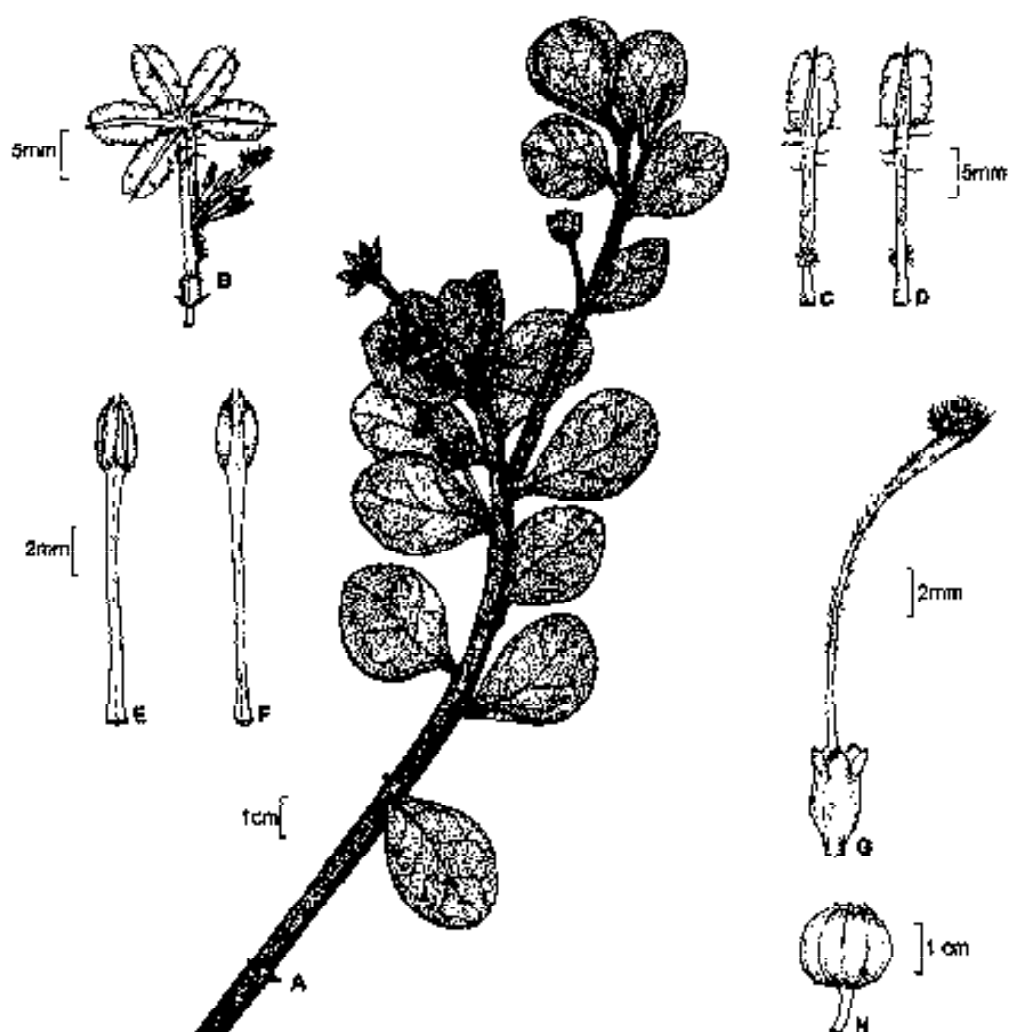


Fig. 29(A - F). *Scaevola plumieri* (L.) Vahl
 A. Twig B. Flower C & D. Petal inner & outer views
 E & F. Stamen inner & outer views G. Pistil H. Drupe

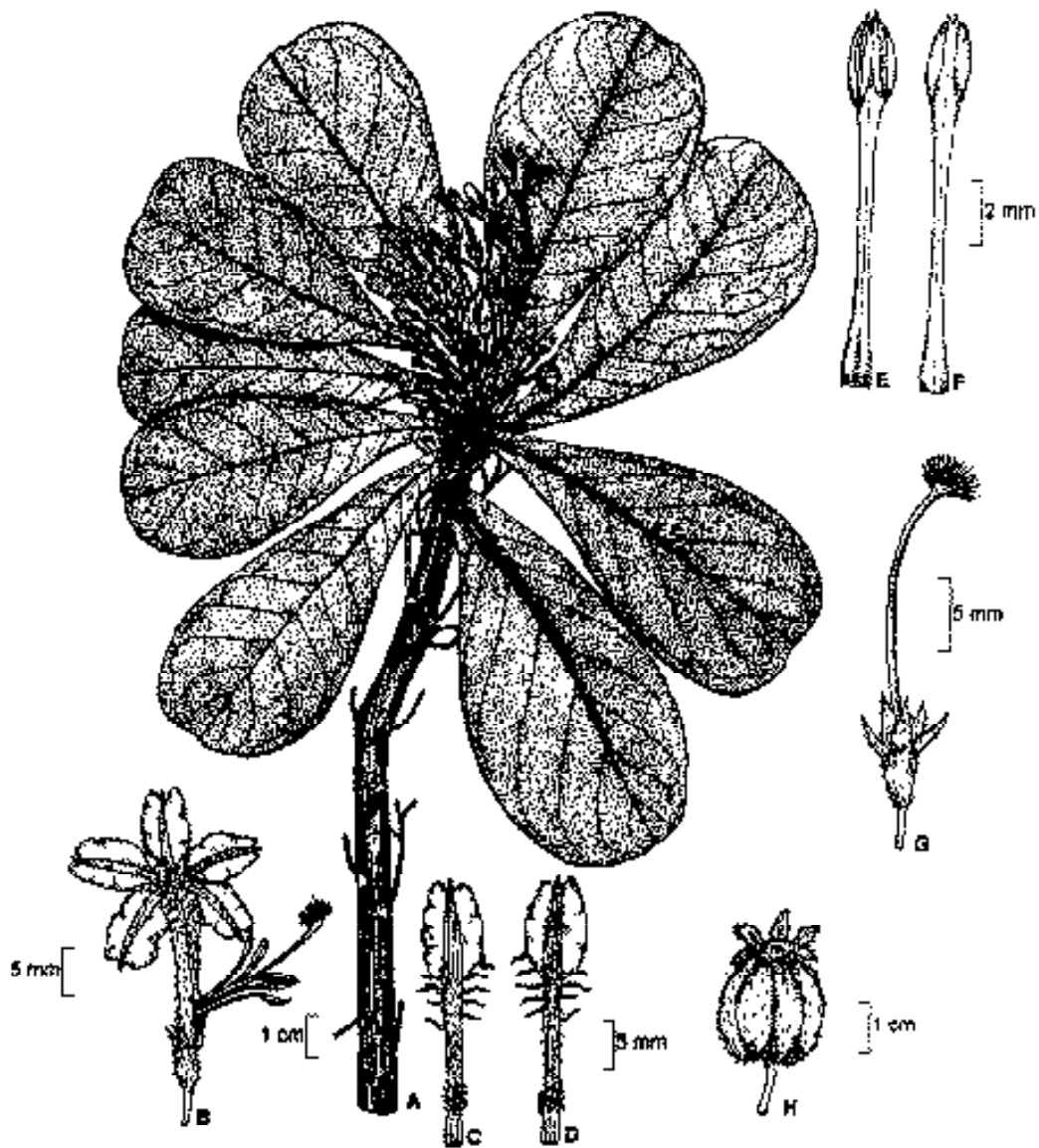


Fig. 38(A - F). *Beccaria tinctoria* (Gaertn.) Roth
 A. Twig B. Flower C & D. Petal inner & outer views
 E & F. Stamen dorsal & ventral views G. Pistil H. Drupe

Fl. & Fr.: Sept. - Jan.

Habitat: Sandy foreshore, with *Dodonaea viscosa*, *Phoenix pusilla*, *Salvadora persica* etc.

Distrib.: Indo-Pacific. TN: Ramanathapuram. GM: Rare, occurs only on Kurusadai and Shingle Islands.

Earlier collected only on Kurusadai Island. Now collected on Shingle Island too. On the East Coast it occurs in the Gulf of Mannar Biosphere Reserve and Visakhapatnam coast in Andhra Pradesh Coast (Sudhakar, 1980).

S. taccada is extremely rare whereas *S. plumieri* is extremely common. Both flower and fruit prolifically. The widely distributed *S. taccada* and *S. plumieri* are distributed by oceanic drift (Carlquist, 1974). In both the species the fruits and seeds can float. What has made *S. plumieri* pretty widespread is not known. The fruit in *S. plumieri* is dark purple and juicy and a little sweet whereas in *S. taccada* it is white and slimy. It is likely that birds may also disperse the fruits/seeds of *S. plumieri*. However, even on the islands on which *S. taccada* occurs not more than ten plants were found on each. Further studies on the autecology of this species is absolutely essential to find out what has prevented it from spreading further.

Uses: A number of uses are attributed in Indian literature (Ambasta, *l.c.*) It has many uses in Malesia (Leenhouts in FM 1, 5: 339, 1957). Plants being extremely rare here, there are no known uses.

Specimens examined: (Total 8) Ku Is. DD & SRR 20540; JGR 93042; SVP & DD 88149; PD 99762; VB 1797; Sh Is. PD 100348, 99762.

55. PLUMBAGINACEAE

Plumbago L.

Tropics and subtropics, 7 species, 3 in India and Tamil Nadu and one in GM.

***P. zeylanica* L.**, Sp. Pl. 148. 1753; FBI 3: 480. 1882; FPM 744. 1921; IFTC t. 403. 1982; FTC 3: 845. 1983; FTN 2: 59. 1987. [*Chithiramulam, Sitragam*]

Shrub. Leaves ovate, attenuate, entire, acute. Spikes terminal. Calyx-tube glandular-hairy. Corolla white. Capsules oblong, 5-valved, glandular-hairy, 1-seeded; seeds flattened.

Fl. & Fr.: Dec. - March.

Habitat: Wastelands, with *Indigofera aspalathoides*, *Perotis indica* etc.

Distrib.: Tropics and subtropics. TN: All districts. GM: Mainland coast, frequent.

Uses: Root abortifacient and diuretic, used in dyspepsia, piles, diarrhoea and skin diseases.

Specimens examined: (Total 57) PD & PU 106988.

56. MYRSINACEAE

Aegiceras Gaertn.

Old World tropics, 2 species and one in India.

A. corniculatum (L.) Blanco, Fl. Filip. 79. 1837; FPM 757. 1921; IFTC t. 406. 1982; FTC 3: 849. 1983; FTN 2: 60. 1987. *Rhizophora corniculata* L., Amoen. Acad. 4: 123. 1759. *Aegiceras majus* Gaertn., Fruct. Sem. Pl. 1: 216, t. 46, f. 1. 1788; IIB 2. t. 146. 1850. FBI 3: 533. 1882. [*Narikandam*] (Fig. 31; Photo 4)

Tree with stilt roots. Leaves obovate-oblong, cuneate, entire, retuse or obtuse. Umbels terminal, ca 20-flowered. Calyx 5-lobed; lobes twisted to the left. Corolla white. Stamens 5. Fruits cylindric, falcate, 4 - 5 cm long, reddish brown.

Fl. & Fr.: Sept. - May.

Habitat: A mangrove species, with *Bruguiera cylindrica*, *Ceriops tagal*, *Rhizophora mucronata* etc.

Distrib.: Trop. shores from Pakistan through India to Australia. TN: Chengalpattu, S. Arcot, Thanjavur and Ramanathapuram. GM: Rare, collected only on Kurusadai Island.

In *A. corniculatum* (= *A. majus*) which is not rare in mangroves and tidal rivers, the seed germinates and floats about in the sea (Ridley, 1930). Only a few trees occur on Kurusadai Island. The factor that enables this species to survive only on this island needs further investigations.

Uses: Fruits used as fish-poison. Wood used for knife-handles and in hut construction; may also be used as stakes for oyster beds.

Specimens examined: (Total 31) Ku Is. PD 100371, 100595; VB 1374.

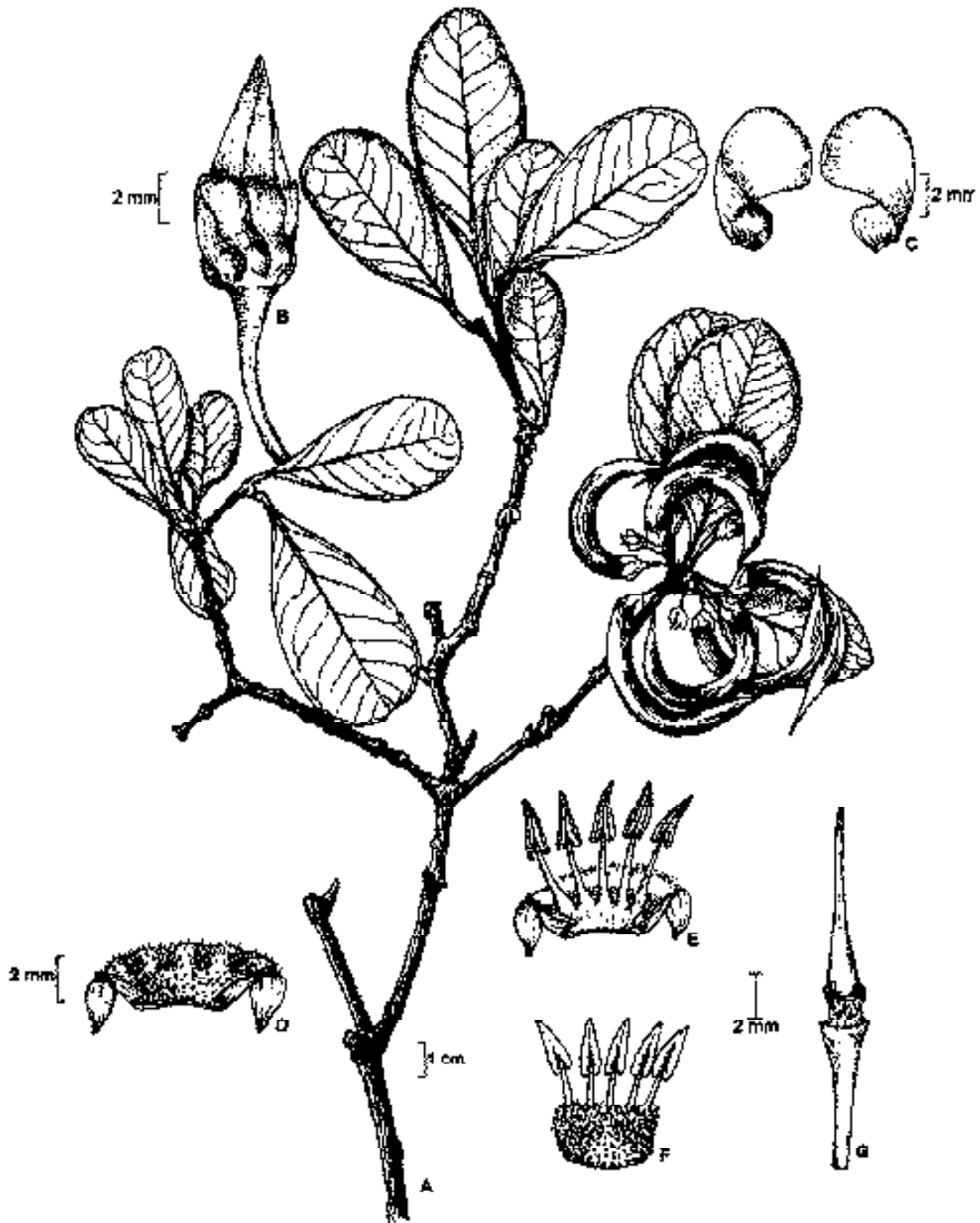


Fig. 31(A - C). *Aspicera coraculata* (L.) Blanco

A. Twig B. Bud C. Sepals D. Corolla split open E. Corolla with stamens
F. Androecium G. Filament

57. SAPOTACEAE

Key to the genera

- | | |
|--|---------------------|
| 1a. Leaves stipulate; calyx-lobes 4; corolla-lobes 6; stamens
triple as many as corolla-lobes | 1. Madhuca |
| b. Leaves exstipulate; calyx-lobes 6 - 8; corolla-lobes more
than 6; stamens 6 or 8 | 2 |
| 2a. Corolla-lobes 16 or 18, white; berries ellipsoid or globose | 2. Manilkara |
| b. Corolla-lobes 24, creamy; berries ovoid | 3. Mimusops |

1. Madhuca J.F. Gmel.

Indomalaysia, ca 85 species, 4 in India, 2 in Tamil Nadu and one in GM.

M. longifolia (J. König) J.F. Macbr. in Contr. Gray Herb. 53: 17. 1918; IFTC t. 412. 1982; FTC 3: 858. 1983; FTN 2: 63. 1987. *Bassia longifolia* J. König in L., Mant. Pl. 563. 1771; FSSI t. 42. 1869; FBI 3: 544. 1882; FPM 763. 1921. [*Illupai*]

Tree. Leaves oblanceolate, acute, entire. Flowers in axillary fascicles. Berries ellipsoid, 1-seeded.

Fl. & Fr.: Oct. - April.

Occasionally cultivated on mainland coast.

Uses: Seed oil is chiefly used in the manufacture of laundry soaps. Also used in rheumatism and skin affections and as a laxative. Flowers considered demulcent and tonic. Berries eaten raw and cooked. Wood used for agricultural implements.

Specimens examined: (Total 45) VB 2431.

2. Manilkara Adans. nom. cons.

Tropics, ca 70 species, 4 in India, 3 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|-----------------------|
| 1a. Leaves retuse-emarginate at apex; corolla-lobes 18, in 3 series;
staminodes 6 or 8; berries ellipsoid, ca 1 cm long, 1-seeded | 1. M. hexandra |
| b. Leaves acute at apex; corolla-lobes 16, in 2 series; staminodes
absent; berries globose, ca 4 cm long, 3 - 5-seeded | 2. M. zapota |

1. *M. hexandra* (Roxb.) Dubard in Ann. Inst. Bot.- Géol. Colon. Marseille 23: 9, f. 2. 1915; FTC 3: 859. 1983; FTN 2: 64. 1987. *Mimusops hexandra* Roxb., Pl. Coromandel t. 15. 1795; FBI 3: 549. 1882; FPM 766. 1921. [*Pala*] (Fig. 32)

Tree. Leaves broadly ovate, cuneate, entire. Flowers 1 - 3, in leaf axils. Calyx 6-lobed. Corolla white. Stamens 6.

Fl. & Fr.: June - Jan.

Habitat: Sandy places, with *Phoenix pusilla*, *Premna serratifolia* etc.

Distrib.: S. India and Sri Lanka. TN: Most districts. GM: Rare on mainland coast; once collected at Kundhukal near Pamban and frequent on Kurusadai, Pullivasal and Pumarichan Islands.

Though this species occurs in the northern coasts of Tamil Nadu, it has never been collected on the Gulf of Mannar Coast except Pamban. The fruit is eaten and dispersed by a number of birds including grey-headed myna, brahmini myna and common myna (Balasubramanian, 1996) which are also found in the biosphere reserves (Deshmukh & Venkataramani, 1994). But then, why it occurs only on a few selected islands needs unravelling.

Uses: Wood used for posts, beams, carts and agricultural implements. Ripe fruits eaten fresh or dried. Seeds yield an edible oil. Leaves used as a fodder.

Specimens examined: (Total 42) PD 101169; Ku Is. PD 100599; Pu Is. PD 99736, 99748; Pv Is. PD 99753, 101410, 103345.

2. *M. zapota* (L.) P. Royen in Blumea 7: 410. 1953; FTC 3: 859. 1983; FTN 2: 64. 1987. *Achras zapota* L., Sp. Pl. 1190. 1753; FBI 3: 534. 1882; FPM 759. 1921. *Manilkara achras* (Mill.) Fosberg in Taxon 13: 255. 1964; IFTC t. 413. 1982. *Sapota achras* Mill., Gard. Dict. ed. 8, n. 1. 1768. [*Sapota*]

Tree. Leaves oblong-lanceolate, acute-entire. Flower solitary. Calyx 6- or 8-lobed. Corolla white. Stamens 8.

Fl. & Fr.: Feb. - June.

Native of S. America, widely cultivated in the tropics for the delicious fruits, the chicle.

3. *Mimusops* L.

Trop. Africa and Malesia to Pacific, 57 species, 2 in India and one in Tamil Nadu.

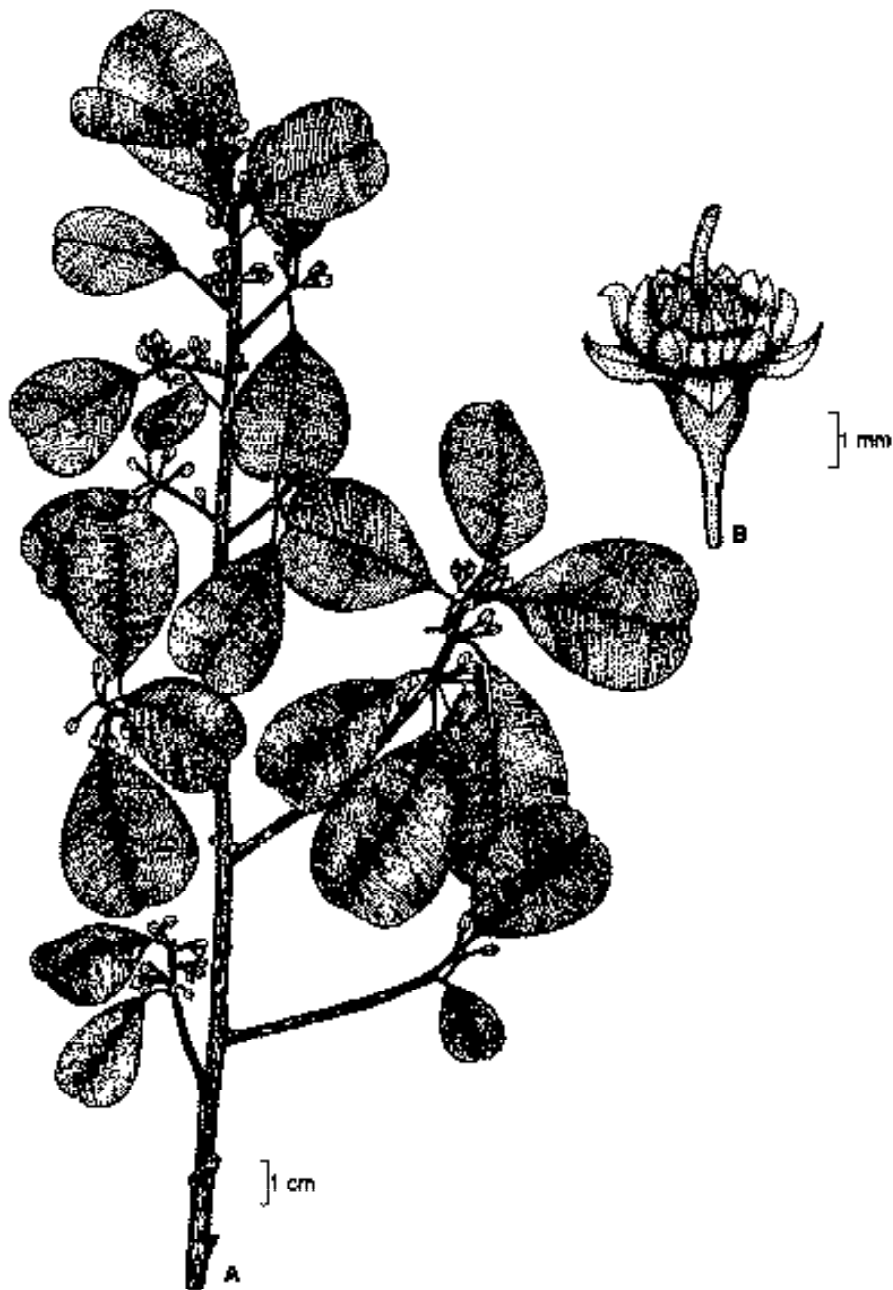


Fig. 32 (A & B). *Muntingia calabura* (Roxb.) Eubard
A, Twig B, Flower

M. elengi L., Sp. Pl. 349. 1753; Wight, Icon. t. 1586. 1850: FBI 3: 548. 1882, I-PM 765. 1921; FTC 3: 860. 1983; FTN 2: 64. 1987. [*Mahilamaram*]

Tree. Leaves elliptic-ovate, attenuate, entire, acute. Flower solitary, scented. Calyx-lobes 8. Stamens 8; staminodes present. Berries 1-seeded.

Fl. & Fr.: March - June.

Cultivated on mainland coast.

Uses: Wood used for building purposes and making agricultural implements. Fruits edible. Also used for preserves and pickles. Dried flowers used as snuff and pounded seed used in suppositories for constipation.

58. EBENACEAE

Diospyros L.

Tropics ca 475 species, 44 in India, 25 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|----------------------|
| 1a. Leaves obovate-spatulate, male flowers in axillary fascicles, 3-merous;
berries globose; calyx-lobes not reflected, 0.7 - 1 cm across | 1. D. ferrea |
| b. Leaves elliptic-ovate; male flowers in axillary umbels, 4-merous,
berries ovoid, calyx-lobes reflexed, 1.5 - 2 cm across | 2. D. montana |

1. **Diospyros ferrea** (Willd.) Bakh. var. **buxifolia** (Rottb.) Bakh. in Bull. Jard. Bot. Buitenzorg 15: 57. 1936; FTC t. 415. 1982; FTN 2: 66. 1987. *Pisomia buxifolia* Rottb. in Nye Saml. K ngel. Danske Vidensk. Selsk. Skr. 2: 536, t. 4, f. 2. 1783. *Maba buxifolia* (Rottb.) Juss. in Ann. Mus. Nat. Hist. Nat. 5: 418. 1804; Wight, Icon. t. 763. 1843; FBI 3: 551. 1882, p.p.; FTC 3: 871. 1982. *Ehretia ferrea* Willd., Phytographia 1: 4, t. 2, f. 2. 1794. *D. ferrea* (Willd.) Bakh. in Gard. Bull. Straits Settlement. 7: 162. 1933; RHFC 3: 91. 1982. [*Iram-balli*]

Shrub. Leaves cuneate, entire, obtuse. Corolla yellowish. Stamens 6 in male flowers. Staminodes absent in female flowers. Berries greenish yellow. 1 - 3-seeded, seeds oblong.

Fl. & Fr.: July - Feb.

Habitat: Scrub jungles.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Rare. Earlier collected once on Pamban to Rameswaram road. A species common in the interior but appears rare on the coast.

Uses: Wood used for boat-anchors, handles and sheaths of weapons, and rafters. Fruits edible.

Specimens examined: (Total 64) TAR 1528(CAL).

2. **D. montana** Roxb., Pl. Coromandel t. 48. 1795; Wight, Icon. t. 1225. 1848; FBI 5: 555. 1882; FPM 776. 1923; FTC 3: 867. 1983; FTN 2: 67. 1987. [*Vakkanatthi*]

Tree. Leaves truncate, entire, subacute-obtuse. Corolla greenish. Stamens ca 16 in male flowers. Staminodes present in female flowers. Berries yellowish orange, 3- 8-seeded; seeds oblong.

Fl.: Feb. - May; *Fr.:* Oct. - Dec.

Habitat: On hedges and road sides.

Distrib.: India, Malesia, Nepal, Sri Lanka and Trop. Australia. TN: Most districts. GM: Rare. Earlier collected at Rameswaram and Sathakonavalasai in Ramanathapuram. A species common in the interior but appears rare on the coast.

Uses: Wood used for agricultural implements. Crushed leaves and fruits used for stupefying fish; fruits crushed and applied externally to boils.

Specimens examined: (Total 53) VB 1739, 1921.

59. OLEACEAE

Jasminum L.

Tropics to temperate regions, ca 450 species, 40 in India, 20 in Tamil Nadu and 2 in GM.

J. auriculatum Vahl, Symb. Bot. 3: 1. 1794; Wight, Icon. t. 700. 1840; FBI 3: 600. 1882; FPM 790. 1923; FTC 3: 879. 1983; RHFC 6: 260. 1987; FTN 2: 71. 1987. [*Mullai*]

Twiner. Leaves 3-foliolate. Cymes 3-chotomous. Corolla white, fragrant. Berries globose.

Fl. & Fr.: July - Jan.

Habitat: Scrub jungles, with *Barleria longiflora*, *Capparis sepiaria* and *Kleinia grandiflora*.

Distrib.: India and Sri Lanka. TN: Cultivated, also run wild. GM: Collected near Koodankulam in Tirunelveli.

Uses: Flowers used for production of perfumed hair oils and attars; also used in consumption.

Specimens examined: (Total 30) PD & PU 107093.

J. sambac (L.) Aiton [*Mallihai*], a twiner, is cultivated for its white fragrant flowers. Widely used in India for garlands and scenting hair oils. Roots and leaves are used in the preparation of eye lotions.

60. NYCTANTHACEAE

Nyctanthes L.

India to Java, 1 - 2 species, one in India.

N. arbor-tristis L., Sp. Pl. 6. 1753; FBI 3: 603. 1882; FPM 792. 1923; IFTC t. 421. 1982; FTC 3: 890. 1983; FTN 2: 74. 1987. [*Parijatham*, *Pavalamalli*]

Small tree. Leaves simple, ovate-obovate, truncate, entire to coarsely toothed, acute. Cymes 3-chothomous. Corolla tube orange; lobes white. Capsules obovoid.

Fl. & Fr.: Almost throughout the year.

Distrib.: Subtropical Himalayas. GM: Sometimes cultivated on mainland coast.

Uses: Cultivated for its fragrant flowers that are offered in temples, and made into garlands. Yields an essential oil. Leaves antibilious and expectorant; used in rheumatism and fevers. Powdered seeds used for scurfy affections of the scalp.

61. SALVADORACEAE

Key to the genera

- | | |
|---|---------------------|
| 1a. Armed shrubs; branches not drooping; leaves spine-tipped; flowers unisexual; berries 2-seeded | 1. <i>Azima</i> |
| b. Unarmed trees; branches drooping; leaves not spine-tipped; flowers bisexual; drupes 1-seeded | 2. <i>Salvadora</i> |

1. *Azima* Lam.

S. Africa to Hainan and the Philippines, 4 species and one in India.

A. tetracantha Lam., Encycl. 1: 343. 1783; IIB 2: t. 152. 1850; FBI 3: 620. 1882; FPM 800. 1923; FTC 3: 894. 1983; FTN 2: 74. 1987; RHFC 7: 397. 1991. [*Ichana, Mulsangu*]

Branchlets 4-gonous; axils 4-spined. Leaves elliptic or lanceolate, cuncate, entire, acute. Flowers in axillary clusters. Corolla creamy. Berries globose, ca 8 mm, white; seeds circular, compressed.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles, with *Acacia planifrons*, *Opuntia dillenii* etc.

Distrib.: Arabia through Africa, Comoro Islands, India, Madagascar, Philippines and Sri Lanka. TN: Almost all districts. GM: Frequent on mainland coast and Kurusadai, Pullivasai and Pumarichan Islands.

Berries of *A. tetracantha* are eaten by red-vented and white-browed bulbuls and dispersed (Balasubramanian, 1996) which are also found in the biosphere reserve.

Uses: Juice of leaves used to relieve cough in phthisis and asthma. Bark expectorant. Berries eaten.

Specimens examined: (Total 93) ANH 49509; KSK 102246; Ku Is. VB 1427; Pu Is. KSK 101695.

2. *Salvadora* L.

Trop. Africa to Asia, 5 species, 2 in India and one in Tamil Nadu.

S. persica L., Sp. Pl. 122. 1753; FBI 3: 619. 1882; FPM 799. 1923; IFTC t. 425. 1982; RHFC 7: 399. 1991. *S. indica* Wight, Ill. Ind. Bot. 2: t. 181. 1850. *S. wightiana* Planch. ex Thwaites, Enum. Pl. Zeyl. 190. 1860. *S. persica* L. var. *wightiana* (Planch. ex Thwaites) Verdc. in Kew Bull. 19: 150. 1964; FTC 3: 895. 1983; FTN 2: 74. 1987. [*Kodumavali, Opa*]

Leaves elliptic-oblong, rounded, entire, acute, apiculate. Panicles axillary or terminal. Corolla creamy. Drupes globose, ca 5 mm, dark purple, rarely white; seeds globose.

Fl. & Fr.: Aug. - March.

Habitat: Sandy shores, with *Clerodendrum inerme*, *Pemphis acidula*, *Prosopis chilensis* etc.

Distrib.: India and Sri Lanka, to Africa. TN: Almost all districts. GM: Occasional on mainland coast but common on all islands.

Drupes are eaten by common myna, red-vented and white-browed bulbuls and dispersed (Balasubramanian, 1996) which are also found in the biosphere reserve.

Uses: Fruits edible. Decoction used in asthma and cough, their poultice used for piles and tumours. Seeds purgative, diuretic and tonic.

Specimens examined: (Total 30) KSK 102106; PD & PU 103557; Ke Is. KSK 102081; Ku Is. PD 100376; Mu Is. PD 100316; Pu Is. KSK 101691; Va Is. KSK 102176.

62. APOCYNACEAE

Key to the genera

- | | |
|--|------------------------|
| 1a. Herbs | 3. <i>Catharanthus</i> |
| b. Shrubs or trees | 2 |
| 2a. Trees; corolla cream with yellow centre; fruit a follicle, 20 - 25 cm long | 4. <i>Plumeria</i> |
| b. Shrub; corolla white or yellow; fruit a berry or drupe, 0.6 - 3 cm across | 3 |
| 3a. Corolla yellow; fruit a drupe, turbinate, 2.5 - 3 cm, greenish yellow | 2. <i>Cassipourea</i> |
| b. Corolla white; fruit a berry not turbinate, 0.6 - 1.5 cm, not greenish yellow.... | 1. <i>Carissa</i> |

1. *Carissa* L. nom. cons.

Subtropics. Old World to Australia, 37 species, 12 in India, 8 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|-----------------------|
| 1a. Leaves obovate or oblanceolate; berries ellipsoid, ca 1.5 cm across, dark blue when ripe | 1. <i>C. carandas</i> |
| b. Leaves ovate; berries subglobose, ca 0.6 cm across, black when ripe | 2. <i>C. spinarum</i> |

1. *C. carandas* L., Mant. Pl. 52. 1767; Roxb., Pl. Coromandel t. 77. 1798; Wight, Icon. t. 426. 1841; FBI 3; 630. 1882; FPM 804. 1922; IFTC t. 429. 1982; RHFC 4: 37. 1983; FTC 3: 905. 1983; FTN 2: 76. 1987. [*Kala, Kalakai*]

Armed shrub. Leaves cuneate, entire, obtuse or emarginate, apiculate. Cymes terminal or axillary. Seeds 4, ellipsoid.

Fl. & Fr.: Feb. - June.

Habitat: Among bushes.

Distrib.: India, Malesia, Myanmar, Nepal and Sri Lanka. TN: In dry forests, and sometimes cultivated. GM: Rare. Earlier collected on Kurusadai Island.

Uses: Ripe fruits edible. Root stomachic and anthelmintic. Decoction of leaves given in remittent fevers.

Specimens examined: (Total 79) AKM 245; TAR 1469(CAL).

2. *C. spinarum* L., Mant. Pl. 559. 1771; FBI 3: 631. 1882; FPM 805. 1922; RHFC 4: 35. 1983; FTC 3: 906. 1983; FTN 2: 76. 1987. *C. diffusa* Roxb., Fl. Ind. 2: 524. 1824; Wight, Icon. t. 427. 1841. [*Chirukala*]

Armed shrub. Leaves acute, entire, mucronate. Cymes terminal. Seeds 4, ellipsoid.

Fl. & Fr.: March - May.

Habitat: Scrub jungles, among bushes.

Distrib.: India, Myanmar and Sri Lanka. TN: Almost all districts. GM: Mainland coast, rare. Earlier collected at Narikuli and Rameswaram.

Specimens examined: (Total 53) CR 96286; VB 1729.

2. *Cascabela* Raf.

Trop. America, 8 species and one in India.

C. thevetia (L.) Lippold in Feddes Repert. 91: 52. 1980; FTC 3: 907. 1983; FTN 2: 76. 1987. *Cerbera thevetia* L., Sp. Pl. 209. 1753. *Thevetia nereifolia* Juss. ex Steud., Nomencl. Bot. 2: 680. 1841 (as "*nereifolia*"); FPM 577. 1922. [*Ponnarali, Thangarali*]

Large shrub or small tree. Leaves linear-lanceolate, cuneate, recurved-acute. Cyme terminal. Corolla golden yellow. Seed one.

Cultivated in gardens as an ornamental and also as a hedge plant. Rarely run wild

3. *Catharanthus* G. Don

Tropics, 8 species, 2 in India and Tamil Nadu and one in GM.

C. roseus (L.) G. Don, Gen. Syst. 4: 95. 1837; RHFC 4: 44. 1983; FTC 3: 909. 1983; FTN 2: 77. 1987. *Vinca rosea* L., Syst. Nat. ed. 10, 944. 1759; FBI 3: 640. 1882. *Lochnera rosea* (L.) Rchb., Consp. Regn. Veg. 134. 1828; FPM 809. 1923. [*Nithyakalyani*]

Herb. Leaves elliptic-obovate or oblong, cuneate, entire, obtuse, apiculate. Corolla white, red, violet or pink. Follicles cylindric, 3 - 4 cm long; seeds oblong.

Fl. & Fr.: Almost throughout the year.

Habitat: An escape from cultivation. Wastelands, with *Boerhavia diffusa* and *Tephrosia purpurea*.

Distrib.: Widely naturalized in the tropics. TN: All districts. Also cultivated on large scale for export. GM: Mainland coast, frequent.

Uses: Plant used in diabetes, juice applied for relief of pain due to wasp-sting. An extract from the plant has shown growth inhibitory effect in certain human tumours.

Specimens examined: (Total 46) KSK 102797, 102252; PD 100386, 102123; VB 1735.

4. *Plumeria* L.

Trop. America, ca 25 species, 10 in India, 2 in Tamil-Nadu and one in GM.

P. rubra L., Sp. Pl. 209. 1753; FTC 3: 915. 1983; RHFC 4: 29. 1983; FTN 2: 78. 1987. *P. acutifolia* Poir. in Lam., Encycl. Suppl. 2: 667. 1812; Wight, Icon. t. 471. 1841; FBI 3: 641. 1882; FPM 821. 1923. [*Malaiarali*, *Kallimandharai*]

Leaves broadly obovate-spatulate, cuneate-attenuate, acuminate. Seeds flat, winged..

Fl. & Fr.: Jan. - June.

Cultivated as an ornamental in gardens.

Allamanda cathartica L. [*Manjal-patti*], a straggling shrub with golden yellow flowers, is grown in gardens. Leaves used as a cathartic. Roots contain an anti-leukemic lactone, allamandin. *Nerium oleander* L. [*Arali*], a shrub with rose, red or white flowers, is cultivated for the flowers used in garland making. Leaves, flowers and bark cardio-tonic, chief active principle in leaves is oleandrin. It stimulates heart and acts as a diuretic. Leaves are also used in cutaneous eruptions. *Tabernaemontana divaricata* (L.) R. Br. ex Roem. & Schult. [*Nandiyavattam*], a shrub with white flowers, is cultivated particularly in temple gardens; root employed as a local anodyne and chewed for relief in toothache; also used as a vermicide. Wood used as incense and in perfumery.

63. ASCLEPIADACEAE

Key to the genera

1a. Erect herbs or shrubs	2
b. Twiners or stragglers	3
2a. Succulent herbs; stem angled; leaves caducous, not auriculate at base, not glaucous	2. <i>Caralluma</i>
b. Non-succulent shrubs; stem cylindric; leaves persistent, auriculate at base, glaucous	1. <i>Calotropis</i>
3a. Follicles echinate	7. <i>Pergularia</i>
b. Follicles smooth	4
4a. Corolla tubular, beaked	3. <i>Ceropegia</i>
b. Corolla neither tubular nor beaked	5
5a. Leaves acuminate; seeds obovoid	10. <i>Wattakaka</i>
b. Leaves other than acuminate; seeds ovoid or oblong	6
6a. Calyx glandular; corona single	7
b. Calyx eglandular; corona double	8
7a. Leaves elliptic; corolla purplish; pollinia ellipsoid; seeds winged	6. <i>Pentstemon</i>
b. Leaves oblong; corolla brownish yellow; pollinia ovoid; seeds not winged	4. <i>Heterostemma</i>
8a. Pollinia oblong; seeds ovoid	9
b. Pollinia spherical; seeds oblong	5. <i>Leptadenia</i>
9a. Branchlets pubescent; outer corona truncate	9. <i>Tylophora</i>
b. Branchlets glabrous; outer corona not truncate	8. <i>Sarcostemma</i>

1. *Calotropis* R. Br.

Old World tropics and subtropics, 2 species, 2 in India and Tamil Nadu and one in GM

C. gigantea (L.) R. Br. in W. T. Aiton, Hortus. Kew. ed. 2, 2: 78. 1811; IIB 2. tt. 155 & 156A. 1850; FBI 4: 17. 1883; FPM 832. 1923; RHFC 4: 78. 1983; FTC 3: 929. 1983; FTN 2: 81. 1987. *Asclepias gigantea* L., Sp. Pl. 214. 1753. [*Erukku*]

Leaves elliptic-oblong, entire, acute. Umbels terminal. Calyx-lobes ciliate-glandular. Corolla purplish. Pollinia pendulous. Corona single, 3-fid. Follicles oblong, inflated, ca 8 cm long; seeds oblong-ovoid.

Fl. & Fr.: June - Sept.

Habitat: Road sides and wastelands, with *Capparis septaria*, *Jatropha villosa* etc.

Distrib.: China, India, Malesia and Sri Lanka. TN: All districts. GM: Common on mainland coast and occasional on Kaswari, Kurusadai, Muyal, Nallathanni, Shingle, Thalaiyari and Upputhanni Islands.

Uses: Bark yields a fibre, used for fishing-nets and lines.

Specimens examined: (Total 87) PD 100432; Mu Is. PD 100660.

2. *Caralluma* R. Br.

Africa, Mediterranean to Myanmar, ca 120 species, 13 in India, 10 in Tamil Nadu and one in GM.

C. adscendens (Roxb.) Haw., Syn. Pl. Succ. 47. 1812; FBI 4: 76. 1883; FPM 861. 1923; FTC 3: 932. 1983, var. *adscendens*: Gravely & Mayur. in Bull. Madras Gov. Mus. 4: 31. 1931; FTN 2:81. 1987. *Stapelia adscendens* Roxb., Pl. Coromandel t. 30. 1795. [*Muyal kombuchedi*] (Fig. 33)

Flowers solitary or in pairs. Calyx-lobes ovate. Corolla star-shaped, dark purplish with yellow bands. Corona subequal. Follicles cylindric, ca 12 cm long, beaked; seeds oblong-obovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities on island, with *Crinum latifolium*, *Jatropha glandulifera* etc. On mainland coast usually occurs in association with *Acacia planifrons* trees. Not common

Distrib.: S. India. Endemic. TN: Chengalpattu, Coimbatore, Nilgiri, Ramanathapuram, Salem, S. Arcot, Tiruchirapalli, Tirunelveli and Tuticorin. GM: Rare, Tirunelveli mainland coast and Karaichalli Island.

Uses: Used as a vegetable. Tender shoots are also eaten raw.

Specimens examined: (Total 53) PD & PU 107095; Kc Is. PD 102083; PD & PU 107302; SAM 104728.

3. *Ceropegia* L.

Old World tropics, ca 170 species, 44 in India, 18 in Tamil Nadu and 3 in GM.

- | | |
|---|--------------------------|
| 1a. Plant leafless; calyx-lobes linear-lanceolate; pollinia oblong | 2. <i>C. juncea</i> |
| b. Plants leafy; calyx-lobes subulate or linear; pollinia obovoid | 2 |
| 2a. Leaves acute; calyx-lobes subulate; corolla more than 2.9 cm long | 1. <i>C. candelabrum</i> |

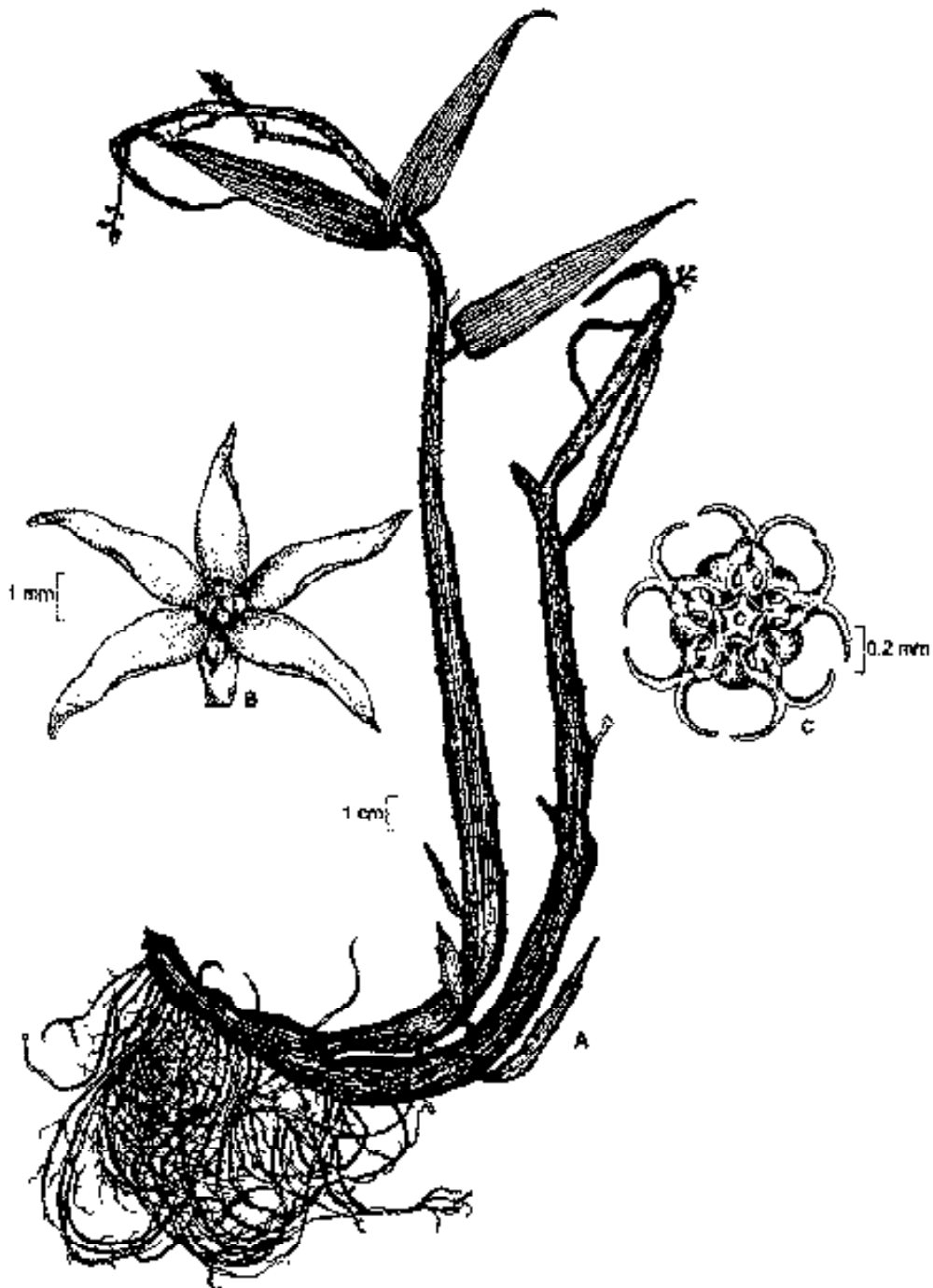


Fig. 33(A - C). *Caralluma adscendens* (Roxb) Haw var. *adscendens*
 A. Habit with split foliaceous B. Flower C. Corona with pollinia

- b. Leaves retuse and apiculate; calyx-lobes linear; corolla less than 2.1 cm long..... **3. *C. mannarana***

1. *C. candelabrum* L., Sp. Pl. 211. 1753; FBI 4: 70. 1883; FPM 857. 1923; RHFC 4: 120. 1983; FTC 3: 935. 1983, var. *candelabrum*: M.Y. Ansari in Fasc. Fl. India 16: 12. 1984; FTN 2: 82. 1987.

Leaves elliptic-obovate, acute-rounded, entire; acute, apiculate. Cymes axillary, 3-5-flowered. Corolla greenish yellow, densely ciliate inside. Outer corona truncate, hairy; the inner spatulate. Follicles linear-cylindrical; seeds oblong.

Fl. & Fr.: Nov. - Jan.

Habitat: On hedges.

Distrib.: India and Sri Lanka. TN: Coimbatore, Madurai, N. Arcot and Ramanathapuram. GM: Mainland coast, rare. Earlier collected at Rameswaram.

Specimens examined: (Total 51) VB 2199.

2. *C. juncea* Roxb., Pl. Coromandel t. 10. 1795; FBI 4: 68. 1883; FPM 856. 1923; RHFC 4: 115 1983; FTC 3: 937. 1983; FFI 16: 18. 1984; FTN 2: 83. 1987.

Flowers solitary or in cymes. Corolla brownish purple, pilose inside. Outer corona deltoid bidentate, ciliate; the inner linear. Follicles linear-cylindrical; seeds oblong.

Fl. & Fr.: Aug. - Jan.

Habitat: On hedges, with *Abrus precatorius*, *Hemidesmus indicus* etc.

Distrib.: India. Endemic. TN: Most districts. GM: Mainland coast, rare. Once collected at Uvari in Tirunelveli. Appears frequent in the interior.

Specimens examined: (Total 27) SAM 106335.

3. *C. mannarana* Umamahesw. & P. Daniel sp. nov.

C. mannarana Umamahesw. & P. Daniel sp. nov. *C. candelabrum* affinis, sed plantae sparse hirsutis; foliis nunquam linearo-oblongis vel orbicularibus, retusis et apiculatis; corollis 1.7 - 2.1 cm longis, tubis 1.1 - 1.4 cm longis, lobis abrupte acutis, neque apice rostratis differt. (Fig. 34)

Typus: India, Tamil Nadu, Tirunelveli Distr., Gulf of Mannar Coast, Uvari, 18.11.1995, S.A. Muthukumar 106332 (CAL holotypus; MH isotypi). Kanyakumari Distr., Gulf of

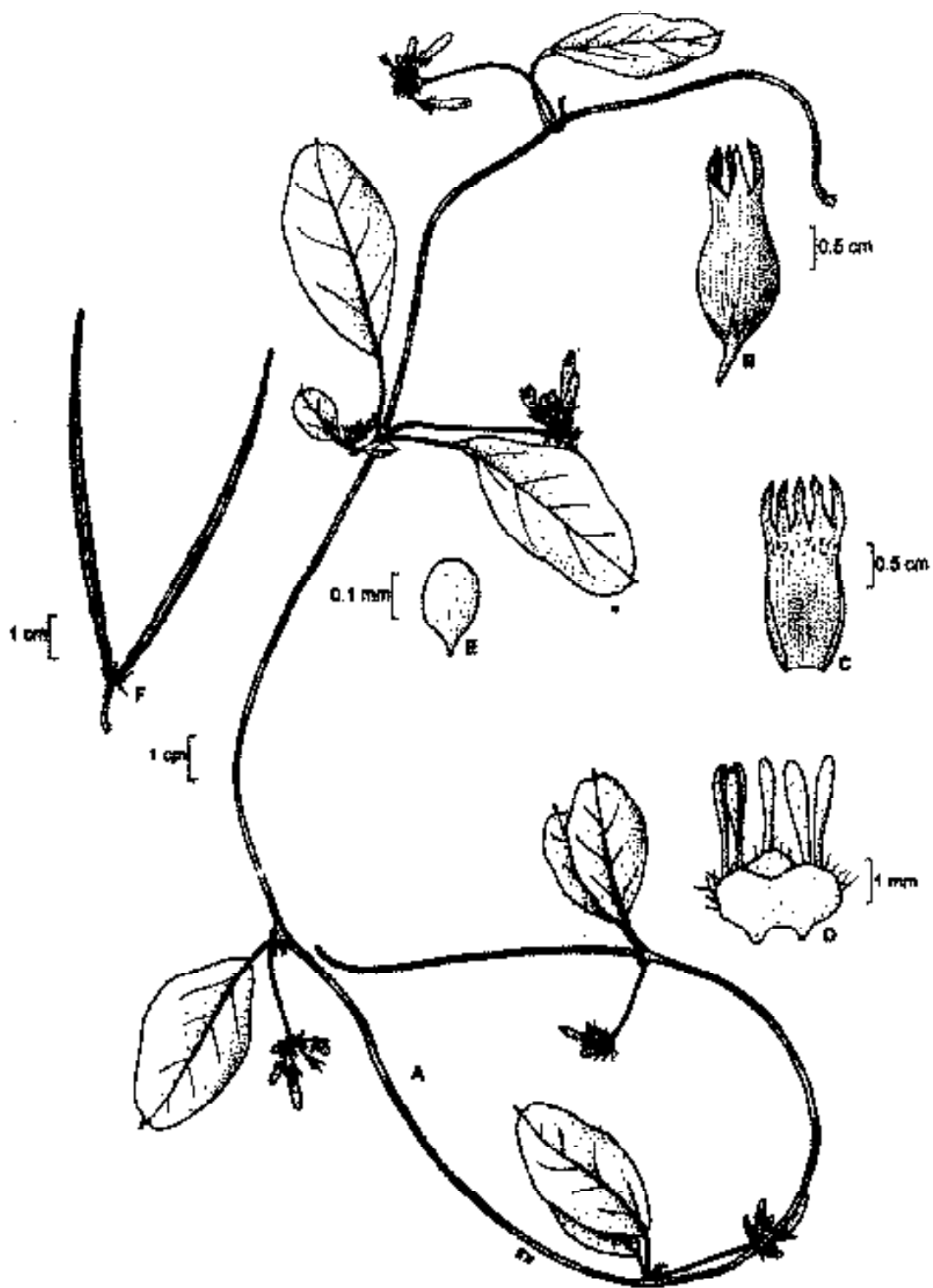


Fig. 34(A - F). *Ceropogia mammillata* Unanue & P. Daxil
 A. Habit B. Flower C. Corolla eight open D. Cross E. Pollinifer
 F. Follicle

Mannar Coast, Kanyakumari, Vivekanantha Kendra Campus, 21.11.1995, S.A. Muthukumar 106398 (MH paratypi).

Ceropegia mannarana is allied to *C. candelabrum* L. but differs from it in the plant being sparsely hairy, leaves never linear-oblong or orbicular, retuse and apiculate, corolla 1.7 - 2.1 cm long, corolla-tube 1.1 - 1.4 cm long, corolla-lobes 0.6 - 0.7 cm long, abruptly acute at apex.

Twining herb; stem sparsely hairy. Leaves elliptic-oblong or ovate, cuneate, entire, retuse and apiculate at apex, 0.6 - 3.5 x 0.3 - 1.5 cm, ciliate or hairy along margins and beneath; petioles 1 - 2 cm long, hairy. Cymes axillary, 3 - 10-flowered; peduncles 2 - 4 cm long, glabrous; pedicels 0.5 - 1 cm long, glabrous or hairy. Sepals 5, linear, ca 0.2 cm long, pubescent, green. Corolla 1.7 - 2.1 x 0.5 - 0.6 cm, pale purplish violet; tube dilated below, 1.1 - 1.4 cm long, hairy at throat inside; lobes oblong, abruptly acute and hairy inside at apex, 0.6 - 0.7 cm long. Outer corona lobes bifid, ciliate; inner corona lobes spatulate, ca 2 x 0.25 mm, glabrous. Pollinia obovoid, ca 0.2 mm long, yellow. Pistil bicarpellary; ovary oblong, ca 1 mm long; style ca 0.5 mm long, truncate at apex. Follicles linear-oblong, ca 9 x 0.4 cm, green with purplish dots.

Fl. & Fr.: Oct. - Dec.

Habitat: Sandy localities, on *Euphorbia antiquorum* and other bushes. Not common.

Etymology: The specific epithet is after the type locality, the Gulf of Mannar Coast.

4. *Heterostemma* Wight & Arn.

Trop. Asia, ca 30 species, 5 in India and one in Tamil Nadu.

H. tanjorensis Wight & Arn. in Wight, Contr. Bot. India 42. 1834 (as "*tanjorensis*"); Wight, Icon. t. 348. 1840; FBI 4: 47. 1883; FPM 847. 1923; IFTC t. 447. 1982; RHFC 4: 107. 1983; FTC 3: 949. 1983; FTN 2: 86. 1987. [*Palakeerat*] (Fig. 35)

Twiner. Leaves truncate, entire, acute, apiculate. Umbels axillary, 5 - 7-flowered. Calyx-lobes puberulous outside. Corona single. Pollinia ovoid. Follicles cylindric, 10 - 12 x 0.7 - 1 cm; seeds ovoid-obovoid.

Fl. & Fr.: Nov. - Jan.

Habitat: Scrub jungles, on *Dichrostachys cinerea*, *Ziziphus xylopyrus* etc.

Distrib.: India and Sri Lanka. TN: Coimbatore, Nilgiri, Thanjavur, Tiruchirapalli and Ramanathapuram. GM: Occasional on mainland coast and Pullivasal Island.

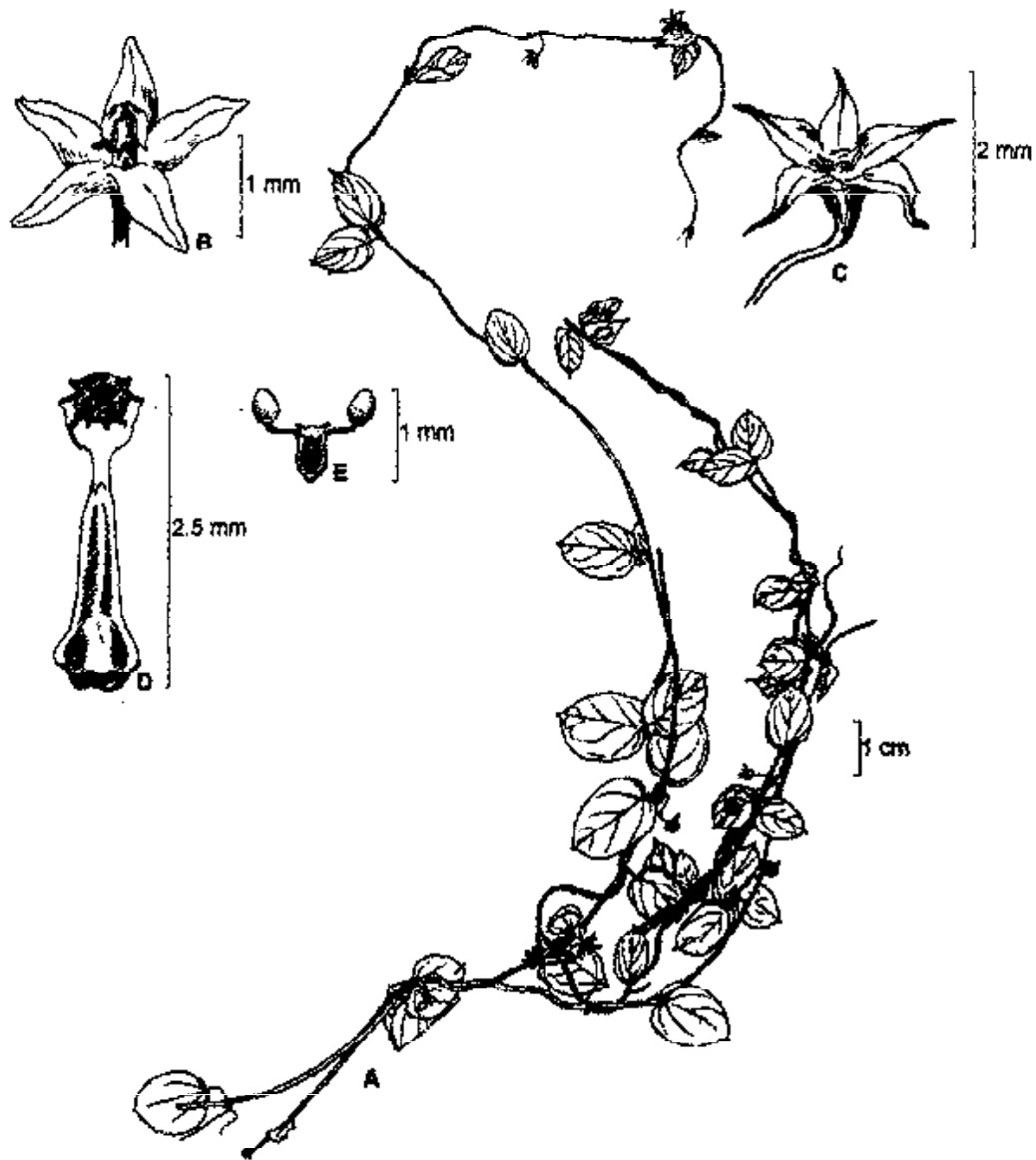


Fig. 35(A - E). *Heterostemma tarjorensis* Wight & Arn.
 A. Twig B. Flower C. Calyx D. Gynostegium E. Pollinium

Specimens examined: (Total 14) PD 100397; Pv Is. PD 101423.

5. *Leptadenia* R. Br.

Old World tropics, 4 species, 2 in India and one in Tamil Nadu.

L. reticulata (Retz.) Wight & Arn. in Wight, Cat. Ind. Pl. 89. 1834; Wight, Contr. Bot. India 47. 1834 & Icon. t. 350. 1840; FBI 4: 63. 1883; FPM 850. 1923; IFTC t. 449. 1982; RHFC 4: 112. 1983; FTC 3: 950. 1983; FTN 2: 87. 1987. *Cynanchum reticulatum* Retz., Obs. Bot. 2: 15. 1781. [*Palakodi, Paalai keerai*]

Straggling shrub. Leaves elliptic-oblong or lanceolate, truncate or rounded, entire, acute. Cymes umbellate, axillary or terminal, ca 15-flowered. Calyx cupular, glabrous. Corolla yellow. Corona double; outer linear-lanceolate; the inner lobed. Follicles cylindric, ca 6 cm long; seeds winged.

Fl. & Fr.: July - Dec.

Habitat: On hedges and also in sandy localities, on *Azadirachta indica* and with *Cardiospermum canescens*.

Distrib.: India, Madagascar, Mauritius, Myanmar and Sri Lanka. TN: Most districts. GM: Occasional on mainland coast and Upputhanni Island.

Uses: Plant stimulant and restorative. Leaves and roots used in skin affections.

Specimens examined: (Total 100) KMS 13609; DDS 20454; Ut Is. PD & PU 106617.

6. *Pentatropis* Wight & Arn.

Old world tropics, 4 species, 2 in India and one in Tamil Nadu.

P. capensis (L. f.) Bullock in Kew Bull. 9: 284. 1955; IFTC t. 452. 1982; RHFC 4: 85. 1983; FTC 3: 955. 1983; FTN 2: 87. 1987. *Cynanchum capense* L. f., Suppl. Pl. 168. 1782. *Pentatropis microphylla* (Heyne ex Roth) Wight & Arn. in Wight, Contr. Bot. India 52. 1834; Wight, Icon. t. 352. 1840; FBI 4: 20. 1883; FPM 835. 1923. *Asclepias microphylla* Heyne ex Roth, Nov. Pl. Sp. 177. 1821. [*Uppilli*]

Twiner. Leaves subcordate-truncate, entire, obtuse, apiculate. Umbels axillary, 7 - 9-flowered. Calyx-lobes glandular. Corona single, laterally compressed. Pollinia pendulous. Follicles ca 5 cm long; seeds ovoid.

Fl. & Fr.: June - Jan.

Habitat: Scrub jungles and in sandy localities, on *Dichrostachys cinerea*, *Salvadora persica* etc. Frequently a trailer in sandy places on islands.

Distrib.: S. and NE. India and Sri Lanka. TN: Most districts. GM: Frequent on mainland coast and common on Karaichalli, Kurusadai, Manoliputti, Mullai, Puluvinichalli, Pumarichan, Thalaiyari, Valai and Van Islands.

Use: Plant a alterative and refrigerant.

Specimens examined: (Total 49) DD 87153; PD 102236; Ku Is. PD 100374; Ma Is. PD 101459; Pu Is. PD & PU 106840; Th Is. PD 101489.

7. *Pergularia* L.

Africa to India, 3 - 5 species, 2 in India and one in Tamil Nadu.

P. daemia (Forssk.) Chiov. in Result. Sci. Miss. Stefan. Paoli. Somal. Ital. 1: 115. 1916; IFTC t. 453. 1982; RHFC 4 : 86. 1983; FTC 3: 955. 1983; FTN 2: 87. 1987. *Asclepias daemia* Forssk., Fl. Aegypt.-Arab. 51. 1775; *Daemia extensa* (Jacq.) R. Br. in T. Aiton, Hortus. Kew. ed. 2. 2: 76. 1811; Wight, Icon. t. 596. 1842; FBI 4: 20. 1883. *Cynanchum extensum* Jacq., Misc. Austriac. 2: 353. 1781. *Pergularia extensa* (Jacq.) N. E. Br. in Dyer, Fl. Cap. 4: 758. 1908; FPM 837. 1923. [*Seenthalkodi, Velipparuthi*]

Twiner. Leaves cordate, entire, acute. Umbels axillary. Calyx glandular-puberulous. Corolla greenish. Pollinia oblong, pendulous. Outer corona flap-like; the inner linear, bifid. Follicles curved, swollen at base, ca 6 cm long; seeds obovoid, winged.

Fl. & Fr.: Almost throughout the year.

Habitat: Hedges and on *Prosopis chilensis*.

Distrib.: India, Malesia, Myanmar, Sri Lanka, Trop. Africa and W. Asia. TN: All districts. GM: Common on mainland coast and frequent on Anaipar, Kurusadai, Manoliputti, Pullivasal, Pumarichan, Thalaiyari and Upputhanni Islands.

Uses: Plant emetic, expectorant and anthelmintic. Decoction of leaves used in asthma; their juice in infantile diarrhoea and rheumatic swellings.

Specimens examined: (Total 45) PD 102116; SAM 104689; Ku Is. KSK 102305; PD 99733; Th Is. PD 101491.

8. *Sarcostemma* R. Br.

Old World tropics and subtropics, ca 10 species, 4 in India and Tamil Nadu and 2 in GM.

- | | |
|--|-----------------------|
| 1a. Stem jointed, fleshy, leafless; corolla pale greenish white | 1. <i>S. acidum</i> |
| b. Stem neither jointed nor fleshy, leafy; corolla purplish pink | 2. <i>S. secamone</i> |

1. *S. acidum* (Roxb.) Voigt, Hort. Suburb. Calcutt. 542. 1845; FTN 2: 87. 1987. *Asclepias acida* Roxb., Fl. Ind. 2: 31. 1832. *Sarcostemma brevistigma* Wight & Arn. in Wight, Contr. Bot. India 59. 1834; Wight, Icon. t. 595. 1842; FBI 4: 26. 1883; FPM 589. 1921. [*Somamum*]

Umbels terminal. Calyx-lobes glabrous. Outer corona crenate; the inner fleshy. Pollinia oblong, pendulous. Follicles linear-cylindric, 8 - 11 cm long; seeds ovoid.

Fl. & Fr.: Dec. - May.

Habitat: Scrub jungles, on *Euphorbia antiquorum*.

Distrib.: India and Myanmar. TN: Almost all districts. GM: Mainland coast, rare. Collected near Koodankulam. Common in the interior but rare on the coast. Also found on Upputhanni Island.

Uses: Dried stems emetic. Infusion of roots given to persons bitten by rabid dogs.

Specimens examined: (Total 53) PD & PU 107201.

2. *S. secamone* (L.) Bennet in Indian Forester 95: 692. 1969; FTN 2: 88. 1987. *Periploca secamone* L., Mant. Pl. 216. 1771. *Oxystelma esculentum* (L. f.) R. Br. ex Schult. in Roem. & Schult., Syst. Veg. 6: 89. 1820; FBI 4: 17. 1883; FPM 833. 1923; IFTC t. 451. 1982; RHFC 4: 84. 1983; FTC 3: 954. 1983. *Periploca esculenta* L. f., Suppl. Pl. 168. 1782. [*Kalappalai, Usippalai*]

Twiner. Stem purplish green. Leaves linear-oblong, truncate, entire, acute, mucronate. Flowers solitary or 2 - 3 in racemes. Calyx glabrous. Pollinia pendulous, oblong. Outer corona corolla-like, pubescent; the inner basally inflated. Follicles linear-cylindrical, 4 - 6 cm long, mucronate.

Fl. & Fr.: Almost throughout the year.

Habitat: Usually along water courses, with *Abutilon hirtum*.

Distrib.: India, Malesia, S. China, Trop. Himalayas and W. Asia. TN: Most districts. GM: Mainland coast, frequent.

Uses: Leaves furnish fodder in scarcity areas. Plant antiseptic, depurative and galactagogue. Fresh roots prescribed in jaundice.

Specimens examined: (Total 42) KSK 102788; PD & PU 106694; SAM 104676.

9. *Tylophora* R. Br.

Old World tropics and S. Africa, ca 50 species, 19 in India, 9 in Tamil Nadu and one in GM.

T. indica (Burm. f.) Merr. in Philipp. J. Sci. 19: 373. 1921; IFTC t. 457. 1982; RHFC 4: 91. 1983; FTC 3: 962. 1983; FTN 2: 89. 1987. *Cynanchum indicum* Burm. f., Fl. Indica 70. 1768. *Tylophora asthmatica* (L. f.) Wight & Arn., in Wight, Contr. Bot. India 51. 1834; Wight, Icon. t. 1277. 1848; FBI 4: 44. 1883; FPM 843. 1923. *Asclepias asthmatica* L. f., Suppl. Pl. 171. 1782. [*Nanglaipirattai*, *Nayppalai*]

Leaves oblong-lanceolate, truncate, acute, mucronate. Umbels compressed, axillary. Calyx hairy. Corolla greenish yellow. Corona fleshy; the inner subulate. Follicles cylindric, ca 7 cm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Road sides and in sandy localities, with *Capparis zeylanica*, *Salvadora persica*, *Thespesia populnea* etc.

Distrib.: From Seychelles, through India and Sri Lanka to SE. Asia. TN: Almost all districts. GM: Common on mainland coast, rare on islands; collected only on Moyal Island.

Uses: Roots stimulant, emetic, cathartic, expectorant, stomachic and diaphoretic, used in asthma, bronchitis, whooping cough, dysentery and diarrhoea; also given in rheumatic pains.

Specimens examined: (Total 115) KSK 102724; PD 100529; SAM 106429; Mu Is. PD 100322.

10. *Wattakaka* (Decne.) Hassk.

Old World tropics, 3 species and one in India.

W. volubilis (L. f.) Stapf in Bot. Mag. sub. t. 8976. 1923; IFTC t. 458. 1982; RHFC 4: 108. 1983; FTC 3: 963. 1983; FTN 2: 90. 1987. *Asclepias volubilis* L. f., Suppl. Pl. 170.

1782. *Dregea volubilis* (L. f.) Benth. ex Hook. f., Fl. Brit. India 4: 46. 1883. *Marsdenia volubilis* (L. f.) T. Cooke, Fl. Bombay 2: 166. 1904; FPM 846. 1923. *Hoya viridiflora* R. Br. in Mem. Wern. Nat. Hist. Soc. 1: 27. 1811; Wight, Icon. 586. 1842. [*Kodippalai, Kurincha*]

Leaves cordate, truncate-rounded, entire. Umbels axillary. Calyx-lobes glandular-puberulous. Corolla greenish. Pollinia oblong. Follicles oblong, 9 - 11 cm long, blunt at apex.

Fl. & Fr.: Almost throughout the year.

Habitat: Hedges and on *Acacia planifrons*, *Ehretia ovalifolia*, *Thespesia populnea* etc.

Distrib.: China, India, Malasia and Sri Lanka. TN: Most districts. GM: Rare on Moyal, Nallathanni and Valimunai Islands. Not collected on mainland coast but common in interior regions.

Uses: Roots and tender stalks emetic and purgative. Leaves used in applications for boils and abscesses.

Specimens examined: (Total 122) Mu Is. KSK 102989; PD 100320, 100667; Nt Is. PD & PU 106646; Vm Is. KSK 102703.

Of the 13 species in the family 9 occur on various islands. Some of them are found only on one island. However, species like *Calotropis gigantea*, *Pentatropis capensis* and *Pergularia daemia* occur on a number of islands. Plumed seeds might be transported by gales to the islands and chance-falling of seeds on suitable substratum might enhance the survival. Birds may also be involved in gathering the plumose seeds for nest-building. The factors that enable some of the species to survive on many islands need further studies.

Asclepias curassavica L., an erect large herb with orange-red flowers, *Stapelia gigantea* N.E. Br. and *S. grandiflora* Masson, succulent herbs, are sometimes cultivated in gardens.

64. PERIPLOCACEAE

Key to the genera

- | | |
|---|------------------------|
| 1a. Straggling shrub; roots not fragrant; flowers showy, ca 5 cm across; corolla pinkish purple | 1. <i>Cryptostegia</i> |
| b. Twining herb; roots fragrant; flowers not showy, ca 0.6 cm across; corolla yellow | 2. <i>Hemidesmus</i> |

1. *Cryptostegia* R. Br.

Africa to India, 2 species, 2 in India and one in Tamil Nadu.

C. grandiflora R. Br. in Edward's Bot. Reg. 5: t. 453. 1820; FBI 4: 6. 1883; FPM 862. 1923; RHFC 4: 183. 1983; FTC 3: 941. 1983; FTN 2: 90. 1987. [*Kankettai, Palai*]

Leaves elliptic-oblong, truncate, entire, subacute. Cymes terminal, 3-5-flowered. Stamens 5; pollinia spoon-shaped. Follicles ovoid-oblong, 10-12 x 2-2.5 cm; seeds obovoid.

Habitat: Sandy localities, with *Prosopis chilensis*, *Spinifex littoreus* etc.

Distrib.: Native of Madagascar, widely planted in the tropics. TN: Cultivated in gardens. GM: Collected once on mainland coast near Keelavaipar. An escape, now well established.

Uses: Yields rubber; also yields a fibre suitable for fishing-lines. Seeds contain a fixed oil.

Specimens examined: (Total 7) PD 104602.

2. *Hemidesmus* R. Br.

S. India and SE. Asia, unispecific.

H. indicus (L.) R. Br. in T. Aiton, Hortus. Kew. ed. 2, 2: 75. 1811; Wight, Icon. t. 594. 1842; var. *indicus*: Hook. f., Fl. Brit. India 4: 5. 1883; FPM 825. 1923; RHFC 4: 185. 1983; FTC 3: 948. 1983; FTN 2: 91. 1987. *Periploca indica* L., Sp. Pl. 211. 1753. [*Nannari*]

Leaves oblong, rounded, entire, obtuse, mucronate. Flowers in axillary fascicles. Stamens 5. Corona single. Pollinia globose. Follicles terete, 7-9 x 0.7-1 cm; seeds oblong.

Fl. & Fr.: Aug. - Feb.

Habitat: Hedges, coconut groves and wastelands, with *Merremia tridentata*, *Mukia maderaspatana* etc.

Distrib.: TN: All districts. GM: Mainland coast, frequent.

Uses: Dried roots constitute the drug *Hemidesmus* which has long been used as a demulcent, diaphoretic, diuretic and alterative. Roots are valued flavouring material for drinks and medicine.

Specimens examined: (Total 79) KSK 102014; PD & PU 106496; SAM 106334.

65. LOGANIACEAE

Key to the genera

- 1a. Stem 4-angled; flower solitary, axillary, 4-merous; capsules globose, ca 1.5 mm, smooth, enclosed by persistent calyx; seeds numerous, oblong 1. *Mitrasacme*
- b. Stem terete; flowers in cymes to 50-flowered, terminal, 5-merous; capsules subglobose, ca 5 mm, papillose, not enclosed by calyx; seeds 6 - 8, pyriform 2. *Spigella*

1. *Mitrasacme* Labill.

Indomalaysia to Australia, ca 40 species, 3 in India and one in Tamil Nadu.

M. indica Wight, Icon. t. 1601. 1850; IFTC t. 460. 1982; FTC 3: 965. 1983; FTN 2: 91. 1987. *M. alsinoides* auct. non R. Br. 1810; FBI 4: 80. 1883; FPM 864. 1923.

Herb. Leaves opposite-decussate, elliptic-lanceolate, entire, acute. Calyx 4-lobed. Corolla white. Stamens 4.

Fl. & Fr.: Nov. - March.

Habitat: Marshy localities.

Distrib.: Australia, China, Japan, Malasia, Myanmar, Philippines, S. India, S. New Guinea, Sri Lanka and Vietnam. TN: Ramanathapuram, Salem and Tirunelveli. Earlier collected at Uppur and Ramanathapuram. Likely to occur on the coast.

Specimens examined: (Total 3) VB 2044.

2. *Spigella* L.

Tropics and subtropics, ca 50 species and one in India.

S. anthemia L., Sp. Pl. 149. 1753; JBNHS 84: 730. 1987. (Fig. 36)

Herb. Leaves opposite-decussate, 4 - 6 clustered at apex, ovate-lanceolate, decurrent, entire, attenuate, minute-bristly. Calyx 5-lobed. Corolla pink. Stamens 5.

Fl. & Fr.: Nov. - Jan.

Habitat: Moist loose sandy soil, in shades of *Prosopis chilensis* and with *Boerhavia erecta*, *Cenchrus* spp., *Physalis minima* etc.

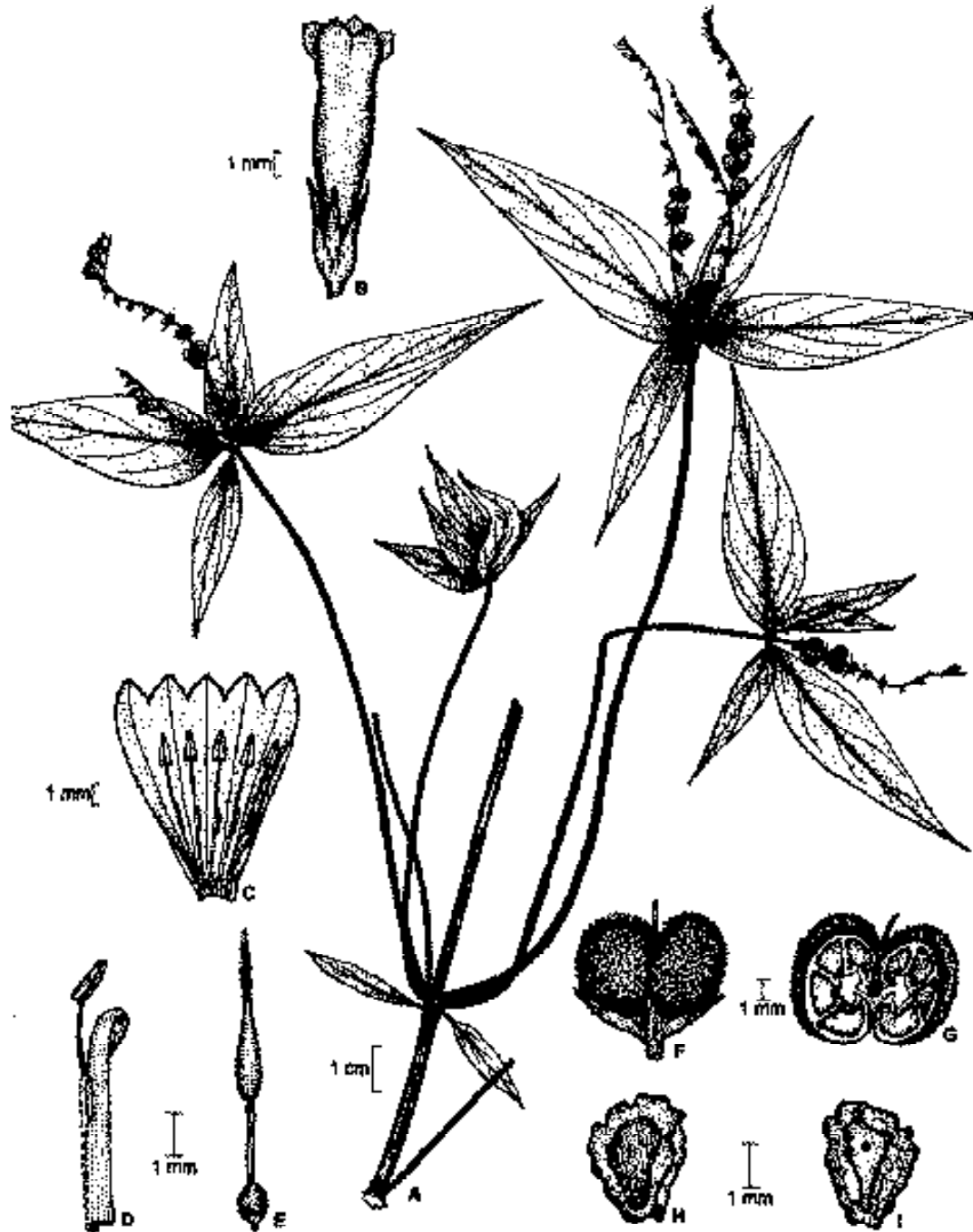


Fig. 36(A - E). *Spigelia nathanae* L.

A. Habit B. Flower C. Corolla split open D. Stamen with a bit of corolla E. Pistil
 F. Capsule G. Capsule L. S. H & I. Seed dorsal & ventral views

Distrib.: Native of S. America, naturalized in Trop. W. Africa and Malesia. TN: Tuticorin. GM: Locally common at Tuticorin port. Added to the flora of peninsular India here.

The plant is likely to have got established only in the recent past by seeds that got stuck to the bark of logs imported from SE. Asia. With profuse flowering and seed setting the seeds are likely to be transported to various destinations of the logs from Tuticorin.

Specimens examined: PD & PU 107354; SAM 104673.

66. GENTIANACEAE

Enicostema Blume

Central America and the W. Indies, 3 species and one in India.

E. axillare (Lam.) J. Raynal in *Adansonia* 9: 75. 1969; FTC 3: 973. 1983; FTN 2: 93. 1987. *Gentiana axillaris* Lam., *Tabl. Encycl.* 1: 487. 1793. *Enicostema littorale* auct. non Blume 1826: FBI 4: 101. 1883; FPM 875. 1923. *Adenema hyssopifolium* G. Don, *Gen. Syst.* 4: 201. 1837 - 1838; Wight, *Icon.* t. 600. 1842. *Enicostema hyssopifolium* (Willd.) Verdc. in *Bothalia* 7: 462. 1962; IFTC t. 463. 1982. *Exacum hyssopifolium* Willd., *Sp. Pl.* 1: 640. 1798. [*Vellaragu*]

Annual herb. Leaves lanceolate, cuneate, entire, acute. Flowers in axillary clusters. Calyx cupular, 5-lobed. Corolla white. Capsules ellipsoid; seeds many, reticulate.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Hedyotis puberula*, *Sporobolus maderaspatanus* etc.

Distrib.: India, Malesia, Sri Lanka, W. Indies and Trop. Africa. TN: All districts. GM: Frequent on mainland coast and common on Karaichalli, Kaswari, Kurusadai, Manoli, Manoliputti, Mullai, Moyal, Pullivasal, Pumarichan, Upputhanni, Van and Valai Islands.

The capsules may get transported to the islands by seawater.

Uses: Plant bitter tonic, stomachic and laxative; also used in dropsy and malaria.

Specimens examined: (Total 80) KSK 102777; Ka Is. PD 102182; Kc Is. PD 102080; Ku Is. PD 100369; Ma Is. PD 101116; Mp Is. PD 101452; Mu Is. PD 100336; Mul Is. KSK 102045; Pv Is. PD 101414.

67. MENYANTHACEAE

Nymphoides Hill

Cosmopolitan, ca 20 species, 5 in India and 3 in Tamil Nadu.

- | | |
|--|--------------------------|
| 1a. Rhizomes thick; capsules ellipsoid, ca 6 mm long, ca 30-seeded;
seeds smooth | 3. <i>N. indicum</i> |
| b. Rhizomes not thick; capsules subglobose or ovoid, 2 - 3 mm long,
1 - 4-seeded; seeds echinate or tuberculate | 2 |
| 2a. Corolla white with a yellow centre; lobes fringed; capsules subglobose;
seeds echinate | 1. <i>N. aurantiacum</i> |
| b. Corolla white without a yellow centre; lobes entire; capsules ovoid;
seeds tuberculate | 2. <i>N. hydrophylla</i> |

1. *N. aurantiacum* (Dalzell) Kuntze, Revis. Gen. Pl. 429. 1891; FTN 2: 86. 1987. *Limnanthemum aurantiacum* Dalzell in Hooker's J. Bot. Kew Gard. Misc. 2: 136. 1850; FBI 4: 132. 1883; FPM 883. 1923.

Aquatic, floating herb; stem petiole-like, spongy, ca 40 cm long. Leaves peltate, broadly ovate, cordate, entire, subscute. Flowers in umbellate fascicles to 10-flowered. Capsules ca 3 mm, pubescent; seeds circular, ca 1.5 mm.

Fl. & Fr.: Nov. - Jan.

Habitat: Still waters of ponds and edges of rivers.

Distrib.: S. India, from Bombay southwards and Sri Lanka. TN: Tuticorin. GM: Rare. Collected only in Tambraparani river at Athur in Tuticorin.

It is represented by very few specimens at MH. And from the East Coast the only earlier collection is from the said locality. The leaves are mostly insect-eaten. The factors that have prevented it from further spread need investigation.

Specimens examined: Dalzell s.n. (K lectotype, photo!); DD s.n.; PD & PU 107275; RW 648/1836; SAM 104683; Stocks s.n. (K photo!).

2. *N. hydrophylla* (Lour.) Kuntze, Revis. Gen. Pl. 429. 1891; FTC 3: 979. 1983; FTN 2: 96. 1987. *Menyanthes hydrophylla* Lour., Fl. Cochinch. 129. 1790. *M. cristata* Roxb., Pl. Coromandel t. 105. 1799; IFTC t. 466. 1982. *Limnanthemum cristatum* (Roxb.) Griseb., Gen. Sp. Gent. 342. 1839; IIB 2: t. 157. bis. f. 4. 1850; FBI 4: 131. 1883; FPM 883. 1923.

Aquatic, floating herb; stem petiole-like, ca 60 cm long. Leaves peltate, broadly ovate or orbicular, cordate, entire, rounded, 5 - 10 cm. Flowers in umbellate fascicles. Capsules ca 2 mm long; seeds discoid, ca 2 mm.

Fl. & Fr.: Almost throughout the year.

Habitat: Edges of ponds and slow running rivers, with *Cryptocoryne spiralis* and *Paspalidium geminatum*.

Distrib.: China, India, Malasia and Sri Lanka. TN: Almost all districts. GM: Mainland coast, frequent. Collected near Kanyakumari and Tambraparani river near Athur.

Uses: Decoction of stalks and leaves used as a wash in parasitic skin affections. Seeds anthelmintic. Stems, leaves and fruits eaten either in the form of a curry or after boiling.

Specimens examined: (Total 25) PD & PU 107013, 107270, 107282.

3. *N. indicum* (L.) Kuntze, Revis. Gen. Pl. 429. 1891; IFTC t. 974 b. 1982; FTC 3: 980. 1983; FTN 2: 96. 1987. *Menyanthes indica* L., Sp. Pl. 145. 1753. *Limnanthemum indicum* (L.) Griseb., Gen. Sp. Gent. 343. 1839, emend. Thwaites, Enum. Pl. Zeyl. 205. 1860; FBI 4: 131. 1883; FPM 883. 1923.

Aquatic, floating herb; stem petiole-like, ca 35 cm long. Leaves broadly ovate-orbicular, deeply cordate, entire, round, 5 - 15 cm. Flowers in umbellate clusters. Corolla white; petals fimbriate. Seeds circular, ca 1.5 mm.

Fl. & Fr.: Almost throughout the year.

Habitat: Still waters in ponds.

Distrib.: Paleotropical. TN: All plain districts. GM: Occasional. Earlier collected at Alagiyapandiapuram, a subcoastal place in Kanyakumari. Likely to occur on the coast.

Uses: Subterranean parts and petioles used as a vegetable. Plant antiscorbutic and febrifuge.

Specimens examined: (Total 4) ANH 49457.

68. HYDROPHYLLACEAE

Hydrolea L. nom. cons.

Tropics, ca 20 species and one in India.

H. zeylanica (L.) Vahl, Symb. Bot. 2: 46. 1791; Wight, Icon. t. 601. 1842; FBI 4: 133. 1883; FPM 884. 1923; IFTC t. 467. 1982; FTC 3: 981. 1983; FTN 2: 97. 1987; RHFC 7: 385. 1991. *Nama zeylanica* L., Sp. Pl. 226. 1753.

Marshy herb, rooting at lower nodes. Leaves elliptic-ovate, truncate, entire, acute. Racemes axillary or terminal. Corolla blue. Capsules oblong, ca 4 mm long, many-seeded; seeds wrinkled.

Fl. & Fr.: Dec. - March.

Habitat: River banks, with *Ludwigia adscendens*, *Monochoria vaginalis* etc.

Distrib.: Africa, SE. Asia, Sri Lanka and Trop. America. TN: All plain districts. GM: Mainland coast, rare. Collected on Tambraparani river bank at Athur in Tuticorin.

Uses: Leaves antiseptic, applied in the form of poultice on ulcers.

Specimens examined: (Total 48) PD & PU 107278.

69. BORAGINACEAE

Key to the genera

1a. Flowers aggregated in 1-sided spikes or racemes	2
b. Flowers solitary or in cymes	3
2a. Herbs or undershrubs	5. <i>Heliotropium</i>
b. Small trees	6. <i>Tournefortia</i>
3a. Prostrate or erect herbs	4
b. Shrubs or trees	5
4a. Prostrate herbs; leaves serrate-crenate; corolla creamy	2. <i>Coldenia</i>
b. Erect herbs; leaves entire; corolla blue or pinkish white	7. <i>Trichodesma</i>
5a. Leaves 0.6 - 1.5 cm long; flower solitary	1. <i>Carmona</i>
b. Leaves 2 - 15 cm long; flowers in cymes	6
6a. Calyx accrescent; style 2; stigma simple	3. <i>Cordia</i>
b. Calyx not accrescent; style 1; stigma capitate	4. <i>Ehretia</i>

1. *Carmona* Cav.

South India, Malesia to Taiwan and the Philippines, unispecific.

C. retusa (Vahl) Masam. in Trans. Nat. Hist. Soc. Taiwan 30: 61. 1940; IF 94: 437. 1968; FTC 3: 996. 1983; FTN 2: 97. 1987; RHFC 7: 5. 1991. *Cordia retusa* Vahl, Symb. Bot. 42. 1791. *Ehretia microphylla* Lam., Tabl. Encycl. 1: 425. 1792; FPM 891. 1923. *E. buxifolia* Roxb., Pl. Coromandel t. 57. 1796; FBI 4: 144. 1883. [*Kurangu vethilal*]

Shrub. Leaves obovate-spatulate, cuneate, entire, obtuse. Flower axillary. Corolla creamy white. Drupes globose, ca 0.5 cm, reddish brown.

Fl. & Fr.: July - Jan.

Habitat: Scrub jungles, with *Cadaba fruticosa*, *Toddalia asiatica* and *Vitex negundo*.

Distrib.: TN: All districts. GM: Mainland coast, occasional.

Uses: Fresh root used as an antidote to vegetable poisoning. Decoction of leaves used for cough and stomach troubles.

Specimens examined: (Total 81) PD & PU 106910; VB 2040.

2. *Coldenia* L.

Old World tropics and subtropics, unispecific.

C. procumbens L., Sp. Pl. 125. 1753; FBI 4: 144. 1883; FPM 892. 1923; IFTC t. 462. 1982; FTC 3: 983. 1983; FTN 2: 97. 1987; RHFC 7: 23. 1991. [*Seruppada*]

Pilose, scabrid herb. Leaves elliptic-ovate, acute, emarginate or obtuse. Flower solitary, axillary. Drupes globose, ca 3 mm.

Fl. & Fr.: Almost throughout the year.

Habitat: Dried up ponds.

Distrib.: TN: All districts. GM: Occasional, earlier collected at places a little interior. It may occur on the coast.

Use: Fresh leaves ground and applied to rheumatic swellings.

Specimens examined: (Total 68) VB 1203.

3. *Cordia* L.

Tropics, ca 250 species, 16 in India, 10 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|--|-------------------------|
| 1a. Corolla orange; drupes subglobose | 3. <i>C. subcordata</i> |
| b. Corolla creamy or white; drupes ovoid | 2 |
| 2a. Shrub; leaves retuse; flowers 4-merous; corolla white; | |

- drupes yellowish orange when ripe 1. *C. diffusa*
 b. Tree; leaves subacute-acute; flowers 5-merous; corolla creamy;
 drupes pale yellowish when ripe 2. *C. obliqua*

1. *C. diffusa* K.C. Jacob in J. Bombay Nat. Hist. Soc. 45: 78. 1944; FTN 2: 97. 1987.
 (Fig. 37)

Leaves elliptic or oblong, cuneate, entire. Cymes umbellate, axillary or terminal, 6 - 8-flowered. Drupes 1 - 1.5 cm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Cadaba fruticosa*, *Clerodendrum inerme* etc.

Distrib.: TN: Coimbatore and Tuticorin. Endemic. GM: Rare on mainland coast and Karaichalli Island. Earlier reported from Coimbatore only. Present collection from the study area is a new record for the East Coast.

Specimens examined: (Total 13) PD & PU 103325; Kc Is. SAM 104746; PD & PU 107301.

2. *C. obliqua* Willd., Sp. Pl. 1: 1072. 1798; FBI 4: 137. 1883; FPM 887. 1923; IFTC t. 469. 1982; FTC 3: 1000. 1983; FTN 2: 48. 1987. [*Vidi*]

Leaves ovate to elliptic, rounded-subacute or oblique, entire, serrate towards apex. Corymbs axillary, 3 - 8-flowered. Drupes mucronate, 1.5 - 2 cm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Ficus benghalensis*, *Premna serratifolia* etc.

Distrib.: India, N. Africa, Pakistan and Sri Lanka. TN: Almost all districts. GM: Rare on mainland coast and Moyal Island. Earlier collected at Samythoppu on mainland coast in Ramanathapuram. Now collected on an island for the first time.

Uses: Fruit is edible. It is an astringent, anthelmintic, diuretic, demulcent and expectorant, used in diseases of the chest and urinary passage. Wood used for boats, well-curbs and agricultural implements.

The pulpy fruits of *C. obliqua* are dispersed by red-vented and white-browed bulbuls (Balasubramanian, 1996). Likewise *C. diffusa* with similar fruits may also be dispersed by birds. However, what needs explanation is their occurrence only on one island each.

Specimens examined: (Total 51) NCN 53129; Mu Is. PD 100668; PD & PU 106805.

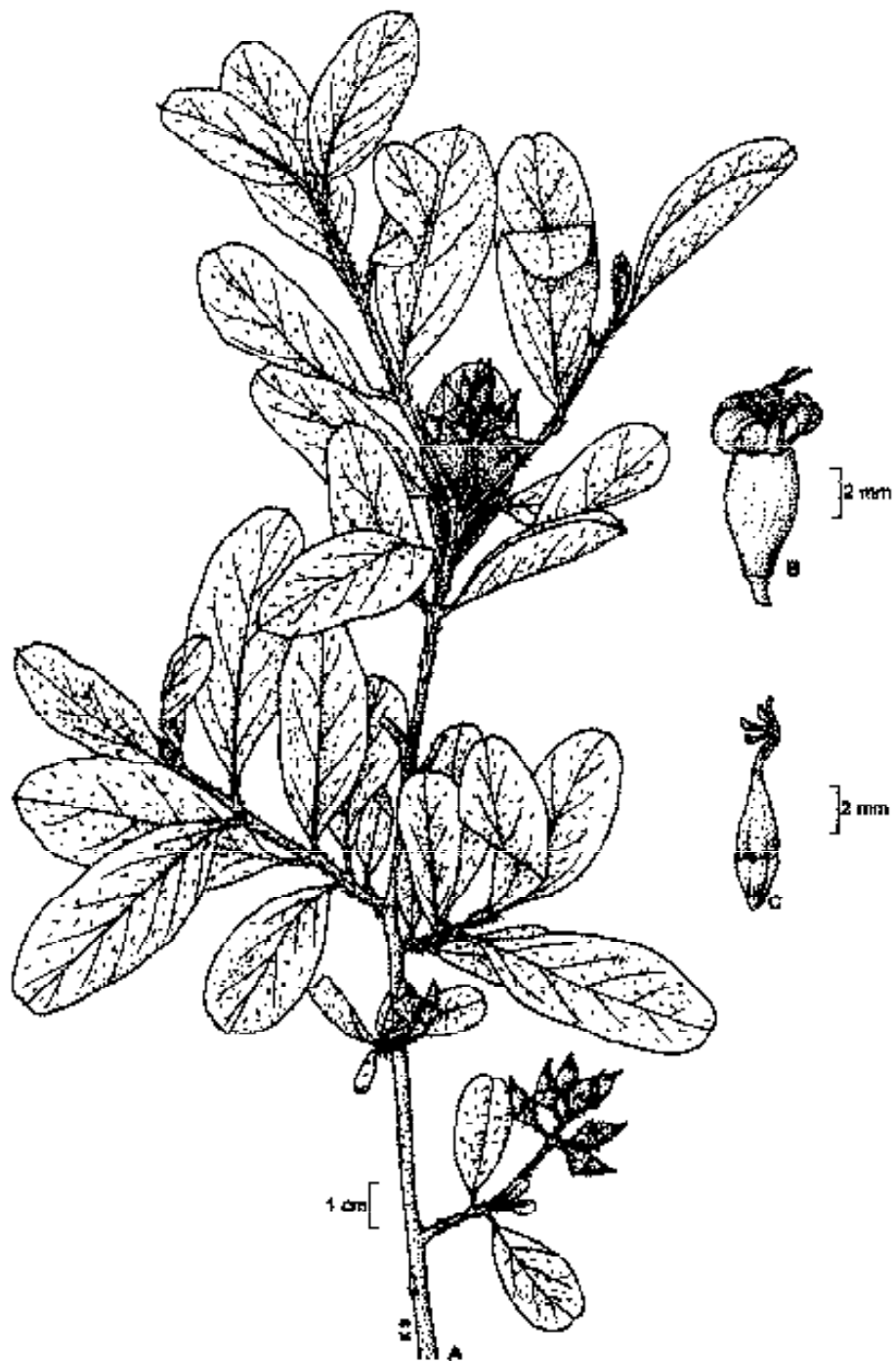


Fig. 37(A-C). *Cardia dihana* K.C. Jacob
A. Twig B. Flower C. Pistil

3. *C. subcordata* Lam., Tabl. Encycl. 1: 421. 1792; FBI 4: 140. 1883; FPM 889. 1923; FTN 2: 98. 1987; RHFC 7: 9. 1991. (Fig. 38)

Tree, to 10 m. Leaves broadly ovate-cordate, cuneate or oblique, entire, obtuse-subacute or acute. Cymes axillary, 3 - 8-flowered. Drupes ca 3 x 2 cm.

Fl. & Fr.: Nov. - Jan.

Habitat: Sandy foreshore on islands, with *Pleurostyliia opposita*, *Salvadora persica*, *Thespesia populnea* and sometimes with *Suriana maritima* and *Excoecaria agallocha*.

Distrib.: Africa through SE. Asia to Pacific Islands. GM: Frequent. Earlier collected only on Kurusadai Island. Now collected also on adjacent islands such as Kurusadai, Muyal, Pullivasal, Pumarichan and Shingle. Never collected on mainland coast.

Notes: Rao & al. (1963a), who reported the distribution of *C. subcordata* on the Kurusadai group of islands, had collected only on Kurusadai Island (Rao 635). It has now been collected on the other islands of the groups except Manoli and Manoliputti. Whereas it is extremely rare on Muyal and Shingle Islands, it is a little common on Kurusadai, Pullivasal and Pumarichan Islands. The fruits with a hard and light pericarp can float for many days are sea-dispersed. However, while it is a little common on some islands, it is rare on two of them and these plants here are stunted ones unlike those on other islands. What has prevented it from reaching the other two islands (Manoli and Manoliputti) needs further investigations. Perhaps water currents in the area are one of the reasons.

Specimens examined: Ku Is. SRR s.n. 88192; TAR 635 (CAL); VB 2177; PD 100375, 99761; PD & PU 106893; Mu Is. PD & PU 106814; Pu Is. PD & PU 106835; Pv Is. PD 101188; Sh Is. PD & PU 106875.

4. *Ehretia* P. Browne

Tropics and subtropics, ca 50 species, 8 in India, 6 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|-------------------------|
| 1a. Cymes unilateral; calyx-lobes lanceolate | 2. <i>E. laevis</i> |
| b. Cymes dichotomous; calyx-lobes oblong | 2 |
| 2a. Leaves oblong, apiculate; corolla-lobes ovate | 1. <i>E. canarensis</i> |
| b. Leaves broadly elliptic-ovate, not apiculate; corolla-lobes oblong | 3. <i>E. ovalifolia</i> |

1. *E. canarensis* (C. B. Clarke) Gamble, Fl. Madras 891. 1923; FTN 2: 98. 1987. *E. laevis* Roxb. var. *canarensis* C.B. Clarke in Fl. Brit. India 4: 142. 1883. *E. laevis* sensu Wight, Icon. t. 1382. 1848, non Roxb. 1796.

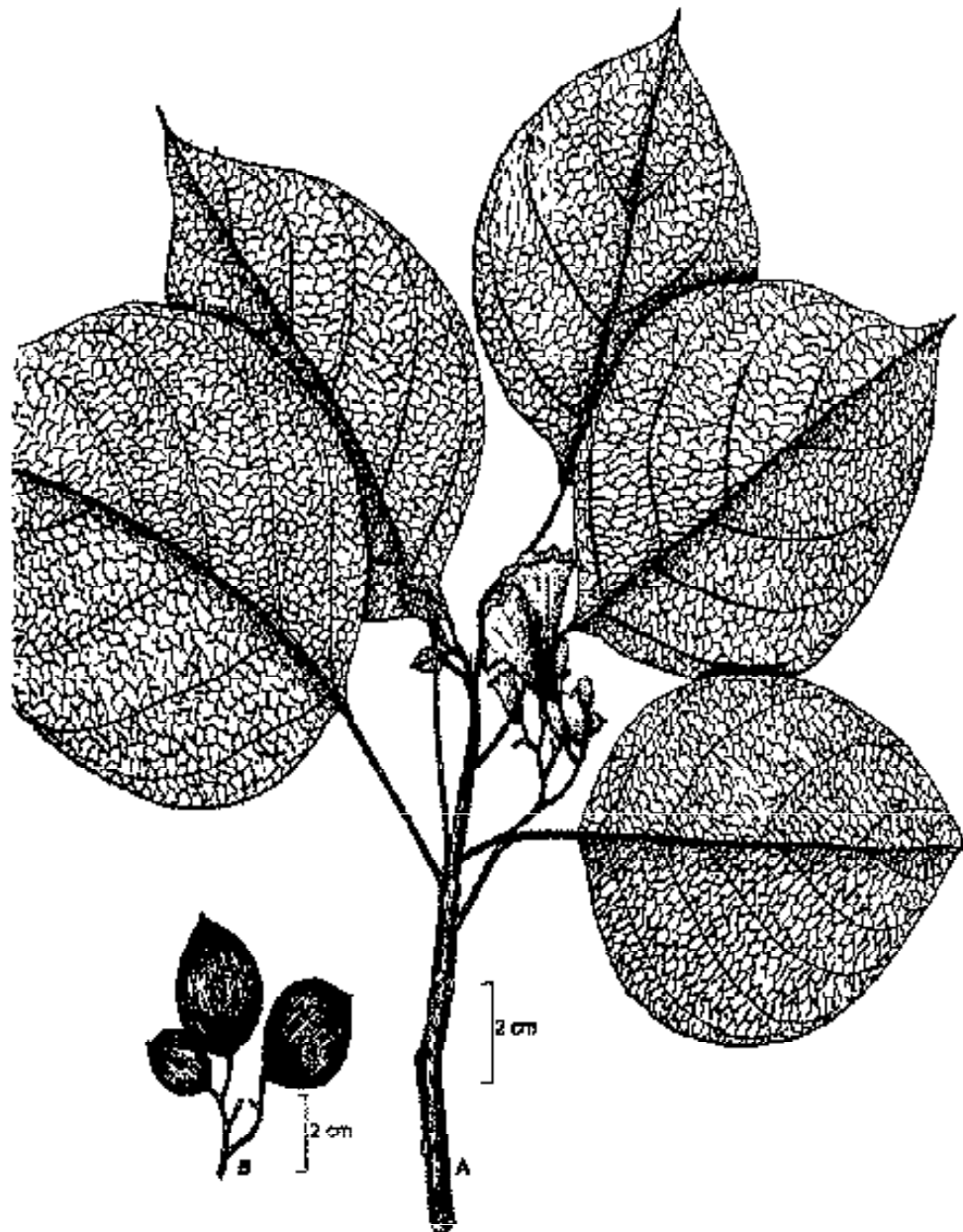


Fig. 38(A & B). *Cordia subcordata* Lam
A. Twig B. Fruits

Tree. Leaves cuneate, entire, subacute. Cymes corymbose, terminal. Corolla white. Drupes globose, ca 5 mm, 1-seeded.

Fl. & Fr.: Aug. - Jan.

Habitat: Sandy localities, with *Capparis sepiaria*, *Manilkara hexandra* etc.

Distrib.: S. India and Sri Lanka. TN: Coimbatore, Kanyakumari, Madurai, Nilgiri, Ramanathapuram and Tirunelveli. GM: Rare, collected on Nallathanni and Purmarichan Islands, not on mainland coast.

Specimens examined: (Total 36) Nt Is. PD & PU 106644; Pu Is. PD 99735.

2. *E. laevis* Roxb., Pl. Coromandel t. 56. 1796; FBI 4: 141. 1883; FPM 891. 1923; IFTC t. 471. 1982; FTC 3: 1001. 1983; FTN 2: 98. 1987; RHFC 7: 21. 1991. *E. laevis* Roxb. var. *floribunda* (Benth.) Brandis, Forest Fl. N. W. India 340. 1874; FBI 4: 142. 1883. *E. floribunda* Benth. in Royle, Ill. Bot. Himal. Mts. 1: 306. 1839. [*Kalvirasu*] (Fig. 39)

Tree. Leaves broadly ovate-oblong, attenuate, entire, subacute-obtuse. Flowers in terminal cymose clusters. Corolla white. Drupes globose, ca 5 mm, 1-seeded.

Fl. & Fr.: July - March.

Habitat: Sandy localities, with *Dichrostachys cinerea*, *Premna serratifolia* etc.

Distrib.: India to SE. Asia. TN: Almost all districts. GM: Earlier collected at Ramswaram. Now collected on Kurusadai Island, rare.

Uses: Wood used for brush-backs, match-boxes and splints. Leaves used as a fodder

Specimens examined: (Total 28) VB 2186; Ku Is. PD 100581.

3. *E. ovalifolia* Wight, Icon. t. 1383. 1848; FBI 4: 743. 1883; FPM 891. 1923; FTC 3: 1002. 1983; FTN 2: 99. 1987.

Tree. Leaves attenuate, entire, obtuse or rounded. Corolla white. Drupes globose, ca 5 mm, 1-seeded.

Fl. & Fr.: Almost throughout the year.

Habitat: Dry and sandy localities, with *Ehretia laevis*, *Ziziphus mauritiana* etc.

Distrib.: S. India and Sri Lanka. TN: Almost all districts. GM: Occasional on mainland coast and Kurusadai and Nallathanni Islands.

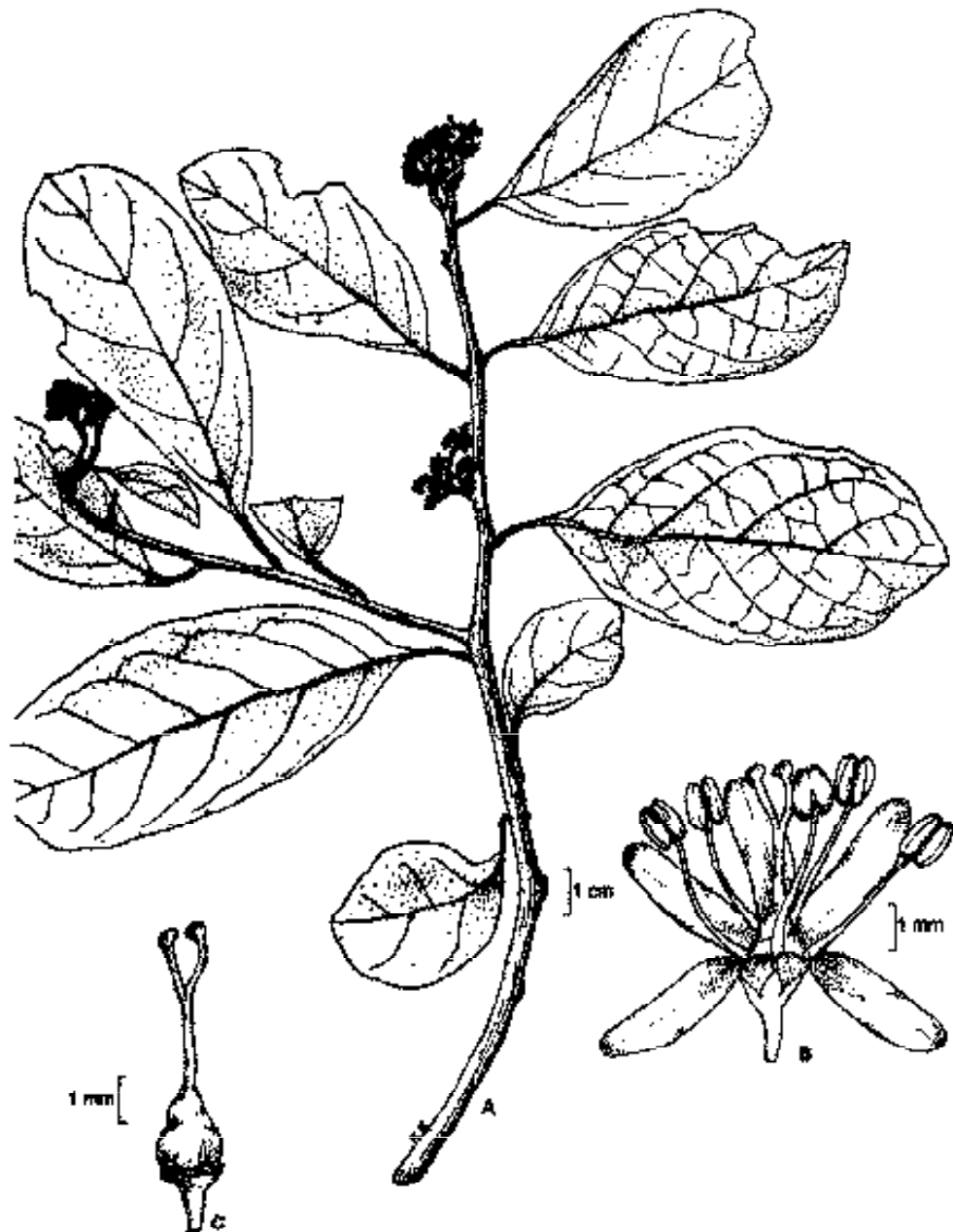


Fig. 28(A - C): *Elettaria laevis* Roxb.
A. Twig B. Flower C. Pistil

A plant of the interior but rare on the coast. Earlier collected on Kurusadai Island and the mainland coast at Samythoppu and Valinokkam in Ramanathapuram. Now collected on Nallathanni Island as well.

Specimens examined: (Total 48) PD & PU 106695; VB 1566; Ku Is. DD & JSR 93570; PD 100571, 99764; Nt Is. PD & PU 100627, 106645.

Birds such as brahmini myna, common myna, red-vented and white-browed bulbuls (Balasubramanian, 1996), which are also found in the biosphere reserve (Deshmukh & Venkataramani, 1994), eat the fruits and disperse the seeds of *E. ovalifolia*. Likewise *E. canarensis* and *E. laevis* might have arrived on islands. However, why these species are restricted to only a few islands needs further investigations.

5. *Heliotropium* L.

Tropical and temperate regions, ca 250 species, 18 in India, 11 in Tamil Nadu and 6 in GM.

Key to the species

- | | |
|--|---------------------------|
| 1a. Plant glaucous; leaves fleshy | 1. <i>H. curassavicum</i> |
| b. Plants not glaucous; leaves not fleshy | 2 |
| 2a. Inflorescence a raceme | 3. <i>H. marifolium</i> |
| b. Inflorescence a spike | 3 |
| 3a. Undershrub; nutlets fused in pairs, beaked | 2. <i>H. indicum</i> |
| b. Herbs; nutlets neither in pairs nor beaked | 4 |
| 4a. Spikes 10 - 15 cm long; nutlets glabrous, rugose | 5. <i>H. subulatum</i> |
| b. Spikes 4 - 8 cm long; nutlets appressed-hairy, smooth
or tuberculate | 5 |
| 5a. Leaves obovate-spatulate; calyx-lobes strigose; nutlets smooth..... | 4. <i>H. ovalifolium</i> |
| b. Leaves elliptic-ovate; calyx-lobes sericeous; nutlets tuberculate | 6. <i>H. supinum</i> |

1. *H. curassavicum* L., Sp. Pl. 130. 1753; FPM 896. 1923; IFTC t. 472. 1982; FTC 3: 986. 1983; FTN 2: 99. 1987; JAA 51: 178. 1970; RHFC 7: 31. 1991.

Herb. Leaves lanceolate, spatulate, cuneate, entire, acute. Spikes terminal. Corolla white. Nutlets 4, ca 1 mm long, free, glabrous.

Fl. & Fr.: Aug. - Feb.

Habitat: Open wastelands, with *Cressa cretica*, *Euphorbia indica* and *Trichodesma indicum*.

Distrib.: Africa, America, Australia, Bangladesh, Europe, India and Pakistan. TN: Almost all districts. GM: Common on mainland coast. Now collected on Thalaiyari Island, rare.

Use: Powdered roots applied to sores and wounds.

Specimens examined: (Total 49) PD 102160, 102221; SAM 104671, 104793; Th Is. PD 101516.

2. *H. indicum* L., Sp. Pl. 130. 1753; FBI 4: 152. 1883; FPM 896. 1923; IFTC t. 433. 1982; FTC 3: 988. 1983; FTN 2: 99. 1987; RHFC 7: 30. 1991. *Tiaridium indicum* (L.) Lehm., Pl. Asperif. Nucif. 14. 1818; IIB t. 171. 1850. [*Thekkodukkupoondi*]

Leaves ovate, truncate, undulate, acute. Spikes terminal or leaf-opposed. Corolla pale bluish white. Nutlets 4, ca 3 mm long, beaked.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet localities and wastelands, with *Basilicum polystachyon*, *Polygonum glabrum* etc.

Distrib.: Africa, America, China, India, Malesia, Myanmar and Ryukyu Islands. TN: All districts. GM: Mainland coast, frequent.

Uses: Plant emollient, vulnerary and diuretic; used as a local application for ulcers, sores, wounds, gum boils and skin affections. Seeds masticated as a stomachic.

Specimens examined: (Total 64) PD & PU 107015.

3. *H. marifolium* Retz., Obs. Bot. 2: 8. 1781; FBI 4: 152. 1883, subsp. *marifolium*: JAA 51: 154. 1970; FTN 2: 99. 1987. *H. scabrum* Retz., Obs. Bot. 2: 8. 1781; Wight, Icon. t. 1389. 1848; FBI 4: 152. 1883; FPM 897. 1923; FTC 3: 989. 1983; RHFC 7: 30. 1991.

Prostrate, spreading, strigose herb. Leaves elliptic-oblong, cuneate, entire, acute. Racemes subterminal. Corolla white with yellow throat. Nutlets 4, ca 1.2 mm long, appressed-hairy.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Boerhavia diffusa*, *Vernonia cinerea* etc.

Distrib.: S. India and Sri Lanka. TN: All districts. GM: Mainland coast, occasional.

Specimens examined: (Total 115) PD 100503; SAM 106440; VB 1806.

4. *H. ovalifolium* Forssk., Fl. Aegypt.-Arab. 38. 1775; FBI 4: 150. 1883; FPM 896. 1923; JAA 51: 178. 1970; FTC 3: 989. 1983; FTN 2: 99. 1987. *H. coromandelianum* Raddi ex DC., Prodr. 9: 533. 1845, non Retz. 1781; Wight, Icon. t. 1388. 1848.

Erect or ascending, sericeous herb. Leaves cuneate, entire, obtuse, apiculate. Spikes terminal or axillary. Corolla white. Nutlets 4, free, ca 1 mm long.

Fl. & Fr.: Jan. - Aug.

Habitat: Wastelands and fallow fields.

Distrib.: Africa, Arabia, Australia, India and Vietnam. TN: All districts. GM: Earlier collected a little interior. May occur on the coast.

Use: Plant used in syphilitic ulcer.

Specimens examined: (Total 66) VB 1964.

5. *H. subulatum* (Hochst. ex DC.) Vatke in Oesterr. Bot. Z. 25: 166. 1876; FPM 896. 1923; FTN 2: 100. 1987. *Tournefortia subulata* Hochst. ex DC., Prodr. 9: 528. 1845. *Heliotropium zeylanicum* auct. non (Burm. f.) Lam. 1789; Wight, Icon. t. 892. 1844 - 1845; FBI 4: 148. 1883; RHFC 7: 32. 1991. [*Thelipoondu*]

Erect, scabrid herb. Leaves linear, cuneate, entire, acute. Spikes terminal. Corolla white. Nutlets 4, ca 1.5 mm long.

Fl. & Fr.: Nov. - Jan.

Habitat: Dry and sandy places, with *Acanthospermum hispidum*, *Tephrosia purpurea* etc.

Distrib.: India and Trop. Africa. TN: Coimbatore, Dharmapuri, Salem and Tirunelveli. Now collected in Kanyakumari and Ramanathapuram. GM: Occasional on mainland coast and rare on Thalaiyari Island. Collected at Vivekananthapuram in Kanyakumari.

Specimens examined: (Total 41) KSK 102841; SAM 106419; Th Is. PD 101537.

6. *H. supinum* L., Sp. Pl. 130. 1753; Wight, Icon. t. 1387. 1848; FBI 4: 149. 1883; FPM 896. 1923; JAA 51: 179. 1970; FTC 3: 990. 1983; FTN 2: 100. 1987; RHFC 7: 29. 1991.

Ascending, hispid herb. Leaves subulate, attenuate, entire. Spikes axillary or subterminal. Corolla white. Nutlets 4, ca 1 mm long.

Fl. & Fr.: Jan. - March & June - Aug.

Habitat: Wastelands, with *Cassia italica*, *Passiflora foetida*, *Portulaca oleracea* etc.

Distrib.: Arabia, India, Iraq, N. Africa, Pakistan, S. Europe and Syria. TN: Most districts. GM: Mainland coast, occasional.

Specimens examined: (Total 29) PD & PU 104629.

6. *Tournefortia* L.

Tropics and subtropics, ca 150 species, 9 in India, 4 in Tamil Nadu and one in GM.

T. argentea L. f., Suppl. Pl. 133. 1782; JBNHS 63: 226. 1966; FTN 2: 101. 1987.

Tree. Leaves ovate or obovate, attenuate, rounded or obtuse. Sepals 5. Petals 5, concave. Stamens 5. Drupes depressed-subglobose.

Distrib.: Asian tropics. India (Lakshadweep and Nicobars) TN: Ramanthapuram.

Note: Its inclusion is based on the report of Sundararaj and Nagarajan (*l.c.*) from Kurusadai Island. No specimens exist from the area. Specimens from the Lakshadweep show that it is a very distinct Boraginaceous tree species which is unlikely to be missed. It may be assumed that the plant has disappeared from Kurusadai Island.

7. *Trichodesma* R. Br.

Old World tropics and subtropics, ca 35 species, 6 in India, 3 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|------------------------|
| 1a. Leaves auriculate at base; corolla blue | 2. <i>T. indicum</i> |
| b. Leaves cordate at base; corolla pinkish white | 1. <i>T. inaequale</i> |

1. *T. inaequale* Edgew. in J. Asiat. Soc. Bengal 21: 175. 1853; KB 44: 700. 1989. *T. amplexicaule* sensu A. DC. in DC., Prodr. 10: 172. 1846, p.p.; FBI 4: 153. 1883, p.p.; FPM 899. 1923, p.p. *T. sedgwickianum* S. P. Banerjee in Bull. Bot. Soc. Bengal 16: 10. 1962; FTC 3: 994. 1983; FTN 2: 101. 1987.

Pubescent herb. Leaves oblong-lanceolate, entire, acute. Flower solitary, axillary. Corolla throat with glandular spots. Nutlets 4, ovoid, 4-angled, ca 3.5 mm long, verrucose.

Fl. & Fr.: Oct. - Jan.

Habitat: Sandy wastelands.

Distrib.: Afghanistan, India, Iran, Mauritius and Pakistan. TN: Coimbatore, Madurai and Ramanathapuram. GM: Rare. Earlier once collected at Samythoppu, near Mandapam.

Specimens examined: (Total 6) NCN 53112.

2. *T. indicum* (L.) R. Br., Prodr. 496. 1810; IIB 2: t. 172. 1850; FBI 4: 153. 1883; FPM 899. 1923; JAA 52: 516. 1971; IFTC t. 475. 1982; FTC 3: 993. 1983; FTN 2: 101. 1987; RHFC 7: 24. 1991. *Borago indica* L., Sp. Pl. 137. 1953.

Hirsute herb. Leaves oblong-lanceolate, entire, acute, white-glandular-hairy above. Flower solitary, axillary. Corolla throat with yellow glandular spots. Nutlets 4, pyramid-like, 4-angled, ca 5 mm long, smooth.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Aerva persica*, *Chloris barbata* and *Spermacoce hispida*.

Distrib.: Afghanistan, India, Mauritius, Myanmar and the Philippines. TN: All districts. GM: Mainland coast, frequent.

Uses: Leaves and flowers eaten. Plant emollient and diuretic; prescribed for expulsion of dead foetus. Roots used in dysentery, and applied to swellings of joints.

Specimens examined: (Total 145) KSK 102811B, 103382; PD 102157; SAM 106415.

70. CONVULVULACEAE

Key to the genera

- | | |
|---|---------------------|
| 1a. Plants parasitic, leafless | 3. <i>Cuscuta</i> |
| b. Plants non-parasitic, leafy | 2 |
| 2a. Leaves rotundiform; capsules indehiscent | 7. <i>Riveria</i> |
| b. Leaves other than rotundiform; capsules dehiscent | 3 |
| 3a. Styles 2; stamens equal | 4 |
| b. Style 1; stamens unequal | 6 |
| 4a. Prostrate herbs; corolla blue; stigma bifid | 4. <i>Evolvulus</i> |
| b. Erect herbs or subshrubs; corolla white; stigma capitate | 5 |
| 5a. Erect herb; branches not woody; capsules 1-seeded..... | 2. <i>Cressa</i> |
| b. Subshrub; branches woody; capsules 4-seeded | 1. <i>Bonania</i> |
| 6a. Pollen grains smooth; stigma capitate or subglobose | 6. <i>Merremia</i> |
| b. Pollen grains spinulose; stigma 2- or 3-lobed | 5. <i>Ipomoea</i> |

1. *Bonamia* Thouars

Tropics, 45 species, 2 in India and Tamil Nadu and one in GM.

B. evolvuloides (Choisy) Raizada ex Raizada in Indian Forester 93: 754. 1967; FTN 2: 104. 1987; IJF 21: 63. 1998. *Breweria evolvuloides* Choisy, Convolv. Orient. 112. 1834; FBI 4: 224. 1883; FPM 923. 1921. *Seddera evolvuloides* (Choisy) Wight, Icon. t. 1369. 1848. (Fig. 40)

Leaves sessile, oblong-elliptic, cuneate, entire, acute-mucronate. Flower solitary, axillary. Capsules ovoid.

Fl. & Fr.: Dec. - March.

Habitat: Dry open lands in scrub jungles usually near rocks and on hard soil and in open coconut groves, with *Barleria buxifolia*, *Croton bonplandianum* and *Sida cuneifolia*.

Distrib.: TN: Kanyakumari, Tirunelveli and Tuticorin. Endemic. GM: Mainland coast, rare.

Note: It is an overlooked endemic that is threatened. Its distribution is restricted to the Gulf of Mannar coastal and subcoastal regions. Populations are few and far between. Habitat crunch is identified as a causal factor (Daniel & Umamaheswari, 1998).

Specimens examined: MAL s.n.; PD 107534; PD & PU 107072; RW 2302 & 2332 (K photo!).

2. *Cressa* L.

Tropics and subtropics, 5 species and one in India.

C. cretica L., Sp. Pl. 223. 1753; FBI 4: 225. 1883; FPM 922. 1923; RHFC 1: 304. 1980; IFTC t. 477. 1982; FTC 3: 1012. 1983; FTN 2: 104. 1987. [*Uppumarikkolunthu*]

Erect, small herb. Leaves ovate, truncate, entire, acute. Flowers solitary or in clusters. Corolla white. Capsules globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy shores and nearby wastelands, with *Chloris barbata*, *Sporobolus* spp. etc.

Distrib.: Tropics. TN: Chengalpattu, Ramanathapuram, S. Arcot, Thanjavur, Tirunelveli and Tuticorin. GM: Mainland coast, common. Rare on Manoli and Van Islands.

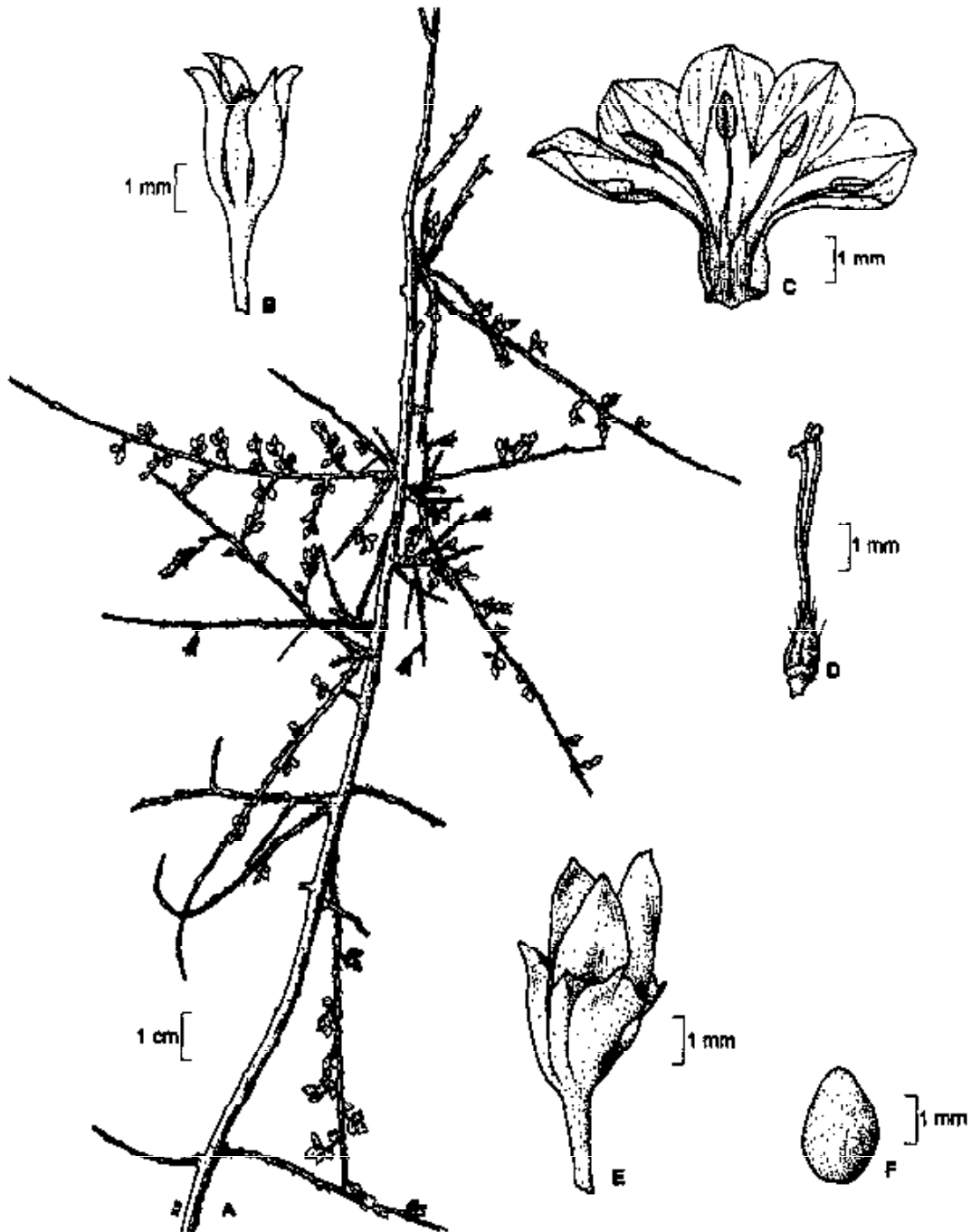


Fig. 40 (A - F). *Bonania evolvensoides* (Choisy) Raizada ex Raizada
 A. Twig B. Calyx C. Corolla split open D. Pistil
 E. Capsule F. Seed

Dispersal of seeds may occur through oceanic drift (Ridley, 1930).

Uses: Herb used as a tonic, aphrodisiac and stomachic. Sometimes grazed by goats.

Specimens examined: (Total 47) KSK 102938; Ma Is. PD 100700; Va Is. PD & PU 103543.

3. *Cuscuta* L.

Cosmopolitan, ca 145 species, 7 in India, 4 in Tamil Nadu and one in GM.

C. reflexa Roxb., Pl. Coromandel t. 104. 1798; FBI 4: 225. 1883; FPM 931. 1923; RHFC 1: 306. 1980; FTC 3: 1014. 1983; FTN 2: 105. 1987.

Twining herb. Flowers in clusters. Corolla creamy. Capsules globose, 2 - 4-seeded.

Fl. & Fr.: Jan. - April.

Habitat: Parasitic on trees and shrubs.

Distrib.: Afghanistan through India, China, Malesia, Sri Lanka and Thailand. TN: All districts. GM: Mainland coast, occasional.

Uses: Plant purgative. Used in flatulence and liver complaints.

Specimens examined: (Total 12) AKM 227.

4. *Evolvulus* L.

Tropics and subtropics, 98 species, 2 in India and Tamil Nadu and one in GM.

E. alsinoides (L.) L., Sp. Pl. ed. 2, 1: 392. 1762; FBI 4: 220. 1883; FPM 923. 1923; RHFC 1: 309. 1980; IFTC t. 479. 1982; FTC 3: 1015. 1983; FTN 2: 105. 1987. *Convolvulus alsinoides* L., Sp. Pl. 157. 1753. [*Vishnu karandai*]

Leaves elliptic, oblong-lanceolate, acute, entire. Flower solitary. Corolla blue. Capsules globose, many-seeded.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Boerhavia diffusa*, *Portulaca quadrifida*, *Sida cordifolia* etc.

Distrib.: Tropics and subtropics. TN: All districts. GM: Common on mainland coast and frequent on Kurusadai and Nallathanni Islands.

Uses: Plant tonic, febrifuge and vermifuge. Used with coconut oil for promoting hair growth.

Specimens examined: (Total 120) KSK 102722; Ku Is. DD & SRR 20554; PD 99790.

5. Ipomoea L.

Tropics, ca 500 species, 60 in India, 33 in Tamil Nadu and 10 in GM.

Key to the species

- 1a. Erect shrub; stem hollow 3. *I. carnea*
- b. Climbers, or prostrate or erect herbs; stem not hollow 2
- 2a. Leaves lobed 7
- b. Leaves not lobed 3
- 3a. Corolla more than 15 cm across 1. *I. alba*
- b. Corolla less than 15 cm across 4
- 4a. Corolla creamy with purple throat 5. *I. marginata*
- b. Corolla white or pink without purple throat 5
- 5a. Plant a woody climber; corolla tube 6.5 - 7.5 cm long 10. *I. violacea*
- b. Plants creepers or trailers; corolla tube 0.5 - 2.5 cm long 6
- 6a. Plant a creeper; corolla pink; filaments villos at base; capsules with persistent calyx 2. *I. aquatica*
- b. Plant a trailer; corolla white; filaments glabrous at base; capsules without persistent calyx 9. *I. runcifolia*
- 7a. Leaves deeply bilobed or emarginate, subcoriaceous with parallel nerves 7. *I. pes-caprae*
- b. Leaves 3- 9 lobed, neither coriaceous nor with parallel nerves 8
- 8a. Calyx-lobes sericeous outside, hirsute inside; seeds pubescent with hairs in small tufts 8. *I. pes-tigridis*
- b. Calyx-lobes neither sericeous nor hirsute; seeds glabrous or densely pubescent throughout 9
- 9a. Plant a climber; leaves 3-lobed; corolla pink-purple; seeds pyriform, glabrous 6. *I. nil*
- b. Plant a creeper; leaves pedately 5 - 7-lobed; corolla cream; seeds oblong, densely pubescent 4. *I. coptica*

1. *I. alba* L., Sp. Pl. 161. 1753; FTC 3: 1020. 1983; FTN 2: 105. 1987. *I. bona-nox* L., Sp. Pl. ed. 2, 1: 228. 1762; FBI 4: 197. 1883. *Calonyction bona-nox* (L.) Bojer, Hortus Maurit. 227. 1837; FPM 920. 1923. *C. speciosum* Choisy, Convolv. Orient. 59, t. 1, f. 4. 1834; RBSI 9: 123. 1921. [*Naganamukkorai*]

Climbing shrub. Leaves broadly cordate or reniform, cordate, entire, acute. Flowers solitary or 2 - 5. Corolla white. Capsules subglobose; seeds densely white - pubescent.

Fl. & Fr.: Sept. - Dec.

Habitat: Wastelands, with *Diplocyclos palmatus*, *Rhynchosia velutina*, *Waltheria indica* etc.

Distrib.: Circumtropical; native of Trop. America, now cultivated or escaped. TN: Chengalpattu, Coimbatore, Dharmapuri, Kanyakumari, Nilgiri, Ramanathapuram and Salem. GM: Mainland coast, occasional. Earlier collected on Kurusadai Island.

Uses: Young leaves and fleshy calyces used as a vegetable. Root-bark purgative.

Specimens examined: (Total 15) KSK 102815; Ku Is. NP & KR 85339, VB 14363.

2. *I. aquatica* Forssk., Fl. Aegypt.-Arab. 44. 1775; FBI 4: 210. 1883; RHFC 1: 318. 1980; FTC 3: 1021. 1983; FTN 2: 105. 1987. *I. reptans* Poir. in Lam., Tabl. Encycl. Suppl. 3: 460. 1814; FPM 916. 1923.

Aquatic herb, rooting at nodes. Leaves lanceolate-hastate, entire, acuminate. Flowers solitary or 2 - 3 in cymes. Corolla pink. Capsules globose; seeds minutely hairy.

Fl. & Fr.: Nov. - Feb.

Habitat: Edges of canals and marshy places.

Distrib.: Old World tropics, now widely naturalized. TN: All districts. GM: Mainland coast, common.

Uses: Young terminal shoots and leaves used as a vegetable. A green fodder of high nutritive value.

Specimens examined: (Total 24) ANH 49580; MSS 68990; VB 1660.

3. *I. carnea* Jacq., Enum. Syst. Pl. 13. 1760; FPM 919. 1923; FTN 2: 106. 1987, subsp. *flutulosa* (Mart. ex. Choisy) D. F. Austin in Taxon 26: 237. 1977 & in RHFC 1: 322. 1980; FTC 3: 1024. 1983. *I. fistulosa* Mart. ex Choisy in DC., Prodr. 9: 349. 1845.

Leaves broadly ovate, cordate, entire, acuminate. Flowers in axillary panicles. Corolla pale pink. Capsules ovoid; seeds hairy.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy wastelands, with *Crotalaria linifolia*, *Cyperus exaltatus*, *Hygrophilla schulli* etc. Usually near water sources, sometimes a hedge plant.

Distrib.: Native of Trop. America, now circumtropical. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Contains two toxic principles. One soluble in water, the other in ether, the latter acts as a mild purgative.

Specimens examined: (Total 28) PD 100498, 102259.

4. *I. coptica* (L.) Roth ex Roem. & Schult., Syst. Veg. 4: 208. 1819; RHFC 1: 323. 1980; FTC 3: 1025. 1983; FTN 2: 106. 1987. *Convolvulus copticus* L., Mant. Pl. 559. 1771. *I. dissecta* Willd., Phytographia 5, t. 2, f. 3. 1794; FBI 4: 200. 1883; FPM 918. 1923.

Herb. Leaves cuneate, serrate, acute. Flower solitary. Capsules conical.

Fl. & Fr.: Nov. - Feb.

Habitat: Wastelands and wet sandy localities, with *Amaranthus roxburghianus*, *Hedyotis pumila* etc.

Distrib.: Australia, S. Africa, S. India and Sri Lanka. TN: Chengalpattu, Ramanathapuram and S. Arcot. GM: Mainland coast, frequent. Thalayiari Island, rare.

Uses: Cold infusion given for dizziness and in intoxication.

Specimens examined: (Total 5) PD & PU 106527; 106682; Th Is. PD 101500.

5. *I. marginata* (Desr.) Verdc. in Kew Bull. 42: 658. 1987; Nicolson & al. in Regnum Veg. 119: 91. 1988. *Convolvulus marginatus* Desr. in Lam., Encycl. 3: 558: 1792. *Ipomoea sepiaria* J. König ex Roxb., Hort. Bengal. 14. 1814; Wight, Icon. t. 838. 1845; FBI 4: 209. 1885; FPM 916. 1923; RHFC 1: 338. 1980; FTC 3: 1032. 1983; FTN 2: 108. 1987. [Thalakkodi]

Climbing herb. Leaves broadly ovate or triangular, cordate, entire, acute. Flowers in umbellate cymes. Capsules globose; seeds white-velvety.

Fl. & Fr.: Dec. - Feb.

Habitat: Hedges and wastelands, with *Euphorbia hirta*, *Tinospora cordifolia* etc.

Distrib.: Asia, Australia and Trop. Africa. TN: All districts. GM: Mainland coast, occasional.

Uses: Eaten as potherb, also used as a fodder. Juice diuretic and deobstruent, used as an antidote to arsenic poisoning.

Specimens examined: (Total 58) KSK 102865, 102023; PD 102235.

6. *I. nil* (L.) Roth, Catal. Bot. 1: 36. 1797; RHFC 1: 332. 1980; FTC 3: 1028. 1983; FTN 2: 107. 1987. *Convolvulus nil* L., Sp. Pl. ed. 2, 1: 219. 1762. *I. hederacea* auct. non (L.) Jacq. 1787; FBI 4: 199. 1883; FPM 917. 1923. [*Kakkattan*]

Leaves cordate, entire, acute-acuminate. Flowers solitary or 1 - 3 in cymes. Capsules globose.

Fl. & Fr.: Dec. - March.

Habitat: Wastelands and sandy soil, with *Crotalaria retusa*, *Hibiscus ovalifolius* etc.

Distrib.: Native of N. America, introduced in the tropics. TN: All districts. GM: Frequent on mainland coast and Anaipar, Pullivasal, Pumarichan and Thalayiari Islands.

Uses: Dried seeds used as a purgative.

Specimens examined: (Total 54) KSK 102748, 102761, 102931; An Is. KSK 102386; Pu Is. PD 99728; Pv Is. PD 101427; Th Is. PD 101490.

7. *I. pes-caprae* (L.) R. Br. in Tuckey, Narr. Exped. Zaire 477. 1818; FPM 917. 1923; RHFC 1: 334. 1980; FTC 3: 1030. 1983; FTN 2: 107. 1987. *Convolvulus pes-caprae* L., Sp. Pl. 159. 1753. *Ipomoea biloba* Forssk., Fl. Aegypt.-Arab. 44. 1775; FBI 4: 212. 1883. [*Attukkal*]

Prostrate herbs. Leaves subcordate or rounded, truncate, entire. Flower solitary. Corolla pink or white. Capsules globose; seeds densely tomentose.

Key to the varieties

- | | |
|--|---|
| <p>1a. Internodes green; nodes pink; calyx-lobes green; corolla white; tube ca 2.5 cm long; persistent calyx-lobes around capsules green</p> | <p>7.1. var. <i>perunkulamensis</i></p> |
| <p>b. Internodes and nodes pink; calyx-lobes pink; corolla pink, deep pink inside throat; tube ca 3.5 cm long; persistent calyx-lobes around capsules pink</p> | <p>7.2. var. <i>pes-caprae</i></p> |

7.1. var. *perunkulamensis* Umamahesw. & P. Daniel in J. Econ. Tax. Bot. 23: 691, f. 1. 1999.

Fl. & Fr.: Dec. - Feb.

Distrib.: GM: Mainland coast, Ramanathapuram.

Habitat: Muddy soil, with *Ipomoea pes-caprae* var. *pes-caprae*, *Eriocaulon quinqueangulare*, *Euphorbia indica*, *Lindernia minima* and *Ludwigia perennis*.

Specimens examined: PD 101473 (CAL holotype; MH isotypes).

7.2. var. *pes-caprae*

Fl. & Fr.: Nov. - Feb.

Habitat: Usually on foreshore sandy soil, with *Canavalia rosea*, *Euphorbia* spp., *Halopyrum mucronatum*, *Launaea sarmentosa*, *Sesuvium portulacastrum* etc.

Distrib.: Pantropical. TN: All districts. GM: Common on mainland coast and all islands.

Uses: Plant astringent, tonic, stomachic and diuretic. Leaves used in external applications for rheumatism and dropsy and their juice taken as a diuretic. Seeds used for stomachache and cramps.

Specimens examined: (Total 50) KSK 102732, 102792, 103462, 103472; PD 101471; Ma Is. PD 101460; Sh Is. PD 100356; Ut Is. PD 101635; Vm Is. KSK 102396.

8. *I. pes-tigridis* L., Sp. Pl. 662. 1753; Wight, Icon. t. 836. 1844 - 1845; FBI 4: 204. 1883; FPM 918. 1923; RHFC 1: 336. 1980; FTC 3: 1031. 1983; FTN 2: 107. 1987. *I. pes-tigridis* L. var. *hepaticifolia* (L.) C.B. Clarke in Fl. Brit. India 4: 204. 1883; RBSI 9: 124. 1921. *I. hepaticifolia* L., Sp. Pl. 161. 1753. [*Punaikkirai*]

Climbing herb. Leaves palmately 5-lobed; lobes obovate, decurrent, acute. Flowers clustered. Corolla white. Capsules globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Cultivated fields and wastelands, with *Cassia italica*, *Cleome viscosa* etc.

Distrib.: Asia and Trop. Africa. TN: All districts. GM: Mainland coast, frequent.

Uses: Used as a fodder. Leaves employed in the form of poultice to cure boils, sores, pimples and carbuncles. Root used as a purgative.

Specimens examined: (Total 58) KSK 102824; NCN 531136; PD & PU 103525, 106936.

9. *I. rumicifolia* Choisy in Mem. Soc. Phys. Genève 6: 446. 1834; FBI 4: 207. 1883; FPM 916. 1923; FTN 2: 108. 1987. (Fig. 41)

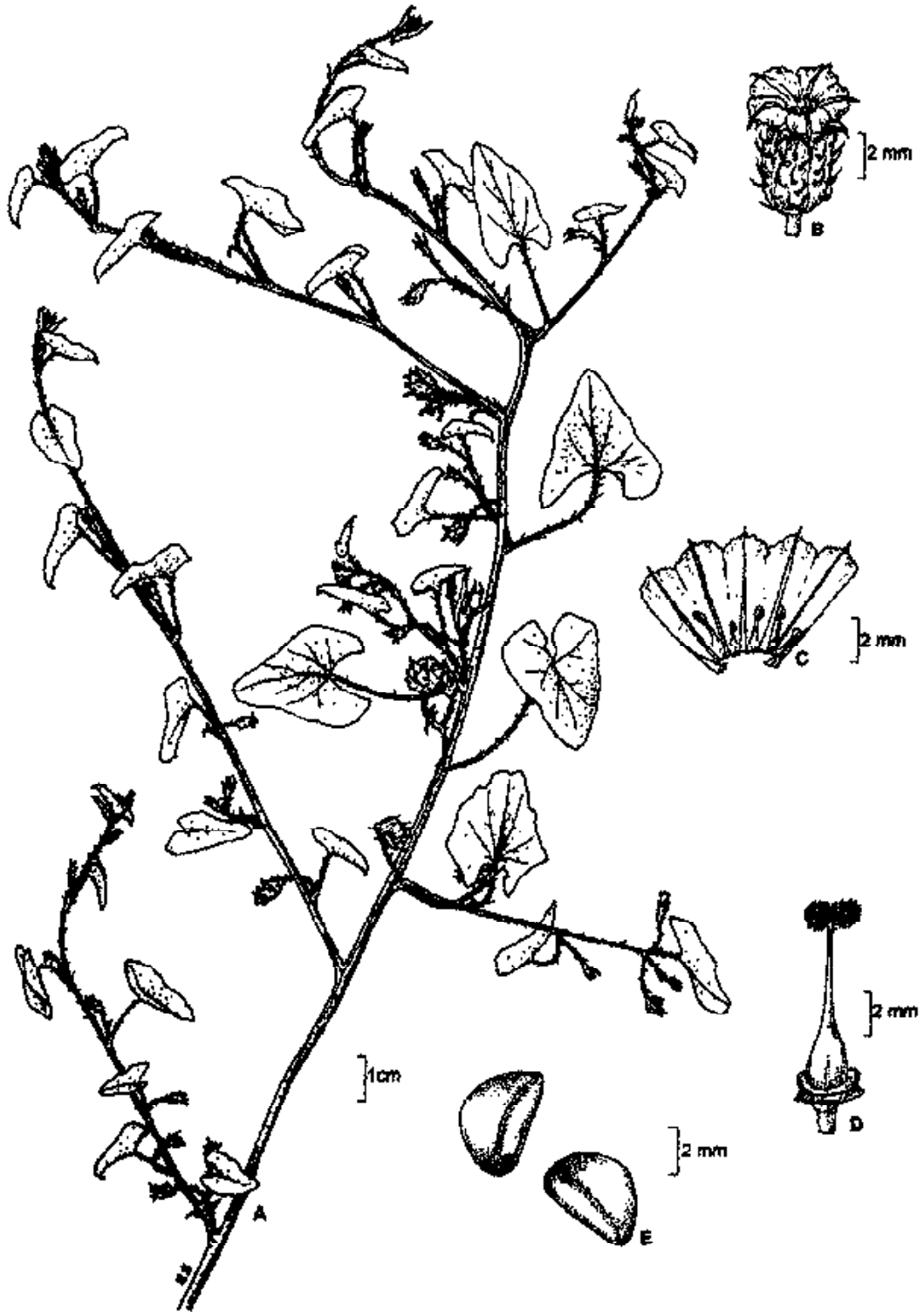


Fig. 41(A - E). *Ipomoea ruscifolia* Choisy

A. Twig B. Flower C. Corolla split open with stamens D. Pistil E. Seeds

Leaves broadly ovate, cordate, entire, obtuse-subacute. Flowers solitary or 2 3. Capsules globose; seeds pubescent.

Fl. & Fr.: Nov. - Feb.

Habitat: Dry localities and near salt pans, with *Cressa cretica*, *Eragrostis viscosa*, *Helitropium curassavicum* etc.

Distrib.: E. Trop. Africa and S. India. TN: Coimbatore, Ramanathapuram and Tuticorin. GM: Mainland coast, rare. Collected at Veppalodai in Tuticorin. An addition to Tuticorin Distr.

Specimens examined: (Total 3) PD & PU 103581; VB 2142, 2315.

10. *I. violacea* L., Sp. Pl. 161. 1753; FTN 2: 109. 1987. *I. tuba* (Schltdl.) G. Don, Gen. Syst. 4: 271. 1837 1838. *Convolvulus tuba* Schltdl. in Linnaea 6: 735. 1831. *Ipomoea grandiflora* sensu C. B. Clarke in FBI 4: 198. 1883, non Lam. 1791. *I. macrantha* Roem. & Schult., Syst. Veg. 4: 251. 1819.

Leaves cordate, entire, acuminate. Flower solitary. Corolla white. Capsules globose; seeds densely tomentose.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, on *Ehretia ovalifolia*, *Premna serratifolia*, *Thespesia populnea* etc.

Distrib.: Australia, E. Trop. Africa, Polynesia, S. India and Sri Lanka. TN: Ramanathapuram and Thanjavur. GM: Occasional on mainland coast and common on Anaipar and Mandapam group of islands.

Specimens examined: (Total 14) KSK 103468; Ku Is. PD 99765; Ma Is. PD 101117; Mu Is. KSK 102996; Pu Is. PD & PU 106834; Pv Is. PD & PU 106856; Sh Is. PD & PU 106869.

Species of *Ipomoea* are sea-dispersed (Ridley, 1930). However, out of the 10 species only were 5 collected on islands. Whereas *I. pes-caprae*, *I. violacea* and *I. nil* occur on a few islands, *I. alba* and *I. coptica* occur only on one island. *I. violacea* is usually abundant.

I. batatas (L.) Lam., the sweet potato, is cultivated for its edible tubers. *I. catrica* (L.) Sweet and *I. quamoclit* L. may be cultivated in gardens as ornamentals.

6. *Merremia* Dennst. ex Endl. nom. cons.

Tropics, ca 70 species, 15 in India, 10 in Tamil Nadu and 4 in GM.

Key to the species

- | | |
|--|-------------------------|
| 1a. Prostrate herbs; leaves entire | 2 |
| b. Twiners; leaves lobed | 3 |
| 2a. Plant a creeper; leaves reniform to broadly ovate; corolla yellow,
ca 0.6 cm across | 2. <i>M. emarginata</i> |
| b. Plant a trailer; leaves spatulate, oblong to pandurate; corolla
cream to yellow with purple throat, ca 1.5 cm across | 4. <i>M. tridentata</i> |
| 3a. Branchlets hirsute; corolla white with pinkish throat,
ca 4 cm across; seeds glabrous | 1. <i>M. dissecta</i> |
| b. Branchlets puberulous; corolla yellow, ca 1.5 cm across;
seeds pubescent | 3. <i>M. hederacea</i> |

1. *M. dissecta* (Jacq.) Hallier f. in Bot. Jahrb. Syst. 16: 552. 1893; FPM 928. 1923; RHFC 1: 349. 1980; FTC 3: 1036. 1983; FTN 2: 109. 1987. *Convolvulus dissectus* Jacq., Obs. Bot. 2: 4, t. 28. 1767. *Ipomoea sinuata* Ortega, Nov. Pl. Descr. Dec. 84. 1798; FBI 4: 214. 1883.

Twining herb. Leaves palmately 5-7-lobed; lobes oblanceolate, decurrent, entire, acuminate. Capsules globose; seeds glabrous.

Fl. & Fr.: Oct. - Jan.

Habitat: On hedges and fences; cultivated as an ornamental; sometimes an escape.

Distrib.: Native of Trop. America. Elsewhere introduced. TN: Chengalpattu, Coimbatore, Ramanathapuram, S. Arcot and Tiruchirapalli. GM: Mainland coast, occasional.

Uses: Seeds possess odour of oil of bitter almonds and used in the preparation of a liquor.

Specimens examined: (Total 7) VB 1892.

2. *M. emarginata* (Burm. f.) Hallier f. in Bot. Jahrb. Syst. 16: 552. 1893; FPM 928. 1923; RHFC 1: 349. 1980; FTC 3: 1037. 1983; FTN 2: 109. 1987. *Evolvulus emarginatus* Burm. f., Fl. Indica 77, t. 30, f. 1, 1768. [*Perettaikkirai*, *Yelikkaadhu keerai*]

Leaves cordate, crenate, obtuse. Flowers solitary or 1-3. Capsules globose; seeds glabrous.

Fl. & Fr.: Dec. - March.

Habitat: Bunds of rice fields, with *Fimbristylis miliacea*, *Mimosa pudica* etc.

Distrib.: S. India, SE. Asia, Sri Lanka and Trop. Africa. TN: Chengalpattu, Kanyakumari, Ramanathapuram, Salem, S. Arcot, Thanjavur and Tiruchirapalli. GM: Mainland coast, occasional.

Uses: Eaten as potherb. Considered deobstruent and diuretic; used in rheumatism and neuralgia.

Specimens examined: (Total 23) NCN 60809; PD & PU 107050; VB 1961.

3. *M. hederacea* (Burm. f.) Hallier f. in Bot. Jahrb. Syst. 18: 118. 1894; RHFC 1: 350. 1980; FTC 3: 1037. 1983; FTN 2: 110. 1987. *Evolvulus hederaceus* Burm. f., Fl. Indica 77, t. 30, f. 2. 1768. *Ipomoea chryseides* Ker Gawl. in Edward's Bot. Reg. 4: t. 270. 1818; Wight, Icon. t. 157. 1839; FBI 4: 206. 1883. *Merremia chryseides* (Ker Gawl.) Hallier f. in Bot. Jahrb. Syst. 16: 552. 1893; FPM 929. 1923.

Climbing herb. Leaves cordate, crenate, acuminate. Flowers in dichasial cymes. Capsules globose.

Fl. & Fr.: Dec. - Jan.

Habitat: Wet and wastelands, with *Cyperus corymbosus*, *Polygonum glabrum* etc.

Distrib.: Old World Tropics, throughout India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Poultice of leaves applied to chapped hands and feet.

Specimens examined: (Total 27) PD & PU 107267.

4. *M. tridentata* (L.) Hallier f. in Bot. Jahrb. Syst. 16: 552. 1893; FPM 928. 1923; RHFC 1: 351. 1980; FTC 3: 1038. 1983; FTN 2: 110. 1987. *Convolvulus tridentatus* L., Sp. Pl. 187. 1753. *Ipomoea tridentata* (L.) Roth in Roem., Arch. Bot. 2: 38. 1800; FBI 4: 205. 1883. *Merremia hastata* (Desr.) Hallier f. in Bot. Jahrb. Syst. 16: 552. 1893; FPM 929. 1923. *Convolvulus hastatus* Desr. in Lam., Encycl. 3: 542. 1792, non Forssk. 1775.

Leaves auriculate, entire, obtuse, mucronate. Flower solitary. Capsules globose; seeds glabrous.

Fl. & Fr.: Dec. - March.

Habitat: Wastelands and sandy soil, with *Celosia polygonoides*, *Trianthema decandra* and *Vernonia cinerea*.

Distrib.: Trop. Asia to Taiwan and Trop. Africa. TN: Almost all districts. GM: Frequent on mainland coast. Occasional on Nallathanni Island.

Seeds are dispersed by seawater (Ridley, 1930). However, of the 4 species only one occurs on an island.

Use: Decoction of roots used in toothache.

Specimens examined: (Total 110) KSK 103484; PD 101184, 102129; PD & PU 106473, 106987; SAM 104791; Nt. Is. PD 101606.

7. *Rivea* Choisy

Indomalaysia, 4 species, 2 in India and Tamil Nadu and one in GM.

R. hypocrateriformis (Desr.) Choisy in Mem. Soc. Phys. Genève 6: 408. 1834; FBI 4: 184. 1883; FPM 903. 1923; IFTC t. 485. 1982; FTC 3: 1042. 1983; FTN 2: 111. 1987. *Convolvulus hypocrateriformis* Desr. in Lam., Encycl. 3: 561. 1792. [*Budhikirai*]

Climber. Leaves broadly ovate, truncate or cordate, entire, acute, apiculate. Flower solitary. Corolla creamy-white. Capsules conical; seeds glabrous.

Fl. & Fr.: Dec. - March.

Habitat: Scrub jungles, on *Acacia* spp. and *Gmelina asiatica*.

Distrib.: India and Nepal. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Leaves and young shoots eaten as a vegetable.

Specimens examined: (Total 106) PD 101171; PD & PU 106954; SAM 106412.

71. SOLANACEAE

Key to the genera

- | | |
|--|--------------------|
| 1a. Fruits covered with inflated calyx | 2 |
| b. Fruits not covered with inflated calyx | 3 |
| 2a. Leaves toothed; flower solitary; corolla yellowish with a dark purple centre | 2. <i>Physalis</i> |
| b. Leaves entire; flowers in fascicles; corolla yellow without a | |

- dark purple centre 4. *Withania*
 3a. Corolla 5 - 7 cm across; fruit a capsule, spiny 1. *Datura*
 b. Corolla 0.5 - 3.5 cm across; fruit a berry, smooth 3. *Solanum*

1. *Datura* L.

South & N. America but widely naturalized elsewhere, 8 species, 7 in India and Tamil Nadu and 2 in GM.

Key to the species

- 1a. Herb; stem purple, pubescent; corolla 10-toothed;
 capsules ca 3 cm with weak sharp spines 1. *D. inoxia*
 b. Undershrub; stem green, glabrous; corolla 5-toothed;
 capsules ca 4 cm with stout blunt spines 2. *D. metel*

1. *D. inoxia* Mill., Gard. Dict. ed. 8, n. 5. 1768; FTC 3: 1051. 1983; FTN 2: 113. 1987. *D. metel* auct. non L. 1753: Sims in Bot. Mag. t. 1440. 1812; FBI 4: 243. 1883; FPM 941. 1923.

Leaves elliptic-ovate, obliquely truncate, entire, rarely lobed, acute. Flower solitary. Corolla white. Capsules globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Acanthospermum hispidum*, *Cleome angustifolia* and *Solanum virginianum*.

Distrib.: TN: Almost all districts. GM: Mainland coast, occasional.

Uses: A source of scopolamine, a cerebral depressant useful in agitated or maniacal conditions.

Specimens examined: (Total 10) PD & PU 106505.

2. *D. metel* L., Sp. Pl. 179. 1753; Saff. in J. Wash. Acad. Sci. 11: 178. 1921; IFTC t. 488. 1982; FTC 3: 1052. 1983; FTN 2: 113. 1987; RHFC 6: 404. 1987. *D. fastuosa* L., Syst. Nat. ed. 10, 932. 1759; Wight, Icon. t. 1396. 1848; FBI 4: 242. 1883; FPM 941. 1923. *D. fastuosa* L. var. *alba* (Nees) C.B. Clarke in Fl. Brit. India 4: 243. 1883; FPM 941. 1923. *D. alba* Nees in Trans. Linn. Soc. London, Bot. 17: 73. 1837. [*Oomathal*]

Leaves elliptic, truncate, unequally lobed; lobes acute. Flower solitary. Corolla white with purple tinge inside. Capsules globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Leucas aspera*, *Sida cordifolia* etc.

Distrib.: TN: Almost all districts. GM: Common on mainland coast and rare on Thalaiyari Island.

Uses: Leaves narcotic and antispasmodic.

Specimens examined: (Total 35) PD & PU 106508; Th Is. PD 101485.

2. *Physalis* L.

Cosmopolitan, ca 80 species in India, 4 in Tamil Nadu and one in GM.

P. minima L., Sp. Pl. 183. 1753; FBI 4: 238. 1883; FPM 933. 1923; IFTC t. 490. 1982; FTC 3: 1056. 1983; FTN 2: 114. 1987. *P. pubescens* Wight, Ill. Ind. Bot. 2: t. 166, f. 6. 1850, non L. 1753. [*Sodakku thakkaali*]

Herb. Leaves elliptic-ovate, obliquely rounded, acute. Flower solitary. Berries globose, pale greenish; seeds smooth or rugose.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Antsomeles malabarica*, *Cassia* spp., *Launaea intybacea* etc.

Distrib.: Africa, Australia and Trop. Asia. TN: Almost all districts. GM: Common on mainland coast. Occasional on Nallathanni, Pullivasal, Pumarichan and Thalaiyari Islands.

Uses: Fruits and leaves edible, also preserved; a tonic, diuretic and purgative.

Specimens examined: (Total 111) KSK 102873; Nt Is. PD 101595; Pu Is. PD 99725; Pv Is. PD 99771; Th Is. PD 101532.

3. *Solanum* L.

Subcosmopolitan, ca 1400 species, 40 in India, 33 in Tamil Nadu and 6 in GM.

Key to the species

- | | |
|---|-------------------------|
| 1a. Annual; berries blackish violet when ripe | 1. <i>S. americanum</i> |
| b. Perennials; berries yellow when ripe | 2 |
| 2a. Unarmed shrub; branchlets fulvous-pubescent | 2. <i>S. pubescens</i> |
| b. Armed shrubs or undershrubs; branchlets glabrous | 3 |

- 3a. Leaves lacinate; flowers in cymes 4. *S. virginianum*
 b. Leaves ovate, angular; flowers in racemes 3. *S. trilobatum*

1. *S. americanum* Mill., Gard. Dict. ed. 8, 5. 1768; KB 27: 103. 1972; RHFC 6: 368. 1987. *S. nigrum* auct. non L. 1753; FBI 2: 229. 1883; FPM 936. 1923; FTC 3: 1062. 1983; FTN 2: 116. 1987. *S. rubrum* Mill., Gard. Dict. ed. 8, n. 4. 1768, non L. 1767; Wight, Icon. t. 344. 1840. [*Manatakkali*]

Unarmed herb. Leaves broadly ovate-elliptic, rounded or decurrent, toothed, acute. Flowers in umbels. Corolla white. Berries globose; seeds discoid, pitted.

Fl. & Fr.: Almost throughout the year.

Habitat: Waste wet places, with *Asystasia gangetica*, *Commelina benghalensis* etc.

Distrib.: Almost cosmopolitan. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Plant antiseptic and antidiysenteric. Root considered diuretic and laxative. Fresh extract of herb is effective in cirrhosis of liver. Leaves and tender shoots are boiled and eaten like spinach.

Specimens examined: (Total 106) KSK 103326; PD & PU 106912.

2. *S. pubescens* Willd., Phytographia 5, t. 3. 1794; Wight, Icon. t. 1402. 1848; FBI 4: 230. 1883; FPM 936. 1923; FTC 3: 1062. 1983; RHFC 6: 369. 1987; FTN 2: 117. 1987.

Leaves broadly ovate, truncate, entire, acute. Flowers in axillary racemes. Corolla purple. Berries globose; seeds minutely scaly.

Fl. & Fr.: Dec. - March.

Habitat: Sandy soil in scrub jungles, with *Phyllanthus rotundifolius*, *Trachys muricata* etc. There is a distinct association with *Acacia planifrons* under whose shade it occurs particularly along Valinokkam coast.

Distrib.: S. India and Sri Lanka. TN: Almost all districts. GM: Common on mainland coast from Valinokkam to Mundal and from Periyathalai to Thiruchendur. Rare on Kurusadai and Nallathanni Islands.

Use: Berries edible. Collected by local villagers for making curry.

Specimens examined: (Total 72) PD & PU 106559, 107239; Ku Is. KSK 102318.

3. *S. trilobatum* L., Sp. Pl. 188. 1753; Wight, Icon. t. 854. 1844 - 1845; FBI 4: 236. 1883; FPM 938. 1923; FTC 3: 1065. 1983; RHFC 6: 380. 1987; FTN 2: 117. 1987. [Tuduvalai]

Climbing, armed undershrub. Leaves lobed, sinuate. Corolla purple. Berries globose; seeds circular, slightly pitted.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Crotalaria retusa*, *Indigofera tinctoria* etc.

Distrib.: Malesia, S. India and Sri Lanka. TN: Almost all districts. GM: Occasional on mainland coast and rare on Kurusadai Island.

Uses: Berries and flowers used for cough. Leaves cooked and eaten

Specimens examined: (Total 65) SAM 104693; Ku Is. PD 99786.

4. *S. virginianum* L., Sp. Pl. 187. 1753; KB 41: 433. 1987; RHFC 4: 76: 375. 1987. *S. surattense* Burm. f., Fl. Indica 57. 1768; FTC 3: 1069. 1983; FTN 2: 117. 1987. *S. xanthocarpum* Schrad. & J.C. Wendl., Sert. Hannov. 1: 8, t. 2. 1795; FBI 4: 236. 1883; FPM 938. 1923. *S. jacquini* Willd., Sp. Pl. 1: 1041. 1798; Wight, Icon. t. 1041. 1848. [Kandangattiri]

Plant prostrate. Leaves attenuate, acute, prickly. Cymes extraaxillary. Berries globose; seeds circular, smooth.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Cenchrus ciliaris*, *Heliotropium scabrum* and *Phyllanthus amarus*.

Distrib.: Australia, India, Polynesia, SE. Asia and Sri Lanka. TN: Almost all districts. GM: Common on mainland coast and occasional on Kurusadai Island.

Uses: Roots expectorant, form a constituent of the well-known Ayurvedic preparation Dasamula. The dasamula is employed in cough, asthma and pain in the chest. Extract of the herb shows antiviral activity.

Specimens examined: (Total 53) KSK 102962; PD 100461; Ku Is. PD 99787.

Solanum melongena L. and *S. torvum* Sw. are cultivated for their fruits, used as a vegetable.

4. *Withania* Pauquy nom. cons.

Old World tropics, 10 species, 2 in India and one in Tamil Nadu.

W. somnifera (L.) Dunal in DC., Prodr. 13: 453. 1852; FBI 4: 239. 1883; FPM 940. 1923; IFTC t. 492. 1982; FTC 3: 1066. 1983; RHFC 6: 399. 1987; FTN 2: 118. 1987. *Physalis somnifera* L., Sp. Pl. 182. 1753; Wight, Icon. t. 853. 1844 45. [*Amukira*] (Fig. 42)

Undershrub, ca 1.5 m, hoary-tomentose. Leaves broadly ovate, truncate, entire, sub-acute-acute. Berries globose, ca 0.6 cm, orange; seeds discoid, pitted.

Fl. & Fr.: April - Dec.

Habitat: Roadside wastelands, with *Aerva persica*, *Cyperus bulbosus* and *Solanum pubescens*.

Distrib.: Mediterranean and India, Canary Islands and Cape of Good Hope. TN: Chengalpattu, Coimbatore, Dharmapuri, Nilgiri, Ramanathapuram, Salem, Tiruchirappalli, Tirunelveli and Tuticorin. GM: Mainland coast, less frequent.

Uses: Tender shoots used as a vegetable, also used as a fodder for goats. Roots used for cough, rheumatism, and as a sedative. Leaves used as a febrifuge and applied to lesions, painful swellings and sore eyes. It is used in a number of Ayurvedic preparations.

Specimens examined: (Total 33) KMS 103736; PD 100462; PD & PU 107241.

Of the 8 species of the Solanaceae 4 were collected on islands. Berries of *Solanum trilobatum* are reportedly eaten by red-vented and white-browed bulbuls and dispersed (Balasubramanian, 1996), which are also found in the biosphere reserve. In *Physalis minima* the bladderly fruit may float and get transported to islands, so also *Datura metel*. However, as the fruits are edible in *Physalis minima* and *Solanum pubescens*, humans may be responsible for the transport.

Capsicum annum L. and *C. frutescens* L., the chillies, and *Lycopersicon esculentum* Mill., the tomato, are cultivated for their fruits, used as vegetables. *L. esculentum* may be rarely found as an escape even on islands. *Cestrum diurnum* L. and *C. nocturnum* L. may be cultivated in gardens.

72. SCROPHULARIACEAE

Key to the genera

- 1a. Prostrate herbs

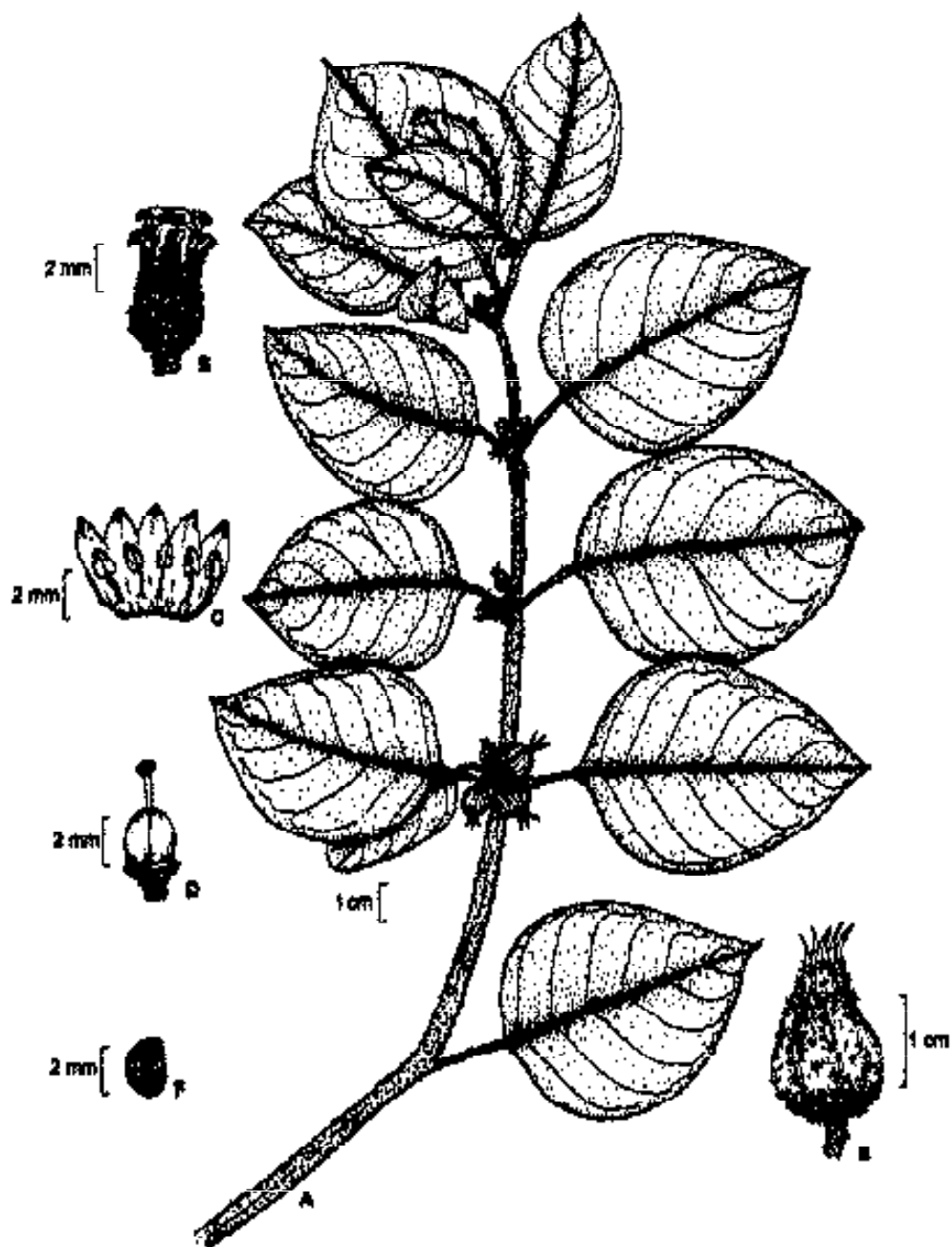


Fig. 42(A - F). *Withania somnifera* (L.) Dunal
 A. Twig B. Flower C. Coccolite split open D. Pistil E. Fruit F. Seed

b.	Erect herbs	4
2a.	Plants heterophyllous	3. <i>Limnophila</i>
b.	Plants homophyllous	3
3a.	Leaves oblong, punctate; stamens 4	1. <i>Bacopa</i>
b.	Leaves orbicular or obovate-spatulate, not punctate; stamens 2	5. <i>Peplidium</i>
4a.	Plants aromatic; stem glandular-hairy	8. <i>Stemodia</i>
b.	Plants non-aromatic; stem not glandular-hairy	5
5a.	Corolla caducous; seeds rugose	4. <i>Lindernia</i>
b.	Corolla not caducous; seeds not rugose	6
6a.	Calyx-tube ribbed; stigma truncate; capsules septicidal	6. <i>Scoparia</i>
b.	Calyx-tube not ribbed; stigma not truncate; capsules loculicidal	7
7a.	Calyx spathaceous	2. <i>Centranthera</i>
b.	Calyx not spathaceous	8
8a.	Calyx-lobes ribbed; corolla-tube bent above middle; stigma lamellate; seeds smooth	9. <i>Striga</i>
b.	Calyx-lobes not ribbed; corolla not bent; stigma capitate; seeds striate	7. <i>Sopubia</i>

1. *Bacopa* Aubl. nom. cons.

Subtropical and temperate regions, 56 species, 3 in India and Tamil Nadu and one in GM.

B. monnieri (L.) Pennell in Proc. Acad. Nat. Sci. Philadelphia 98: 94. 1946; RHFC 3: 420. 1981; IFTC t. 494. 1982; FTC 3: 1071. 1983; FTN 2: 119. 1987. *Lysimachia monnieri* L., Cent. Pl. 2: 9. 1756. *Gratiola monnieri* (L.) L., Syst. Nat. ed. 10, 851. 1759 (as "*monniera*"); Roxb., Pl. Coromandel, t. 178. 1805. *Moniera cuneifolia* Michx., Fl. Bor.-Amer. 2: 22. 1803; FPM 953. 1923. *Herpestis monniera* (L.) Kunth in H.B.K., Nov. Gen. Sp. 2: 366. 1818, nom. illeg.; FBI 4: 272. 1884. [*Neerpiramf*]

Prostrate herb. Leaves succulent, entire, obtuse. Flower solitary. Calyx-lobes unequal. Corolla 2-lipped, white with violet and green bands inside throat. Capsules ovoid-globose; seeds oblong.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet situations, with *Centella asiatica*, *Kyllinga monocephala* etc.

Distrib.: Paleotropical. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Plant is said to improve intellect, used for epilepsy, insanity and other nervous diseases. Leaves used as a diuretic and aperient.

Specimens examined: (Total 93) PD & PU 100707; SAM 104759.

2. *Centranthera* R. Br.

China to Australia, 9 species, 5 in India and one in Tamil Nadu.

C. tranquebarica (Spreng.) Merr. in Ann. Roy. Bot. Gard. (Calcutta) 50: 57. 1942; FTN 2: 119. 1987. *Razumovia tranquebarica* Spreng., Mant. Prim. Fl. Hal. 45. 1807 & Syst. Veg. 2: 812. 1825. *Centranthera humifusa* Wall. ex Benth., Scroph. Ind. 50. 1835 & in DC., Prodr. 10: 525. 1846; FBI 4: 301. 1884; FPM 972. 1923.

Herb. Leaves linear, entire, acute. Flower solitary. Calyx 3 - 5-lobed. Corolla yellow. Capsules ovoid-subglobose; seeds conical, pitted.

Fl. & Fr.: March - Sept.

Habitat: Marshy places.

Distrib.: Indonesia, S. India and Sri Lanka. TN: Chengalpattu, Pudukkottai, Ramnathapuram and Tiruchirapalli. GM: Rare. Earlier once collected on Kurusadai Island.

Specimens examined: (Total 5) Ku Is. without collector's name & no.

3. *Limnophila* R. Br.

Old World tropics, 36 species, 22 in India, 7 in Tamil Nadu and one in GM.

L. indica (L.) Druce in Bot. Exch. Club Soc. Brit. Isles 3: 420. 1914; RHFC 3: 432. 1981; FTC 3: 1080. 1983; FTN 2: 121. 1987. *Hottonia indica* L., Syst. Nat. ed. 10, 919. 1759. *L. gratioloides* R. Br., Prodr. 442. 1810; FBI 4: 271. 1884; FPM 952. 1923.

Prostrate herb. Leaves linear-lanceolate, cuneate, lacinate, acute. Flower solitary. Corolla yellow with dark purple throat, villous inside. Capsules elliptic to subglobose; seeds minute.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet localities.

Distrib.: China, India, SE. Asia and Sri Lanka. TN: Almost all districts. GM: Mainland coast, common.

Uses: Leaves eaten as potherb. Plant considered antiseptic and carminative; a liniment prepared from it is used in elephantiasis. Infusion of leaves is given in dyspepsia and dysentery.

Specimens examined: (Total 37) VB 1172, 1656.

4. Lindernia All.

Old World tropics, ca 50 species, 27 in India, 15 in Tamil Nadu and 7 in GM.

Key to the species

1a. Plant prostrate	1. <i>L. antipoda</i>
b. Plants erect or ascending	2
2a. Stamens 4; staminodes absent	3
b. Stamens 2; staminodes present	4
3a. Corolla violet with yellow centre; capsules as long as fruiting-calyx ..	2. <i>L. caespitosa</i>
b. Corolla rose-purple; capsules shorter than fruiting-calyx	3. <i>L. crustacea</i>
4a. Corolla yellow	5. <i>L. minima</i>
b. Corolla not yellow	5
5a. Bracts oblong; corolla pinkish white with 2 yellow dots at throat	7. <i>L. parviflora</i>
b. Bracts linear; corolla violet, bluish or white with or without pink throat	6
6a. Corolla violet; throat not pink; staminodes bifid with a linear hairy basal appendage	4. <i>L. hyssopioides</i>
b. Corolla blue or white; throat pink; staminodes not bifid, without appendage	6. <i>L. oppositifolia</i>

1. *L. antipoda* (L.) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.): 214. 1931; RHFC 3: 413. 1981; IFTC t. 498. 1982; FTC 3: 1085. 1983; FTN 2: 122. 1987. *Ruellia antipoda* L., Sp. Pl. 635. 1753. *Gratiola veronicifolia* Retz., Obs. Bot. 4: 8. 1786. *Ilysanthes veronicifolia* (Retz.) Urb. in Ber. Deutsch. Bot. Ges. 2: 436. 1884; FPM 962. 1923. *Bonnaya veronicifolia* (Retz.) Spreng., Syst. Veg. 1: 41. 1824; FBI 4: 285. 1884. *Gratiola verbenifolia* Colsm., Prodr. Descr. Gratiol. 8. 1793. *Bonnaya verbenifolia* (Colsm.) Spreng., Syst. Veg. 1: 42. 1824; Wight, Icon. t. 1412. 1849. [*Thannippoondu*]

Leaves obovate-elliptic, cuneate, serrate, acute. Flowers solitary or 2 at each node. Corolla bluish, 2-lipped. Capsules linear, longer than fruiting-calyx.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet localities, with *Fimbristylis miliacea*, *Monochoria vaginalis*, *Panicum repens* etc.

Distrib.: Asian tropics and subtropics. TN: All districts. GM: Mainland coast, occasional.

Specimens examined: (Total 73) PD & PU 107043A; VB 2293.

2. *L. caespitosa* (Blume) Panigrahi in *Taxon* 33: 320. 1984; FTN 2: 122. 1987. *Diceros caespitosus* Blume, *Bijdr.* 753. 1826. *Selago pusilla* Thunb., *Prodr. Pl. Cap.* 99. 1800. *Vandellia scabra* Benth., *Scroph. Ind.* 36. 1835; FBI 4: 281. 1884, incl. var.; FPM 959. 1923. *Lindernia pusilla* (Thunb.) Merr. in *Philipp. J. Sci.* 11: 312. 1917; RHFC 3: 408. 1981, non Bold. 1916.

Herb. Leaves ovate, truncate, serrulate-crenate, acute. Flowers solitary or 2 at each node. Capsules obovoid.

Fl. & Fr.: Dec. - Jan.

Habitat: Wet localities, with *Fimbristylis miliacea*, *Monochoria vaginalis*, *Panicum repens* etc.

Distrib.: Africa, east to S. China, India, Malesia, Myanmar, Polynesia and Taiwan. TN: Almost all districts. GM: Mainland coast, occasional.

Specimens examined: (Total 14) PD & PU 107043 B.

3. *L. crustacea* (L.) F. Muell., *Syst. Census Austral. Pl.* 97. 1882; RHFC 3: 407. 1981; IFTC t. 499. 1982; FTC 3: 1088. 1983; FTN 2: 122. 1987. *Cupraria crustacea* L., *Mant. Pl.* 87. 1767. *Vandellia crustacea* (L.) Benth., *Scroph. Ind.* 35. 1835; Wight, *Icon. t.* 863. 1845; FBI 4: 279. 1884; FPM 959. 1923.

Herb. Leaves elliptic-oblong, auriculate, serrate, acute. Flowers 2 at each node. Capsules obovoid.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet fallow fields, with *Ammannia baccifera*, *Euphorbia* spp., *Peplidium maritimum* etc.

Distrib.: Africa, Asia and Australia. TN: All plain districts. GM: Frequent on mainland coast. Rare on Muzal Island.

Uses: Plant used in bilious affections and dysentery. Also used in poultices for boils, sores, itch and ringworm.

Specimens examined: (Total 32) VB 1579, 1642; Mu Is. PD 100631.

4. *L. hyssopoides* (L.) Haines, *Bot. Bihar Orissa* 635. 1922; RHFC 3: 414. 1981;

FTC 3: 1090. 1983; FTN 2: 122. 1987. *Gratiola hyssopioides* L., Mant. Pl. 174. 1771. *Ilysanthes hyssopioides* (L.) Benth. in DC., Prodr. 10: 419. 1846; FBI 4: 283. 1884; FPM 961. 1923.

Herb. Leaves sessile, linear-lanceolate, entire, sparingly serrate towards apex. Flower solitary. Capsules globose; fruiting-calyx shorter than capsule.

Fl. & Fr.: Nov. - April.

Habitat: Wet localities.

Distrib.: China, India, SE. Asia and Sri Lanka. TN: Most districts. Appears common in the interior.

Earlier collected at Kundrakudi and Sayalkudi, places a little away from the coast in Ramanathapuram. May occur on the coast.

Specimens examined: (Total 41) NCN 53193; VB 2060.

5. *L. minima* (Benth.) Mukh. in J. Indian Bot. Soc. 24: 132. 1945; FTN 2: 122. 1987; JETB 14: 494. 1990. *Ilysanthes minima* Benth. in DC., Prodr. 10: 420. 1846; FBI 4: 284. 1884; FPM 961. 1923.

Herb. Leaves linear or oblong-lanceolate, cuneate, entire, acute. Flowers solitary or 2 at each node. Capsules subglobose, equalling fruiting-calyx.

Fl. & Fr.: Dec. - Jan.

Habitat: Moist localities, with *Aponogeton natans*, *Cyperus iria*, *Mollugo pentaphylla* etc.

Distrib.: S. India. Endemic. TN: Chengalpattu, Ramanathapuram and Tirunelveli. GM: Rare on mainland coast. Collected near Sethukarai and on Thalaiyari Island.

Specimens examined: (Total 6) PD & PU 106526, 106534; Th Is. PD 101538.

6. *L. oppositifolia* (Retz.) Mukh. in J. Indian Bot. Soc. 24: 134. 1945; FTC 3: 1090. 1983; FTN 2: 123. 1987. *Gratiola oppositifolia* Retz., Obs. Bot. 4: 8. 1786. *Bonnaya oppositifolia* (Retz.) Spreng., Syst. Veg. 1: 41. 1824; FBI 4: 286. 1884. *Ilysanthes oppositifolia* (Retz.) Urb., Ber. Deutsch. Bot. Ges. 2: 435. 1884; FPM 962. 1923.

Herb. Leaves oblong-lanceolate, cuneate, serrate, acute. Flowers solitary or in racemes. Capsules linear, longer than fruiting-calyx.

Fl. & Fr.: Nov. - Jan.

Habitat: Marshy places.

Distrib.: S. India, Endemic. TN: Chengalpattu, Coimbatore, N. Arcot, Pudukkottai, Ramanathapuram, S. Arcot and Tiruchirapalli. Having been collected a little interior earlier, might occur on the coast.

Use: Roots febrifuge.

Specimens examined: (Total 27) NCN 53195; VB 1699.

7. *L. parviflora* (Roxb.) Haines, Bot. Bihar Orissa 635. 1922; FTC 3: 1091. 1983; FTN 2: 123. 1987. *Gratiola parviflora* Roxb., Pl. Coromandel t. 203. 1811. *Hysanthes parviflora* (Roxb.) Benth., Scroph. Ind. 34. 1835 & in DC., Prodr. 10. 419. 1846; FBI 4: 283. 1884; FPM 991. 1923. *Bonnaya hyssopioides* sensu Wight, Icon. t. 857. 1844-1845, non Benth. 1835.

Herb. Leaves oblong-elliptic, rounded, entire, acute. Flower solitary. Capsules oblong, longer than fruiting-calyx.

Fl. & Fr.: Nov. - Feb.

Habitat: Moist harvested rice fields.

Distrib.: India, Thailand and Trop. Africa. TN: Most districts in plains. GM: Mainland coast, common. Occasional on Thalayiari Island.

Specimens examined: (Total 52) VB 1657; Th Is. PD 101536.

5. *Peplidium* Delile

Trop. and temperate Old World, ca 10 species and one in India.

P. maritimum (L. f.) F. Asch. in Schweinf., Beitr. Fl. Aethiop. 1306. 1867; FPM 963. 1924; RHFC 3: 435. 1981; IFTC t. 503. 1982; FTC 3: 1099. 1983; FTN 2: 125. 1987. *Hedyotis maritima* L. f., Suppl. Pl. 119. 1782. *Peplidium humifusum* Delile, Descr. Egypte, Hist. Nat. 148, t. 4. 1812; FBI 4: 287. 1884.

Prostrate herb, rooting at nodes. Leaves succulent, decurrent, entire, obtuse. Flowers solitary or 2 at each node. Corolla creamy white. Capsules globose, enclosed by fruiting-calyx.

Fl. & Fr.: Dec. - Jan.

Habitat: Marshy places, with *Ammannia baccifera*, *Cyperus iria*, *Suaeda monoica* etc.

Distrib.: Australia, Egypt, S. India and Sri Lanka. TN: Chengalpattu, Madurai, Ramanathapuram, S. Arcot and Thanjavur. GM: Frequent on Manoli, Moyal and Thalaiyari Islands.

Specimens examined: (Total 26) Ma Is. PD 101102; Mu Is. PD 100627; Th Is. PD 101519.

6. *Scoparia* L.

Trop. America, ca 20 species and one in India.

S. dulcis L., Sp. Pl. 116. 1753; FBI 4: 289. 1884; FPM 964. 1924; RHFC 3: 439. 1981; IFTC t. 504. 1982; FTC 3: 1100. 1983; FTN 2: 125. 1987. [*Sarakkotthini*]

Erect herb. Leaves lanceolate, cuneate, serrate, acute. Flowers solitary or 2. Corolla white. Capsules ellipsoid-globose.

Fl. & Fr.: Throughout the year.

Habitat: Fallow fields, with *Amaranthus viridis*, *Chloris barbata* and *Gomphrena serrata*.

Distrib.: Tropics. TN: Almost all districts. GM: Mainland coast, common.

Uses: Infusion of leaves used in fever, cough and bronchitis. Decoction of plant used for renal troubles. Plants used as a fodder.

Specimens examined: (Total 86) PD 102276; VB 2410.

7. *Sopubia* Buch.-Ham. ex D. Don

Trop. Old World to S. Africa, ca 60 species, 3 in India and Tamil Nadu and one in GM.

S. delphinifolia (L.) G. Don, Gen. Syst. 4: 560. 1837-1838; FBI 4: 302. 1884; FPM 970. 1924; RHFC 3: 394. 1981; FTC 3: 1101. 1983; FTN 2: 125. 1987. *Gerardia delphinifolia* L., Cent. Pl. 2: 21. 1756 (as "*delphinifolia*").

Herb. Leaves pinnatifid. Corolla pink. Capsules oblong, as long as fruiting-calyx.

Fl. & Fr.: Oct. - Jan.

Habitat: Marshy places, with *Sporobolus* spp., *Striga asiatica* etc.

Distrib.: S. India and Sri Lanka. TN: Almost all districts. GM: Common on Kurusadai, Manoli, Muyal and Thalaiyari Islands. Earlier collected on Valai Island. Not collected on mainland coast.

Note: Corolla very rarely white. It is not known whether plants in the interior have flowers with white corolla.

Uses: Juice applied to sores on feet caused by exposure to moisture.

Specimens examined: (Total 27) Ku Is. PD 100588; Ma Is. PD 101101, 101104; Mu Is. PD 100625; Th Is. PD 101496; Va Is. DD & SRR 20092.

8. *Stemodia* L. nom. cons.

S. viscosa Roxb., Pl. Coromandel t. 163. 1802; Wight, Icon. t. 1408. 1849; FBI 4: 265. 1884; FPM 949. 1923; RHFC 3: 419. 1981; IFTC t. 506. 1982; FTC 3: 1102. 1983; FTN 2: 126. 1987.

Erect herb. Leaves elliptic-oblong, auriculate, serrate, acute. Flowers solitary or 2 - 3 at each node. Corolla violet. Capsules oblong to globose.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet places, with *Eclipta prostrata*, *Gomphrena serrata*, *Scoparia dulcis* etc.

Distrib.: Afghanistan, India and Sri Lanka. TN: Almost all districts. GM: Common on mainland coast and occasional on Thalaiyari Island.

Uses: Dried plant is slightly fragrant and mucilaginous and is used as a demulcent.

Specimens examined: (Total 47) KSK 102886; PD 102279; PD & PU 106662; SAM 104701; Th Is. PD 101534.

9. *Striga* Lour.

Old World tropics, ca 40 species, 7 in India, 4 in Tamil Nadu and one in GM.

S. asiatica (L.) Kuntze, Revis. Gen. Pl. 466. 1891; IFTC t. 507. 1982; FTC 3: 1104. 1983; FTN 2: 126. 1987. *Buchnera asiatica* L., Sp. Pl. 630. 1753. *Striga lutea* Lour., Fl. Cochinch. 22. 1790; FBI 4: 299. 1884; FPM 968. 1924; RHFC 3: 400. 1981.

Erect herb. Leaves oblong, entire, subacute. Flower solitary. Corolla white. Capsules oblong to globose, nearly half as long as fruiting-calyx.

Fl. & Fr.: Throughout the year.

Habitat: Marshy localities, parasitic on *Sporobolus maderaspatanus* and also associated with *Peplidium maritimum*, *Sopubia delphiniifolia* etc.

Distrib.: India, SE. Asia, Sri Lanka and Trop. Africa. TN: Almost all districts. GM: Occasional on mainland coast and common on Appa, Kurusadai, Manoli, Moyal and Thalaiyari Islands.

Use: Plant used to improve appetite.

Specimens examined: (Total 68) Ap Is. PD 101558; Ku Is. PD 100589; Ma Is. PD 100681; Mu Is. PD 100626; Th Is. PD 101497.

Of the 14 species enumerated only 6 species occur on islands, most of them on Thalaiyari Island. On the islands they inhabit marshy or wet places. Being plants of marshy habitats the fruits/seeds might stick to the feet of birds with mud and get transported to islands.

73. LENTIBULARIACEAE

Utricularia L.

Cosmopolitan, ca 180 species, 28 in India, 18 in Tamil Nadu and one in GM.

U. polygaloides Edgew. in Proc. Linn. Soc. London 1: 351. 1847; FTC 3: 1118. 1983; FTN 2: 130. 1987; Janarth. & A.N. Henry, Bladderworts India 79. 1992. *U. humilis* sensu Wight, Icon. t. 1572, f. 2. 1850, non Vahl 1804. *U. reticulata* Sm. var. *uliginosa* sensu C.B. Clarke in FBI 4: 331. 1884, p.p. *U. stricticaulis* (J. König ex Oliv.) Stapf ex Gamble, Fl. Madras 981. 1924. *U. reticulata* Sm. var. *stricticaulis* J. König ex Oliv. in J. Proc. Linn. Soc., Bot. 3: 180. 1859.

Erect herb. Leaves linear, obtuse, with numerous small bladders. Flower solitary. Corolla blue. Capsules ellipsoid, enclosed by calyx; seeds ovoid-oblong.

Fl. & Fr.: Dec. - Feb.

Habitat: Occasional in moist harvested rice fields.

Distrib.: S. India and Sri Lanka. TN: Chengalpattu, N. Arcot, Pudukkottai, Ramnathapuram, S. Arcot, Thanjavur and Tirunelveli. GM: Mainland coast, occasional.

Specimens examined: (Total 13) VB 1242.

74. BIGNONIACEAE

Tecomella Seem.

Arabia to W. India, unispecific.

T. undulata (Roxb.) Seem. in Ann. Mag. Nat. Hist. 10: 30. 1862; Bhandari, Fl. Indian Desert ed. 2, 114. 1990. *Bignonia undulata* Roxb., Fl. Ind. 2: 101. 1832. *Tecoma undulata* (Roxb.) G. Don, Gen. Syst. 4: 233. 1837-1838; FBI 4: 378. 1884.

Small tree. Leaves opposite, linear-lanceolate to oblong, cuneate, undulate, obtuse. Flowers in lateral branches. Corolla orange-yellow. Capsules linear, 15 - 20 cm long; seeds discoid, winged.

Fl. & Fr.: Oct. - Jan.

Habitat: On sand dunes.

Distrib.: TN: Ramanathapuram. GM: Mainland coast, occasional.

Uses: Wood used for furniture, carvings and agricultural implements. Earlier collected at Rameswaram. Might have been initially planted. Leaves readily eaten by cattle. Bark of young branches used as a remedy for syphilis.

Specimens examined: VB 1897, 2178.

Millingtonia hortensis L. f. is planted as an avenue tree and *Tecoma stans* (L.) Kunth is cultivated in gardens. *Kigelia africana* (Lam.) Benth. and *Tabebuia rosea* (Bertol.) DC. may also be sometimes cultivated on road sides and gardens respectively.

75. PEDALIACEAE

Pedaliium Royen ex L.

Old World tropics, unispecific.

P. murex L., Syst. Nat. ed. 10, 1123. 1759; Wight, Icon. t. 1615. 1850; FBI 4: 386. 1884; FPM 1001. 1924; RHFC 3: 322. 1981; IFTC t. 516. 1982; FTC 3: 1138. 1983; FTN 2: 137. 1987. [*Perunerunji*]

Erect, succulent herb. Leaves ovate-elliptic, acute, irregularly toothed, emarginate. Flower solitary. Corolla yellow. Stamens 4; staminodes with sterile orange anthers. Drupes 4-angled below, pyramidal-ovoid above, spinose; seeds oblong.

Fl. & Fr.: Oct. - Feb.

Habitat: Waste sandy places, with *Euphorbia hirta*, *Tribulus terrestris* etc.

Distrib.: TN: All districts. GM: Common on mainland coast and Appa, Karaichalli, Kurusadai, Moyal, Nallathanni and Thalairy Islands.

The spinose drupes may be transported to islands by humans.

Specimens examined: (Total 47) KSK 102115, 102772; PD 100401, Ap Is. PD 101562; Ku Is. PD 99778; Mu Is. PD 106661; Th Is. PD 101483.

Sesamum orientale L., [Yellu] sesame, a herb, is cultivated for its edible seeds and oil extracted from them. Gingelly oil is a much favoured cooking medium in S. India.

76. MARTYNIACEAE

Martynia L.

Mexico, unispecific.

M. annua L., Sp. Pl. 618. 1753; FPM 1003. 1924; IFTC t. 515. 1982; FTC 3: 1137. 1983; FTN 2: 138. 1987. *M. diandra* Gloxin, Observ. Bot. 14, t. 1. 1785; FBI 4: 386. 1884.

Undershrub, glandular-pubescent. Leaves ovate, cordate, dentate, acute. Flowers in racemes. Corolla rose with yellow throat, ventricose. Drupes ovoid with curved apical spines.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands, with *Tribulus terrestris* and *Pedaliium murex*.

Distrib.: TN: All districts. GM: Mainland coast, frequent.

Uses: Leaves used for epilepsy and applied to tubercular glands of the neck; juice used as a gargle for sore throat. Fruits used for inflammation. Seeds yield a semidrying oil.

Specimens examined: (Total 72) KSK 103356, 102907; PD 100391.

77. ACANTHACEAE

Key to the genera

a. Plants mangrove-associates; leaves pinnatifid

1. *Acanthus*

b.	Plants non-mangrove associates; leaves not pinnatifid	2
2a.	Corolla upper lip obscure	4. <i>Blepharis</i>
b.	Corolla upper lip well-developed	3
3a.	Corolla-tube as long as or slightly longer than lobes.....	4
b.	Corolla-tube twice as long as lobes	9
4a.	Stamens 4, didynamous	5
b.	Stamens 2, equal	6
5a.	Prostrate herbs; flowers in condensed spikes; corolla white with purple spots; capsules 2-seeded	10. <i>Lepidagathis</i>
b.	Undershrubs; flowers in axillary whorls; corolla violet; capsules more than 2-seeded	7. <i>Hygrophila</i>
6a.	Inflorescence a dense spike	7
b.	Inflorescence a cyme or panicle	8
7a.	Bracts 4-farious, broadly scarious along margins	13. <i>Rungia</i>
b.	Bracts neither 4-farious nor scarious along margins	9. <i>Justicia</i>
8a.	Corolla white with brown or purple blotches; capsules ovoid, glabrous	8. <i>Indoneesiella</i>
b.	Corolla pink; capsules ellipsoid, papillose	11. <i>Peristrophe</i>
9a.	Stamens 2; staminodes present or absent	10
b.	Stamens 4; staminodes absent	11
10a.	Flowers in spikes; corolla bluish green	6. <i>Ecbolium</i>
b.	Flowers solitary or in racemes; corolla not bluish green	3. <i>Barleria</i>
11a.	Flowers in one-sided racemes	2. <i>Asystasia</i>
b.	Flowers not in one-sided racemes	12
12a.	Bracts present; flowers in racemes	12. <i>Ruellia</i>
b.	Bracts absent; flower solitary	5. <i>Dipteracanthus</i>

1. *Acanthus* L.

Old World tropics and subtropics, ca 30 species, 7 in India, 2 in Tamil Nadu and one in GM.

A. ilicifolius L., Sp. Pl. 639. 1753; FBI 4: 481. 1884; FPM 1014. 1924; FTC 3: 1146. 1983; FTN 2: 138. 1987. *Dilivaria ilicifolia* (L.) Juss., Gen. Pl. 103. 1789; Wight, Icon. t. 459. 1841. [*Kazhuthaimulli*]

Spinose undershrub. Leaves attenuate; lobes spine-tipped, acuminate. Spikes terminal. Bracts ovate. Corolla blue. Capsules ellipsoid; seeds 4, suborbicular, softly wrinkled.

Fl. & Fr.: Nov. - Feb.

Habitat: Tidal swamps and creeks, among mangroves.

Distrib.: Australia, India, Malesia to the Philippines and Sri Lanka. TN: Chengalpattu, S. Arcot and Thanjavur. GM: Earlier reported from Kurusadai Island by Rao & al. (1963a). Never collected again.

Specimens examined: (Total 25) Ku Isl. AKM 221; TAR 585(CAL).

2. *Asystasia* Blume

Old World tropics, ca 10 species, 8 in India, 5 in Tamil Nadu and one in GM.

A. gangetica (L.) T. Anderson in Thwaites, Enum. Pl. Zeyl. 235. 1860; FPM 1063. 1924; IFTC t. 521. 1982; FTC 3: 1157. 1983; FTN 2: 141. 1987. *Justicia gangetica* L., Cent. Pl. 2: 3. 1756. *Asystasia coromandeliana* Wight ex Nees in Wall., Pl. Asiat. Rar. 3: 89. 1832; Wight, Icon. t. 1506. 1850; FBI 4: 493. 1884.

Straggling shrub. Leaves ovate, truncate, entire, acute. Racemes terminal. Bracts lanceolate. Corolla creamy-white with purple tinge. Capsules ellipsoid, 4-seeded; seeds angular.

Fl. & Fr.: Sept. - March.

Habitat: Wastelands and also on sandy soil, usually in shade, with *Apluda mutica*, *Cymbopogon caesius* etc.

Distrib.: Arabia, Africa, Malesia, S. India and Sri Lanka. TN: Almost all districts. GM: Common on mainland coast and frequent on Anaipar, Karaichalli, Pullivasal, Puluvinichalli, Pumarichan and Upputhanni Islands.

This is the only Acanthaceous species that occurs on a few islands. Its dispersal from the mainland to the islands will make an interesting study.

Uses: Used as a potherb. Leaves used as a fodder. Juice of plant administered to children suffering from swellings and rheumatism.

Specimens examined: (Total 42) KSK 103329; PD & PU 106940; Ap Is. KSK 102381; Kc Is. PD & PU 107296; Pu Is. PD 101429; Pc Is. KSK 102356; Pv Is. PD 99744.

3. *Barleria* L.

Tropics, ca 250 species, 26 in India, 19 in Tamil Nadu and 5 in GM.

Key to the species

1a. Plants prickly

2

b.	Plants not prickly	4
2a.	Corolla violet	1. <i>B. buxifolia</i>
b.	Corolla white	3
3a.	Leaves linear-lanceolate; capsules ovoid, 2-seeded	3. <i>B. cuspidata</i>
b.	Leaves obovate-oblong; capsules ellipsoid, 4-seeded	5. <i>B. noctiflora</i>
4a.	Inflorescence a cyme; corolla purplish pink	2. <i>B. cristata</i>
b.	Inflorescence a raceme; corolla white	4. <i>B. longiflora</i>

1. *B. buxifolia* L., Sp. Pl. 636. 1753; Wight, Icon. t. 870. 1844 - 1845; FBI 4: 483. 1884; FPM 1059. 1924; FTC 3: 1160. 1983; FTN 2: 141. 1987.

Undershrub. Leaves obovate, acute, entire, mucronate. Flower solitary, axillary. Bracts absent. Capsules ellipsoid, 4-seeded; seeds ovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Acanthospermum hispidum*, *Tephrosia purpurea* etc.

Distrib.: S. India. Endemic. TN: Most districts. GM: Mainland coast, occasional.

Uses: Leaves and roots used for cough and inflammation.

Specimens examined: (Total 73) KSK 102842.

2. *B. cristata* L., Sp. Pl. 636. 1753; Wight, Icon. t. 453. 1841; FBI 4: 488. 1884; FPM 1060. 1924; FTC 3: 1162. 1983; FTN 2: 142. 1987. [*Mulkanakambaram*]

Undershrub. Leaves elliptic-oblong or lanceolate, attenuate, entire-ciliate, acute. Bracts lanceolate. Capsules oblong, 2-seeded; seeds orbicular.

Fl. & Fr.: Dec. - Feb.

Habitat: Wastelands and dry localities, with *Abutilon indicum*, *Chloris barbata* etc.

Distrib.: China, India and Malesia. TN: Chengalpattu, Coimbatore, Nilgiri, Ramnathapuram and Tiruchirapalli. GM: Mainland coast, occasional.

Uses: Leaves and roots used for cough and inflammation.

Specimens examined: (Total 15) KSK 103332.

3. *B. cuspidata* Heyne ex Nees in Wall., Pl. Asiat. Rar. 3: 93. 1832; Wight, Icon. t. 451. 1841; FBI 4: 483. 1884; FPM 1059. 1924; FTC 3: 1162. 1983; FTN 2: 142. 1987.

Shrub. Leaves cuneate, entire, acute, mucronate. Flower solitary. Bracts linear. Capsules ellipsoid; seeds ovoid.

Fl. & Fr.: Dec. - Jan.

Habitat: Wastelands, with *Anisomeles malabarica*, *Tridax procumbens* etc.

Distrib.: S. India. Endemic. TN: Most districts. GM: Mainland coast, less frequent.

Specimens examined: (Total 55) ANH 53263; KSK 102776; SAM 106433.

4. **B. longiflora** L. f., Suppl. Pl. 290. 1782; FBI 4: 485. 1884; FPM 1059. 1924; FTC 3: 1164. 1983; FTN 2: 142. 1987.

Straggling shrub. Leaves elliptic-ovate, truncate, entire-ciliate, acute. Bracts linear-lanceolate. Capsules ellipsoid-oblong, 2-seeded; seeds ovoid.

Fl. & Fr.: Nov. - Feb.

Habitat: Dry localities, with *Jasminum auriculatum*, *Kleinia grandiflora* etc.

Distrib.: S. India. Endemic. TN: Most districts. GM: Mainland coast, occasional.

Specimens examined: (Total 47) PD & PU 107099.

5. **B. noctiflora** L. f., Suppl. Pl. 290. 1782; FBI 4: 484. 1884; FPM 1059. 1924; IFTC t. 522. 1982; FTC 3: 1165. 1983; FTN 2: 142. 1987.

Herb. Leaves in axillary clusters, cuneate, entire, obtuse. Flower solitary. Bracts absent. Seeds ovoid.

Fl. & Fr.: Dec. - Jan.

Habitat: Wastelands, with *Justicia tranquebariensis*, *Pupalia lappacea* and *Sauropus bacciformis*.

Distrib.: S. India and Sri Lanka. TN: Most districts. GM: Mainland coast, occasional.

Specimens examined: (Total 44) SAM 104775.

4. **Blepharis** Juss.

Old World tropics to S. Africa, ca 80 species, 5 in India and 2 in Tamil Nadu.

Key to the species

- 1a. Bracteoles spatulate; outer calyx-lobe not forked; corolla white; capsules 2-seeded 1. *B. maderaspatensis*
- b. Bracteoles lanceolate; outer calyx-lobe forked; corolla violet-purple; capsules 4-seeded 2. *B. repens*

1. *B. maderaspatensis* (L.) Heyne ex Roth, Nov. Pl. Sp. 320. 1821; FTC 3: 1167. 1983; FTN 2: 143. 1987. *Acanthus maderaspatensis* L., Sp. Pl. 639. 1753. *Blepharis boerhaviifolia* Pers., Syn. Pl. 2: 180. 1806 (as "*boerhaviaefolia*"); Wight, Icon. t. 458. 1841; FBI 4: 478. 1884; FPM 1013. 1924.

Prostrate herb. Leaves elliptic-ovate, margin entire at base, distantly toothed above. Bracts in 4 opposite pairs. Flowers in axillary clusters. Capsules ellipsoid; seeds suborbicular.

Fl. & Fr.: Nov. - Feb.

Habitat: Wastelands, with *Apluda mutica*, *Aristida setacea*, *Cleome viscosa* etc.

Distrib.: Trop. Africa to India. TN: Almost all districts. GM: Mainland coast, common.

Specimens examined: (Total 97) KSK 102820, 103323; PD & PU 106929, 106968; SAM 104752.

2. *B. repens* (Vahl) Roth, Nov. Pl. Sp. 321. 1821; FTN 2: 143. 1987. *Acanthus repens* Vahl, Symb. Bot. 2: 76. 1791. *Blepharis molluginifolia* Pers., Syn. Pl. 2: 180. 1806; FBI 4: 479. 1884; FPM 1013. 1924; IFTC t. 523. 1982; FTC 3: 1168. 1983.

Prostrate herb. Leaves oblong-oblancheolate, acute-cuneate, entire, obtuse. Bracts 4, in opposite pairs. Flowers in axillary clusters. Capsules ellipsoid; seeds 4, subglobose.

Fl. & Fr.: Nov. - Jan.

Habitat: Sandy places and roadsides with *Leucas aspera*, *Barleria cuspidata* etc.

Distrib.: India and Sri Lanka. TN: Most districts. GM: Mainland coast, occasional.

Specimens examined: (Total 43) MSS 70316; SAM 106424.

5. *Dipteracanthus* Nees

Tropics and subtropics 10 species, 7 in India, 2 in GM.

Key to the species

- 1a. Erect herb; calyx-lobes lanceolate; corolla ca 1.5 cm across 1. *D. patulus*
 b. Prostrate herb; calyx-lobes linear-subulate; corolla ca 2.5 cm across 2. *D. prostratus*

1. *D. patulus* (Jacq.) Nees in Wall., Pl. Asiat. Rar. 3: 82. 1832; Wight, Icon. t. 1505. 1850; FTC 3: 1171. 1983; FTN 2: 145. 1987. *Ruellia patula* Jacq., Misc. Austriac. 2: 358. 1781; FBI 4: 412. 1884; FPM 1017. 1924.

Leaves ovate, rounded, entire, acute. Bracts absent. Flower axillary, solitary. Corolla bluish. Capsules ellipsoid, 12- or more-seeded; seeds orbicular.

Fl. & Fr.: Aug. - Feb.

Habitat: Wastelands along roadsides and along water courses with *Brachiaria reptans*, *Phyla nodiflora* and *Vicoa indica*.

Distrib.: Arabia, Abyssinia, India, Myanmar and Sri Lanka. TN: Most districts. GM: Mainland coast, occasional.

Specimens examined: (Total 34) KSK 102001; VB 2070.

2. *D. prostratus* (Poir.) Nees in Wall., Pl. Asiat. Rar. 3: 81. 1832; IFTC t. 525. 1982; FTC 3: 1171. 1983; FTN 2: 145. 1987. *Ruellia prostrata* Poir. in Lam., Encycl. 6: 349. 1804; Bedd., Icon. t. 282. 1868 - 1872; FBI 4: 411. 1884.

Leaves ovate-elliptic, truncate, entire, subacute-obtuse. Bracts absent. Flowers axillary. Corolla blue-violet. Capsules ellipsoid, 16 - 20-seeded; seeds orbicular.

Fl. & Fr.: June - Dec.

Habitat: Open places and road sides with *Cynodon dactylon*, *Portulaca oleracea* etc.

Distrib.: S. India. Endemic. TN: Almost all districts. GM: Mainland coast, occasional.

Specimens examined: (Total 41) KSK 103485.

6. *Ecbolium* Kurz

Cosmopolitan, ca 20 species and one in India.

E. ligustrinum (Vahl) Vollesen in Kew Bull. 44: 651. 1989. *Justicia ecbolium* L., Sp. Pl. 15. 1753. *J. ligustrina* Vahl, Enum. Pl. 1: 118. 1804. *Ecbolium linneanum* Kurz in J.

Asiat. Soc. Bengal Pt. 2, Nat. Hist. 40: 75. 1871; FBI 4: 544. 1884; FPM 1074. 1921. *E. linneanum* Kurz var. *dentatum* (Klein ex Link) C. B. Clarke in Fl. Brit. India 4: 545. 1885; FPM 1074. 1921. *Justicia dentata* Klein ex Link, Jahrb. Gewachsk. 1: 48. 1820. *Ecbolium linneanum* Kurz var. *latevirens* (Vahl) C. B. Clarke in Fl. Brit. India 4: 545. 1885; FPM 1074. 1921. *E. viride* (Forssk.) Alston var. *dentatum* (Klein ex Link) Santapau in Rec. Bot. Surv. India 16 (1): 208. 1967. *E. viride* (Forssk.) Alston var. *latevirens* (Vahl) Santapau in Rec. Bot. Surv. India 16(1): 208. 1967. *E. viride* sensu Rani & K.M. Matthew in FTC 3: 1174. 1983; FTN 2: 146. 1987.

Shrub. Leaves elliptic-ovate, attenuate, entire, acute. Bracts leafy. Corolla bluish green. Capsules ovoid, 2-seeded; seeds orbicular.

Fl. & Fr.: Dec. - May.

Habitat: Wastelands, with *Blainvillea acmella*, *Euphorbia* spp., *Hyptis suaveolens* etc.

Distrib.: Arabia, Abyssinia, Madagascar, S. India and Sri Lanka. TN: Most districts. GM: Mainland coast, occasional.

Uses: Plant used in dysuria. Roots given in jaundice, menorrhagia and rheumatism.

Specimens examined: (Total 54) SAM 106458.

7. *Hygrophila* R. Br.

Tropics, ca 100 species, 11 in India, 6 in Tamil Nadu and one in GM.

H. schulli (Buch.-Ham.) M.R. & S.M. Almeida in J. Bombay Nat. Hist. Soc. 83 (Suppl.): 221. 1987; Nicolson & al. in Regnum Veg. 119: 40. 1988. *Bahel schulli* Buch.-Ham. in Trans. Linn. Soc. London 14: 289. 1825. *Hygrophila auriculata* (Schumach.) Heine in Kew Bull. 16: 172. 1962; IFTC t. 530. 1982; FTC 3: 1178. 1983; FTN 2: 148. 1987. *Barleria auriculata* Schumach. in Schumach. & Thonner, Beskr. Guin. Pl. 285. 1827. *Asteracantha longifolia* (L.) Nees in Wall., Pl. Asiat. Rar. 3: 90. 1832; Wight, Icon. t. 449. 1841; FPM 1015. 1921. *Barleria longifolia* L., Cent. Pl. 2: 22. 1756, non *Hygrophila longifolia* Nees 1847. *Hygrophila spinosa* T. Anderson in Thwaites, Enum. Pl. Zeyl. 225. 1860; FBI 4: 408. 1884. [*Neermulli*]

Armed undershrub. Leaves whorled, lanceolate, cuneate, entire, minutely dentate, acute. Flowers in axillary whorls. Bracts leafy. Corolla violet. Capsules cylindrical; seeds many, orbicular.

Fl. & Fr.: Almost throughout the year.

Habitat: Along water courses and water-logged places with *Cyperus exaltatus*, *Ipomoea* spp, etc.

Distrib.: India and SE. Asia. TN: All districts. GM: Mainland coast, frequent.

Specimens examined: (Total 70) KSK 102864; PD 102260.

8. Indoneesiella Sreem.

India and Sri Lanka, 2 species, 2 in Tamil Nadu and one in GM.

I. echloides (L.) Sreem. in *Phytologia* 16: 466. 1968; FTC 3: 1181. 1983; FTN 2: 149. 1983. *Justicia echloides* L., Sp. Pl. 16. 1753. *Andrographis echloides* (L.) Nees in Wall., Pl. Asiat. Rar. 3: 117. 1832; Wight, Icon. t. 467. 1841; FBI 4: 505. 1884; FPM 1051. 1924. [*Gopuranthangi*]

Herb; branchlets 4-gonous. Leaves oblong-ob lanceolate, rounded, entire, acute. Inflorescence a panicle. Bracts elliptic-lanceolate. Capsules 4-seeded; seeds ovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Amaranthus roxburghianus*, *Dactyloctenium aegyptium* etc.

Distrib.: TN: Almost all districts. GM: Mainland coast, common.

Specimens examined: (Total 103) PD 101142, 101123, 107723; VB 1508, 1782, 2025.

9. Justicia L.

Cosmopolitan, ca 40 species, 20 in India, 11 in Tamil Nadu and 5 in GM.

Key to the species

- 1a. Calyx 4-lobed; capsules not beaked 2
- b. Calyx 5-lobed; capsules beaked 3
- 2a. Calyx-lobes minutely ciliate; bracts ovate 2. *J. diffusa*
- b. Calyx-lobes conspicuously ciliate; bracts lanceolate 4. *J. prostrata*
- 3a. Leaves oblanceolate; seeds rugose 1. *J. adhatoda*
- b. Leaves not oblanceolate; seeds spinulose 4
- 4a. Leaves ovate-orbicular; bracteoles lanceolate; capsules pubescent 5. *J. tranquebariensis*
- b. Leaves elliptic-ovate; bracteoles linear; capsules glabrous 3. *J. glauca*

1. *J. adhatoda* L., Sp. Pl. 15. 1753; JAA 52: 640. 1971; FTN 2: 150. 1987. *Adhatoda zeylanica* Medik., Hist. & Commentat. Acad. Elect. Sci. Theod.-Palat. 6: 393. 1790; IFTC t. 519. 1982; FTC 3: 1147. 1983. *A. vasica* Nees in Wall., Pl. Asiat. Rar. 3: 103. 1832; FBI 4: 540. 1885; FPM 1082. 1924. [*Adathoda*]

Shrub. Leaves acute-attenuate, entire, acuminate. Corolla creamy-white. Capsules oblong, 4-seeded; seeds orbicular.

Fl. & Fr.: Jan. - March.

Distrib.: India, subtropical Himalayas and Vietnam. TN: Almost all districts. GM: Rarely planted on mainland coast.

Uses: Leaf juice used in diarrhoea and dysentery. Powdered leaves used in skin affections. Fresh and dried leaves constitute the drug *vasaka*, used in bronchial troubles and consumption.

Specimens examined: (Total 30) VB 2556.

2. *J. diffusa* Willd., Sp. Pl. 1: 87. 1797; FBI 4: 538. 1885; FPM 1081. 1924; FTC 3: 1185. 1983. *Rostellularia diffusa* (Willd.) Nees in Wall., Pl. Asiat. Rar. 3: 100. 1832; FTN 2: 158. 1987.

Diffuse herb. Leaves broadly elliptic-ovate, truncate, entire, subacute. Corolla pinkish. Capsules oblong; seeds ovoid, papillose when wet.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet places.

Distrib.: India, Myanmar, Sri Lanka and Thailand. TN: Almost all districts. Earlier collected at Sayalkudi and Muthukulathur a little away from the coast. May occur on the coast.

Specimens examined: (Total 67) NCN 53210, 53143.

3. *J. glauca* Rottler in Ges. Naturf. Freunde Berlin Neue Schriften 4: 219. 1803; FBI 4: 529. 1885; FPM 1079. 1924; FTC 3: 1187. 1983; FTN 2: 150. 1987. *Gendarussa tranquebariensis* Wight, Icon. t. 462. 1841, non Nees 1832.

Undershrub. Leaves rounded, entire, subacute. Bracts broadly ovate. Corolla pale violet. Capsules oblong; seeds ovoid, spinulose.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands with *Euphorbia hirta*, *Tridax procumbens* and *Vernonia cinerea*.

Distrib.: S. India. Endemic. TN: Most districts. GM: Mainland coast, occasional.

Specimens examined: (Total 80) KSK 102775.

4. *J. prostrata* (Roxb. ex C.B. Clarke) Gamble, Fl. Madras 1081. 1924; FTC 3: 1188. 1983. *J. diffusa* Willd. var. *prostrata* C.B. Clarke in Fl. Brit. India 4: 538. 1885. *Rostellularia prostrata* (Roxb. ex C.B. Clarke) R.B. Majumdar in Bull. Bot. Soc. Bengal 25: 75. 1971; FTN 2: 159. 1987.

Prostrate herb. Leaves ovate, rounded, entire, obtuse-acute. Corolla pale pink. Capsules oblong; seeds ovoid, minutely papillose when wet.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities and wastelands, with *Allmania nodiflora*, *Aristida setacea* etc.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, common.

Specimens examined: (Total 103) KSK 102918; PD & PU 107222; SAM 106354.

5. *J. tranquebariensis* L. f., Suppl. Pl. 85. 1782; FBI 4: 530. 1885; FPM 1079. 1924; FTC 3: 1190. 1983; FTN 2: 151. 1987. *Gendarussa tranquebariensis* (L. f.) Nees in Wall., Pl. Asiat. Rar. 3: 105. 1832. [Sivanarvembu]

Undershrub. Leaves rounded, cuneate, entire, obtuse-rounded, apiculate. Bracts elliptic to broadly ovate. Corolla white with pink lines. Capsules oblong, pubescent.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands and sandy localities, with *Barleria noctiflora*, *Sauropus bacciformis* and *Trachys muricata*.

Distrib.: S. India and Sri Lanka. TN: All districts. GM: Mainland coast, common.

Uses: Juice of leaves considered cooling and aperient; given to children in smallpox.

Specimens examined: (Total 117) DD & JSR 93557; PD & PU 107054, 107390; SAM 104776.

10. *Lepidagathis* Willd.

Tropics and subtropics, ca 100 species, 25 in India, 12 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|----------------------|
| 1a. Leaves serrate along margins with spine-tipped serrations, acute at apex,
pubescent | 1. <i>L. pungens</i> |
| b. Leaves entire along margins, mucronate and spine-tipped at apex, glabrous... | 2. <i>L. spinosa</i> |

1. *L. pungens* Nees in Wall., Pl. Asiat. Rar. 3: 97. 1832; FBI 4: 517. 1885; FPM 1067. 1924; FTN 2: 152. 1987. (Fig. 43)

Small herb. Leaves ovate, cuneate, acute. Bracts ovate. Capsules conical or ovoid; seeds ovoid.

Fl. & Fr.: July - Oct.

Habitat: Sandy localities, with *Manisuris myurus*, *Ocimum gratissimum* etc.

Distrib.: S. India. Endemic. TN: Kanyakumari, Tirunelveli and Tuticorin. GM: Mainland coast, occasional.

Specimens examined: (Total 11) KSK 102849; SAM 106450.

2. *L. spinosa* Wight ex Nees in Wall., Pl. Asiat. Rar. 3: 97. 1832; FBI 4: 517. 1885; FPM 1067. 1924; FTN 2: 152. 1987.

Small herb. Leaves obovate, acute at both ends. Bracts oblong. Seeds flattened.

Fl. & Fr.: Jan. - Aug.

Habitat: Dry localities, with *Chloris barbata*, *Cleome angustifolia* etc.

Distrib.: S. India. Endemic. TN: Ramanathapuram, Tirunelveli and Tuticorin. GM: Mainland coast, occasional.

Specimens examined: (Total 15) PD & PU 103614; 107229; VB 1269.

11. *Peristrophe* Nees

Old World tropics, ca 15 species, 8 in India, 2 in Tamil Nadu and one in GM.

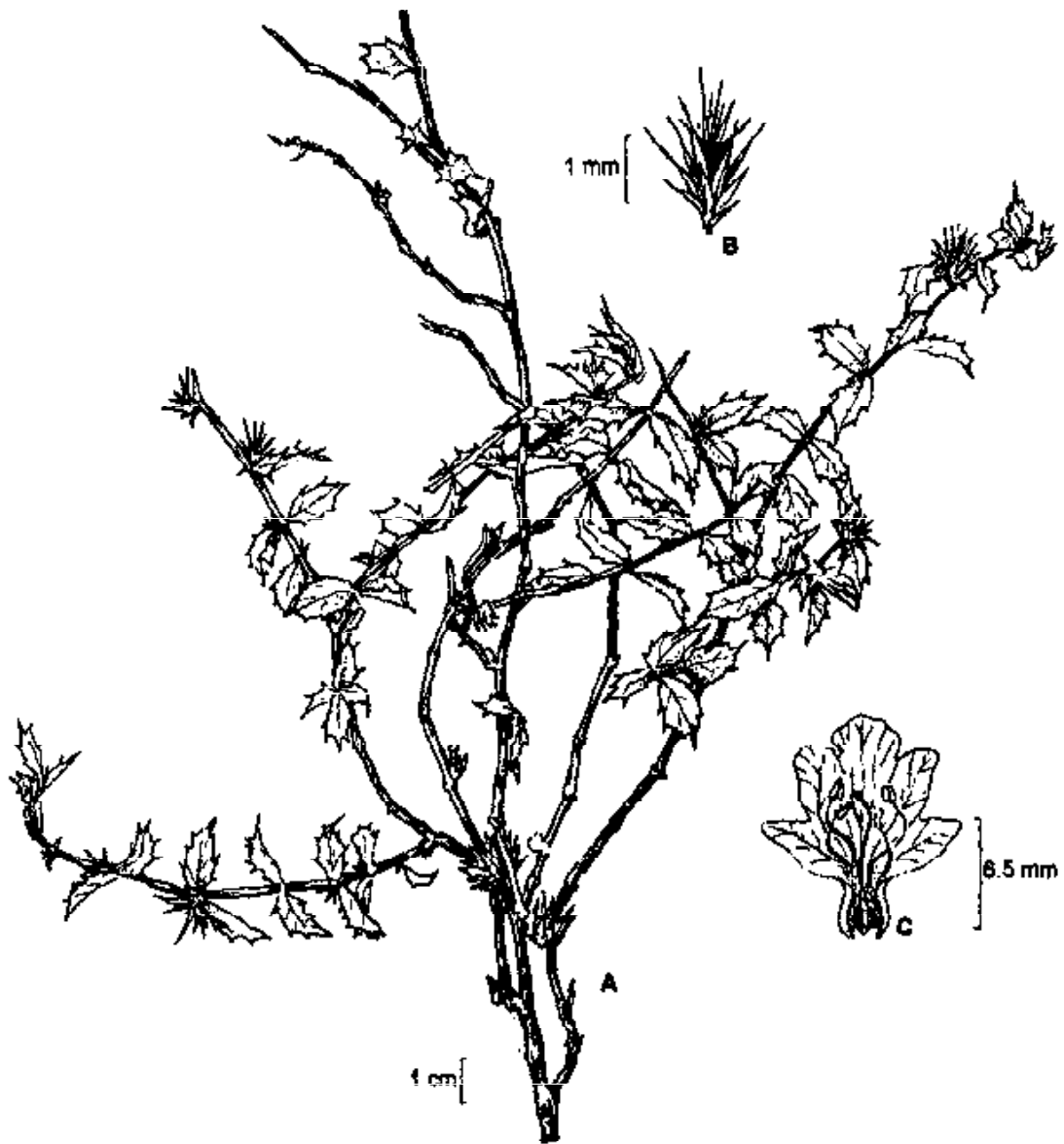


Fig. 43 (A - C). *Lepidagathis pungens* Noes
A. Twig B. Bracts C. Corolla split open

P. paniculata (Forssk.) Brummitt in Kew Bull. 38: 451. 1983; FTN 2: 155. 1987. *Dianthera paniculata* Forssk., Fl. Aegypt.-Arab. 7. 1775. *Peristrophe bicalyculata* (Retz.) Nees in Wall., Pl. Asiat. Rar. 3: 113. 1832; FBI 4: 554. 1885; FPM 1084. 1924; IFTC t. 538. 1982; FTC 3: 1193. 1983. *Dianthera bicalyculata* Retz. in Kongl. Vetensk. Acad. Handl. 297, t. 9. 1775.

Herb. Leaves lanceolate, rounded-acute, entire, acute. Panicles with lax cymes. Bracts linear. Capsules 4-seeded; seeds orbicular.

Fl. & Fr.: Nov. - Feb.

Habitat: Wastelands, with *Acalypha lanceolata*, *Euphorbia* spp. etc.

Distrib.: India and SE. Asia. TN: Most districts. GM: Mainland coast, frequent.

Uses: Used as a fodder for horses; also used as a green manure. Yields an essential oil which shows tuberculostatic activity *in vitro*.

Specimens examined: (Total 23) KSK 102949; VB 1286.

12. *Ruellia* L.

Tropics and subtropics, ca 150 species and one in India..

R. tuberosa L., Sp. Pl. 635. 1753; FPM 1017. 1924; IFTC t. 540. 1982; FTC 3: 1197. 1983; FTN 2: 159. 1987.

Herb. Leaves obovate, cuneate, entire, obtuse. Racemes axillary and terminal. Bracts linear-lanceolate. Corolla blue. Capsules oblong, many-seeded; seeds orbicular.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands, with *Abutilon indicum*, *Cleome* spp. etc.

Distrib.: Trop. America, naturalized in India. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Plant emetic, used as a substitute for ipecacuanha.

Specimens examined: (Total 16) KSK 103333; VB 2390.

13. *Rungia* Nees

Old World tropics, ca 50 species, 13 in India, 9 in Tamil Nadu and one in GM.

R. repens (L.) Nees in Wall., Pl. Asiat. Rar. 3: 110. 1832; Wight, Icon. t. 465. 1841; FBI 4: 549. 1885; FPM 1070. 1924; IFTC t. 541. 1982; FTC 3: 1197. 1983; FTN 2: 160. 1987. *Justicia repens* L., Sp. Pl. 15. 1753; Roxb., Pl. Coromandel t. 152. 1802. [*Kodaga saleh*]

Prostrate herb. Leaves elliptic-lanceolate, cuneate, entire, acute. Spikes terminal. Bracts ovate. Corolla pinkish. Capsules oblong, 4-seeded; seeds orbicular, tuberculate.

Fl. & Fr.: Nov. - Feb.

Habitat: Wastelands, with *Amaranthus viridis*, *Eclipta prostrata* etc.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Dried and pulverized plant is used in cough and fever; also used as a vermifuge and diuretic.

Specimens examined: (Total 65) PD 102272; PD & PU 107341.

Crossandra infundibuliformis (L.) Nees., an undershrub, is often cultivated in gardens as an ornamental. *Eranthemum roseum* (Vahl) R. Br. is rarely grown in gardens.

78. THUNBERGIACEAE

Thunbergia alata Bojer ex Sims, a climbing shrub, is sometimes cultivated in gardens. *T. erecta* (Benth.) T. Anderson, an erect shrub, may also be cultivated.

79. VERBENACEAE

Key to the genera

1a. Plants prostrate	4. Phyla
b. Plants erect	2
2a. Large trees, more than 10 m; inflorescence a panicle, dichotomously branched; drupes enveloped by inflated calyx	8. Tectona
b. Shrubs, undershrubs, or small trees, less than 10 m; inflorescence not a panicle; drupes not enveloped by inflated calyx	3
3a. Thorny or prickly shrubs	4
b. Unarmed undershrubs or trees	5
4a. Thorny shrubs; thorns leaf-bearing; drupes yellow when ripe	2. Gmelina
b. Prickly shrubs; drupes purple when ripe	3. Lantana
5a. Stamens 2; staminodes 2	7. Stachytarpheta
b. Stamens 4; staminodes absent	6
6a. Inflorescence a corymb; drupes violet when ripe	5. Premna

- b. Inflorescence not a corymb; drupes black when ripe 7
 7a. Herbs; calyx-tube sticky-pubescent 6. *Priva*
 b. Shrubs; calyx-tube not sticky-pubescent 8
 8a. Leaves simple; drupes with four pyrenes 1. *Clerodendrum*
 b. Leaves digitately 3 - 7-foliolate; drupes with 1 - 4-seeded pyrenes 9. *Vitex*

1. *Clerodendrum* L.

Tropics and subtropics, ca 400 species, 18 in India, 12 in Tamil Nadu and 2 in GM.

Key to the species

- 1a. Plant strongly foetid; leaves coriaceous; calyx cupular, corolla white
with pink lines 1. *C. inerme*
 b. Plant not foetid; leaves chartaceous; calyx campanulate;
corolla creamy 2. *C. phlomidis*

1. *C. inerme* (L.) Gaertn., Fruct. Sem. Pl. 1: 271, t. 75. 1788; FBI 4: 589. 1885; FPM 1099. 1924; FTC 3: 1219. 1983; RHFC 4: 466. 1983; FTN 2: 164. 1987. *Volkameria inermis* L., Sp. Pl. 637. 1753. [*Peenari changu*]

Shrub, ca 2 m. Leaves obovate, cuneate, entire, obtuse. Cymes axillary. Drupes globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Usually a mangrove associate, also in sandy localities, with *Indigofera oblongifolia*, *Premna serratifolia* etc.

Distrib.: Australia, China, Coastal India, Myanmar and Sri Lanka. TN: Most districts. GM: Common on almost all islands except Anaipar and Valimunai and frequent on mainland coast.

This is one of the widespread Verbenaceous species. The corky-woody pyrenes can float for months in seawater and get transported (Ridley, 1930).

Uses: Leaves used as a febrifuge. Poultice of leaves used to resolve buboes.

Specimens examined: (Total 75) PD 100496; Mu Is. PD 101113; Pc Is. KSK 102347; Pu Is. KSK 102340; Th Is. PD 101481; Va Is. PD & PU 107521.

2. *C. phlomidis* L. f., Suppl. Pl. 292. 1782; Wight, Icon. t. 1473. 1849; FBI 4: 590. 1885; FPM 1099. 1924; FTC 3: 1220. 1983; RHFC 4: 466. 1983; FTN 2: 164. 1987. [*Taluddai*]

Shrub, ca 3 m. Leaves ovate, truncate, coarsely serrate. Flowers in panicles. Drupes globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Cyperus* spp., *Phyllanthus* spp. etc.

Distrib.: India, Myanmar, Pakistan and Sri Lanka. TN: Chengalpattu, Coimbatore, Dharmapuri, Kanyakumari, Ramanathapuram, Salem, S. Arcot and Tiruchirapalli. GM: Mainland coast, occasional.

Uses: Roots aromatic and astringent, decoction used as a demulcent in gonorrhoea.

Specimens examined: (Total 67) ANH 49503, 53301; KSK 103461.

C. thomsonae Balf., a climbing shrub, is sometimes cultivated in gardens.

2. *Gmelina* L.

Trop. Africa, E. Asia, Indomalaya and Australia, ca 35 species, 4 in India, 3 in Tamil Nadu and one in GM.

G. asiatica L., Sp. Pl. 626. 1753; IIB 2: t. 174. 1850; FBI 4: 582. 1885; FPM 1098. 1924; FTC 3: 1222. 1983; RHFC 4: 394. 1983; FTN 2: 165. 1987. *G. parvifolia* Roxb., Pl. Coromandel t. 162. 1802. [*Nilakumala*]

Straggling, armed shrub; thorns to 3.5 cm long. Leaves elliptic, obovate, cuneate, entire, obtuse or subacute. Racemes axillary or terminal. Corolla yellow. Drupes ellipsoid, ca 2 cm long.

Fl. & Fr.: March - May.

Habitat: Coastal scrub jungles, with *Acacia* spp., *Lannea coromandelica* etc.

Distrib.: Bangladesh, S. India and Sri Lanka. TN: All districts. GM: Mainland coast, frequent.

Uses: Fruits edible. Root mucilaginous demulcent and astringent, used in rheumatism and catarrh of the bladder. Wood used for making churning sticks.

Specimens examined: (Total 115) KSK 102052; PD & PU 107218.

3. *Lantana* L.

Trop. America, Asia and Africa, ca 150 species, 4 in India and Tamil Nadu and one in GM.

L. camara L., Sp. Pl. 627. 1753; FBI 4: 562. 1885; FTC 3: 1224. 1983. *L. aculeata* L., Sp. Pl. 627. 1753; FPM 1087. 1924. *L. camara* L. var. *aculeata* (L.) Moldenke in Torreya 34: 9. 1934; FTN 2: 165. 1987. [*Unnichi*]

Straggler. Leaves ovate, attenuate, crenate, acute. Spikes condensed, axillary. Corolla pinkish, white or yellow. Drupes globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Anisomeles malabarica*, *Toddalia asiatica* etc.

Distrib.: Native of Trop. America, naturalized elsewhere. TN: Most districts. GM: Mainland coast, frequent.

Uses: Occasionally used as a green manure. Fruit is said to be edible. Plant is credited with vulnerary, diaphoretic, carminative and antispasmodic properties, used in pustules and tumours; decoction given in tetanus, rheumatism and malaria, and for ataxy of abdominal viscera.

Specimens examined: (Total 58) KSK 102052, 102787; VB 1303.

4. *Phyla* Lour.

Tropics and subtropics, ca 20 species and one in India.

P. nodiflora (L.) Greene in Pittonia 4: 46. 1899; IFTC t. 553. 1982; RHFC 4: 236. 1983; FTC 3: 1226. 1983; FTN 2: 166. 1987. *Verbena nodiflora* L., Sp. Pl. 20. 1753. *Lippia nodiflora* (L.) A. Rich. in Michx., Fl. Bor.-Amer. 2: 15. 1803; Wight, Icon. t. 1463. 1849; FBI 4: 563. 1885; FPM 1088. 1924. [*Koduppal*]

Leaves obovate or spatulate, cuneate, toothed, obtuse. Spikes axillary. Corolla purplish white. Drupes globose.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet localities, with *Brachiaria reptans*, *Eclipta prostrata* etc.

Distrib.: Tropics and subtropics. TN: All districts. GM: Mainland coast, common.

Uses: Leaves eaten. Herb diuretic and febrifuge. Paste or poultice of fresh plant applied to boils.

Specimens examined: (Total 104) KSK 102007, 102891, 103477; PD 100494; SAM 104796.

5. *Premna* L. nom. cons.

Tropics and subtropics, ca 200 species, 31 in India, 10 in Tamil Nadu and one in GM.

P. serratifolia L., Mant. Pl. 253. 1771; FPM 1096. 1924; FTC 3: 1229. 1983; FTN 2: 167. 1987; Nicolson & al. in *Regnum Veg.* 119: 262. 1988, excl. syn. *P. corymbosa* Rottler. *P. integrifolia* L., Mant. Pl. 252. 1771; Wight, *Icon.* t. 1469. 1849; FBI 4: 574. 1885. *P. obtusifolia* R. Br., *Prodr.* 512. 1810; RHFC 4: 334. 1983. [*Munnai*] (Fig. 44)

Shrub to small tree. Leaves ovate or elliptic, rounded, entire-serrate, acute, foetid when bruised. Corymbs terminal. Corolla creamy white.

Fl. & Fr.: Almost throughout the year.

Habitat: Usually a little away from shores on islands, on sandy soil with *Clerodendrum inerme*, *Dichrostachys cinerea* etc.

Distrib.: India to Malesia and Sri Lanka. TN: Almost all districts. GM: Common on Mandapam group of Islands and very rare on mainland coast.

The dark-violet berries are said to be dispersed by birds (Ridley, 1930). They are eaten by common myna, red-vented and white-browed bulbuls and dispersed (Balasubramanian, 1996). These birds are found in the biosphere reserve (Deshmukh & Venkataramani, 1994). However, the plant occurs only on the Mandapam group of islands.

Specimens examined: (Total 55) PD 100444; Ku Is. *Thurston* 2; PD 100583; Mp Is. PD 101468; Mu Is. PD 100318, 100623, 100674, 106704; Pu Is. PD 99726; Pv Is. PD 101196.

6. *Priva* Adans.

Tropics and subtropics, ca 20 species and one in India.

P. cordifolia (L. f.) Druce in *Bot. Exch. Club Soc. Brit. Isles* 4: 641. 1917; IFTC t. 555. 1982; FTC 3: 1230. 1983; FTN 2: 168. 1987. *Buchnera cordifolia* L. f., *Suppl. Pl.* 287. 1782. *Priva leptostachya* Juss. in *Ann. Mus. Natl. Hist. Nat.* 7: 70. 1806; FBI 4: 565. 1885; FPM 1091. 1924. *Streptium asperum* Roxb., *Pl. Coromandel* t. 146. 1800.

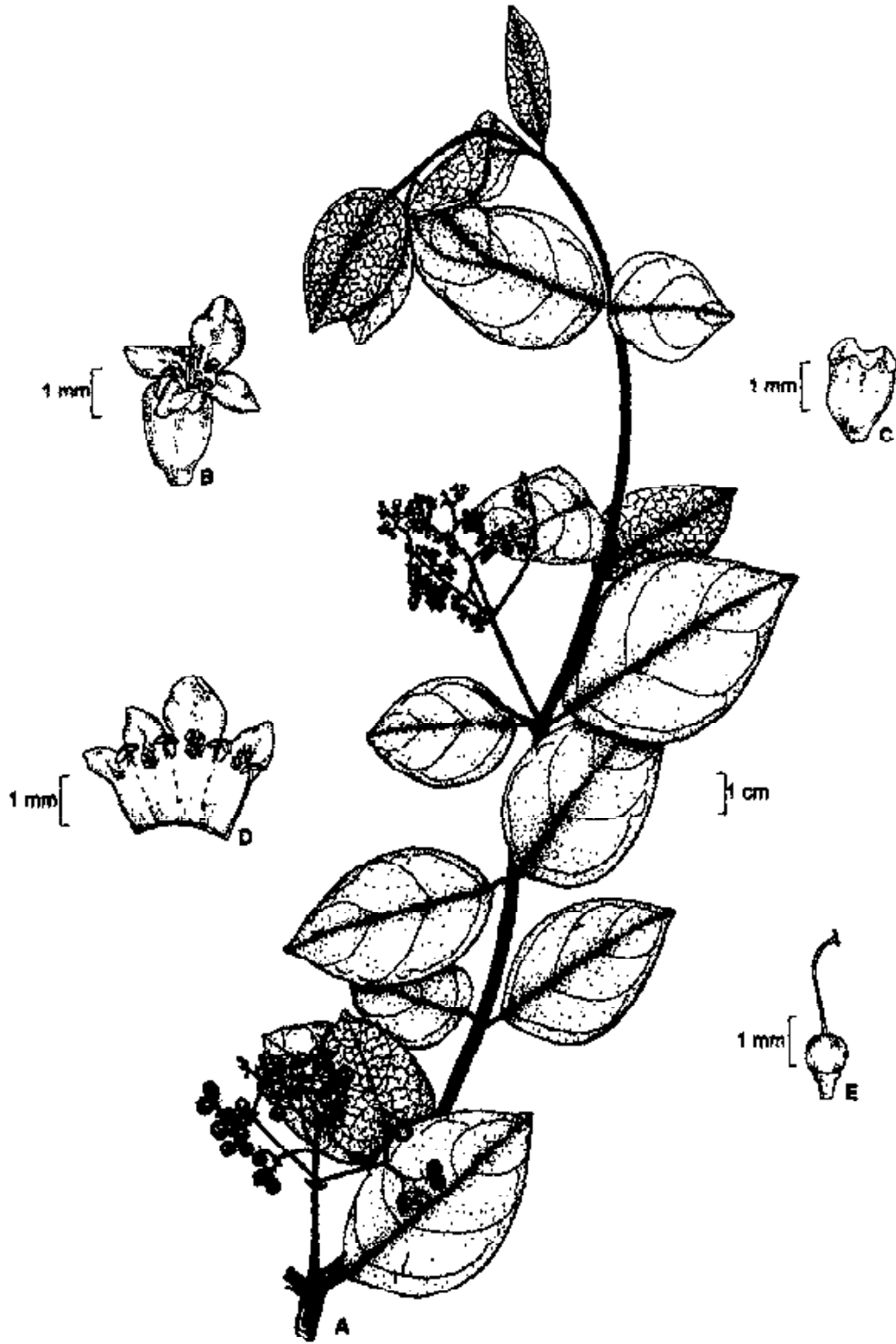


Fig. 44(A - E). *Ficus serratifolia* L.

A. Twig B. Flower C. Calyx D. Corolla split open E. Pistil

Herb. Leaves broadly ovate, truncate, serrate, acute. Spikes terminal. Corolla white. Drupes oblong; calyx persistent, sticky-pubescent.

Fl. & Fr.: Nov. - Feb.

Habitat: Wastelands with *Allmania nodiflora*, *Zornia diphylla* etc.

Distrib.: India, Nepal and Pakistan. TN: Most districts. GM: Mainland coast, frequent.

Uses: Ground seeds are made into a paste for application to sores.

Specimens examined: (Total 20) SAM 106411.

7. *Stachytarpheta* Vahl nom. cons.

Trop. America, ca 65 species, 5 in India, 3 in Tamil Nadu and one in GM.

S. jamaicensis (L.) Vahl, Enum. Pl. 1: 206. 1804; RHFC 4: 253. 1983; FTC 3: 1232. 1983; FTN 2: 168. 1987; BOBSI 34: 167. 1992. *Verbena jamaicensis* L., Sp. Pl. 19. 1753. *Stachytarpheta indica* auct. non (L.) Vahl: FBI 4: 564. 1885; FPM 1090. 1924; IFTC t. 556. 1982.

Undershrub. Leaves elliptic-obovate, decurrent, crenate-serrate, acute. Spikes terminal. Corolla bluish violet. Pyrenes oblong.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands with *Acanthospermum hispidum*, *Boerhavia erecta* etc.

Distrib.: Naturalized in Trop. Asia. TN: Most districts. GM: Mainland coast, frequent.

Uses: Eaten like spinach. Herb used for intestinal worms, venereal diseases, ulcers, and stomach ailments. Leaves employed for cardiac troubles.

Specimens examined: (Total 90) KSK 102893; PD 102287.

8. *Tectona* L. f. nom. cons.

South Asia to Malesia, 4 species and one in India.

T. grandis L. f., Suppl. Pl. 151. 1782; Roxb., Pl. Coromandel t. 6. 1795; FBI 4: 570. 1885; FPM 1092. 1924; FTC 3: 1236. 1983; RHFC 4: 304. 1983; FTN 2: 169. 1987. [*Thekku*]

Leaves ovate-elliptic, subacute, entire, acute. Corolla white. Drupes globose.

Fl. & Fr.: May - Aug.

Occasionally planted.

Uses: Yields a very valuable timber used for ship-building, bridges, flooring, furniture etc. Leaves contain tannin and a dye. Oil obtained by distillation of wood chips applied to eczema. Fatty oil from kernels is used in scabies. Flowers and seeds diuretic. Bark astringent, used in bronchitis.

9. *Vitex* L.

Tropics to temperate regions, ca 250 species, 13 in India, 7 in Tamil Nadu and 2 in GM.

- | | |
|--|-----------------------|
| 1a. Central leaflet oblanceolate; lateral leaflets petiolulate, entire along margins... | 1. <i>V. negundo</i> |
| b. Central leaflet obovate-rhomboid; lateral leaflets subsessile, bluntly toothed along margins..... | 2. <i>V. trifolia</i> |

1. *V. negundo* L., Sp. Pl. 638. 1753; Wight, Icon. t. 519. 1842; FBI 4: 583. 1885, incl. var. *incisa*; FPM 1102. 1925; FTC 3: 1240. 1983; RHFC 4: 373. 1983; FTN 2: 169. 1987. [*Nochi*]

Large shrub or small tree. Leaves 3-5-foliolate; leaflets acute, acuminate. Panicles terminal. Corolla purple-violet. Drupes globose to ellipsoid-oblong.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Anisomeles malabarica*, *Cassia auriculata*, *Jatropha glandulifera* etc.

Distrib.: E. Asia to the Philippines, India and Sri Lanka. TN: Most districts. GM: Mainland coast, common. Earlier collected on Kurusadai Island.

Uses: Leaves used in the preparation of a tonic and vermifuge. Extract of leaves shows anticancer activity against *Ehrlich ascites* tumour-cells. Flowers astringent, used in diarrhoea, fever and liver complaints.

Specimens examined: (Total 104) KSK 103303; PD & PU 106909, Ku Is. DDS & SRR 20539.

2. *V. trifolia* L., Sp. Pl. 638. 1753 (as "*trifolis*"); FBI 4: 583. 1885; FPM 1102. 1924; FTC 3: 1241. 1983; RHFC 4: 378. 1983; FTN 2: 170. 1987. [*Nirnochi*] (Fig. 45)

Shrub, ca 3 m high. Leaves (1) - 3 (-5)-foliolate; leaflets cuneate, acuminate. Panicles terminal and supraaxillary. Corolla violet, purple or blue. Drupes subglobose or ovoid.

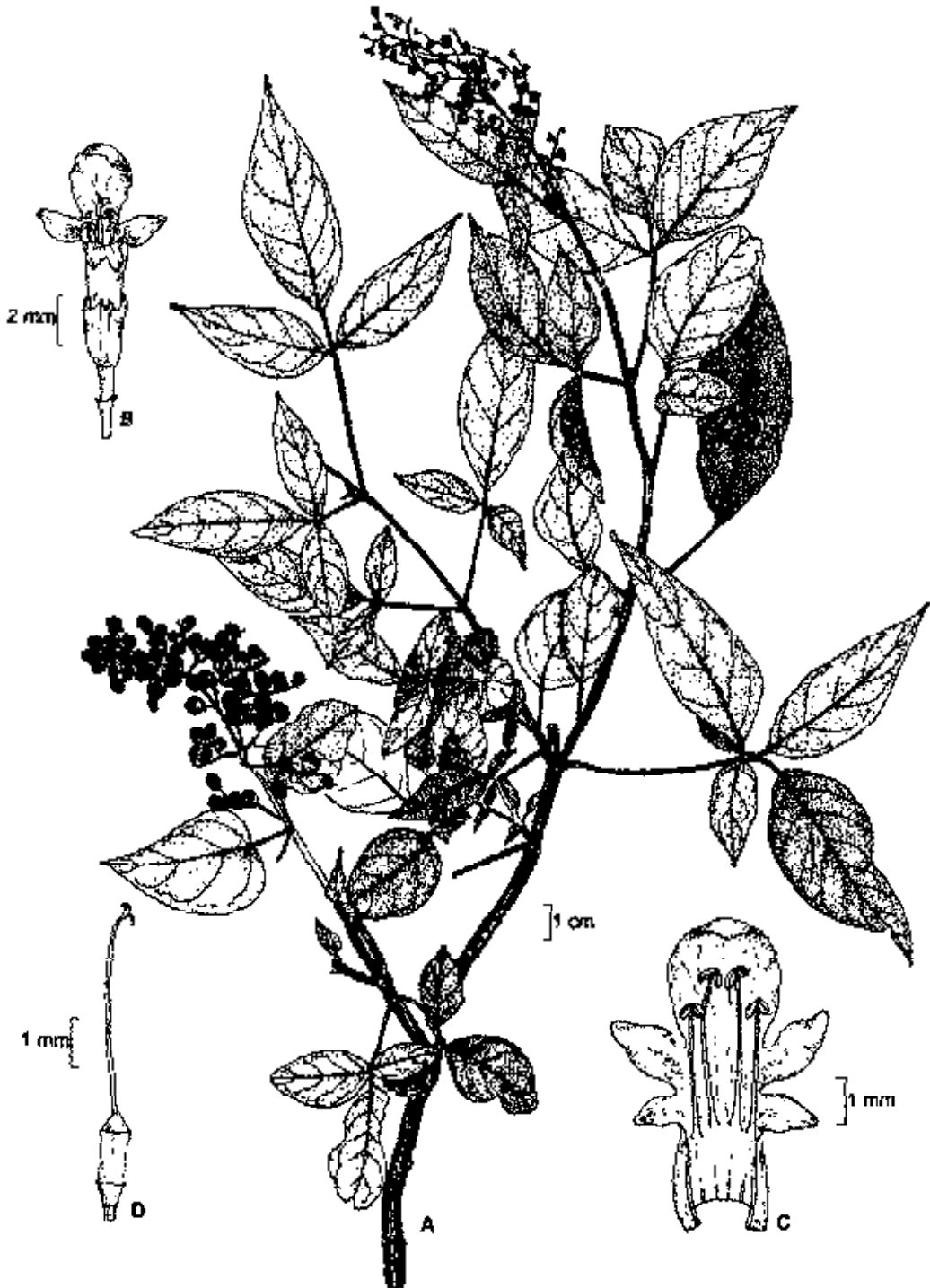


Fig. 45(A - D). *Vitis trifolia* L.

A, Twig B, Flower C, Corolla split open D, Pistil

Fl. & Fr.: Throughout the year.

Habitat: Sandy soil with *Acacia planifrons*, *Cordia obliqua* and *Premna serratifolia*.

Distrib.: Australia, India, the Philippines, SE. Asia to Japan and Sri Lanka. TN: Chengalpattu, Ramanathapuram and S. Arcot. GM: Moyal Island, rare. Added here to the flora of Gulf of Mannar.

Though the black fruits are said to be dispersed by seawater as well as birds (Ridley, 1930), it is extremely rare in that only a few plants occur on Moyal Island only.

Uses: Leaves form a constituent of poultices used in rheumatic swellings, inflammations and sprains. Leaves insecticidal and antibacterial, their extract is used in tuberculosis; extract also exhibits anticancer activity.

Specimens examined: (Total 10) Mu Isl. PD 100636.

Duranta erecta L., a shrub, is sometimes cultivated in gardens.

80. AVICENNIACEAE

Avicennia L.

Tropics, 14 species, 3 in India and Tamil Nadu and one in GM.

A. marina (Forssk.) Vierh. in Akad. Wiss. Wien, Math. - Naturwiss. Kl., Denkschr. 71: 435. 1907; FPM 1106. 1924; RHFC 4: 127. 1983; FTC 3: 1242. 1983; FTN 2: 171. 1987. *Secura marina* Forssk., Fl. Aegypt. - Arab. 37. 1775. [*Kanna*] (Fig. 46)

Large trees to small shrubs; pneumatophores corky. Leaves elliptic-oblong, acute-cuneate, entire, acute. Cymes peduncled, condensed. Calyx persistent. Corolla yellow. Stamens 4. Drupes ovoid; seed single, reniform.

Fl. & Fr.: May - July.

Distrib.: Arabia to India. TN: Chengalpattu, Ramanathapuram, S. Arcot and Tuticorin. GM: Common on all islands except Anaipar, Karaichalli, Mullai, Thalayiari, Van and Valimunai.

The seed germinates inside the capsule before it falls from the tree and is sea-dispersed (Ridley, 1930). Though widespread here, it is absent from certain islands.

Common on the mainland coast at Pamban, Veppalodai, Tuticorin and Punnakayal and most islands. The plant is a large tree on the Mandapam groups of islands. It becomes a

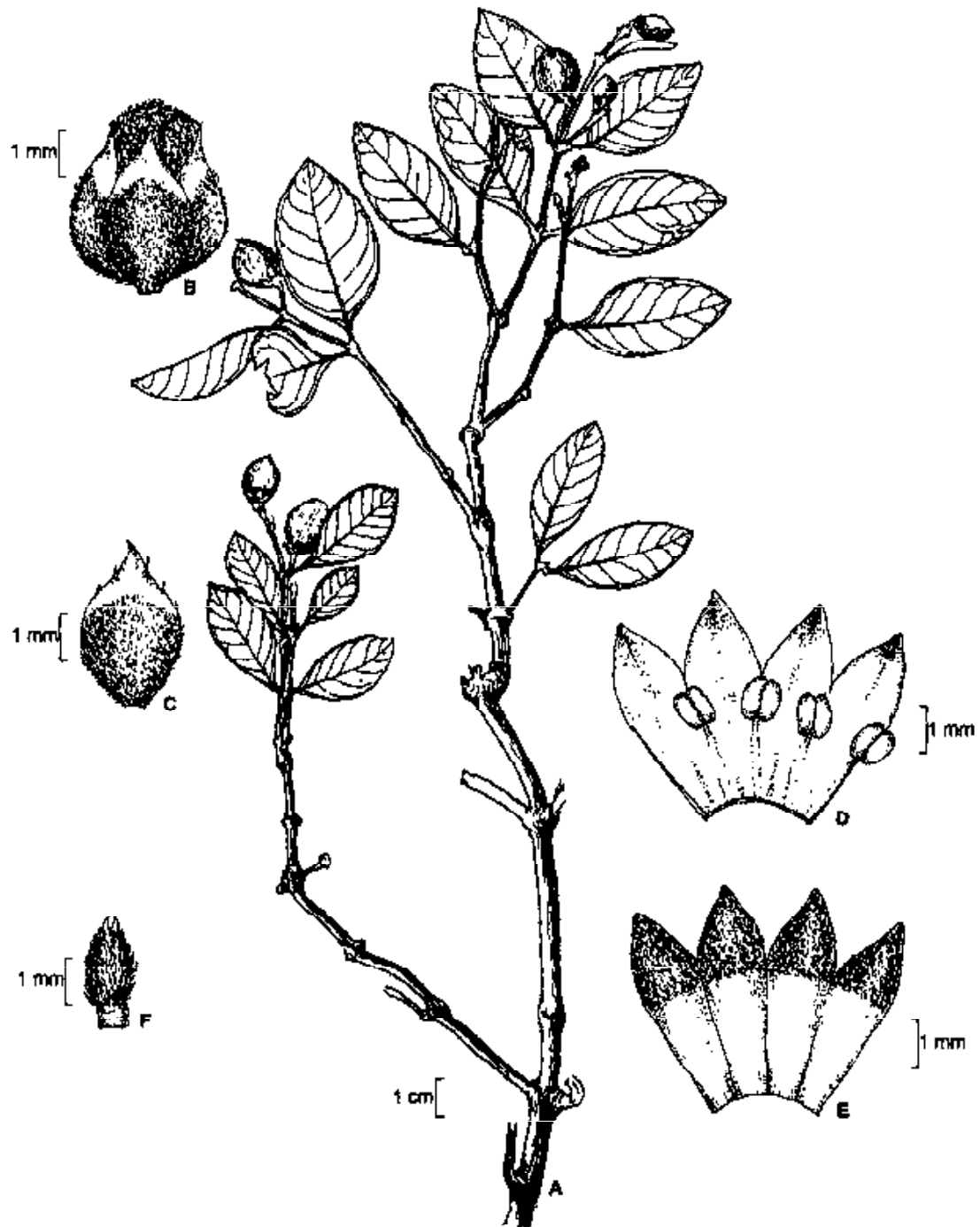


Fig. 46(A - F). *Avicennia marina* (Forsk.) Vierh
 A. Twig B. Bud C. Sepal D. Corolla split open E. Corolla outside F. Pistil

large to small shrub around Veppalodai and Tuticorin respectively and almost an undershrub in the Tambraparani estuary at Punnakayal.

Uses: Leaves sometimes used as a fodder; decomposed leaves constitute fish-food. Bark contains tannin. Extensively exploited for fuel wood.

Specimens examined: (Total 34) PD 102162; SAM 104798; Ka Is. PD 102189; Ku Is. PD 100370; Ma Is. PD 100698; Mp Is. PD 101442; Mu Is. PD 100306; Pu Is. KSK 101683; Pv Is. KSK 103338.

81. LAMIACEAE (nom. alt. LABIATAE)

Key to the genera

- | | |
|---|------------------------|
| 1a. Calyx 8 - 10-toothed; upper lip of corolla hooded | 6. Leucas |
| b. Calyx 5-lobed; upper lip of corolla straight or spreading | 2 |
| 2a. Calyx-lobes subequal, not 2-lipped | 3 |
| b. Calyx-lobes unequal, 2-lipped | 4 |
| 3a. Corolla pink-violet or purple; corolla-tube annulate inside | 1. Anisomeles |
| b. Corolla blue; corolla-tube not annulate inside | 5. Hyptis |
| 4a. Corolla-lips subequal; fruiting-calyx less than 2.5 mm long | 5 |
| b. Corolla-lips unequal; fruiting-calyx more than 4 mm long | 6 |
| 5a. Calyx puberulous outside | 4. Geniosporum |
| b. Calyx strigose outside | 2. Basilicum |
| 6a. Stamens included; stigma capitate | 8. Orthoclethra |
| b. Stamens exerted; stigma bifid | 7 |
| 7a. Lower lip of calyx 2-toothed; corolla pinkish white | 3. Beclum |
| b. Lower lip of calyx 4-toothed; corolla cream or purplish white..... | 7. Ocimum |

1. *Anisomeles* R. Br.

Old World tropics, 5 or 6 species, 3 in India and Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|-------------------------|
| 1a. Leaves ovate, truncate at base; corolla pink-violet | 1. A. indica |
| b. Leaves lanceolate, rounded at base; corolla purple | 2. A. malabarica |

1. *A. indica* (L.) Kuntze, Revis. Gen. Pl. 512. 1891; FPM 1140. 1924; RBSI 14: 152. 1940; RHFC 3: 176. 1981; FTC 3: 1250. 1983; FTN 2: 172. 1987. *Nepeta indica* L., Sp. Pl. 571. 1753. *Anisomeles ovata* R. Br. in W. T. Aiton, Hort. Kew. ed. 2, 3: 364. 1811; Wight, Icon. t. 865. 1845; FBI 4: 672. 1885.

Undershrub. Leaves crenate-serrate, acute. Flowers in spikes. Nutlets ellipsoid, black, shiny.

Fl. & Fr.: Throughout the year.

Habitat: Waste places

Distrib.: China, India, Malesia and Sri Lanka. TN: All districts. GM: Mainland coast, fairly common.

Uses: Herb used as an astringent and carminative. Essential oil therefrom is useful in uterine affections.

Specimens examined: (Total 123) DD & SRR 20039; VB 2097.

2. *A. malabarica* (L.) R. Br. ex Sims in Bot. Mag. t. 2071. 1819; Wight, Icon. t. 864. 1845; FBI 4: 673. 1885; FPM 1140. 1924; RBSI 14: 153. 1940; RHFC 3: 178. 1981; FTC 3: 1250. 1983; FTN 2: 172. 1987. *Nepeta malabarica* L., Mant. Pl. 566. 1771. [*Peyameratti*]

Undershrub. Leaves crenate-serrate, acute. Flowers in spikes. Nutlets ovoid-ellipsoid, blackish brown, shiny.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands and in scrub jungles, with *Scutia myrtina*, *Vitex negundo* etc.

Distrib.: Mauritius, S. India and Sri Lanka. TN: All districts. GM: Mainland coast, common.

Uses: Infusion of leaves used in dyspepsia and fever accompanying teething in children. A decoction of the plant or its essential oil is used in rheumatism.

Specimens examined: (Total 150) KSK 100306; PD 100398; PD & PU 106510.

2. *Basilicum* Moench

Old World tropics to E. Australia, 7 species and one in India.

B. polystachyon (L.) Moench, Suppl. Meth. 143. 1802; RHFC 3: 122. 1981; IFTC t. 563. 1982; FTC 3: 1252. 1983; FTN 2: 172. 1987. *Ocimum polystachyon* L., Mant. Pl. 567. 1771. *Moschosma polystachyon* (L.) Benth. in Wall., Pl. Asiat. Rar. 2: 13. 1830 - 31; FBI 4: 612. 1885; FPM 1117. 1924. [*Sanakki poondur*]

Undershrub. Leaves ovate, truncate, serrate, acuminate. Verticils 6-flowered. Corolla pinkish white. Nutlets ellipsoid, smooth.

Fl. & Fr.: Jan. - March.

Habitat: Shady and moist places, with *Brachiaria reptans*, *Echinochloa colona* etc.

Distrib.: India, SE. Asia, Sri Lanka and Africa. TN: Most districts. GM: Mainland coast, occasional.

Uses: Crushed leaves applied to sprains. Decoction of leaves given as a sedative in epilepsy, palpitation of heart, neuralgia and convulsions.

Specimens examined: (Total 40) PD 102281; PD & PU 107066; VB 1521.

3. *Becium* Lindl.

Tropics, ca 10 species and one in India.

B. filamentosum (Forssk.) Chiov. in Nuovo Giorn. Bot. Ital. 26: 162. 1919; KB 38: 56. 1983; FTC 3: 1253. 1983; FTN 2: 173. 1987. *Ocimum filamentosum* Forssk., Fl. Aegypt.-Arab. 108. 1775. *O. adscendens* Willd., Sp. Pl. 3: 166. 1800; FBI 14: 609. 1885; FPM 1112. 1924; RHFC 3: 117. 1981.

Undershrub. Leaves elliptic-oblongate, attenuate, entire or serrulate, acute. Verticils few-flowered. Nutlets erect.

Fl. & Fr.: Nov. - Jan.

Habitat: Wastelands, with *Tephrosia purpurea*, *Justicia prostrata* etc.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Specimens examined: (Total 71) SAM 106353.

4. *Geniosporum* Wall. ex Benth.

Trop. Africa, Madagascar, S. China and SE. Asia, ca 25 species, 3 in India, 2 in Tamil Nadu and one in GM.

G. tenuiflorum (L.) Merr. in Philipp. J. Sci. 19: 379. 1921; RHFC 3: 119. 1981; IFTC t. 566. 1982; FTC 3: 1255. 1983. *Ocimum tenuiflorum* L., Sp. Pl. 597. 1753. *O. prostratum* L., Mant. Pl. 566. 1771. *Geniosporum prostratum* (L.) Benth. in Edward's Bot. Reg. 15: sub t. 1300. 1830; FBI 4: 610. 1885; FPM 1116. 1924.

Procumbent or erect herb. Leaves oblong to spatulate, acute, serrate. Verticils 15 20-flowered. Corolla blue-purple to violet. Nutlets 4, ovoid, oblong-cylindric.

Key to the varieties

- 1a. Procumbent herb; bracts cordate, not membranous, not transparent along margins; lateral calyx-teeth neither lanceolate nor awned 4.2. var. *tenuiflorum*
- b. Erect herb; bracts deltoid, membranous, transparent along margins; lateral calyx-teeth lanceolate, awned 4.1. var. *longiracemosum*

4.1. var. *longiracemosum* (Ramam. & Sebastine) Santapau & S.K. Jain in Indian Forester 92: 643. 1966; FTN 2: 174. 1987. *G. prostratum* (L.) Benth. var. *longiracemosum* Ramam. & Sebastine in Bull. Bot. Surv. India 6: 325. 1964.

Fl. & Fr.: Nov. - Jan.

Habitat: Red soil, with *Cyanotis papilionacea*, *Jatropha maheshwarii* and *Leucas diffusa*.

Distrib.: S. India. Endemic. Tuticorin. GM: Sparse. Earlier collected in Kudiramoli Theri. Now collected at Periyathalai near Thiruchendur.

Specimens examined: KMS 13701; KSK 102899.

4.2. var. *tenuiflorum*: FTN 2: 173. 1987.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Mollugo disticha*, *Spermacoce hispida* etc.

Distrib.: S. India and Sri Lanka. TN: Most districts. GM: Mainland coast, common.

Use: Plant considered febrifuge.

Specimens examined: (Total 85) KSK 102967, 102802; PD & PU 107207.

5. *Hyptis* Jacq. nom. cons.

Temp. and Trop. America, ca 400 species, 4 in India, 2 in Tamil Nadu and one in GM.

H. suaveolens (L.) Poir. in Ann. Mus. Natl. Hist. Nat. 7: 472, t. 29, f. 2. 1806; FBI 4: 630. 1885; FPM 1129. 1924; RHFC 3: 155. 1981; IFTC t. 567. 1982; FTC 3: 1256. 1983; FTN 2: 174. 1987. *Ballota suaveolens* L., Syst. Nat. ed. 10, 1100. 1759.

Undershrub. Leaves ovate, obliquely truncate, irregularly serrulate, acute. Verticils 6-flowered. Nutlets 2, ovoid or oblong.

Fl. & Fr.: Almost throughout the year.

Habitat: Waste and wet places, with *Blainvillea acmella*, *Cassia absus* etc.

Distrib.: Native of C. America. Naturalized elsewhere. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Plant stimulant, carminative and lactagogue. Leaf juice given in colic. Shoot tips edible. Root chewed with betel nut as a stomachic, and its decoction used as an appetiser.

Specimens examined: (Total 84) PD 102984; PD & PU 106454, 106964; SAM 107051.

6. *Leucas* R. Br.

Africa and Arabia to Indonesia, ca 150 species, 40 in India, 30 in Tamil Nadu and 6 in GM.

Key to the species

1a. Calyx-mouth not oblique	2
b. Calyx-mouth oblique	4
2a. Flowers solitary or, 2 or 4 per node, not aggregated in verticils	3. <i>L. biflora</i>
b. Flowers ca 15 per node, aggregated in verticils	3
3a. Leaves broadly ovate, crenate; calyx-tube villous outside	1. <i>L. anandaraoana</i>
b. Leaves oblong, entire; calyx-tube strigose outside	4. <i>L. diffusa</i>
4a. Calyx villous at mouth	6. <i>L. zeylanica</i>
b. Calyx not villous at mouth	5
5a. Verticils usually solitary, rarely 2, lax; calyx tubular, glabrous in the lower half and bulbous-based-hairy in the upper half	2. <i>L. aspera</i>
b. Verticils 4 - 6, superposed; calyx obovate, pubescent throughout	5. <i>L. wightiana</i>

1. *L. anandaraoana* Umamahesw. & P. Daniel in Kew Bull. 54: 103, f. 1. 1999. (Fig. 47)

Erect herb. Leaves truncate, crenate, acute. Verticils clustered, ca 15-flowered. Bracts narrowly and asymmetrically obovate. Calyx 10-toothed with alternate shorter and longer teeth, villous. Corolla white with an annular oblique ring inside. Nutlets 4.

Fl. & Fr.: Feb.

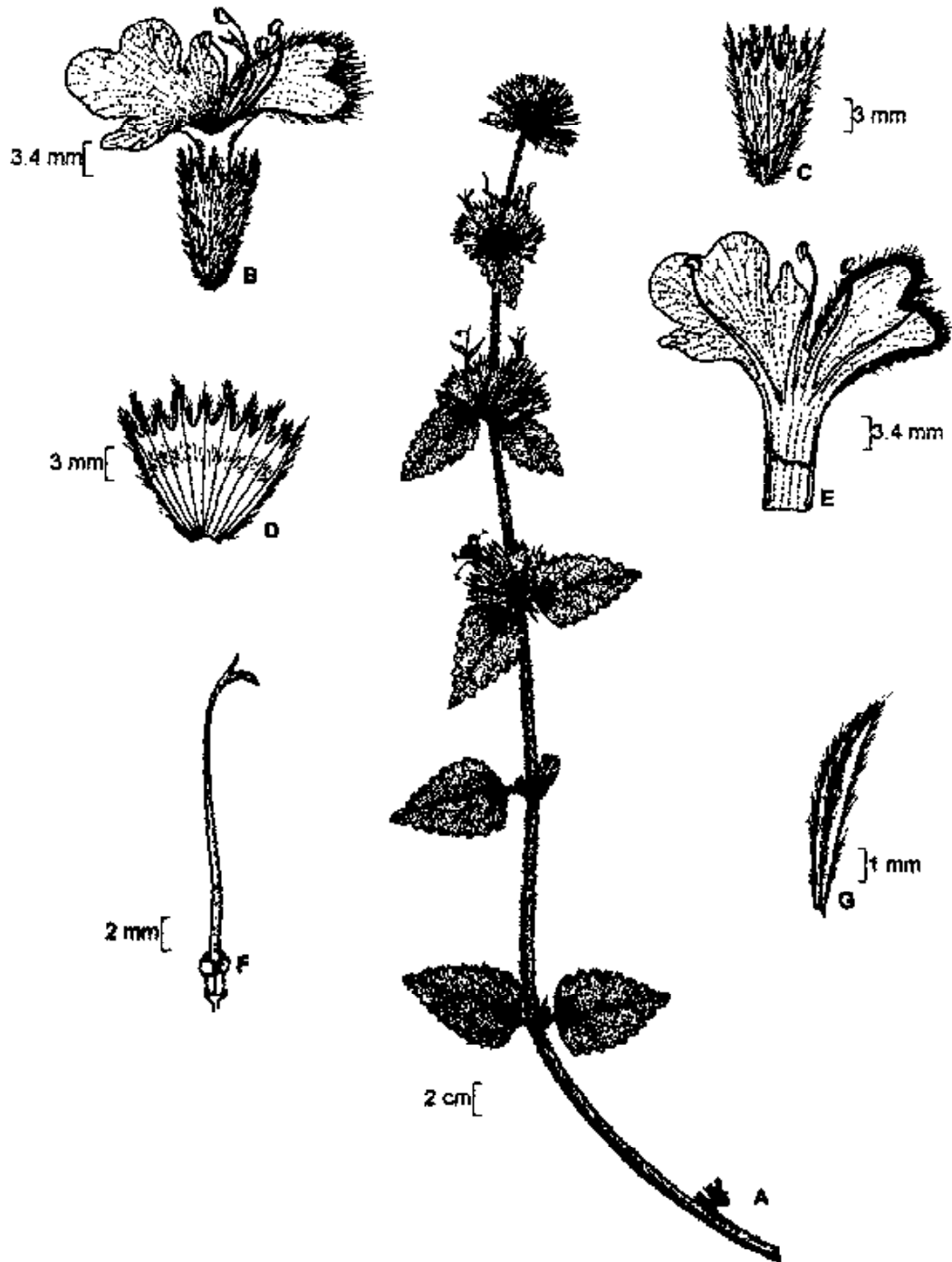


Fig. 47 (A - G). *Leucas anandaraosana* Umamahesw & P. Daniel
 A. Twig B. Flower C. Calyx D. Calyx split open
 E. Corolla split open F. Pistil G. Bract

Habitat: Open sandy places, with *Aerva tomentosa*, *Eragrostis* spp., *Euphorbia* spp., *Launaea sarmentosa* and *Spermacoce hispida*.

Distrib.: India. Endemic. TN: Ramanathapuram. GM: Upputhanni Island. Not common.

Specimens examined: PD 101669 (CAL holotype; K, MH isotypes).

Note: *L. anandaraoana* is allied to *L. flaccida* R. Br. It is a new species described from an island.

2. *L. aspera* (Willd.) Link, Enum. Hort. Berol. Alt. 2: 113. 1822; FBI 4: 690. 1885; FPM 1150. 1924; FTC 3: 1259. 1983; FTN 2: 175. 1987. *Phlomis aspera* Willd., Enum. Pl. 621. 1809. [Thumbai]

Erect herb, ca 50 cm. Leaves linear-lanceolate, cuneate, entire-serrate, acute. Calyx-mouth oblique, 10-toothed; teeth unequal. Nutlets 4.

Fl. & Fr.: Nov. - March.

Habitat: Wastelands, with *Aerva lanata*, *Celosia polygonoides*, *Corchorus aestuans* etc.

Distrib.: Java, Mauritius and the Philippines. TN: All districts. GM: Mainland coast, common. Occasional on Nallathanni and Pumarichan Islands.

Uses: Leaf juice applied externally in psoriasis and chronic skin eruptions. Flowers given with honey for cough and cold. Herb is used as an antipyretic.

Specimens examined: (Total 67) PD 101121; Nt Is. KSK 102706; Pu Is. KSK 101697.

3. *L. biflora* (Vahl) R. Br., Prodr. 504. 1810; Wight, Icon. t. 866. 1845; FBI 4: 683. 1885; FPM 1150. 1924; RHFC 3: 186. 1981; FTC 3: 126. 1983; FTN 2: 175. 1987. *Phlomis biflora* Vahl, Symb. Bot. 3: 42. 1794.

Erect herb. Leaves ovate, truncate, crenate-serrate, acute. Calyx-mouth straight, 10-toothed; teeth subequal. Nutlets 4, subtrigonus.

Fl. & Fr.: Nov. - April.

Habitat: Dry wastelands, with *Alysicarpus monilifer*, *Blepharis repens* etc.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Specimens examined: (Total 90) SAM 106428.

4. *L. diffusa* Benth., *Labiata. Gen. Spec.* 615. 1834; FBI 4: 689. 1885; FPM 1150. 1924; FTC 3: 1261. 1983; FTN 2: 176. 1987. (Fig. 48)

Diffuse herb. Leaves cuneate, entire, subacute-obtuse. Verticils terminal. Calyx-mouth straight, 10-toothed; teeth subequal. Nutlets subtrigonus.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy soil, also in red soil, with *Gisekia pharnaceoides*, *Lopholepis ornithocephala* etc.

Distrib.: S. India. Endemic. TN: Chengalpattu, N. Arcot, Ramanathapuram, Salem and Thanjavur. GM: Mainland coast, frequent. Occasional on Moyal and Kurusadai Islands.

Specimens examined: (Total 38) KSK 102985; PD & PU 106522; Ku Is. SVP & SNC 87139; Mu Is. PD 100670.

5. *L. wightiana* Benth. in Wall., *Pl. Asiat. Rar.* 1: 60. 1830; FBI 4: 690. 1885; FPM 1150. 1924; FTC 3: 1267. 1983; FTN 2: 178. 1987; JSBC 17:20. 2000. *L. aspera* (Willd.) Link var. *wightiana* (Benth.) Benth., *Labiata. Gen. Spec.* 616. 1834. (Fig. 49)

Herb. Leaves linear-lanceolate, attenuate, entire to distantly serrate, subacute. Verticils terminal, 4-6, superposed. Calyx-mouth oblique, 10-toothed. Corolla annulate inside. Nutlets 4, subtrigonus.

Fl. & Fr.: Dec. - Jan.

Habitat: Wastelands.

Distrib.: S. India. Endemic. TN: Kanyakumari, Ramanathapuram and S. Arcot. GM: Mainland coast, rare. Earlier collected twice in Kanyakumari. Appears extremely rare. Other places given in the flora of Tamil Nadu under distribution are based on mistaken identity.

Specimens examined: MAL 316; MSS 70320; NCN 53211.

6. *L. zeylanica* (L.) R. Br., *Prodr.* 504. 1810; IIB 2: t. 176. 1850; FBI 4: 689. 1885; FPM 1150. 1924; FTN 2: 179. 1987. *Phlomis zeylanica* L., *Sp. Pl.* 586. 1753.

Erect herb. Leaves linear or elliptic-lanceolate, tapering, entire, subacute. Calyx-mouth oblique, 10-toothed; teeth unequal.

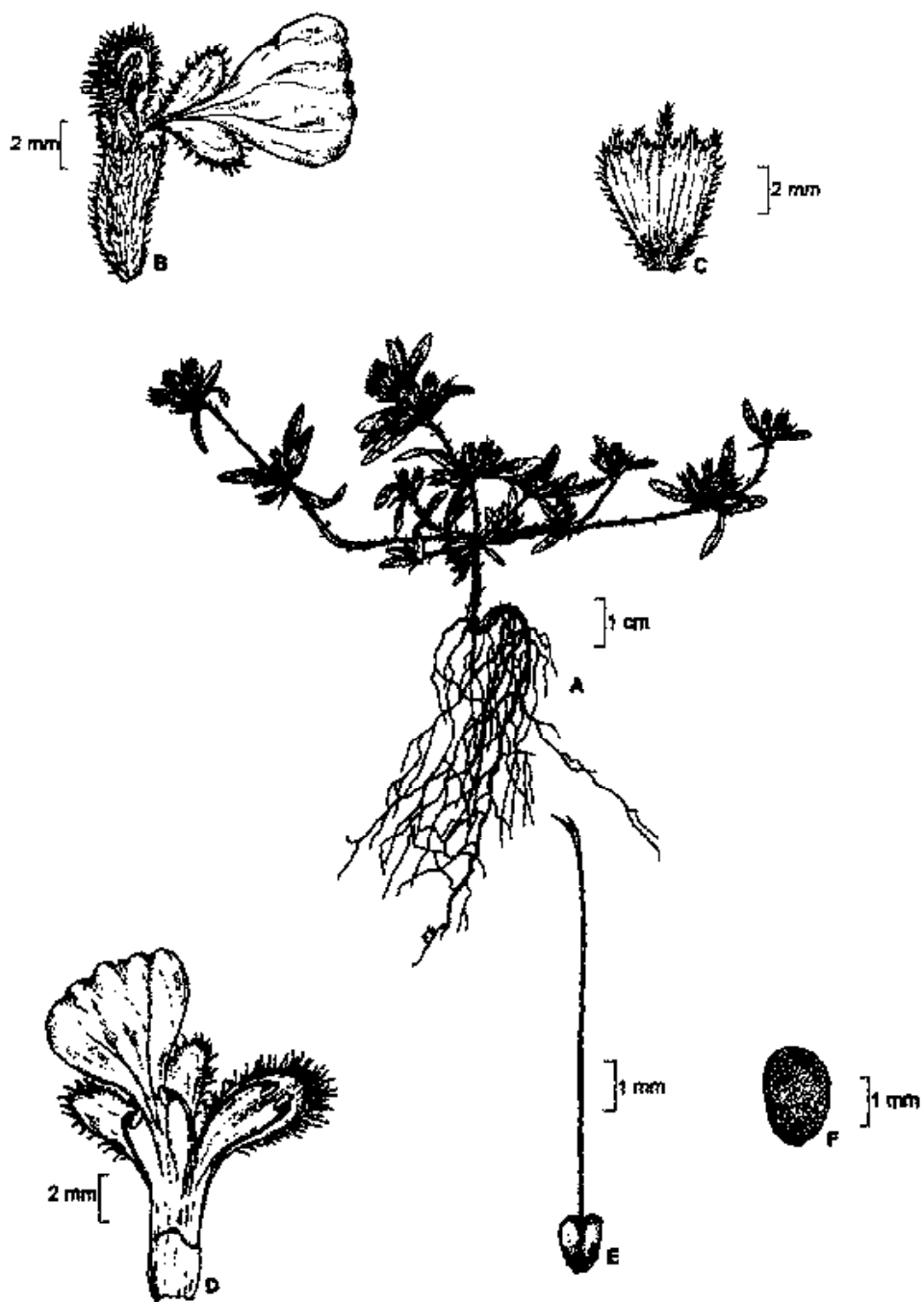


Fig. 48(A - F). *Leucas diffusa* Booth.

A. Habit B. Flower C. Calyx split open D. Corolla split open
E. Pistil F. Seed

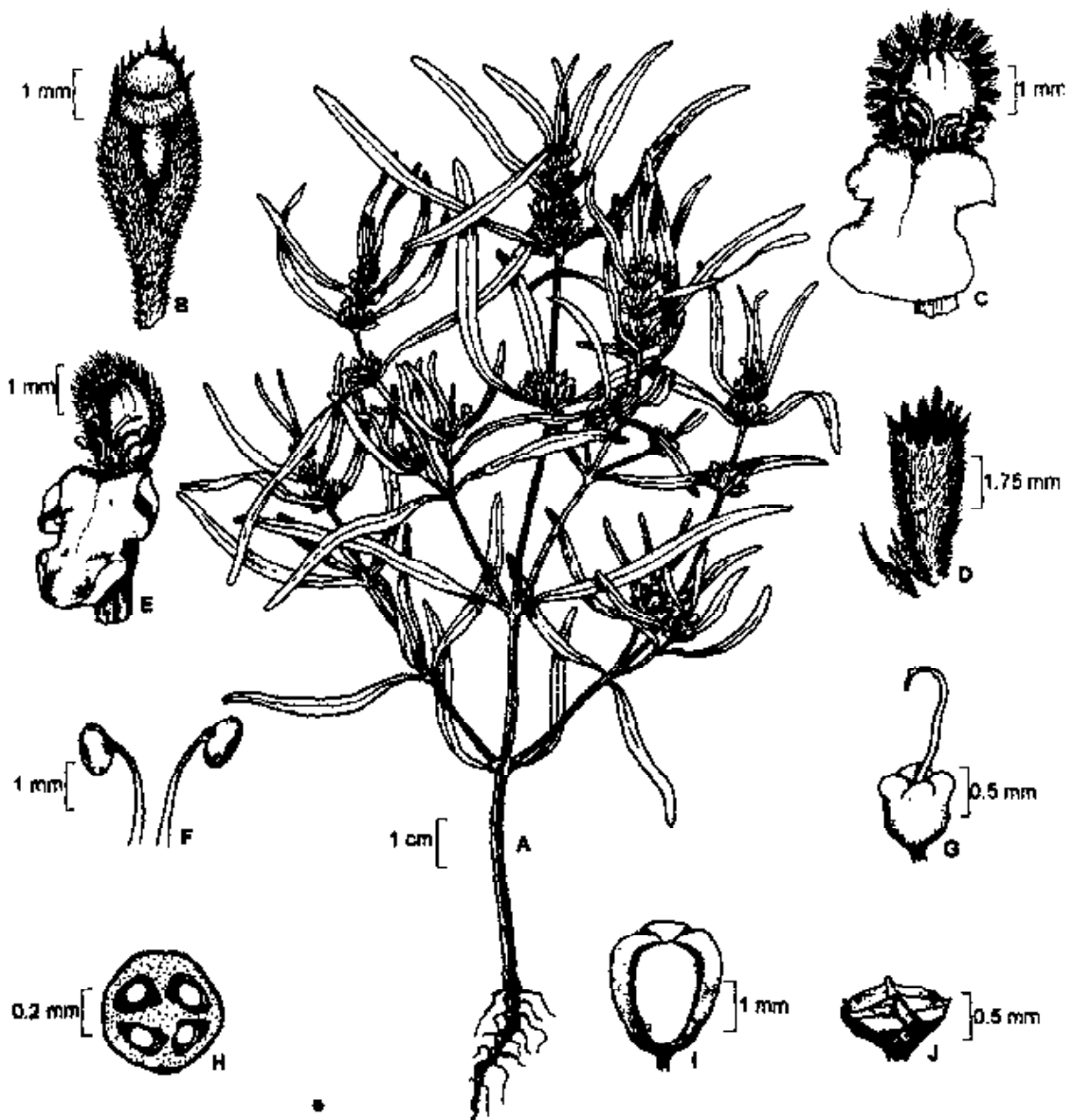


Fig. 49 (A - J). *Leucas wightiana* Benth.
 A. Habit B. Bud split C. Corolla in bud D. Calyx E. Corolla
 F. Stamens G. Pistil H. Ovary C.S. I. Nutlets J. Disc

Fl. & Fr.: Nov. - Feb.

Habitat: Wastelands.

Distrib.: China, India, Malesia and Sri Lanka. TN: Most districts. GM: Mainland coast, occasional.

Specimens examined: (Total 44) NCN 53191.

The whole family with 18 species in all and *Leucas* with 6 species is represented on islands only by 3 species of *Leucas*. The dispersal of the members of the Lamiaceae to the islands appears an interesting study for future workers.

7. *Ocimum* L.

Subtropical and tropical regions, ca 150 species, 5 in India and 4 in Tamil Nadu.

Key to the species

- | | |
|---|--------------------------|
| 1a. Bracts oblanceolate, acute-acuminate; fruiting-calyx more than 3 times as long as flowering-calyx | 2 |
| b. Bracts broadly ovate, obtuse-acute; fruiting-calyx less than 2 times as long as flowering-calyx | 3 |
| 2a. Calyx glabrous or sericeous outside; lower lip of calyx as long as or longer than upper lip | 2. <i>O. basilicum</i> |
| b. Calyx hirsute outside; lower lip of calyx shorter than upper lip | 3. <i>O. gratissimum</i> |
| 3a. Bracts reflexed; calyx green, villous inside; seeds mucilaginous when wet | 1. <i>O. americanum</i> |
| b. Bracts not reflexed; calyx purplish, glabrous inside; seeds not mucilaginous when wet | 4. <i>O. tenuiflorum</i> |

1. *O. americanum* L., Cent. Pl. 1: 15. 1756; FTN 2: 179. 1987. *O. canum* Sims in Bot. Mag. t. 2452. 1823; FBI 4: 607. 1885; FPM 1111. 1924; RHFC 3: 114. 1981; FTC 3: 1269. 1983. [*Naal thulasi*]

Erect herb, ca 50 cm. Leaves elliptic-oblong, truncate, sparingly serrate, acute. Verticils 6 - 10-flowered; bracts ovate. Calyx 2-lipped. Corolla white. Nutlets erect.

Fl. & Fr.: Nov. - Feb.

Habitat: Wastelands, with *Justicia tranquebariensis*, *Trachys muricata* etc.

Distrib.: Paleotropics. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Yields a volatile oil used in soaps and cosmetics. Plant used as a potherb, diuretic and tonic and used in preparation of a cooling drink.

Specimens examined: (Total 95) SAM 104787; VB 1046, 1347, 1204.

2. *O. basilicum* L., Sp. Pl. 597. 1753; RHFC 3: 115. 1981.

Herb or undershrub. Leaves elliptic-ovate or elliptic-lanceolate, acute-decurrent or rounded, serrate, acute. Bracts oblanceolate, ciliate. Calyx 2-lipped. Corolla cream. Nutlets erect.

Key to the varieties

- | | |
|--|--------------------------|
| 1a. Branchlets and leaves purple; leaves elliptic-ovate | 2.2. <i>purpurascens</i> |
| b. Branchlets and leaves green; leaves elliptic-lanceolate | 2.1. <i>pilosum</i> |

2.1. var. *pilosum* Benth. in DC., Prodr. 12: 33. 1848; FPM 1111. 1924; FTC 3: 1269. 1983; FTN 2: 179. 1987.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands; also cultivated.

Distrib.: Africa, America and Trop. Asia. TN: Coimbatore, Dharmapuri, Nilgiri, Pudukkottai, Ramanathapuram and S. Arcot. GM: Mainland coast, frequent.

Specimens examined: (Total 39) KSK 102832; PD 100505, 101130; SAM 104773.

2.2. var. *purpurascens* Benth. in DC., Prodr. 12: 33. 1848; FBI 4: 608. 1885; FPM 1111. 1924; FTC 3: 1269. 1983; FTN 2: 180. 1987. [*Karunthulasi*]

Herb. Cultivated for its medicinal use.

3. *O. gratissimum* L., Sp. Pl. 1197. 1753; FPM 1111. 1924; RHFC 3: 112. 1981; IFTC 1: 570. 1982; FTC 3: 1270. 1983; FTN 2: 180. 1987. [*Elumicchanthulasi, Perunthulasi*]

Undershrub. Leaves obovate, acute, deeply serrate, acute-acuminate. Bracts oblanceolate. Calyx 2-lipped. Corolla white. Nutlets 3 or 4, erect.

Fl. & Fr.: Dec. - Jan.

Habitat: Wastelands and sandy localities, with *Allmania nodiflora*, *Euphorbia* spp. etc.

Distrib.: India, Malesia, Thailand, Sri Lanka, Trop. Africa and Trop. America. TN: Chengalpattu, Coimbatore, Ramanathapuram, Salem, Tiruchirapalli and Tirunelveli. GM: Mainland coast, occasional.

Uses: Plant a mosquito repellent. Used for relief from ear- and toothache. Plant digestive, tonic, stimulant, demulcent, diuretic etc.

Specimens examined: (Total 67) NCN 53126; SAM 106451.

4. *O. tenuiflorum* L., Sp. Pl. 597. 1753; FTC 3: 1271. 1983; FTN 2: 180. 1987. *O. sanctum* L., Mant. Pl. 85. 1767; FBI 4: 609. 1885; FPM 1111. 1924; RHFC 3: 116. 1981. [*Thulasi*]

Undershrub. Leaves elliptic-oblongate, truncate, serrate-undulate, acutely apiculate. Bracts broadly ovate, sessile. Calyx 2-lipped, purplish. Corolla white. Nutlets 4, erect.

Fl. & Fr.: Nov. - Jan.

Habitat: Wastelands and road sides, with *Chloris barbata*, *Indigofera linnaei* etc.

Distrib.: India, SW. Asia and Sri Lanka TN: All districts. The 'sacred tulasi' is cultivated in temples and houses. GM: Mainland coast, frequent.

Uses: Leaves stimulant, diaphoretic, antiperiodic and expectorant. Used in bronchitis. Decoction of roots is given as a diaphoretic in malarial fevers.

Specimens examined: (Total 33) KSK 102851, 103301, 103307; PD 101124.

8. *Orthosiphon* Benth.

Old World tropics, ca 40 species, 10 in India, 5 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|--------------------------|
| 1a. Diffuse herb; calyx as long as corolla tube | 1. <i>O. pallidus</i> |
| b. Erect undershrub; calyx shorter than corolla tube | 2. <i>O. thymiflorus</i> |

1. *O. pallidus* Benth., Labiat. Gen. Spec. 708. 1835; FBI 4: 613. 1885; FPM 1114. 1924; FTN 2: 180. 1987.

Leaves ovate, cuneate, crenate, acute. Racemes short, 6-flowered. Bracts ovate. Calyx 2-lipped. Corolla white. Nutlets 4, subglobose.

Fl. & Fr.: Oct. - Jan.

Habitat: Along canals, with *Cyperus* spp., *Mollugo* spp. etc.

Distrib.: Arabia, Baluchistan and India. TN: Most districts. GM: Mainland coast, occasional. An addition to the Gulf of Mannar Coast.

Specimens examined: (Total 15) PD 100411; VB 1940.

2. *O. thymiflorus* (Roth) Sleesen in *Reinwardtia* 5: 42. 1959; RHFC 3: 124. 1981; FTC 3: 1272. 1983; FTN 2: 181. 1987. *Ocimum thymiflorum* Roth, Nov. Pl. Sp. 269. 1821. *Orthosiphon tomentosus* Benth. in Wall., Pl. Asiat. Rar. 2: 14. 1830 - 31; FBI 4: 613. 1885. *O. glabratus* Benth. in Wall., Pl. Asiat. Rar. 2: 14. 1830 - 31; FPM 1114. 1924. *O. viscosus* Benth. in Wall., Pl. Asiat. Rar. 2: 14. 1830 - 1831; FPM 1114. 1924.

Leaves ovate-elliptic, truncate, cuneate, serrate, acute. Racemes 6-flowered. Calyx 2-lipped. Corolla white. Nutlets 4, subglobose.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Corchorus aestuans*, *Glinus oppositifolia* etc.

Distrib.: India, Malesia, Sri Lanka and Vietnam. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Decoction of plant used in diarrhoea and piles; that of leaves as a febrifuge. Leaves pounded and applied to cuts and wounds.

Specimens examined: (Total 50) KSK 102012.

Mentha arvensis L. and *Plectranthus amboinicus* (Lour.) Spreng. are herbs cultivated for the leaves used medicinally. *P. scutellarioides* (L.) R. Br. is cultivated in gardens for its showy leaves.

82. NYCTAGINACEAE

Key to the genera

- | | |
|---|---------------------|
| 1a. Tree; leaves 8 - 15 cm long; perianth white | 2. <i>Pisonia</i> |
| b. Herb; leaves 1.5 - 4 cm long; perianth pink | 1. <i>Boerhavia</i> |

1. *Boerhavia* L.

Tropics, ca 40 species, 8 in India, 5 in Tamil Nadu and 2 in GM.

Key to the species

- 1a. Erect herb; leaves wavy, acute-apiculate at apex 2. *B. erecta*
 b. Diffuse herb; leaves entire, obtuse-acute at apex 1. *B. diffusa*

1. *B. diffusa* L., Sp. Pl. 3: 1753; FPM 1162. 1925; IFTC t. 578. 1982; FTC 3: 1287. 1983; FTN 2: 188. 1987. *B. repens* L., Sp. Pl. 3: 1753; FBI 4: 709. 1885. *B. procumbens* Banks ex Roxb., Fl. Ind. 1: 148. 1820; Wight, Icon. t. 874. 1844 - 45. [*Mukurattai*]

Leaves ovate, truncate. Panicles axillary or terminal, 3 - 7-flowered. Stamens 2 or 3. Anthocarps club-shaped, glandular-hairy, rounded at apex.

Fl. & Fr.: Jan. - April.

Habitat: Sandy soil and in wastelands, with *Blumea obliqua*, *Cyperus* spp., and *Vigna trilobata*.

Distrib.: Pantropical. TN: Almost all districts. GM: Common on mainland coast and Anaipar, Appa, Kaswari, Karaichalli, Muyal, Nallathamni, Puluvinichalli, Shingle, Thalaiyari, Upputhanni, Valai and Valimunai Islands.

Uses: Roots expectorant, diuretic and laxative; used in asthma. Source of Ayurvedic drug punarnava. It is an ingredient in a number of Ayurvedic preparations used as anti-ageing agent (Tripathi & al., 1996).

Specimens examined: (Total 143) KSK 102782, 102932, 103435; Mu Is. PD 100312; Sh Is. PD 100360; Vm Is. KSK 102393.

2. *B. erecta* L., Sp. Pl. 3: 1753; FTC 3: 1288. 1983; FTN 2: 188. 1987. *B. punarnava* Saha & K.H. Krishnam. in J. Sci. Industr. Res., C., Biol. Sci. 21: 254. 1962.

Leaves elliptic-ovate, rounded. Panicles axillary or terminal, 2 - 4-flowered. Stamens 1 or 3. Anthocarps obconic, glabrous, truncate at apex.

Fl. & Fr.: Throughout the year.

Habitat: Sandy areas, with *Bulbostylis barbata*, *Spermacoce hispida* and *Trianthema decandra*.

Distrib.: Pantropical. TN: Coimbatore, S. Arcot, Ramanathapuram and Tiruchirapalli. GM: Frequent on mainland coast and Anaipar and Valimunai Islands.

Specimens examined: (Total 29) KSK 102925; PD 100526; An Is. KSK 102323.

Fruits of *Boerhavia* are adhesive in nature. They are mainly dispersed by sea-birds (Ridley, 1930). Humans may also be involved.

2. *Pisonia* L.

Tropics and subtropics, ca 35 species, 3 in India, 2 in Tamil Nadu and one in GM.

P. grandis R. Br., Prodr. 422. 1810; FTN 2: 189. 1987. *P. alba* Span. in Linnaea 15: 342. 1841; FBI 4: 711. 1885, p.p. *P. morindifolia* R. Br. ex Wight, Icon. t. 1765. 1852 (as '*mornisbifolia*'); FPM 1164. 1925. [*Illachaikkettayilai*]

Small tree. Leaves broadly ovate, truncate, entire, acuminate. Flowers in cymose clusters. Anthocarps clavate, 5-ribbed.

Fl. & Fr.: Oct.

Habitat: Sandy seacoast.

Distrib.: India and Sri Lanka. TN: All districts. GM: Mainland coast, occasional.

Uses: Leaves used as greens. Plant diuretic.

Specimens examined: VB 1359.

Bougainvillea glabra Choisy and *B. spectabilis* Willd., and *Mirabilis jalapa* L. are cultivated as ornamentals.

83. AMARANTHACEAE

Key to the genera

1a. Fruits with hooked bristles	10. <i>Pupalia</i>
b. Fruits without hooked bristles	2
2a. Staminodes present	3
b. Staminodes absent	5
3a. Bracteoles spinescent; staminodes fimbriate	1. <i>Achyranthes</i>
b. Bracteoles not spinescent; staminodes not fimbriate	4
4a. Fruiting spikes densely white-woolly	2. <i>Aerva</i>
b. Fruiting spikes not densely white-woolly	4. <i>Alternanthera</i>
5a. Flowers unisexual	5. <i>Amaranthus</i>
b. Flowers bisexual	6
6a. Straggling shrubs; flowers in panicles	9. <i>Ptilotrichum</i>
b. Herbs; flowers not in panicles	7
7a. Herbs with swollen nodes; leaves decussate	8. <i>Gomphrena</i>

- | | | |
|-----|--|--------------------|
| b. | Herbs without swollen nodes; leaves alternate | 8 |
| 8a. | Sterile flowers present; fruit a nut, muricate | 7. <i>Digera</i> |
| b. | Sterile flowers absent; fruit a capsule or utricle, not muricate | 9 |
| 9a. | Inflorescence a head; utricles subglobose | 3. <i>Allmania</i> |
| b. | Inflorescence a spike; capsules globose or urceolate | 6. <i>Celosia</i> |

1. *Achyranthes* L.

Tropics and subtropics, especially of the Old World, 6 species, 4 in India, 2 in Tamil Nadu and one in GM.

A. aspera L., Sp. Pl. 204. 1753; FTC 3: 1296. 1983, var. *aspera*: Wight, Icon. t. 1777. 1852; FBI 4: 730. 1885; FPM 1176. 1925; RHFC 1: 38. 1980; FTN 2: 189. 1987. [*Nayurivi*]

Herb. Leaves obovate-elliptic, cuneate, entire, acute. Spikes terminal and axillary. Perianth pink. Utricles obconic.

Fl. & Fr.: Aug. - Feb.

Habitat: Road sides, wastelands and sandy areas, with *Aerva persica*, *Asystasia gangetica* etc.

Distrib.: Pantropical. TN: Almost all districts. GM: Common on mainland coast and Appa, Manoli, Muyal, Nallathanni, Pullivasal, Pumarichan, Thalaiyari, Upputhanni and Valai Islands.

The plant, the fruits of which easily get stuck to clothes, must have reached the islands through human agency.

Uses: Decoction of herb diuretic, used in renal dropsies. Young leaves used as spinach. Ash is rich in potash and might be of value as a manure. An ingredient in the herbal product 'Bacitol' (Anon., 1996).

Specimens examined: (Total 39) KSK 102770, 102941; Ma Is. PD 100682; Mu Is. PD 100658; Pv Is. PD 99742; Pu Is. PD 99783; Ut Is. PD 101638.

2. *Aerva* Forssk.

Old World tropics, ca 10 species, 7 in India, 4 in Tamil Nadu and 2 in GM.

Key to the species

- | | | |
|-----|--|---------------------|
| 1a. | Leaves obovate or elliptic, obtuse or acute; spikes less than 2 cm long;
flowers bisexual | 1. <i>A. lanata</i> |
|-----|--|---------------------|

- b. Leaves oblong, retuse; spikes more than 2 cm long; flowers unisexual 2. *A. persica*

1. *A. lanata* (L.) Juss. ex Schult. in Ann. Mus. Natl. Hist. Nat. 11: 131. 1808; Wight, Icon. t. 723. 1840; FBI 4: 728. 1885; FPM 1178. 1925; RHFC 1: 32. 1980; FTC 3: 1299. 1983; FTN 2: 189. 1987. [*Sirupulai*]

Herb. Spikes axillary. Perianth white. Utricles ovoid or obovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Road sides, wastelands and in sandy areas, with *Cassia* spp., *Cleome viscosa* etc.

Distrib.: Tropics and subtropics. TN: Almost all districts. GM: Common on mainland coast and Appa, Kurusadai, Muyal, Nallathanni, Pumarichan, Thalaiyari, Valai, Valimunai and Van islands.

Uses: Plant used in cough, sore throat, diabetes and lithiasis. It contains β -sitosteryl palmitate, α -amyrin, and β -sitosteryl. Decoction diuretic.

Specimens examined: (Total 132) KSK 102768; An Is. KSK 102371; Ap Is. PD 101545; Ku Is. PD 99770; Mu Is. PD 100662; Pu Is. PD 99717; Th Is. PD 101477; Va Is. KSK 102038.

2. *A. persica* (Burm. f.) Merr. in Philipp. J. Sci. 19: 348. 1928; Bhandari, Fl. Indian Desert 320. 1978; FTN 2: 190. 1987. *Iresine persica* Burm. f., Fl. Indica 212. 1768. *Aerva tomentosa* Forssk., Fl. Aegypt.-Arab. 122. 727. 1775; FPM 1178. 1925. *Iresine javanica* Burm. f., Fl. Indica 212. 1768. *Aerva javanica* (Burm. f.) Juss. ex Schult. in Roem. & Schult., Syst. Veg. 5: 565. 1819; Wight, Icon. t. 876. 1844-45; FBI 4: 727. 1885; RHFC 1: 31. 1980; FTC 3: 1299. 1983. [*Perumpulai*]

Undershrub. Perianth white. Utricles ovoid or obovoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Open wastelands, with *Achyranthes aspera*, *Parthenium hysterophorus* etc.

Distrib.: Arabia, E. & W. Trop. Africa, India and Sri Lanka. TN: Almost all districts. GM: Common on mainland coast and islands; particularly very common on Upputhanni Island.

Uses: Herb diuretic and demulcent. Given to horses and camels as a purgative and emetic. Extract contains kaempferol-3-galactoside, kaempferol-3-rhamnogalactoside, β -amyrin, and β -setosterol.

Specimens examined: (Total 73) KSK 102712; PD 100467; An Is. KSK 102372; Ap Is. PD 101548; Kc Is. PD 102068; Ku Is. PD 100570; Ma Is. PD 100689; Mu Is. PD 100319; Pc Is. KSK 102354; Th Is. PD 101475; Ut Is. PD 101661; Va Is. PD 102172; Vm Is. KSK 102398.

Both species are common on islands. The seeds may be wind-dispersed (Ridley, 1930).

3. *Allmania* R. Br. ex Wight

Trop. Asia, 2 species, 2 in India, one with 3 varieties in Tamil Nadu and 2 varieties in GM.

A. nodiflora (L.) R.Br. ex Wight in J. Bot. (Hooker) 1: 226, t. 128. 1834; FTC 3: 1301. 1983. *Celosia nodiflora* L., Sp. Pl. 205. 1753. *Allmania albida* (Willd.) R. Br. ex Hook. f., Fl. Brit. India 4: 717. 1885. *Celosia albida* Willd., Sp. Pl. 1: 1197. 1798. *Chamissoa albida* (Willd.) Wight, Icon. t. 1769. 1852. [*Kumuttikeerai*]

Annual. Leaves linear-oblong, lanceolate or ovate or elliptic, acute or mucronate. Heads globose, 0.5 - 1.5 cm. Perianth 5-lobed; lobes subequal, linear-oblong, or oblong-elliptic, acute, glabrous or pubescent. Utricles subglobose, shiny, blackish, shortly hairy along margins.

Key to the varieties

- | | |
|---|---------------------------|
| 1a. Heads more than 1 cm across; perianth-lobes pubescent | 1. var. <i>nodiflora</i> |
| b. Heads less than 1 cm across; perianth-lobes glabrous | 2. var. <i>procumbens</i> |

1. var. *nodiflora*: Hook. f., Fl. Brit. India 4: 716. 1885. incl. vars. *dichotoma* & *aspera*; FPM 1168. 1925; FTN 2: 190. 1987. *A. nodiflora* (L.) R. Br. ex Wight var. *longipedunculata* Trimen, Handb. Fl. Ceylon 3: 394. 1895. *A. longipedunculata* (Trimen) Gamble, Fl. Madras 1168. 1925. *A. nodiflora* (L.) R. Br. ex Wight var. *roxburghii* Hook. f., Fl. Brit. India 4: 717. 1885; RBSI 9(1): 147. 1921.

Fl. & Fr.: June - Feb.

Habitat: Wet localities, with *Cleome viscosa*, *Ocimum americanum* etc.

Distrib.: China, Malesia, India and Sri Lanka. TN: Most districts. GM: Collected only on mainland coast at Vivekananthapuram, Kootapuli and Tuticorin port.

Specimens examined: (Total 33) KSK 102821; PD & PU 107372.

2. var. *procumbens* Hook. f., Fl. Brit. India 4: 717. 1885; FPM 1168. 1925; FTN 2: 190. 1987. *Chamissoa nodiflora* sensu Wight, Icon. t. 1770. 1852, non (L.) Mart. ex Moq. 1849.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Apluda mutica*, *Digera muricata* and *Physalis minima*.

Distrib.: SE. Asia and S. India. TN: Most districts. GM: Mainland coast, frequent. Collected at Kalimankundru, Munaikadu in Ramanathapuram and Vivekananthapuram in Kanyakumari.

Specimens examined: (Total 37) KSK 102945, 103447; PD & PU 106972.

4. *Alternanthera* Forssk.

Tropics and subtropics, ca 80 species, 6 in India, 5 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|-----------------------|
| 1a. Stem hispid-hairy; flowers dense in axillary elongated heads | 1. <i>A. pungens</i> |
| b. Stem glabrous; flowers clustered in axils, not in elongated heads | 2. <i>A. sessilis</i> |

1. *A. pungens* Kunth in H.B.K., Nov. Gen. Sp. 2: 206. 1818; KB 13: 174. 1958; RHFC 1: 47. 1980; FTC 3: 1303. 1983; FTN 2: 191. 1987. *A. echinata* Sm. in Rees, Cycl. 39 (Suppl.): n. 10. 1819.

Prostrate herb. Leaves alternate, ovate, cuneate, entire, obtuse or mucronate. Perianth 5-lobed; lobes unequal, oblong-elliptic, serrate at apex. Utricles globose.

Fl. & Fr.: June - Feb.

Habitat: Road sides and open wastelands.

Distrib.: Trop. America, now a widely distributed weed in the tropics. TN: All districts. GM: Throughout mainland coast.

Uses: Plant diuretic; decoction given in gonorrhoea.

Specimens examined: (Total 36) KSK 102796, 102845.

2. *A. sessilis* (L.) R. Br. ex DC., Cat. Pl. Horti Monsp. 4: 77. 1813; Wight, Icon. t. 727. 1840; FBI 4: 731. 1885; RHFC 1: 49. 1980; FTC 3: 1305. 1983; FTN 2: 191. 1987.

Gomphrena sessilis L., Sp. Pl. 225. 1753. *Alternanthera triandra* Lam., Encycl. 1: 95. 1783; FPM 1179. 1925. [*Ponnanganni*]

Ascending or prostrate herb. Leaves linear-oblong or lanceolate-elliptic, oblique, entire, obtuse or subacute. Perianth 5-lobed; lobes ovate, acute. Utricles obcordate.

Fl. & Fr.: June - Feb.

Habitat: Wetlands and rice fields.

Distrib.: India and Sri Lanka. TN: All districts. GM: Mainland coast, common.

Uses: Accredited with galactagogue properties; a good fodder. Also used for night blindness, contains carotene 192 mg/100 g. Leaves used in soups and as a vegetable. Young shoots nutritious, contain protein 5% and iron 16.7 mg/100 g.

Specimens examined: (Total 109) VB 1241.

5. *Amaranthus* L.

Trop. and temperate regions, ca 60 species, 20 in India, 6 in Tamil Nadu and 4 in GM.

Key to the species

1a. Plant spinescent	2. <i>A. spinosus</i>
b. Plants not spinescent	2
2a. Perianth 5-lobed	1. <i>A. roxburghianus</i>
b. Perianth 3-lobed	3
3a. Utricles lenticular, shiny	3. <i>A. tricolor</i>
b. Utricles obovoid or suborbicular, not shiny	4. <i>A. viridis</i>

1. *A. roxburghianus* Nevski in Trudy Bot. Inst. Akad. Nauk. SSSR, Ser. 1, Fl. Sist. Vysš. Rast. 4: 311. 1937, in obs. (as "*roxburghiano*"); JBNHS 73: 60. 1976; FTN 2: 191. 1987. *A. polygonoides* Roxb., Fl. Ind. 3: 602. 1832, non L. 1759; Wight, Icon. t. 719. 1843; BOBSI 8: 88. 1967. *A. polygamus* sensu FBI 4: 721. 1885, non L. 1755; FPM 1171. 1925. *A. gracizans* L. subsp. *thellungianus* (Nevski) Gusev in Bot. Zurn. (Moscow & Leningrad) 57: 462. 1972; RHFC 1: 22. 1980; FTC 3: 1306. 1983. [*Sirukeerai*]

Erect herb. Leaves lanceolate-obovoid, entire, acute or obtuse. Flowers in axillary clusters. Perianth-lobes linear-oblong or obovoid, obtuse, mucronate. Utricles ovoid, smooth, brownish.

Fl. & Fr.: Aug. - March.

Habitat: Road sides, with *Chloris barbata*, *Heliotropium scabrum* etc.

Distrib.: Tropics, throughout India and Sri Lanka. TN: Most districts. GM: Mainland coast, occasional. Once collected at Thonithurai in Ramanathapuram. Rare on Thalaiyari Island.

Specimens examined: (Total 45) PD 100506.

2. *A. spinosus* L., Sp. Pl. 991. 1753; Wight, Icon. t. 513. 1841; FBI 4: 718. 1885; FPM 1170. 1925; RHFC 1: 9. 1980; FTC 3: 1307. 1983; FTN 2: 191. 1987. [*Mullukirai*]

Erect herb. Leaves ovate, cuneate, entire, subacute-obtuse. Flowers in axillary and terminal spikes. Perianth-lobes ovate, acuminate. Utricles ovoid, smooth.

Fl. & Fr.: July - Nov.

Habitat: Wastelands.

Distrib.: Tropics, throughout India and Sri Lanka. TN: All districts. GM: Mainland coast, frequent.

Uses: Plant used as a potherb. Considered a sudorific and febrifuge, recommended for eruptive fevers; also used as a lactagogue. Leaves emollient. Infusion of shoots used in eczema.

Specimens examined: (Total 56) VB 1097.

3. *A. tricolor* L., Sp. Pl. 989. 1753; RHFC 1: 15. 1980; FTC 3: 1307. 1983; FTN 2: 191. 1987. *A. mangostanus* L., Cent. Pl. 1: 32. 1755; FBI 4: 720. 1885; FPM 1171. 1925. *A. gangeticus* L., Syst. Nat. ed. 10, 1268. 1757, incl. var. *tristis*; FBI 4: 719. 1885; FPM 1171. 1925. *A. oleraceus* Burm. f., Fl. Indica 198. 1768, non L. 1753; Wight, Icon. t. 715. 1843.

Erect herb. Leaves lanceolate-ovate, cuneate, entire, emarginate or retuse. Flowers clustered in axillary spikes. Perianth-lobes linear, shortly awned. Utricles rugose.

Fl. & Fr.: Nov. - May

Habitat: Road sides and wastelands, with *Euphorbia hirta*, *Physalis minima* etc.

Distrib.: Africa, America, India, Sri Lanka and Trop. Asia. TN: Chengalpattu, Nilgiri, Ramanathapuram and Tiruchirapalli. GM: Mainland coast, frequent. Collected at Than-gachimadam and Kalimankundru in Ramanathapuram. Also collected on Moyal Island.

Uses: Used as a potherb. Tender shoots contain vitamin A and C. Seeds contain saponin which is slightly toxic.

Specimens examined: (Total 15) KSK 103442; PD 100396; Mu Is. KSK 103365.

4. *A. viridis* L., Sp. Pl. ed. 2, 2: 1405. 1763; FBI 4: 720. 1885; FPM 1171. 1925; FTC 3: 1308. 1983; FTN 2: 191. 1987. *Chenopodium caudatum* Jacq., Collectanea. 2: 235. 1788, non *Amaranthus caudatus* L. 1753. *Euxolus caudatus* (Jacq.) Moq. in DC., Prodr. 13: 274. 1849; Wight, Icon. t. 1773. 1852. [*Kappaikeeral*]

Erect herb. Leaves ovate, truncate, entire, subacute or retuse. Flowers in axillary and terminal spikes. Perianth-lobes ovate, acute, scarious with a thick green nerve. Utricles rugose.

Fl. & Fr.: June - Feb.

Habitat: Road sides and wet places, with *Cassia* spp., *Cleome viscosa* etc.

Distrib.: Tropics, throughout India. TN: All districts. GM: Mainland coast, frequent. Collected at Tuticorin port, near Athur in Tuticorin and Rameswaram in Ramanathapuram.

Uses: Used as a potherb. Tastes like spinach when boiled, also used as a fodder.

Specimens examined: (Total 67) KSK 102725; PD 102126, 102274.

6. *Celosia* L.

Trop. America and Africa, ca 50 species, 4 in India and Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|---------------------------|
| 1a. Leaves linear or lanceolate; flowers dense in cylindrical spikes | 1. <i>C. argentea</i> |
| b. Leaves rounded or broadly ovate; flowers few in distant clusters
on linear spikes | 2. <i>C. polygonoides</i> |

1. *C. argentea* L., Sp. Pl. 205. 1753; Wight, Icon. t. 1767. 1852; FBI 4: 714. 1885; FPM 1166. 1925; RHFC 1: 3. 1980; FTC 3: 1309. 1983; FTN 2: 192. 1987.

Erect herb. Leaves sessile, attenuate, entire, acute. Spikes terminal. Perianth-lobes linear-oblong. Capsules obovoid-elliptic; seeds compressed, reticulate.

Fl. & Fr.: June - Jan.

Habitat: Wastelands, with *Cassia senna*, *Chloris barbata* etc.

Distrib.: Trop. Asia, Africa, America, India and Sri Lanka. TN: All districts. GM: Mainland coast, common. Collected at Munaikadu.

Uses: Seeds used in diarrhoea, eye troubles, and sore mouth. Plant used as a potherb in times of scarcity.

Specimens examined: (Total 89) KSK 102956.

2. *C. polygonoides* Retz., Obs. Bot. 2: 12. 1781; FBI 4: 715. 1885; FPM 1166. 1925; RHFC 1: 5. 1980; FTC 3: 1310. 1983; FTN 2: 192. 1987.

Erect herb. Leaves subcordate, truncate, entire, obtuse. Spikes terminal. Perianth-lobes lanceolate-ovate. Capsules urceolate; seeds reniform or suborbicular, smooth.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and road sides, with *Aerva lanata*, *Tephrosia purpurea* etc.

Distrib.: S. India and Sri Lanka TN: Almost all districts. GM: Throughout mainland coast, frequent.

Specimens examined: (Total 83) KSK 102869; PD 101187; SAM 104710, 106318.

C. cristata L., 'cock's comb', a herb, is cultivated in gardens.

7. *Digera* Forssk.

Old world tropics, unispecific.

D. muricata (L.) Mart., Beitr. Amaranac. 77. 1825; RHFC 1: 23. 1980; FTC 3: 1311. 1983; FTN 2: 192. 1987. *Achyranthes muricata* L., Sp. Pl. ed. 2, 1: 295. 1762. *Digera arvensis* Forssk., Fl. Aegypt.-Arab. 65. 1775; FBI 4: 717. 1885; FPM 1161. 1925. *Desmodium muricata* (L.) DC., Cat. Pl. Horti Monsp. 103. 1813; Wight, Icon. t. 732. 1843. [*Thoyyakeeruf*]

Erect herb. Leaves ovate, cuneate, entire, acute. Spikes terminal or axillary. Perianth-lobes unequal; outer 2 ovate-oblong, acute; inner ones lanceolate-obovate. Nuts obovoid, apically notched, muricate.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and cultivated fields, with *Achyranthes aspera*, *Cynodon dactylon* etc.

Distrib.: TN: Almost all districts. GM: Mainland coast, sporadic.

Uses: Tender shoots used as a potherb. Flowers and seeds prescribed for urinary discharges. A good fodder.

Specimens examined: (Total 74) KSK 102943.

8. *Gomphrena* L.

Tropics, ca 100 species and 2 in India.

Key to the species

- | | |
|--|----------------------|
| 1a. Erect herb; stem 4-angled; heads globose; perianth pinkish | 1. <i>G. globosa</i> |
| b. Decumbent herb; stem terete; heads elongate; perianth white | 2. <i>G. serrata</i> |

1. *G. globosa* L., Sp. Pl. 224. 1753; Wight, Icon. t. 1784. 1852; FBI 4: 732. 1885; FPM 1179. 1925; RHFC 1: 55. 1980; FTC 3: 1313. 1983; FTN 2: 192. 1987. [*Vadamalli*]

Leaves elliptic-oblong, entire, acute or obtuse. Perianth-lobes lanceolate, densely woolly. Utricles globose, brownish.

Fl. & Fr.: Almost throughout the year.

Habitat: Cultivated in gardens, often found as an escape in open places.

Distrib.: Cultivated in all countries, probably originating in America. TN: All districts. GM: Frequent on mainland coast. A few plants were found on Van Island.

Flowers being used by the womenfolk to adorn the hair, the plant might have reached the island through the human agency.

Uses: Roots sometimes used for cough. Plant used as a vegetable in Moluccas.

Specimens examined: (Total 25) PD & PU 107523; SAM 106345.

2. *G. serrata* L., Sp. Pl. 224. 1753; Taxon 29: 86. 1980; FTN 2: 192. 1987. *G. celosoides* Mart., Beitr. Amarantac. 93. 1825; RHFC 1: 53. 1980; IFTC t. 588. 1982; FTC 3: 1312. 1983. *G. decumbens* Jacq., Pl. Hort. Schoenbr. t. 482. 1804; FPM 1179. 1925.

Leaves opposite, oblong-elliptic, cuneate, entire, obtuse or subacute. Perianth-lobes lanceolate, woolly. Utricles subglobose.

Fl. & Fr.: Aug. - March.

Habitat: Road sides and in wet places.

Distrib.: Central America. TN: All districts, naturalized. GM: Mainland coast. Collected at Athur and Tuticorin port.

Specimens examined: (Total 73) PD 102277; PD & PU 107387.

9. *Psilotrichum* Blume

Old world tropics, ca 15 species, 5 in India, 4 in Tamil Nadu and one in GM.

P. elliotii Baker & C.B. Clarke in Dyer, Fl. Trop. Africa 6: 58. 1909; KB 17: 492. 1964; RHFC 1: 45. 1980; FTC 3: 1315. 1983; FTN 2: 193. 1987. *P. calceolatum* Moq. ex Hook. f., Fl. Brit. India 4: 725. 1885, nom. illeg.; FPM 1174. 1925. *P. nudum* sensu Wight, Icon. t. 1775. 1852. non (Heyne ex Wall.) Moq. 1849.

Undershrub. Leaves ovate, cuneate, entire, acute. Spikes axillary. Perianth-lobes narrowly ovate, acuminate. Utricles globose.

Fl. & Fr.: Almost throughout the year.

Habitat: On hedges.

Distrib.: S. India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, rare. Once collected at Vattakottai in Kanyakumari.

Specimens examined: (Total 59) KSK 102787.

10. *Pupalia* Juss.

Old World tropics, ca 4 species, 2 in India and one with 3 varieties in Tamil Nadu.

P. lappacea (L.) Juss. in Ann. Mus. Natl. Hist. Nat. 2: 132. 1803. IFTC; t. 591. 1982. *Achyranthes lappacea* L., Sp. Pl. 204. 1753. *Pupalia atropurpurea* (Lam.) Moq. in DC., Prodr. 13: 331. 1849; FBI 4: 472. 1885; FPM 1173. 1925. *Achyranthes atropurpurea* Lam., Encycl. 1: 546. 1785. *Desmochaeta atropurpurea* (Lam.) DC., Cat. Pl. Horti Monsp. 102. 1813; Wight, Icon. t. 731. 1840. [*Adai-outi*]

Erect, prostrate or straggling herb. Leaves opposite, orbicular or broadly ovate, cuneate, entire, rounded, retuse or acute. Flowers clustered in long spikes. Perianth-lobes linear-oblong, lanceolate-ovate or elliptic, acute. Utricles oblong, brownish.

Key to the varieties

- | | |
|--|-------------------------------|
| 1a. Erect herb; leaves broadly ovate, acute at apex | 10. 1. var. <i>lappacea</i> |
| b. Prostrate or straggling herbs; leaves orbicular, retuse
or rounded at apex | 2 |
| 2a. Leaves retuse at apex, sparsely strigose; utricles more
than 5 mm across | 10. 2. var. <i>orbiculata</i> |
| b. Leaves rounded at apex, densely villous; utricles less than
5 mm across | 10. 3. var. <i>velutina</i> |

10. 1. var. *lappacea*: C. C. Towns. in Kew Bull. 34: 135. 1979 & in RHFC 1: 29. 1980; FTC 3: 1316; FTN 2: 193. 1987. [*Adai-ott*]

Fl. & Fr.: Throughout the year.

Habitat: Roadsides and wastelands, with *Achyranthes aspera*, *Chloris barbata* etc.

Distrib.: Trop. Asia, Africa and India. TN: All districts. GM: Mainland coast, frequent.

Uses: Fruit is an ingredient in enema preparations; mixed with palm oil applied to boils. Given in the form of soup for cough and fever. Ashes of the plant mixed in water is given in flatulence; also applied to leprosy sores.

Specimens examined: (Total 63) KSK 102853, 103389; PD 101138.

10. 2. var. *orbiculata* (Heyne ex Wall.) C. C. Towns. in Kew Bull. 29: 469. 1974; FTN 2: 193. 1987. *Achyranthes orbiculata* Heyne ex Wall. in Roxb., Fl. Ind. 2: 507. 1824. *Pupalia orbiculata* (Heyne ex Wall.) Wight, Icon. t. 1783. 1852; FBI 4: 724. 1885; FPM 1173. 1925.

Fl. & Fr.: Nov. - Feb.

Habitat: Sandy seashores, with *Aerva* spp., *Atriplex repens* and sometimes *Suaeda* spp.

Distrib.: India and Sri Lanka. TN: Chengalpattu, Nilgiri, Ramanathapuram and Tuticorin. GM: Mainland coast, occasional. Collected at Tuticorin port and Mukaiyar in Ramanathapuram. Frequent on Appa, Kurusadai, Manoli, Muyal, Pullivasal, Puluvinichalli, Pumarichan, Upputhanni and Valimunai Islands.

Use: Good sand binder.

Specimens examined: (Total 15) KSK 103433, 102152; Ap Is. PD 101542; Ma Is. KSK 102335; Pc Is. KSK 103348; Pv Is. PD 99751; Ut Is. PD 101650; Vm Is. KSK 102399.

10. 3. var. *velutina* (Moq.) Hook. f., Fl. Brit. India 4: 724. 1885; FPM 1173. 1925; FTC 3: 1317. 1983; FTN 2: 193. 1987. *P. velutina* Moq. in DC., Prodr. 13: 332. 1849.

Fl. & Fr.: Sept. - March.

Habitat: Sandy soil.

Distrib.: Myanmar and S. India. TN: Kanyakumari, Nilgiri, Pudukkottai, Salem, Ramanathapuram and Tirunelveli. GM: Mainland coast, rare. Once collected near Anjukramam in Kanyakumari.

Specimens examined: (Total 17) ANH 61554.

84. CHENOPODIACEAE

Key to the genera

- | | | |
|-----|--|------------------------|
| 1a. | Branchlets jointed; leaves obscure; stamens 1 or 2 | 2 |
| b. | Branchlets not jointed; leaves prominent; stamens 5 | 4 |
| 2a. | Stem pinkish green; joints stout | 5. <i>Salicornia</i> |
| b. | Stem yellowish green; joints not stout | 3 |
| 3a. | Herbs; joints winged; stamen 1; utricles globose | 4. <i>Halosarcia</i> |
| b. | Shrubs; joints not winged; stamens 2; utricles obovoid or oblong | 1. <i>Arthrocnemum</i> |
| 4a. | Leaves succulent, linear-oblong to subterete, sickle-shaped | 6. <i>Suaeda</i> |
| b. | Leaves not succulent, neither linear-oblong nor subterete | 5 |
| 5a. | Undershubs, rooting at nodes; flowers unisexual | 2. <i>Atriplex</i> |
| b. | Twining, not rooting at nodes; flowers bisexual | 3. <i>Basella</i> |

1. *Arthrocnemum* Moq.

Cosmopolitan, coastal, ca 10 species and one in India.

A. glaucum (Delile) Ung.-Stemb. in Atti Bot. Congr. Firenze 283. 1874; FBI 5: 12. 1886; FTN 2: 194. 1987. *Salicornia glauca* Delile, Descr. Egypte, Hist. Nat. 2: 49. 1813. *Arthrocnemum fruticosum* Moq. var. *glaucum* (Delile) Moq. in DC., Prodr. 13: 151. 1849; FPM 1183. 1925. (Fig. 50; Photo 11)

Shrub, ca 2 m, woody at base; branches many, erect or ascending, jointed, cylindrical, fleshy. Flowers in spikes. Seed obovoid or oblong.

Fl. & Fr.: Dec. - Feb.

Habitat: Salt marshes, with *Avicennia marina*, *Suaeda* spp. etc.

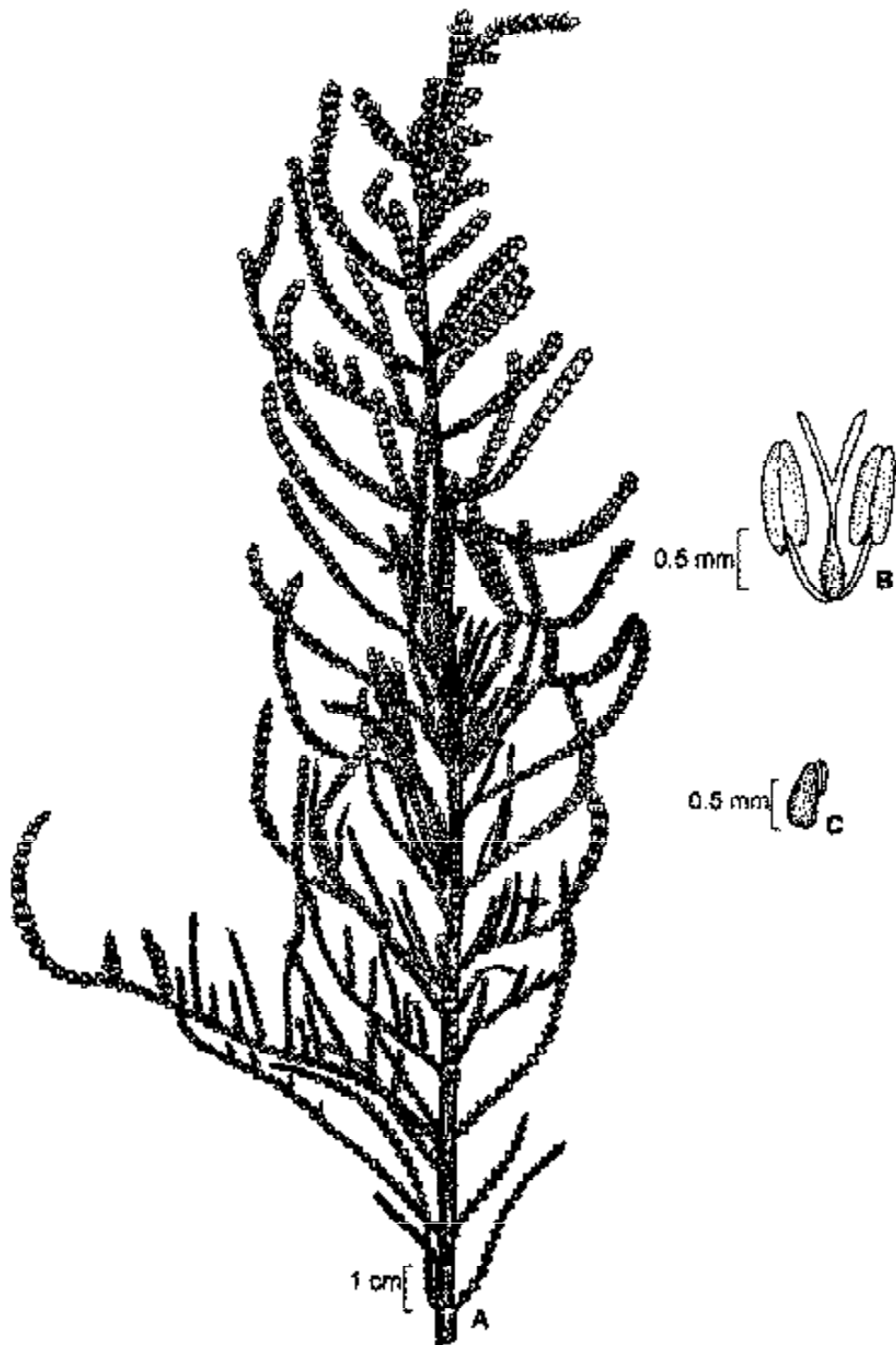


Fig. 50(A - C). *Arthrocnemum glaucum* (Delile) Ung.-Stemb.
A. Twig B. Pistil & stamens C. Seed

Distrib.: Mediterranean, India, Sri Lanka, Trop. Africa and W. Asia. TN: Chengalpattu, Ramanathapuram and Tuticorin. GM: On mainland coast it is a little frequent only around Tuticorin. Usually occurs in the vicinity of salt pans. Collected on Kaswari, Manoli, Upputhanni and Van Islands. Plants were particularly robust and abundant on Upputhanni Island. On the islands usually grows in association with *Avicennia marina*.

Specimens examined: (Total 17) SAM 104761; Ka Is. PD & PU 107506; Ma Is. KSK 103394; PD 102329; Ut Is. PD 101645, 102060; Va Is. PD 102178; PD & PU 107522.

2. *Atriplex* L.

Temperate and subtropical regions, ca 100 species, 5 in India, 3 in Tamil Nadu and one in GM.

A. repens Roth, Nov. Pl. Sp. 377. 1821; FBI 5: 7. 1886; FPM 1182. 1925; FTN 2: 194. 1987. *Obione königii* Moq. in DC., Prodr. 13: 99. 1849; Wight, Icon. t. 1790. 1852.

(Fig. 51)

Leaves sessile, oblong-elliptic, cuneate, entire, obtuse or rounded. Spikes terminal. Stamens 5 in male flowers. Ovary obovoid; stigmas 2.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy seashores, with *Ipomoea pes-caprae*, *Sesuvium portulacastrum* and *Suaeda* spp.

Distrib.: Afghanistan, S. India and Sri Lanka. TN: Chengalpattu, Kanyakumari, Ramanathapuram and Tuticorin. GM: Common on all islands except Appa and Valimunai but less common on mainland coast.

Use: Reportedly cooked and eaten like other leafy vegetables.

Specimens examined: (Total 18) An Is. KSK 102376; Ku Is. PD 100576; Mu Is. PD 100314; Pu Is. PD 99722; PD & PU 106821; Pv Is. PD & PU 106854.

3. *Basella* L.

Madagascar and E. Africa, 5 species, 2 in India and one in Tamil Nadu.

B. alba L. var. *rubra* (L.) J. Stewart, Punjab Pl. 177. 1869; IFTC t. 596. 1982; FTC 3: 1326. 1983; FTN 2: 194. 1987; RHFC 7: 1. 1991. *B. rubra* L., Sp. Pl. 272. 1753; FBI 5: 20. 1886; FPM 1185. 1925. [*Pasalai keerai*]

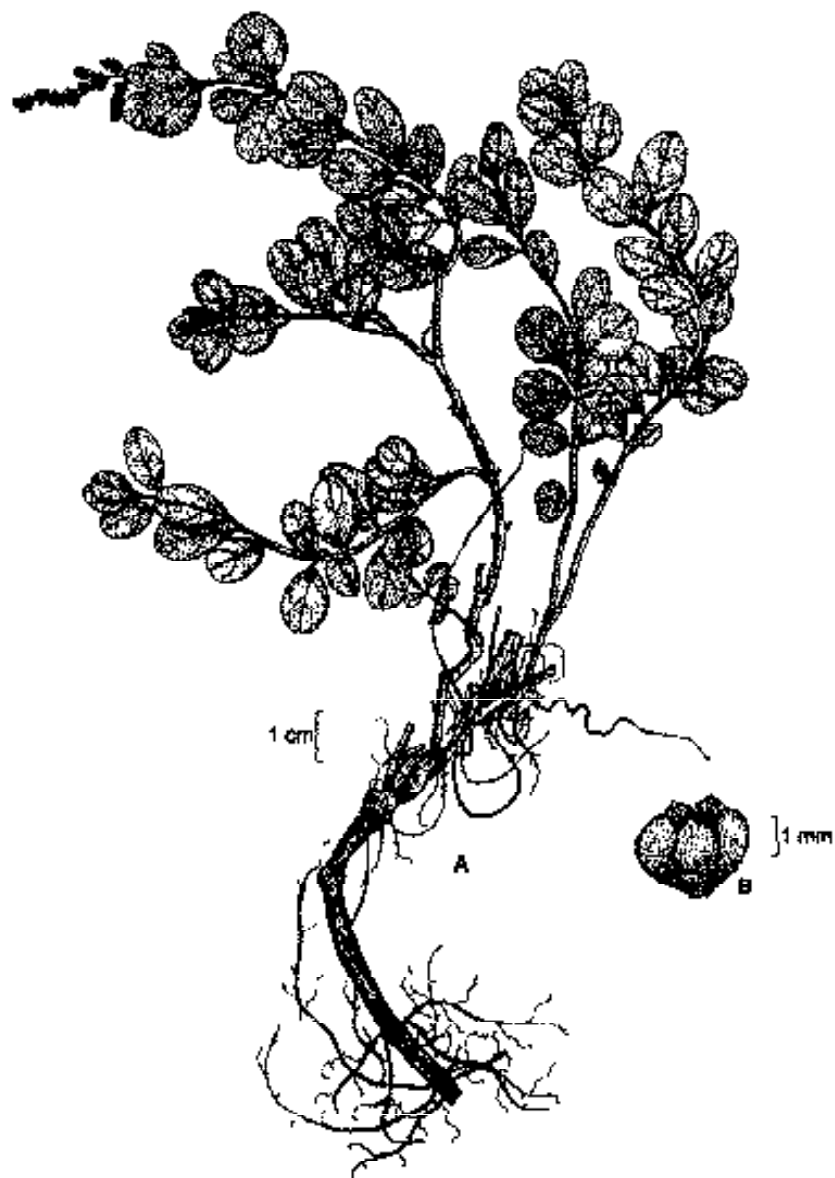


Fig. 51 (A & B). *Atriplex rosea* Roth
A. Habit B. Flower

Twining herb; stem fleshy, purplish green. Leaves broadly ovate, cordate, entire, acute or acuminate. Spikes axillary. Flowers minute, creamy. Fruits globose, dark purplish; seeds globose.

Fl. & Fr.: Sept. - Feb.

Habitat: Among bushes with *Acacia* spp., *Euphorbia antiquorum* etc.

Distrib.: Pantropical, cultivated. TN: All districts. GM: Mainland coast, occasional.

Uses: Tender stems and leaves make a wholesome spinach and consumed as a potherb. Leaves are pulped and used as poultice. Juice of leaves given to children and pregnant women for relief from constipation.

Specimens examined: (Total 37) SAM 106436; VB 2444.

4. *Halosarcia* P.G. Wilson

Australia to Malesia, 23 species and one in India.

H. indica (Willd.) P.G. Wilson in *Nuytsia* 3: 63. 1980; FM 1, 9: 557. 1982. *Salicornia indica* Willd. in *Nova Acta Acad. Sci. Imp. Petrop. Hist. Acad.* 5: 111, t. 4, f. 1. 1799; Wight, *Icon.* t. 737. 1844. *Arthrocnemum indicum* (Willd.) Moq., *Chenop. Monogr. Enum.* 113. 1840, p.p.; FBI 5: 12. 1886; FPM 1183. 1925; FTC 3: 1320. 1983; PTN 2: 194. 1987. [*Pavalappundu*]

Succulent, erect herb, ca 30 cm, profusely branched; branches diffuse or suberect; joints ca 1 cm long. Spikes slender, cylindrical, 1 - 3 cm long. Perianth-lobes 5, truncate. Ovary ovoid; stigmas 2.

Fl. & Fr.: Sept. - March.

Habitat: Salt marshes, with *Aeluropus lagopoides*, *Suaeda* spp. etc.

Distrib.: Malesia, S. India and Sri Lanka. TN: Chengalpattu, Ramanathapuram, S. Arcot, Thanjavur, Tirunelveli and Tuticorin. GM: Mainland coast, occasional.

Uses: Grown in saline soil to reduce salinity. Ashes used as a mordant in dyeing. Consumed as a salad, also pickled. Used to reduce pain due to scorpion sting.

Specimens examined: (Total 10) KSK 103374; PD 100438, 100447.

5. *Salicornia* L.

Cosmopolitan, 13 species and one in India.

S. brachiata Roxb., Fl. Ind. 1: 84. 1832; Wight, Icon. t. 738. 1844; FBI 5: 12. 1886; FPM 1183. 1925; FTC 3: 1322. 1983; FTN 2: 195. 1987. [*Seethapavalam*] (Photo 12)

Herb. Stem profusely branched, fleshy. Spikes cylindric. Bracts 2. Perianth obpyramidal, membranous. Stamen 1. Ovary ovoid; stigmas 2. Utricles ovoid.

Fl. & Fr.: Dec. - July.

Habitat: Salt marshes and dried up salt pans, as pure patches, sometimes with *Aeluropus lagopoides*.

Distrib.: India and Sri Lanka. TN: Chengalpattu, Ramanathapuram, S. Arcot, Thanjavur, Tirunelveli and Tuticorin. GM: Mainland coast, occasional. Frequent on Kurusadai, Manoli, Muyal and Thalaiyari Islands.

Uses: Ash of the plant, called *sajii* or *barilla*, was formerly used in soap and glass making. Leaves and young shoots eaten after pickling; shoots also sometimes used as a potherb.

Specimens examined: (Total 23) KSK 103375, 103393; PD 102226; SAM 104763; Ku Is. PD 100590; Mu Is. PD & PU 106816.

6. *Suaeda* Forssk. ex Scop. nom. cons.

Cosmopolitan, coasts and salt steppes, ca 110 species, 4 in India and 3 in Tamil Nadu.

Key to the species

- | | |
|---|------------------------|
| 1a. Tender leaves sickle-shaped, drying pale green; flower buds depressed; tepals bent in middle..... | 1. <i>S. maritima</i> |
| b. Tender leaves straight, drying black; flower buds subglobose-globose; tepals concave, incurved | 2 |
| 2a. Flowers bisexual; bracts and bracteoles toothed along margins; ovary basally adnate to perianth | 3. <i>S. nudiflora</i> |
| b. Flowers unisexual; bracts and bracteoles entire along margins; ovary free from perianth | 2. <i>S. monoica</i> |

1. *S. maritima* (L.) Dumort., Fl. Belg. 22. 1827; FBI 5: 14. 1886; FPM 1184. 1925; FTC 3: 1324. 1983; FTN 2: 196. 1987, excl. syn. *S. nudiflora* (Willd.) Moq. *Chenopodium maritimum* L., Sp. Pl. 221. 1753. [*Umarikeerai*]

Herb. Leaves cuneate, entire, acute. Spikes 3-10 cm long. Bracts linear-oblong. Perianth-lobes ovate, acute. Utricles obovoid; seeds trapezoid, blackish.

Fl. & Fr.: Aug. - Feb.

Habitat: Seashores and edges of salt pans, with *Arthrocnemon glaucum*, *Salicornia brachiata* etc.

Distrib.: Europe, N. Africa, N. & W. Asia, N. America, India, Sri Lanka and Thailand. TN: Chengalpattu, Kanyakumari, Ramanathapuram, S. Arcot, Thanjavur and Tuticorin. GM: Frequent on mainland coast and common on all islands.

Uses: The mainland coast, particularly Tuticorin and up to Thiruchendur in the south, is inhabited by fisherfolk who are catholics. A local legend has it that once when there was extreme drought and consequent famine St. Francis Xavier pointed to this plant as a food and from then onwards everyone began eating it. Reportedly very tasty when cooked with coconut.

Specimens examined: (Total 62) PD 102062, 102220; Ka Is. PD 102198; Ku Is. PD 100381; Ma Is. PD 101440; Mp Is. PD 100317; Pu Is. PD 99707; Pv Is. PD 99749; Sh Is. PD 100366; Ut Is. PD 101658; Va Is. PD 102179.

2. *S. monoica* Forssk. ex J. F. Gmel., Syst. Nat. ed. 13, 2: 503. 1791; Wight, Icon. t. 1792. 1852; FBI 5: 13. 1886; FPM 1184. 1925; FTC 3: 1324. 1983; FTN 2: 196. 1987. [Karuumari]

Shrub. Leaves sessile, cuneate, entire, obtuse. Flowers lax or dense, in leafy spikes; bracts ovate, entire, membranous. Perianth-lobes oblong, obtuse. Utricles ovoid, blackish; seeds trapezoid.

Fl. & Fr.: June - Jan.

Habitat: Seashores and salt marshes, with other *Suaeda* spp. and *Arthrocnemon glaucum*.

Distrib.: Arabia, Trop. Africa, S. India and Sri Lanka. TN: Ramanathapuram, S. Arcot, Thanjavur and Tuticorin. GM: Frequent on mainland coast and common on most islands.

Uses: A good fodder for sheep and goats. May also be employed for reclamation of saline soils.

Specimens examined: (Total 46) KSK 102155; PD 102063B; Ap Is. PD 101550; Ku Is. PD 102197A; Kc Is. PD 102079; Ma Is. PD 100677; Pu Is. PD 99737; Th Is. PD 101522.

3. *S. nudiflora* (Willd.) Moq. in Ann. Sci. Nat. (Paris) 23: 316. 1831; FBI 5: 14. 1886; FPM 1184. 1925; FTC 3: 1326. 1983. *Salsola nudiflora* Willd., Sp. Pl. 1: 1313. 1798. *Suaeda indica* Moq. in Ann. Sci. Nat. (Paris) 23: 316. 1831; Wight, Icon. t. 1796. 1852. [*Karuvumari, Umarinadi*]

Shrub. Leaves subsessile, cuneate, entire, subacute or obtuse. Flowers dense in leafless spikes; spikes 7 - 15 cm long; bracts ovate. Perianth-lobes oblong, obtuse. Utricles ovoid; seeds lenticular.

Fl. & Fr.: Dec. - May.

Habitat: Seashores and along salt pans, with *Suaeda monoica*, *Salicornia brachiata* etc.

Distrib.: S. India and Sri Lanka. TN: Ramanathapuram and Tuticorin. GM: Frequent on mainland coast and Kurusadai, Pulvinichalli and Shingle Islands.

Specimens examined: (Total 45) KSK 103391; PD 100436, 102063; Pc Is. PD & PU 106598; Sh Is. PD 100365.

Chenopodiaceae, members of which are common on islands, are reportedly sea-dispersed. Some of them are also dispersed by birds externally as well as internally (Ridley, 1930).

85. POLYGONACEAE

Polygonum L.

Cosmopolitan, ca 150 species, 80 in India, 16 in Tamil Nadu and 2 in GM.

- | | |
|---|---|
| 1a. Herb; leaves glabrous, gland-dotted; stipules and bracts glabrous | 2. <i>P. glabrum</i> var. <i>glabrum</i> |
| b. Undershrub; leaves strigose, eglandular; stipules and bracts ciliate | 1. <i>P. barbatum</i> var. <i>stagninum</i> |

1. *P. barbatum* L. var. *stagninum* (Buch.-Ham. ex Meisn.) Steward in Contr. Gray Herb. 88: 54. 1930; FTN 2: 197. 1987. *P. stagninum* Buch.-Ham. ex Meisn. in Wall., Pl. Asiat. Rar. 3: 56. 1832; FBI 5: 37. 1886; RBSI 91: 149. 1921.

Leaves lanceolate, attenuate, entire, acuminate. Racemes 3 - 6 cm long. Perianth-lobes white. Nuts trigonous, blackish.

Fl. & Fr.: Sept. - Jan.

Habitat: Along water courses, with *Brachiaria reptans*, *Commelina ensifolia*, *Eclipta prostrata* etc.

Distrib.: Hotter parts of India and Myanmar. TN: Coimbatore (Fischer, 1921) and Tuticorin. GM: Mainland coast. Occasional, once collected at Athur in Tuticorin.

Earlier reported only from Coimbatore. Addition to the Gulf of Mannar.

Uses: Relished by cattle; also used in curries. Decoction of shoots used as a stimulating wash for ulcers; seeds tonic, purgative and emetic.

Specimen examined: PD 102268.

2. *P. glabrum* Willd., Sp. Pl. 2: 447. 1799, var. *glabrum*: Wight, Icon. t. 1797. 1852; FBI 5: 34. 1886; FPM 1189. 1925; IFTC t. 598. 1982; FTN 2: 198. 1987. *Persicaria glabra* (Willd.) M. Gomez in Ann. Inst. Segunda Enseñ. Habana 2: 278. 1896; FTC 3: 1336. 1983. [*Sivappu Kumbakodai*]

Stem reddish green. Leaves lanceolate, attenuate, entire, acuminate. Racemes 4 - 7 cm long. Perianth-lobes rose. Nuts biconvex, obovoid, brownish black.

Fl. & Fr.: Oct. - March.

Habitat: Along water courses, with *Cyperus pangorei*, *Echinochloa crus-galli* etc.

Distrib.: Africa, America, India, Sri Lanka and Trop. Asia. TN: Most districts. GM: Mainland coast, occasional. Collected at Vijayanarayanapuram in Kanyakumari.

Specimens examined: (Total 83) PD & PU 107062.

Antigonon leptopus Hook. & Arn. [Kodi Rose], a climbing shrub and *Muhlenbeckia platyclada* (F. Muell. ex Hook.) Meisn., a shrub, are grown in gardens.

86. ARISTOLOCHIACEAE

Aristolochia L.

Tropics and subtropics, ca 300 species, 15 in India, 6 in Tamil Nadu and one in GM.

A. bracteolata Lam., Tabl. Encycl. 1: 258. 1783; IFTC t. 601. 1982; FTC 3: 1344. 1983; FTN 2: 201. 1987. *A. bracteata* Retz., Obs. Bot. 5: 29. 1788; FBI 5: 75. 1886; FPM 1201. 1925. [*Aduthinnappalai*]

Perennial herb. Leaves cordate-reniform, cordate, entire or slightly wavy, obtuse, glaucous. Flower solitary, axillary. Perianth purplish. Stamens 8. Capsules ellipsoid; seeds cordate.

Fl. & Fr.: Aug. - Nov.

Habitat: Dry localities and along railway tracks, with *Bulbostylis* spp., *Portulaca* spp. etc.

Distrib.: Arabia, S. India, Sri Lanka and Trop. Africa. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Plant used as a purgative and anthelmintic. Bruised leaves are mixed with castor oil and applied to control eczema. Decoction of roots is efficacious in expulsion of round worms.

Specimens examined: (Total 55) PD 100515, 100521.

87. PIPERACEAE

Piper betle L., the betel leaf of commerce, is cultivated particularly around Athur in Tuticorin. Leaves used as a masticatory with areca nut.

88. LAURACEAE

Cassytha L.

Old World tropics, 16 species, 3 in India, 2 in Tamil Nadu and one in GM.

C. filiformis L., Sp. Pl. 35. 1753; Wight, Icon. t. 1847. 1852; FBI 5: 188. 1886; FPM 1241. 1925; IFTC t. 607. 1982; FTC 3: 1358. 1983; FTN 2: 207. 1987. [*Erumaikottan*]

Twining parasite; stem filiform, slender, glabrous, yellowish. Flowers in racemose spikes. Perianth yellowish. Fertile stamens 2; staminodes 6, glandular at base. Fruits globose; seeds cordate.

Fl. & Fr.: Aug. - Feb.

Habitat: On almost all plants except grasses like *Halopyrum mucronatum*.

Distrib.: Arabia, India, Sri Lanka and Trop. Africa. TN: Almost all districts. GM: Occasional on mainland coast and common on Kurusadai group of islands and infests almost all plants on islands. It is absent from Tuticorin group of islands and on few islands in the Keelakarai group viz., Anaipar, Mullai and Valimunai.

Uses: Used in bilious affections, urethritis, chronic dysentery, and eye and skin affections. Stem mashed in water yields a brown dye.

Specimens examined: (Total 67) KSK 102981; Ku Is. PD 100568; Pv Is. PD 101422; Sh Is. PD 100344.

89. LORANTHACEAE

Helicanthes Danser

India, unispecific.

H. elastica (Desr.) Danser in Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Tweede Sect. 2, 29 (6): 55. 1933; IFTC t. 617. 1982; FTC 3: 1373. 1983; FTN 2: 216. 1987. *Loranthus elasticus* Desr. in Lam., Tabl. Encycl. 3: 599. 1792; FBI 5: 216. 1886; FPM 254. 1925. *L. euphorbiae* Wight in Calcutta J. Nat. Hist. 6: 363. 1846 & Icon t. 1063. 1846. [*Andagan, Cigari*] (Photo 20)

Parasitic shrub; branches opposite, glabrous. Leaves coriaceous, entire, round-subacute. Flowers in axillary clusters, sessile. Perianth white or cream with green stripes. Stamens 5, red. Fruits globose, reddish.

Fl. & Fr.: Dec. - April.

Habitat: On *Anacardium occidentale* and *Euphorbia antiquorum*.

Distrib.: S. India. Endemic. TN: Coimbatore, Kanyakumari, Madurai, Nilgiri, Ramathapuram, S. Arcot, Tiruchirapalli and Tirunelveli. GM: Mainland coast, occasional.

Use: Leaves lithontriptic, also used to check abortion.

Specimens examined: (Total 30) PD & PU 106998, 107091.

90. EUPHORBIACEAE

Key to the genera

- | | |
|---|---------------------|
| 1a. Inflorescence a cyathium; tepals minute or absent; stamen 1 | 5. <i>Euphorbia</i> |
| b. Inflorescence not a cyathium; tepals present, conspicuous; | |
| stamens more than 1 | 2 |
| 2a. Plants twiners with stinging hairs | 13. <i>Tragia</i> |
| b. Plants neither twiners nor with stinging hairs | 3 |
| 3a. Stamens opposite tepals | 4 |
| b. Stamens alternate with tepals | 7 |

4a. Tepals gland-dotted; stem winged	11. <i>Sauropus</i>
b. Tepals not gland-dotted; stem not winged	5
5a. Plants dioecious; branchlets terminating in sharp spines; stamens free	12. <i>Securinega</i>
b. Plants monoecious; branchlets not terminating in spines; stamens connate.....	6
6a. Perianth turbinate; disc absent; fruits red	2. <i>Breynia</i>
b. Perianth not turbinate; disc present; fruits not red	9. <i>Phyllanthus</i>
7a. Perianth biseriate; inner tepals longer than outer ones	8
b. Perianth uniseriate	10
8a. Shrubs or undershrubs; old branches with leaf-scars	7. <i>Jatropha</i>
b. Herbs; old branches without leaf-scars	9
9a. Plants foetid; tender parts white-hairy; capsules warty	4. <i>Croton</i>
b. Plants neither foetid nor white-hairy; capsules not warty but stellate- tomentose	3. <i>Chrozophora</i>
10a. Leaves palmately lobed; inflorescence a paniculate raceme; tepals 5; capsules ca 2 cm across, prickly	10. <i>Ricinus</i>
b. Leaves not palmately lobed; inflorescence a spike; tepals less than 5; capsules less than 2 cm across, not prickly	11
11a. Mangrove-associate shrubs; leaves elliptic-obovate; capsules 0.7 - 1 cm across	6. <i>Excoecaria</i>
b. Nonmangrove-associate herbs; leaves ovate or ovate-lanceolate; capsules 1 - 5 mm across	12
12a. Spikes continuous; tepals 4; stamens more than 8 in male flowers; disc absent	1. <i>Acalypha</i>
b. Spikes interrupted; tepals 3; stamens 3 - 5 in male flowers; disc present	8. <i>Micrococca</i>

1. *Acalypha* L.

Tropics and subtropics, ca 430 species, 10 in India and Tamil Nadu and 3 in GM.

Key to the species

1a. Leaves caudate-acuminate at apex	1. <i>A. ciliata</i>
b. Leaves acute or subacute at apex	2
2a. Leaves acute; bracts funnel-shaped	2. <i>A. indica</i>
b. Leaves subacute; bracts flat	3. <i>A. lanceolata</i>

1. *A. ciliata* Forssk., Fl. Aegypt.-Arab. 161, 1775; FBI 5: 415, 1887; FPM 1330, 1925; FTC 3: 1406, 1983; FTN 2: 220, 1987; FIFTC t. 537, 1988.

Erect herb. Leaves ovate, rounded, serrate. Spikes axillary. Male flowers clustered or in groups. Female flowers to 10. Capsules globose; seeds pyriform or obovoid.

Fl. & Fr.: Sept. - Jan.

Habitat: Open wastelands, with *Cleome viscosa*, *Mollugo nudicaulis*, *Portulaca oleracea* etc.

Distrib.: Arabia, India, Sri Lanka and Trop. Africa. TN: All districts. GM: Mainland coast, occasional.

Uses: Plant used as a laxative and vermifuge.

Specimens examined: (Total 41) NCN 53122; PD 100405; VB 2185.

2. *A. indica* L., Sp. Pl. 1003. 1753; Wight, Icon. t. 877. 1844 - 45; FBI 5: 416. 1887; FPM 1330. 1925; FTC 3: 1408. 1983; FTN 2: 220. 1987. [*Kuppaimeni*]

Erect herb. Leaves ovate, rounded, crenate-serrate. Spikes axillary. Male flowers clustered at apex. Female flowers 12 - 15. Capsules globose, hispid; seeds elliptic or ovoid.

Fl. & Fr.: July - March.

Habitat: Road sides and wastelands, with *Cleome viscosa*, *Dactyloctenium aegyptium* and *Tridax procumbens*.

Distrib.: India, Philippines, Sri Lanka and Trop. Africa. TN: All districts. GM: Common on mainland coast and Appa, Kaswari, Kurusadai, Muyal, Pumarichan and Thalayiari Islands.

Uses: Plant used as a laxative. Juice of fresh leaves employed for cutaneous troubles. It is also a reliable emetic.

Specimens examined: (Total 83) PD 100389; Ap Is. PD 101559; Ku Is. KSK 102300; Mu Is. PD 100665; Pu Is. PD 99701.

3. *A. lanceolata* Willd., Sp. Pl. 4: 524. 1805; FPM 1311. 1925; FTC 3: 1408: 1983; FTN 2: 220. 1987. *A. fallax* Müll. Arg. in *Linnaea* 34: 43. 1865; FBI 5: 416. 1887.

Erect herb. Leaves ovate-lanceolate, serrate. Spikes axillary. Male flowers clustered at apex; stamens many. Female flowers at base, few. Capsules globose, hispid-glandular; seeds ovoid, smooth.

Fl. & Fr.: Aug. - Feb.

Habitat: Wastelands, with *Chloris barbata*, *Peristrophe paniculata*, *Physalis minima* etc.

Distrib.: India, Indonesia and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Specimens examined: (Total 13) KSK 102950.

Acalypha wilkesiana Müll. Arg., a shrub, is cultivated as an ornamental.

2. *Breynia* J.R. & G. Forst.

China to New Caledonia and Australia, ca 25 species, 2 in India and Tamil Nadu and one in GM.

B. vitis-idaea (Burm. f.) C.E.C. Fisch. in Bull. Misc. Inform. 1932: 65. 1932; FTC 3: 1416. 1983; FTN 2: 222. 1987. *Rhamnus vitis-idaea* Burm. f., Fl. Indica 61. 1768. *Phyllanthus rhamnoides* Retz., Obs. Bot. 5: 30. 1788. *Melanthesa rhamnoides* (Retz.) Blume, Bijdr. 591. 1826; Wight, Icon. t. 1898. 1852. *Breynia rhamnoides* (Retz.) Müll. Arg. in DC., Prodr. 15: 440. 1866; FBI 5: 330. 1887; FPM 1304. 1925. [*Kattuniruri*]

Large shrub; branches horizontal. Leaves elliptic, rounded, entire, obtuse. Male flowers in fascicles; stamens 6. Female flower solitary. Capsule globose; seeds trigonous.

Fl. & Fr.: March - June.

Habitat: Sandy localities, with *Securinega leucopyrus*, *Pleurostyliia opposita* etc.

Distrib.: India, Malesia and Sri Lanka. TN: All districts. GM: A plant of the hills, not collected on mainland coast. Earlier collected on Kurusadai Island. Now collected on Pullivasal Island too.

The red fruits are dispersed by red-vented and white-browed bulbuls (Balasubramanian, 1996). Though somewhat common they occur only on Kurusadai and Pullivasal Islands.

Uses: Leaves applied as a poultice to hasten suppuration. Juice of plant given after parturition to prevent haemorrhage. Dried leaves are smoked like tobacco for relief in tonsillitis.

Specimens examined: (Total 101) Ku Is. KSK 102319; Pv Is. PD 99779.

3. *Chrozophora* A. Juss.

Mediterranean, Trop. Africa to India, 12 species, 3 in India and Tamil Nadu and one in GM.

C. rottleri (Geiseler) A. Juss., Euphorb. Gen. 28. 1824; FPM 1317. 1925; IFTC t. 630. 1982; FTC 3: 1418. 1983; FTN 2: 223. 1987. *Croton rottleri* Geiseler, Croton. Monogr. 57. 1807. *Chrozophora plicata* form 1. Hook. f., Fl. Brit. India 5: 409. 1887.

Herb. Leaves broadly ovate or orbicular, cordate, undulate, obtuse, rarely 3-lobed. Racemes pendulous. Male flowers crowded; stamens 15. Female flowers at base. Capsules globose; seeds globose, smooth.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands, with *Pedaliium murex*, *Physalis minima* etc.

Distrib.: India, N. Africa, Spain and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Use: Plant acrid and poisonous. Capsules yield a blue colour. Seeds used as cathartic.

Specimens examined: (Total 44) PD & PU 107262; VB 1341.

4. *Croton* L.

Tropics and subtropics, ca 800 species, 14 in India, 8 in Tamil Nadu and one in GM.

C. bonplandianus Baill. in Adansonia 4: 339. 1864; JBNHS 41: 573. 1940 (as "*bonplandianum*"); FTC 3: 1420. 1983; FTN 2: 224. 1987; FIFTC t. 454. 1988. *C. sparsiflorus* Morong in Ann. New York Acad. Sci. 7: 221. 1893; FPM 1316. 1925. [*Mannannai chedi*, *Milahaipoondu*, *Reilpoondu*]

Erect herb. Leaves ovate, acute, serrulate. Racemes terminal. Male flowers fasciated towards apex; stamens many. Female flower below, solitary. Capsules ellipsoid; seeds ellipsoid.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands and sandy soils, with *Boerhavia* spp., *Pedaliium murex*, *Tridax procumbens* etc.

Distrib.: Introduced American weed. TN: All districts. GM: Common on mainland coast and occasional on Karaichalli and Thalaiyari Islands.

Uses: Seed yields a fatty oil with satisfactory drying properties, 120 hrs as compared with 95 hrs for a film of raw linseed oil. Cake useful as a manure.

Specimens examined: (Total 67) PD 100519, 102215; Kc Is. PD 102096.

5. Euphorbia L.

Cosmopolitan, ca 1600 species, 60 in India, 29 in Tamil Nadu and 11 in GM.

Key to the species

1a. Plants succulent	2
b. Plants not succulent	4
2a. Plants unarmed; branches terete	10. <i>E. tirucalli</i>
b. Plants armed; branches 3 - 6-angular	3
3a. Branches twisted; cyathia green; seeds smooth, not caruncled	11. <i>E. tortilis</i>
b. Branches not twisted; cyathia red; seeds minutely caruncled.....	1. <i>E. antiquorum</i>
4a. Involucral gland one, cupular; floral leaves with reddish blotches at base	3. <i>E. cyathophora</i>
b. Involucral glands 4 or 5 rarely 6, oblong; floral leaves absent	5
5a. Involucre tubular; appendages inconspicuous.....	4. <i>E. heyneana</i>
b. Involucre campanulate; appendages conspicuous.....	6
6a. Plants prostrate	7
b. Plants erect or ascending	10
7a. Cyathia solitary, or less than 7, in axillary clusters	8
b. Cyathia 7 - 10, in terminal or subterminal clusters	9
8a. Leaves suborbicular to oblong, obtuse at apex; involucre campanulate	9. <i>E. thymifolia</i>
b. Leaves subquadrate-ovate, retuse at apex; involucre tubular	8. <i>E. serpens</i>
9a. Male flowers 8 - 10; capsules glabrous; seeds ca 1.5 mm long, smooth	2. <i>E. corrigioides</i>
b. Male flowers 4 - 6; capsules pubescent; seeds ca 5 mm long, furrowed	7. <i>E. rosen</i>
10a. Involucral appendages as large as the red glands	5. <i>E. hirta</i>
b. Involucral appendages 3 - 4 times larger than the green glands	6. <i>E. indica</i>

1. *E. antiquorum* L., Sp. Pl. 450. 1753; Wight, Icon. t. 897. 1844 - 45; FBI 5: 255. 1887; FPM 1277. 1925; FTC 3: 1428. 1983; FTN 2: 227. 1987. [*Sadurakalli*]

Shrub; branches jointed, 3 - 6-angled, spiny. Flowers in cymes, greenish yellow; lateral 2 males, pedunculate; central flowers female, sessile. Stamens many. Capsules globose.

Fl. & Fr.: Jan. - April.

Habitat: Frequent on road sides, with *Asparagus racemosus* and *Euphorbia tortilis*. Also cultivated as hedges. A host for the parasite *Helicanthes elastica*.

Distrib.: India and Sri Lanka. TN: All districts. GM: Mainland coast, occasional.

Uses: Plant purgative and digestive. Juice used for nervine troubles and dropsy. Latex applied to wounds to kill maggots.

Specimens examined: (Total 21) PD & PU 107082.

2. *E. corrigioloides* Boiss., Cent. Euphorb. 11. 1860 & in DC., Prodr. 15: 32. 1862; FBI 5: 251. 1887; FPM 1275. 1925; FTC 3: 1429. 1983; FTN 2: 227. 1987; FIFTC t. 548. 1988.

Prostrate herb. Leaves oblong, obliquely cordate, entire or serrulate, obtuse. Cyathia clustered in axillary or terminal cymes. Flowers white. Capsules globose or subglobose; seeds tetragonous.

Fl. & Fr.: Jan. - Aug.

Habitat: Wastelands and sandy places.

Distrib.: S. India. Endemic. TN: Most districts. GM: Mainland coast, occasional. Earlier once collected on Kurusadai Island.

Specimens examined: (Total 35) VB 1340, 2052, 1211, 1212; Ku Is. DDS & JSR 93539.

3. *E. cyathophora* Murray in Commentat. Soc. Regiae Sci. Gott. 7: 81. 1786; FTC 3: 1430. 1983; FTN 2: 228. 1987. *E. heterophylla* Gamble, Fl. Madras 1278. 1925.

Erect herb. Leaves obovate, lobed at middle, attenuate, entire, acute. Cyathia terminal, clustered. Capsules subglobose; seeds subglobose, tuberculate.

Fl. & Fr.: Almost throughout the year.

Habitat: Wastelands.

Distrib.: Native of Trop. America. A weed in Indian gardens. TN: Cultivated, sometimes a weed in open places. GM: Mainland coast, occasional.

Specimens examined: (Total 10) VB 2001.

4. *E. heyneana* Spreng., Syst. Veg. 3: 791. 1826, subsp. *heyneana*: FTC 3: 1433. 1983; FTN 2: 228. 1987. *E. microphylla* Heyne ex Roth, Nov. Pl. Sp. 229. 1821, non Lam. 1788; FBI 5: 252. 1887; FPM 1276. 1925.

Prostrate herb. Leaves oblong, oblique, serrate, obtuse. Cyathia axillary. Capsules broadly ovoid, pubescent; seeds oblong, transversely furrowed, viscous when soaked in water.

Fl. & Fr.: Sept. - Jan.

Habitat: Sandy soil.

Distrib.: India and Indonesia. TN: Chengalpattu, Coimbatore, Madurai, Ramanathapuram, Salem and Thanjavur. GM: Appears frequent in the interior. Muyal Island, rare. Earlier collected on Kurusadai Island.

Use: Plant used as a galactagogue.

Specimens examined: (Total 19) VB 2198; Ku Is. DD & JSR 93552; VB 1452; Mu Is. KSK 103368.

5. *E. hirta* L., Sp. Pl. 454. 1753; FPM 1275. 1925; FTC 3: 1434. 1983; FTN 2: 228. 1987; FIFTC t. 554. 1988. *E. pilulifera* sensu FBI 5: 250. 1887, non L. 1753. [*Amam-patchatarist*]

Erect or ascending herb. Leaves elliptic-lanceolate, serrate, obtuse. Cyathia in axillary clusters. Capsules subglobose; seeds oblong, transversely rugose.

Fl. & Fr.: Almost throughout the year.

Habitat: Rice fields and wastelands, with *Acalypha* spp., *Blumea* spp., *Tribulus terrestris* etc.

Distrib.: Tropics and subtropics. TN: All districts. GM: Mainland coast, common.

Uses: Plant used as an ingredient of medicines for cough and asthma; also used in colic and dysentery.

Specimens examined: (Total 128) KSK 101699; PD 100399; PD & PU 106489.

6. *E. indica* Lam., Encycl. 2: 423. 1786; IJB 2: 205. 1979; FTN 2: 228. 1987. *E. hypericifolia* auct. non L. 1753; FBI 5: 249. 1887; FPM 1275: 1925; FTC 3. 1434. 1983.

Erect herb. Leaves elliptic-oblong, equilateral, serrulate, obtuse or rounded. Cyathia in axillary clusters. Capsules globose; seeds oblong-ellipsoid, transversely furrowed.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet localities, with *Cyperus hyalinus*, *Heliotropium* spp. etc.

Distrib.: Tropics of both hemispheres, except Australia and the Pacific Islands. TN: All districts. GM: Common on mainland coast and Mandapam group of islands and Appa, Thalaiyari and Upputhanni Islands.

Specimens examined: (Total 92) Pu Is. PD 99706, 99711; Th Is. PD 101515.

7. *E. rosea* Retz., Obs. Bot. 4: 26. 1786; FBI 5: 251. 1887; FPM 1275. 1925; FTC 3: 1438. 1983; FTN 2: 229. 1987; FIFTC t. 560. 1988. *Chamaesyce rosea* (Retz.) G.L. Webster in J. Arnold Arbor. 48: 423. 1967.

Prostrate herb. Leaves obovate or linear, spatulate, oblique, crenate, rounded or obtuse. Cyathia subterminal. Capsules globose; seeds oblong, transversely rugose.

Fl. & Fr.: June - Feb.

Habitat: Sandy soil, with *Launaea intybacea*, *Vernonia cinerea* etc.

Distrib.: Afghanistan, S. India and Sri Lanka. TN: Almost all districts. GM: Frequent on mainland coast and Appa, Karaichalli, Moyal, Nallathanni, Pumarichan and Upputhanni Islands.

Uses: Leaves and seeds vermifuge.

Specimens examined: (Total 60) PD 101906; Mu Is. PD 100659; Nt Is. PD 101627; Pu Is. PD 100580; Ut Is. PD 101644.

8. *E. serpens* Kunth in H. B. K., Nov. Gen. Sp. 2: 52. 1817; JBNHS 68: 854. 1972; IFTC t. 637. 1982; FTC 3: 1439. 1983; FTN 2: 229. 1987. *E. microphylla* auct. non B. Heyne ex Roth 1821: FBI 5: 252. 1887, p.p.

Prostrate herb; rooting at nodes. Leaves subcordate, entire, obtuse. Cyathium axillary, solitary. Capsules ovoid or subglobose; seeds oblong, minutely tuberculate.

Fl. & Fr.: Sept. - Feb.

Habitat: Bunds of cultivated fields.

Distrib.: Native of Trop. America; naturalized in Africa and Asia. TN: Chengalpattu, Ramanathapuram, Salem, S. Arcot and Tiruchirapalli. GM: Earlier collected at places like Ramanathapuram, Uttarakosamangai, a little away from the coast. May occur on the coast.

Specimens examined: (Total 8) VB 1092, 1206.

9. *E. thymifolia* L., Sp. Pl. 454. 1753; FBI 5: 252. 1887; FPM 1276. 1925; FTC 3: 1439. 1983; FTN 2: 230. 1987; FIFTC t. 562. 1988. [*Sitrapaladai*]

Prostrate herb. Leaves rounded or slightly oblique, crenulate, obtuse. Cyathia axillary, solitary or in clusters. Capsules ovoid, subglobose; seeds oblong, transversely rugose.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Bulbostylis barbata*, *Euphorbia indica* etc.

Distrib.: India, Sri Lanka and Trop. Asia. TN: All districts. GM: Occasional on mainland coast and Appa, Kurusadai and Muyal Islands.

Uses: Leaves and seeds considered stimulant, astringent, anthelmintic and laxative; used for bowel complaints in children.

Specimens examined: (Total 78) NCN 53093; Ap Is. PD 101554; Ku Is. PD 100579; Mu Is. PD 100635.

10. *E. tirucalli* L., Sp. Pl. 452. 1753; FBI 5: 254. 1887; FPM 1276. 1925; FTC 3: 1440. 1983; FTN 2: 230. 1987; FIFTC t. 563. 1988. [*Thirukalli*]

Shrub; branches dichotomous, glaucous green. Leaves linear-lanceolate, cuneate, entire, obtuse. Cyathia few, terminal. Capsules globose; seeds globose, smooth.

Fl. & Fr.: Jan. - June.

Habitat: Planted as a hedge.

Distrib.: Native of Africa; naturalized in India and Sri Lanka. TN: All districts. GM: Planted on mainland coast.

Uses: Latex vesicant and rubefacient; used externally to remove warts; also applied in neuralgia and toothache. Toxic to fish and rats.

Specimens examined: (Total 9) PD & PU 107086.

11. *E. tortilis* Rottler ex Ainslie, Mat. Ind. 2: 424. 1826; Wight, Icon. t. 898. 1844 - 1845; FBI 5: 256. 1887; FPM 1277. 1925; FTC 3: 1441. 1983; FTN 2: 230. 1987. [*Thirukukalli*]

Shrub; branches 3-angular, twisted. Cyathia paired or 3 - 4 in groups, axillary. Capsules 3-gonous.

Fl. & Fr.: Jan. - Feb.

Habitat: On road sides, with *E. antiquorum* and *E. tirucalli*.

Distrib.: S. India and Sri Lanka. TN: Chengalpattu, Coimbatore, Kanyakumari, Tiruchirapalli and Tirunelveli. GM: Mainland coast, frequent.

Specimens examined: (Total 10) PD & PU 107084.

Of the 11 species only are 5 found on islands. The seeds of *Euphorbia* are conveyed in mud on feet of birds and some are undoubtedly sea-dispersed (Ridley, 1930).

E. pulcherrima Willd. ex Klotzsch is cultivated in gardens as an ornamental.

6. *Excoecaria* L.

Old World tropics, 40 species, 7 in India, 4 in Tamil Nadu and one in GM.

E. agallocha L., Syst. Nat. ed. 10, 2: 1288. 1759 & Sp. Pl. ed. 2, 2: 1451. 1763; Wight, Icon. t. 1865B. 1852; FBI-5: 47. 1888; FPM 1344. 1925; IFTC t. 638. 1982; FTC 3: 1442. 1983; FTN 2: 230. 1987. [*Thillai*] (Fig. 52)

Large shrub. Leaves acute, entire, acuminate. Spikes axillary. Tepals 3. Stamens 3. Capsules globose; cocci 3.

Fl. & Fr.: Aug. - Feb.

Habitat: In mangroves, with *Bruguiera cylindrica*, *Ceriops tagal*, *Rhizophora mucronata* etc. Rarely a little away, with *Pandanus fascicularis*, *Ficus benghalensis* and *Pemphis acidula*.

Distrib.: Indomalaysia. TN: Chengalpattu, Kanyakumari, Ramanathapuram, S. Arcot and Thanjavur. GM: Mainland coast, rare. Collected only at Samythoppu in Ramanathapuram. Frequent on Manoli, Manoliputti, Muyal, Pumarichan and Shingle Islands. Earlier collected on Kurusadai Island.

The floating seeds are sea-dispersed (Ridley, 1930). But then not common on islands.

Uses: Wood used for carpentry work. Latex applied to obstinate ulcers, also used in preparations for rheumatism and leprosy. It is a drastic purgative and abortifacient, and can blind the eyes.

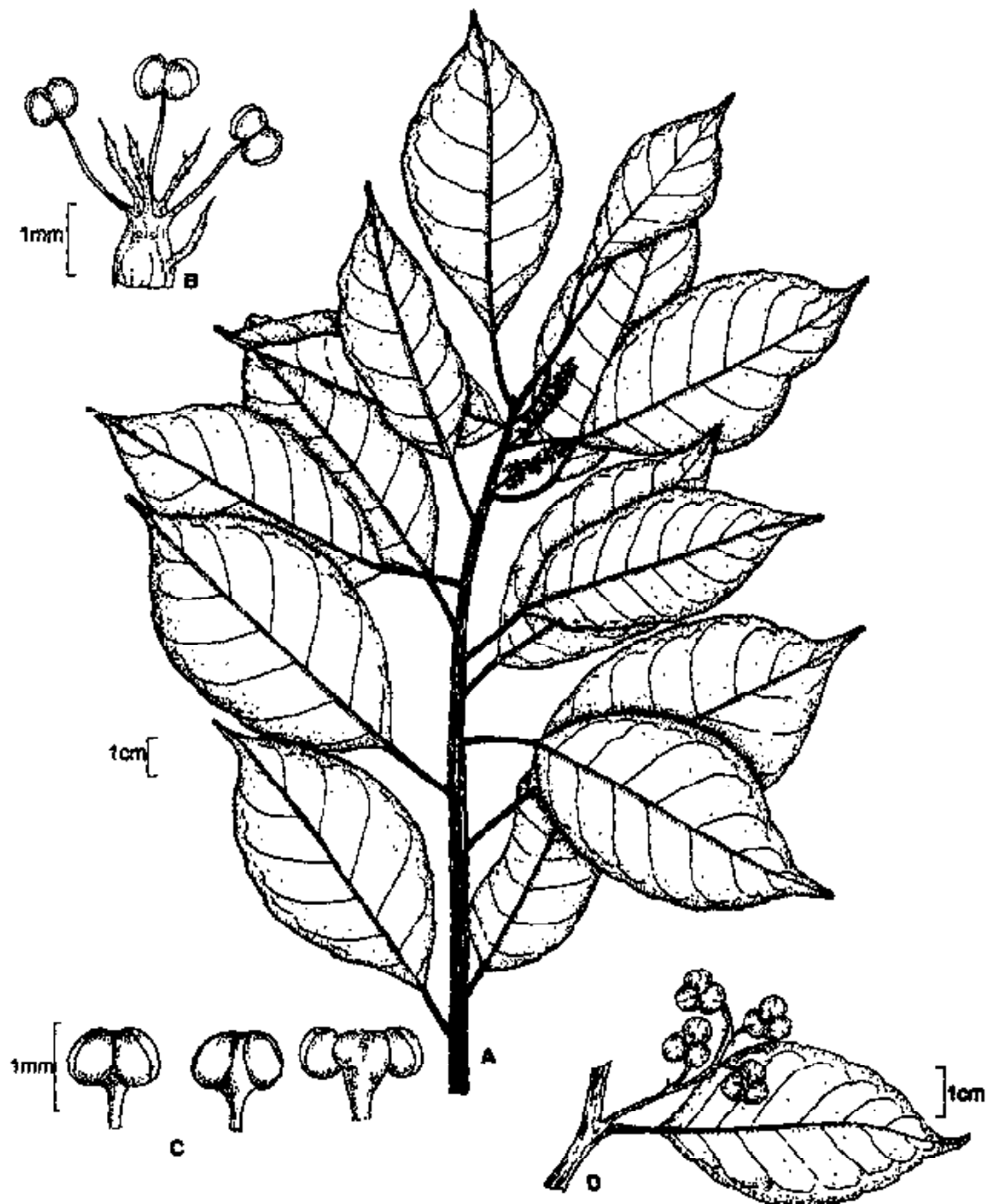


Fig. 52(A - D). *Excoecaria agallocha* L.

A. Twig B. Male flower C. Stamen - different views D. Capsules

Specimens examined: (Total 57) KSK 102025; NCN 53131; Ku Is. *SVP & DD* 88163; Mu Is. *PD* 101463; Pu Is. *KSK* 102342; *PD & PU* 106820; Sh Is. *PD* 100349; *PD & PU* 106874.

7. *Jatropha* L.

Tropics and subtropics, ca 170 species, 10 in India, 9 in Tamil Nadu and 5 in GM.

Key to the species

- | | |
|--|---------------------------|
| 1a. Stamens 10 | 1. <i>J. curcas</i> |
| b. Stamens 8 or 9 | 2 |
| 2a. Leaves not peltate, deeply 3 - 5-lobed, gland-tipped or glandular-hairy along margins | 3 |
| b. Leaves peltate, shallowly 3 - 5-lobed or entire, neither gland-tipped nor glandular-hairy | 4 |
| 3a. Leaves entire, glandular-hairy along margins; stipules ciliate, less than 0.5 cm long | 3. <i>J. gossypifolia</i> |
| b. Leaves serrate, gland-tipped along margins; stipules filiform, more than 1 cm long | 2. <i>J. glandulifera</i> |
| 4a. Leaves stipulate; flowers in dichotomous cymes | 4. <i>J. maheshwarii</i> |
| b. Leaves exstipulate; flowers in umbellate cymes | 5. <i>J. villosa</i> |

1. *J. curcas* L., Sp. Pl. 1006. 1753; FBI 5: 383. 1887; FPM 1340. 1924; FTC 3: 1449. 1983; FTN 2: 232. 1987; FIFTC t. 570. 1988. [*Kattuamanaku*]

Large shrub; stem woody. Leaves broadly ovate, 3 - 5-lobed. Flowers in terminal cymes. Capsules ellipsoid-oblong; seeds oblong, caruncled.

Fl. & Fr.: Almost throughout the year.

Habitat: A hedge plant.

Native of Trop. America. GM: Occasionally cultivated on mainland coast.

Uses: Seed oil is purgative, also used for manufacturing candles, soaps and varnishes. It is used in sciatica, dropsy and paralysis and externally for skin troubles and rheumatism. Leaves rubefacient and lactagogue.

2. *J. glandulifera* Roxb., Fl. Ind. 3: 688. 1832; FBI 5: 382. 1887; FPM 1340. 1925; IFTC t. 642. 1982; FTC 3: 1449. 1983; FTN 2: 232. 1987. [*Adalai*]

Shrub; stem dichotomously branched. Leaves palmately 3 - 5-lobed, linear-lanceolate. Flowers in corymbose cymes. Stamens 8. Capsules 3-lobed, subglobose; seeds oblong, caruncled.

Fl. & Fr.: Almost throughout the year.

Habitat: Roadsides and wastelands, with *Cassia* spp., *Martynia annua* and *Physalis minima*.

Distrib.: India, Sri Lanka and Trop. Africa. TN: Most districts. GM: Common on mainland coast. Also collected on Karaichalli and Nallathanni Islands.

Uses: Seed oil used as a purgative; also applied in rheumatism and paralytic affections. Root pounded with water is given to children having abdominal enlargement.

Specimens examined: (Total 35) PD 100370, 101172; Kc Is. PD 102085; SAM 104726; Nt Is. PD 101601.

3. *J. gossypifolia* L., Sp. Pl. 1006. 1753; FBI 5: 583. 1887; FPM 1340. 1925; FTC 3: 1490. 1983; FTN 2: 232. 1987; FIFTC t. 571. 1988.

Undershrub. Leaves palmately 3 - 5-lobed; lobes obovate, acute. Cymes terminal, subcorymbose. Stamens 8. Capsules oblong; seeds oblong, caruncled.

Fl. & Fr.: Almost throughout the year.

Habitat: Common on roadsides and on wastelands, with *Catharanthus roseus*, *Tephrosia purpurea* etc.; also cultivated as a hedge plant.

Distrib.: New World tropics. TN: All districts. GM: Mainland coast, frequent.

Uses: Roots employed against leprosy. Decoction of leaves employed as a purgative and stomachic. Latex used in ulcers.

Specimens examined: (Total 85) PD 100385.

4. *J. maheshwaril* Subr. & M.P. Nayar in Bull. Bot. Surv. India 6: 331. 1964; FTN 2: 233. 1987. *Tritaxis beddomei* sensu Sundararaj in JBNHS 53: 525, ff. 1-9. 1956, non Benth. 1878. (Fig. 53)

Undershrub. Leaves peltate or subpeltate, narrowly oblong or ovate, sometimes irregularly 2 - 3-lobed, truncate or subcordate, entire, acute-acuminate. Stamens 8 or 9. Capsules subglobose; seeds oblong, caruncled.

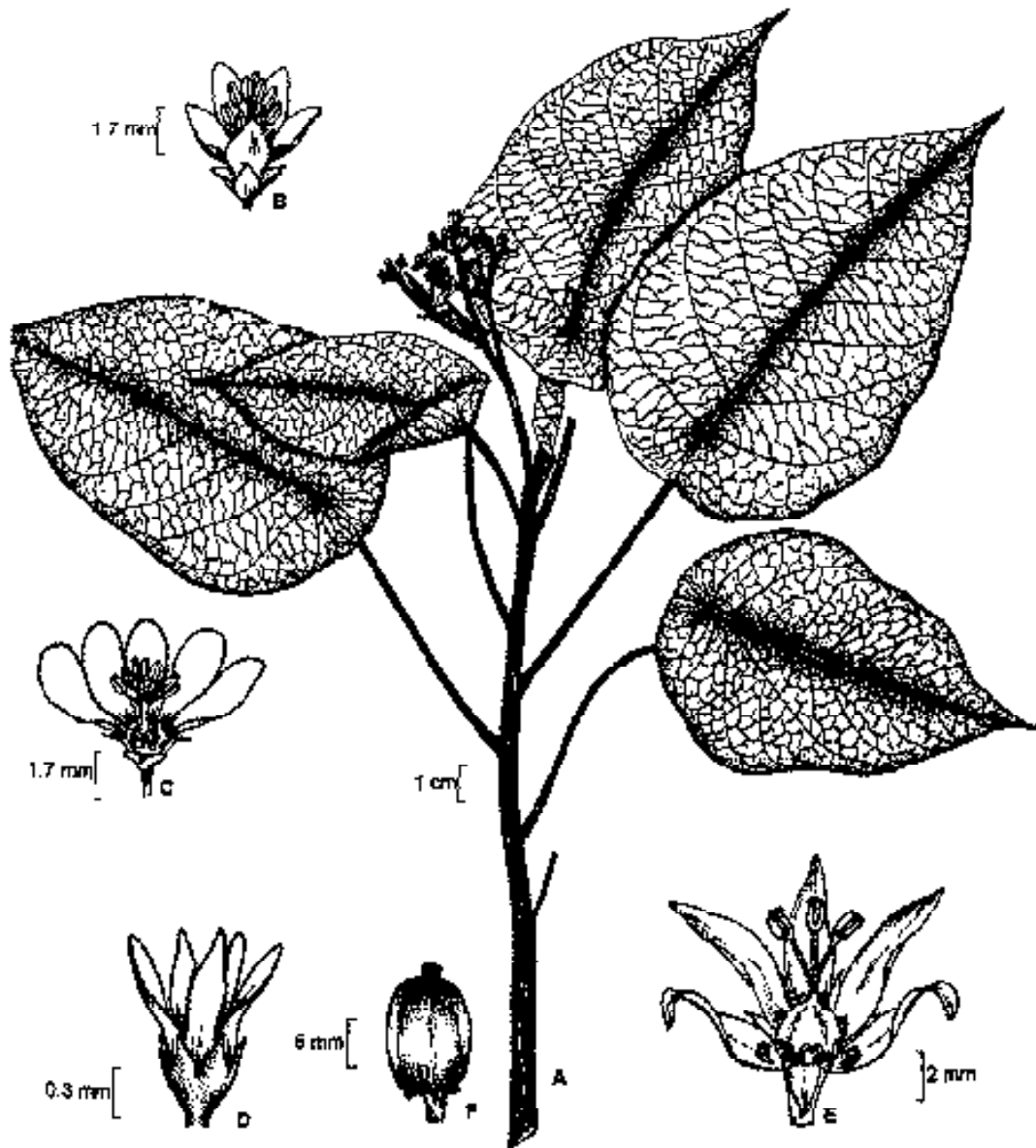


Fig. 53(A - F). *Zastrophe umbellata* Subr. & M.P. Nayar
 A. Twig B. Male flower C. Male flower split open D. Female flower
 E. Female flower split open F. Capsule

Fl. & Fr.: Dec. - Jan.

Habitat: Sandy soil, with *Geniosporum tenuiflorum*, *Lopholepis ornithocephala* etc.

Distrib.: S. India. Endemic. So far known only from Kanyakumari, Tirunelveli and Tuticorin districts. GM: Mainland coast, frequent.

Note: Plants that occur on red sandy soil on Tirunelveli and Tuticorin coasts usually have much larger and ovate-oblong leaves.

Specimens examined: (Total 22) KSK 102801, 102837, 102896; SAM 106426; PD & PU 106961.

5. *J. villosa* Wight var. *ramnadensis* Ramam. in Bull. Bot. Surv. India 9: 278. 1967; JBNHS 80:73. 1983; FTN 2:233.1987. (Fig. 54)

Undershrub; stem profusely branched. Leaves peltate, 3-5-lobed; lobes ovate, entire, acuminate. Stamens 8. Capsules oblong; seeds oblong, caruncled.

Fl. & Fr.: Nov. - Feb.

Habitat: Sandy seashores and in scrub jungles, with *Capparis sepiaria*, *Dodonaea viscosa* and *Ziziphus mauritiana*.

Distrib.: S. India. Endemic. TN: Ramanathapuram. GM: Occasional, collected only in the northern part of Rameswaram.

Specimens examined: (Total 4) PD 100433; VB 2182.

Birds are reported to disperse seeds of certain species of *Jatropha* (Ridley, 1930). Of the few species only *J. glandulifera* occurs on 2 islands. Perhaps the capsules are sea-dispersed.

J. integerrima Jacq. and *J. multifida* L. may be cultivated as ornamentals.

8. *Micrococca* Benth.

Old world tropics, 12 species, 3 in India and Tamil Nadu and one in GM.

M. mercurialis (L.) Benth. in Hook., Niger Fl. 503. 1849; FPM 1328. 1925; IFTC L. 647. 1982; FTC 3: 1460. 1983; FTN 2: 235. 1987. *Tragia mercurialis* L., Sp. Pl. 980. 1753. *Claoxylon mercuriale* (L.) Thwaites, Enum. Pl. Zeyl. 271. 1861; FBI 5: 412. 1887.

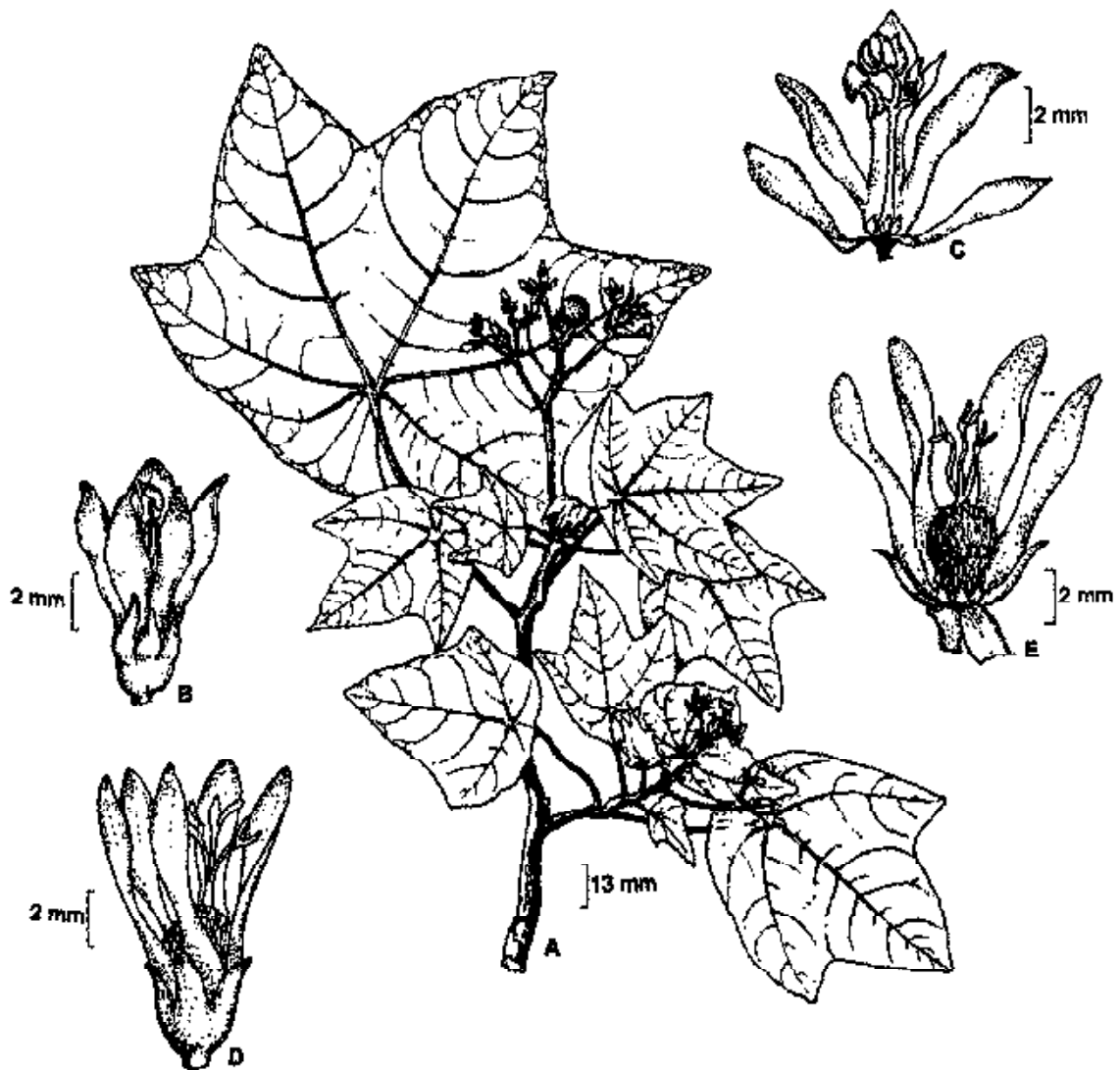


Fig. 54(A - E). *Jatropha villosa* Wight var. *ramnadensis* Ramam
 A. Twig B. Male flower C. Male flower split open
 D. Female flower E. Female flower split open

Erect herb. Leaves ovate-lanceolate, rounded, crenate, acute-acuminate. Spikes axillary. Stamens 3-5 in male flowers. Female flower solitary. Capsules globose; seeds globose, foveolate.

Fl. & Fr.: Nov. - Jan.

Habitat: Road sides and railway tracks, with *Lantana camara*, *Vernonia cinerea* etc.

Distrib.: Arabia, India, Sri Lanka and Trop. Africa. TN: All districts. GM: Frequent on mainland coast and rare on islands. Collected at Vattakottai in Kanyakumari and on Thalaiyari Island.

Specimens examined: (Total 29) KSK 102786; Th Is. PD 101498.

9. *Phyllanthus* L.

Tropics and subtropics, ca 700 species, 40 in India, 28 in Tamil Nadu and 6 in GM.

Key to the species

- | | |
|--|------------------------------|
| 1a. Tree; fruit a juicy drupe, ca 3 cm across | 2. <i>P. emblica</i> |
| b. Shrubs or herbs; fruit a berry or capsule, not juicy, less than 3 cm across | 2 |
| 2a. Shrub; fruit a berry, purple when ripe | 4. <i>P. reticulatus</i> |
| b. Herbs; fruit a capsule, not purple when ripe | 3 |
| 3a. Leaves rotundiform, mucronate at apex | 5. <i>P. rotundifolius</i> |
| b. Leaves neither rotundiform nor mucronate at apex | 4 |
| 4a. Tepals 5; disc 5-glanded | 1. <i>P. amarus</i> |
| b. Tepals 6; disc 6-glanded | 5 |
| 5a. Leaves oblong; stamens 3; capsules globose | 6. <i>P. virgatus</i> |
| b. Leaves obovate; stamens 5; capsules subglobose | 3. <i>P. maderaspatensis</i> |

1. *P. amarus* Schumacher & Thonner in Kongel. Danske Vidensk.-Selsk. Skr. 4: 195. 1829; Airy Shaw, Euphorbiac. Borneo 182. 1975; FTC 3: 1464. 1983; FTN 2: 236. 1987. *P. niruri* auct. non. L. 1753; Wight, Icon. t. 1894. 1852; FBI 5: 298. 1887; FPM 1290. 1925. [*Keelkainelli*]

Erect herb. Leaves elliptic-oblong, obtuse, entire, apiculate. Flowers axillary. Stamens 3 in male flowers. Capsules globose; seeds trigonous.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet places and road sides, with *Corchorus tridens*, *Dactyloctenium aegyptium* and *Eclipta prostrata*.

Distrib.: S. India and Sri Lanka. TN: All districts. GM: Common on mainland coast and rare on Kurusadai and Nallathanni Islands.

Uses: Plant astringent, diuretic and febrifuge; used in stomach disorders such as diarrhoea, dysentery, dyspepsia and colic; and also used in dropsy and diseases of the urino-genital system. Fresh shoots an effective remedy in jaundice.

Specimens examined: (Total 105) Ku Is. KSK 102754; PD 99766, 99793, 102122.

2. *P. emblica* L., Sp. Pl. 982. 1753; FBI 5: 289. 1887; IFTC t. 648. 1982; FTC 3: 1466. 1983; FTN 2: 236. 1983. *Emblica officinalis* Gaertn., Fruct. Sem. Pl. 2: 122. 1791; Wight, Icon. t. 1896. 1852; FPM 1295. 1925. [*Nelli*]

Leaves oblong, truncate-subcordate, entire, apiculate. Flowers in axillary fascicles. Stamens 3 in male flowers. Drupes depressed-globose; seeds trigonous.

Fl. & Fr.: March - June.

Distrib.: SE. Asia. TN: All districts, also cultivated. GM: A hill plant; occasionally cultivated on mainland coast. Earlier once collected on Kurusadai Island.

Uses: Fruits edible, also pickled; a rich source of vitamin C. Fruit sour and astringent, cooling, diuretic, laxative. It is also used in hair dyes; dried ones are used for shampooing hair.

3. *P. maderaspatensis* L., Sp. Pl. 982. 1753; Wight, Icon. t. 1895, f. 3. 1852; FBI 5: 292. 1887; FPM 1289. 1925; FTC 3: 1467. 1983; FTN 2: 237. 1987.

Erect herb. Leaves cuneate, entire, retuse or obtuse. Flower solitary, axillary. Seeds triquetrous, muriculate.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy places, with *Cleome viscosa*, *Cyperus bulbosus* and *Hedyotis puberula*.

Distrib.: Australia, Arabia, China, India, Indonesia, Sri Lanka and Trop. Africa. TN: All districts. GM: Common on mainland coast and rare on Kurusadai, Manoli, Pumarichan and Shingle Islands.

Uses: Seeds laxative, diuretic and carminative; infusion of leaves given in headache.

Specimens examined: (Total 100) PD 100479; Ku Is. PD 99769; Ma Is. PD 100693; Pu Is. PD 99710; Sh Is. PD 100350.

4. *P. reticulatus* Poir. in Lam., *Encycl.* 5: 298. 1804; FBI 5: 288. 1887; FTC 3: 1468. 1983; FTN 2: 238. 1987. *Kirganelia reticulata* (Poir.) Baill., *Étude Euphorb.* 613. 1858; FPM 1294. 1925. *Anisonema multiflora* Wight, *Icon.* t. 1899. 1852.

Leaves elliptic-oblong, acute, entire. Stamens 5 in male flowers. Berries subglobose; seeds trigonous.

Fl. & Fr.: Almost throughout the year.

Habitat: Scrub jungles and on hedges, with *Acalypha ciliata*, *Grewia oppositifolia* and *Prosopis chilensis*.

Distrib.: China, India, Malesia, Sri Lanka and Trop. Africa. TN: All districts. GM: Mainland coast, frequent.

Specimens examined: (Total 111) PD 100409; PD & PU 107202.

5. *P. rotundifolius* Klein ex Willd., *Sp. Pl.* 4: 584. 1805; FBI 5: 299. 1887; FPM 1290. 1925; FTN 2: 238. 1987.

Erect herb. Leaves cuneate, entire. Stamens 3 in male flowers. Capsules globose; seeds trigonous, ribbed.

Fl. & Fr.: May - Sept.

Habitat: Sandy seashores, with *Aerva persica*, *Cyperus arenarius* and *Hedyotis puberula*.

Distrib.: India and Trop. Africa. TN: Chengalpattu, Ramanathapuram, Thanjavur and Tirunelveli. GM: Frequent on mainland coast and Anaipar, Kurusadai, Manoli, Nallathanni and Upputhanni Islands.

Specimens examined: (Total 24) KSK 103418; Ku Is. KSK 102312; PD 100382; Ni Is. PD 101594; Ut Is. PD 101649; PD & PU 106885.

6. *P. virgatus* G. Forst., *Fl. Ins. Austr.* 65. 1786 (as "*virgata*"); FTC 3: 1469. 1983; FTN 2: 239. 1987. *P. simplex* Retz., *Obs. Bot.* 5: 29. 1788; FBI 5: 295. 1887; FPM 1289. 1925. *P. simplex* Retz. var. *virgatus* (G. Forst.) Müll.-Arg. in *Linnaea* 32: 32. 1863. *Macraea oblongifolia* Wight, *Icon.* t. 1902, f. 1. 1852.

Erect herb. Leaves entire, obtuse-subacute, glabrous. Flower axillary, solitary. Seeds triquetrous, minutely tubercled.

Fl. & Fr.: June - Jan.

Habitat: Road sides, with *Acalypha ciliata*, *Mollugo nudicaulis* etc.

Distrib.: India, Malesia, Polynesia, Sri Lanka and Vietnam. TN: All districts. GM: Mainland coast, occasional.

Specimens examined: (Total 103) PD 100407; VB 1823.

Seeds of *Phyllanthus* spp. are eaten and transported by birds internally (Carlquist, 1974). But not all species are found on islands.

Phyllanthus acidus (L.) Skeels [*Aranelli*], a small tree, native of Trop. America may be cultivated for its fruits. Fruits eaten, also made into jam or jelly. Roots and seeds cathartic.

10. *Ricinus* L.

East & NE. Africa to the Middle East. Naturalized throughout the tropics. Unispecific.

R. communis L., Sp. Pl. 1007. 1753; FBI 5: 457. 1887; FPM 1353. 1925; IFTC t. 652. 1982; FTC 3: 1471. 1983; FTN 2: 239. 1987. [*Amanaku*, *Kottamuthu*]

Large shrub. Leaves palmately lobed, glaucous; lobes oblong-lanceolate, serrate, acute. Stamens many in male flowers. Capsules oblong-ellipsoid; seeds oblong, mottled.

Fl. & Fr.: Oct. - March.

Distrib.: Cultivated throughout India, also an escape. GM: Once collected at Tuticorin port; an escape.

Uses: Seed yields an oil. It is used in the manufacture of lubricants, soaps; dehydrated oil used in the paper industry. Also used as a laxative. Besides, it is an ingredient in the Ayurvedic preparation, 'Boniol oil' used in skin care (Tripathi & al., 1996).

Specimens examined: (Total 20) PD 103524.

11. *Sauropus* Blume

Indomalesia, ca 40 species, 10 in India, 3 in Tamil Nadu and one in GM.

S. bacciformis (L.) Airy Shaw in Kew Bull. 35: 685. 1980; FTC 3: 1472. 1983; FTN 2: 239. 1987. *Phyllanthus bacciformis* L., Mant. Pl. 294. 1767. *Agyneia bacciformis* (L.) A. Juss., Euphorb. Gen. 24, t. 6. 1824; Wight, Icon. t. 1893. 1852; FBI 5: 285. 1887; FPM 1234. 1925. *Synostemon bacciformis* (L.) G.L. Webster in Taxon 9: 26. 1960.

Erect herb. Leaves obovate or elliptic-oblong, obtuse, entire. Male flowers in axillary clusters; stamens 3. Capsules drooping, ovoid or subglobose; seeds linear, slightly curved.

Fl. & Fr.: July - Feb.

Habitat: Frequent on sandy soil but common in moist situations, with *Eclipta prostrata*, *Peplidium maritimum*, *Physalis minima* and *Sporobolus maderaspatanus*.

Distrib.: Banka, Celebes, India, Mauritius, SE. Asia and S. China. TN: Chengalpattu, Kanyakumari, Ramanathapuram, S. Arcot, Thanjavur, Tiruchirapalli and Tirunelveli. GM: Common on mainland coast and Kurusadai, Manoli, Muyal, Pullivasal and Thalaiyari Islands.

As the plants are found mostly in wet situations the seeds in mud/soil may stick to birds' feet and get dispersed.

Specimens examined: (Total 55) PD 102147; Ku Is. PD 100587; Ma Is. PD 100687; Mu Is. KSK 102991; PD 100640, 100331; Th Is. PD 101488.

12. *Securinega* Comm. ex Juss.

Tropics and subtropics, ca 20 species, 3 in India, 2 in Tamil Nadu and one in GM.

S. leucopyrus (Willd.) Müll.-Arg. in DC., Prodr. 15: 451. 1866; FTC 3: 1475. 1983; FTN 2: 240. 1987. *Fluggea leucopyrus* Willd., Sp. Pl. 4: 757. 1805; Wight, Icon. t. 1875. 1852; FBI 5: 328. 1887; FPM 1296. 1925. [*Pulachi*]

Straggling shrub. Leaves obovate or obcordate, cuneate, entire, obtuse or emarginate. Male flowers numerous in clusters; stamens 5. Capsules globose, white; seeds angled, brownish.

Fl. & Fr.: June - Nov.

Habitat: Scrub jungles, with *Pleurostyliia opposita*, *Salvadora persica* etc.

Distrib.: S. India and Sri Lanka. TN: Almost all districts. GM: Rare on mainland coast and Muyal Island.

A hill plant, rarely met with on coast. Earlier collected at Rameswaram and Kurusadai Island. Not collected here this time. Now collected on Muyal Island, rare.

Various birds are reported to disperse the seeds (Balasubramanian, 1996). Perhaps all islands are not suitable as a habitat.

Uses: Leaves are eaten. Berries edible. Slender branches are used for making wicker-baskets and for thatching.

Specimens examined: (Total 10) Mu Is. KSK 102987; PD 100309, 100309.

13. *Tragia* L.

Tropics and subtropics, ca 125 species 6 in India, 5 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|--------------------------|
| 1a. Leaves simple, truncate at base, acuminate at apex | 1. <i>T. involucrata</i> |
| b. Leaves palmately 3-lobed, rounded at base; lobes acute at apex..... | 2. <i>T. plukenetii</i> |

1. *T. involucrata* L., Sp. Pl. 980. 1753; IFTC t. 659. 1982; FTC 3: 1479. 1983, var. *involucrata*: FBI 5: 465. 1888; FPM 1332. 1925; FTN 2: 240. 1987. [*Chenthatti*]

Stem strigose-hispid. Leaves ovate, truncate, serrate, acuminate. Male flowers in racemes, leaf-opposed; stamens 3. Capsules globose; seeds globose.

Fl. & Fr.: Nov. - Feb.

Habitat: On hedges.

Distrib.: China, India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Plant diaphoretic. Juice is applied to itchy eruptions on skin.

Specimens examined: (Total 50) VB 2275.

2. *T. plukenetii* R.M. Sm. in Kew Bull. 37: 688. 1983; FTC 3: 1480. 1983; FTN 2: 241. 1987; FIFTC t. 582. 1988. *T. cannabina* L. f., Suppl. Pl. 415. 1782, nom. illeg.; FPM 1333. 1925. *T. involucrata* L. var. *cannabina* (L. f.) Müll.-Arg. in DC., Prodr. 15: 944. 1866; FBI 5: 485. 1888. [*Karunchenthatti*]

Leaves crenate, acute, hirsute. Male flowers in axillary cymes; stamens 3. Capsules globose; seeds globose.

Fl. & Fr.: July - Feb.

Habitat: Wastelands, with *Blepharis maderaspatensis*, *Scutia myrtina* etc.

Distrib.: India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Roots diaphoretic; their decoction used in bronchial troubles.

Specimens examined: (Total 55) KSK 103322; PD & PU 103556.

Codiaeum variegatum (L.) Juss., *Pedilanthus tithymaloides* (L.) Poir., and *Synadenium grantii* Hook. f., all shrubs, are grown in gardens and hedges.

91. URTICACEAE

Pouzolzia Gaudich.

Tropics, ca 50 species, 12 in India, 8 in Tamil Nadu and one in GM.

P. zeylanica (L.) Benn., Pl. Jav. Rar. 1: 67. 1838; FTC 3: 1497. 1983; FTN 2: 249. 1987. *Parietaria zeylanica* L., Sp. Pl. 1052. 1753. *Pouzolzia indica* (L.) Gaudich., Voy. Uranie 12: 503. 1830; Wight, Icon. t. 1980, f. 1. & 2100, f. 40. 1853; FBI 5: 581. 1888; FPM 1382. 1928. *Parietaria indica* L., Mant. Pl. 128. 1767. [*Kallurki*]

Monoecious shrub. Leaves elliptic-ovate, rounded, entire, acute. Flowers in clusters. Tepals 4, free in male flowers, connate in female flowers. Achenes 2-winged.

Fl. & Fr.: Jan. - March.

Habitat: Wet sandy places.

Distrib.: India, Sri Lanka, Japan and Malesia. TN: Almost all districts. GM: Mainland coast, occasional.

Uses: Leaves used as vulnerary and a cicatrizant for gangrenous ulcers. Poultice of herb applied to sores and boils.

Specimens examined: (Total 38) TAR 1518 (CAL); VB 1987.

Pilea microphylla (L.) Liebm., the 'gun powder plant', with very small leaves, is cultivated in gardens.

92. MORACEAE

Ficus L.

Tropics and subtropics, ca 800 species, 70 in India, 32 in Tamil Nadu and 3 in GM.

Key to the species

- 1a. Lateral nerves in leaves 11 - 13 pairs; ovary white 1. *F. amplissima*
b. Lateral nerves in leaves 6 - 10 pairs; ovary dark brown to red-brown 2
- 2a. Aerial roots present; leaves obtuse-subacute; figs 1.5 - 2 cm across, red when ripe 2. *F. benghalensis*
b. Aerial roots absent; leaves cuspidate; figs 4 - 6 mm across, pink-purple or black when ripe 3. *F. religiosa*

1. *F. amplissima* Sm. in Rees, Cycl. 14: 68. 1810; RHFC 3: 242. 1981; FTC 3: 1515. 1983; FTN 2: 251. 1987. *F. tsiela* Roxb. ex Buch.-Ham. in Trans. Linn. Soc. London, Bot. 15: 149. 1826; Wight, Icon. t. 668. 1840; FBI 5: 515. 1888; FPM 1362. 1928. [*Ichu*]

Tree. Leaves ovate-oblong, truncate-rounded, entire, gradually acute. Figs monoecious. Tepals 3, brownish. Stamen 1. Ovary reniform. Achenes smooth.

Fl. & Fr.: Sept.- Dec.

Habitat: Along roadsides, often grown for its shade.

Distrib.: Maldives, S. India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Specimens examined: (Total 18) VB 1812.

2. *F. benghalensis* L., Sp. Pl. 1059. 1753; King in Ann. Roy. Bot. Gard. (Calcutta) 1: 118, t. 13. 1888; FBI 5: 449. 1888; FPM 1361. 1928; RHFC 3: 251. 1981; FTC 3: 1518. 1983; FTN 2: 252. 1987. *Urostigma benghalense* (L.) Gasp., Nov. Gen. Fic. 7. 1844; Wight, Icon. t. 1989. 1853. [*Aalamaram*]

Lofty tree. Leaves elliptic-ovate, rounded, entire, obtuse-subacute. Figs monoecious. Tepals 3 - 5, brownish. Stamen 1. Ovary obovoid-globose. Achenes globose-ellipsoid.

Fl. & Fr.: May - Aug.

Habitat: Sandy localities and road sides.

Distrib.: India, Pakistan and Sri Lanka. TN: All districts. GM: Frequent on mainland coast and Kurusadai, Muya and Nallathanni Islands.

Uses: Leaves lopped for fodder. Latex applied in rheumatism and lumbago. Infusion of bark considered tonic and astringent, used in diarrhoea, dysentery and diabetes.

Specimens examined: (Total 65) Ku Is. PD 100602; Mu Is. PD 100649; Nt Is. PD 102367.

3. *F. religiosa* L., Sp. Pl. 1059. 1753; FSSI t. 314. 1873; FBI 5: 513. 1888; FPM 1363. 1928; RHFC 3: 236. 1981; FTC 3: 1527. 1983; FTN 2: 255. 1987. [*Arasamaram*]

Lofty tree. Leaves broadly ovate, truncate, sinuate, abruptly acuminate, cuspidate. Figs monoecious. Tepals 2 in male flowers. Stamen 1. Tepals 3 - 4 in female flowers. Ovary ovoid-oblong. Achenes smooth.

Fl. & Fr.: March - April.

Habitat: Sandy localities and road sides.

Distrib.: India to SE. Asia. TN: All districts. GM: Mainland coast, frequent. Rare on Manoli Island.

Uses: Leaves used as fodder. Bark infusion used for ulcers and skin troubles.

Specimens examined: (Total 26) PD 100522; VB 1564.

Ficus fruits are eaten by birds and dispersed (Ridley, 1930; Balasubramanian, 1996). Enhanced germination in *Ficus* seeds has also been reported (Midya & Bramhachary, 1991; Balasubramanian & al., 1998). But then they are very poorly represented on islands.

Ficus elastica Roxb. ex Hornem., Indian Rubber, is sometimes cultivated in gardens.

93. CASUARINACEAE

Casuarina L.

Old World tropics, ca 70 species, 5 in India and Tamil Nadu and one in GM.

C. litorea L., Diss. Stickman 12. 1754 (as "*Casaarina*"); FTN 2: 257. 1987. *C. equisetifolia* L., Amoen. Acad. 4: 143. 1759 (as "*equisefolia*"); FBI 5: 598. 1888; FPM 1389. 1928; IFTC t. 681. 1982; FTC 3: 1536. 1983. FTN 2: 257. 1987. [*Chavuku*]

Tree, 10 - 15 m high; branches drooping; branchlets filiform, striate. Leaves scaly. Spikes cylindrical. Tepals 2. Fruits oblong with persistent bracts and bracteoles, stramineous brown.

Fl. & Fr.: Oct. - Feb.

Habitat: Planted on sandy coasts, particularly abundant on way from Rameswaram to Dhanushkodi.

Distrib.: Australia, Malay Islands, and Pacific. Elsewhere cultivated.

Specimens examined: (Total 34) PD 100403.

94. HYDROCHARITACEAE

Key to the genera

- 1a. Freshwater plants 2
- b. Marine plants 5
- 2a. Leaves suborbicular; spathes winged 5. *Ottelia*
- b. Leaves oblong or ribbon-like; spathes not winged 3
- 3a. Plants rooting at nodes; fruits cylindrical 3. *Hydrilla*
- b. Plants not rooting at nodes; fruits ovoid or oblong 4
- 4a. Fruits ovoid; seeds ellipsoid 4. *Lagarosiphon*
- b. Fruits oblong; seeds cylindrical 7. *Vallisneria*
- 5a. Leaves differentiated into petiole and lamina 2. *Halophila*
- b. Leaves not differentiated into petiole and lamina 6
- 6a. Leaves less than 15 cm long; fruits globose 6. *Thalassia*
- b. Leaves more than 15 cm long; fruits ovoid 1. *Enhalus*

1. *Enhalus* Rich.

Indomalaysia to Australia, unispecific.

E. acoroides (L. f.) Royle, Ill. Bot. Himal. Mts. 453. 1840; FPM 1886. 1935; Hartog in FM 1, 5: 402. 1957 & Seagrass. 215. 1970; FTN 3: 1. 1989; SCC 19. 1992; RHFC 9: 95. 1995. *Stratiotes acoroides* L. f., Suppl. Pl. 268. 1782. *Enhalus königii* Rich. in Mem. Cl. Sci. Math. Inst. Natf. France 12: 64, 78. 1812; FBI 5: 663. 1888. (Fig. 55)

Dioecious, robust, submerged, rhizomatous herb; rhizomes creeping, to 2 cm thick, densely clothed with fibrous decayed leaves; roots cord-like, ca 30 cm long; stem erect. Leaves 4 - 5, ribbon-like, entire, obtuse or emarginate, 40 - 100 x 1.5 - 2 cm. Male flowers many on a conical central axis, globose, 3 - 6 mm, spathed; spathes 2, subequal, lanceolate, persistent; sepals 3, elliptic, entire, ca 1.5 x 0.7 mm, hyaline; petals 3, similar to sepals; stamens 3, ca 1.2 mm long; anthers elliptic. Peduncle of female inflorescence to 1.5 m long, dilated at apex, 1-flowered, spathed; spathes 2, linear-oblong, 2.5 - 7 cm long, persistent; sepals 3, oblong, acute, 1 - 1.5 cm long; petals 3, linear-oblong, obtuse, 1.3 - 2 cm long; ovary ovoid, ca 1 x 0.6 cm; styles 5 - 6; stigmas 10 - 12, sticky; fruits 2 - 5 x 1 - 3 cm with persistent appendages, greenish; seeds 10 - 12, obconical or obovoid, ca 2.5 mm across, whitish or creamy.

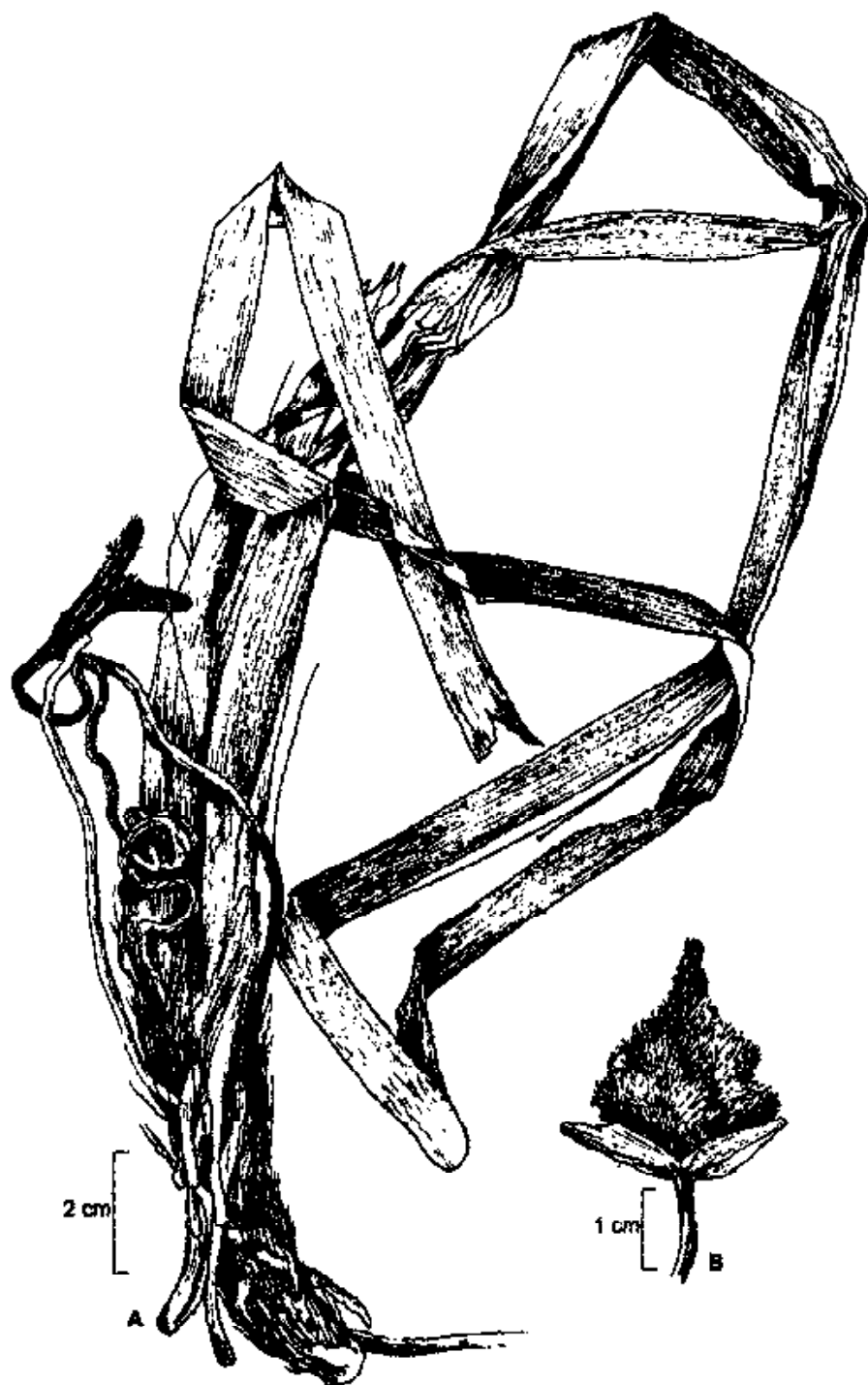


Fig. 42(A&B). *Eshulus acroides* (L.f.) Royle
A. Habit B. Fruit

Fl. & Fr.: Almost throughout the year.

Habitat: Muddy bottom of shallow waters of tidal and subtidal zones.

Distrib.: TN: Pudukkottai, Ramanathapuram and Thanjavur. GM: Common around Mandapam and Keelakarai groups of islands only. Fruits with the spring-like stalks are commonly cast ashore on islands.

Use: Seeds and rhizomes are edible.

Specimens examined: (Total 15) NP & KR 85310; Ku Is. PD & PU 106902; NP & KR 85332; Pu Is. KSK 101686; Th Is. PD 101539.

2. *Halophila* Thouars

Tropics, coasts of the West Indies, Indian and Pacific Oceans, 9 species, 5 in India.

Key to the species

1a. Nodes 6 - 12-leaved; leaves without cross-veins	1. <i>H. beccarii</i>
b. Nodes 2-leaved; leaves with cross-veins	2
2a. Leaves glabrous, entire along margins	3
b. Leaves hairy, serrulate along margins	4
3a. Cross-veins in leaves less than 13 pairs	4. <i>H. ovata</i>
b. Cross-veins in leaves more than 13 pairs	3. <i>H. ovalis</i>
4a. Plant monoecious; fruits globose	2. <i>H. decipiens</i>
b. Plant dioecious; fruits ovoid	5. <i>H. stipulacea</i>

1. *H. beccarii* Asch. in Nuovo Giorn. Bot. Ital. 3: 302. 1871; Hartog in FM 1, 5: 411. 1957 & Seagrass. 261. 1970; FTC 3: 1544. 1983; FTN 3: 1. 1989; SCCI 14. 1992; RHFC 9: 92. 1995.

Monoecious, rhizomatous herb; root one at each node, to 7 cm long; internodes 1 - 4.5 cm long; scales 2, obcordate, convolute, emarginate, subacute, hyaline; stem erect, to 2.5 cm. Leaves oblong-lanceolate, acute, entire or spinulose along margins, 5 - 16 x 2 - 3 mm, glabrous; petioles 3 - 15 mm long; sheaths 2 - 4 mm long, hyaline. Flower solitary, axillary, spathed; spathes 2, oblong-lanceolate, acute, ca 4 mm long. Male flowers pedicellate; tepals 3, oblong, obtuse, ca 2.5 mm long; stamens 3; anthers linear. Female flowers sessile or subsessile; ovary oblong, 1 - 2 mm long; hypanthium to 2 mm long; styles 2 - 3, unequal, filiform, papillose; fruits ellipsoid-ovoid, 4 - 5 mm long with curved beak; seeds 1 - 4, globose, ca 1.2 mm, reticulate, brownish.

Fl. & Fr.: Jan. - March & Aug. - Oct.

Habitat: Shallow sheltered backwaters and mangrove swamps, in pure formations or with species of *Halodule* and *Halophila*.

Distrib.: Bay of Bengal and S. China. TN: S. Arcot and Tuticorin. GM: Earlier collected only on mainland shores at Tuticorin and Punnakayal. Appears rare.

Specimens examined: (Total 10) NP & KR 85394; KR 85731; KR & RG 86896.

2. *H. decipiens* Ostenf. in Bot. Tidsskr. 24: 260. 1920; Hartog in FM 1, 5: 410, t. 18. 1957 & Seagrass. 254. 1970; Lakshm. & al. in Curr. Sci. 57: 199. 1988; Parthas. & al. in Aquat. Bot. 32: 179. 1988; FTN 3: 1. 1989; SCCI 16. 1992; RHFC 9: 93. 1995.

Rhizomatous herb; root one at each node; internodes 1.5 - 3.5 cm long; scales 2, amplexicaul, obovate, mucronate, serrulate or entire; stem 3 - 5 cm long. Leaves oblong-elliptic, obtuse-acute, 1 - 2.5 x 0.3 - 0.6 cm; cross-veins 5 - 9 pairs; petioles to 1 cm long. Flower solitary, axillary, spathed; spathes 2, ovate, entire or serrulate, acuminate-mucronate, 3 - 4 mm long, hairy beneath. Male flower: tepals 3, ovate-elliptic, obtuse or hooded, ca 2 mm long, hyaline; stamens 3; anthers linear. Female flower: ovary oblong-ovoid, ca 1.5 mm long; hypanthium 1 - 2 mm long; styles 3, papillose adaxially; fruits ca 4 mm; seeds 2 - 5, globose, ca 0.5 mm, reticulate, pale white.

Fl. & Fr.: Jan. - March.

Habitat: Soft muddy sand to fine coarse sand, usually in pure formations, sometimes with algae like *Caulerpa scalpelliformis* and *Ulva reticulata*.

Distrib.: Pantropical. TN: Tuticorin. GM: Rare, earlier collected only on Tuticorin mainland shores.

Specimens examined: (Total 3) NP & KR 85383, 85384; KR & RG 88106.

3. *H. ovalis* (R. Br.) Hook. f., Fl. Tasman. 2: 45. 1858; FPM 1885. 1935; Hartog in FM 1, 5: 408. 1957 & Seagrass. 240. 1970; FTC 3: 1544. 1983; FTN 3: 1. 1989; SCCI 18. 1992; RHFC 9: 93. 1995. *Caulinia ovalis* R. Br., Prodr. 339. 1810. *Halophila ovata* auct. non Gaudich. 1827: FBI 5: 663. 1888; FPM 1398. 1928. [*Aathu ponnaganni*, *Alaivaarf*]

Diocious, rhizomatous herb; root one at each node; internodes to 6 cm long; scales 2, suborbicular, 4 - 9 x 3 - 8 mm, transparent. Leaves oblong-elliptic or linear-elliptic, obtuse, 1.2 - 7.5 cm long; cross-veins 13 - 20 pairs; petioles subterete, ca 2 cm long. Flower solitary, axillary, 2-spathed. Male flower to 4 cm long; spathes elliptic-lanceolate, acuminate or hooded, subequal, 5 - 10 mm long, transparent; tepals 3, broadly elliptic, obtuse or hooded, 3 - 5 mm long; stamens 3; anthers oblong. Female flower 2 - 5 cm long; spathes ovate-oblong or lanceolate, 4 - 11 mm long, transparent; ovary ellipsoid, ca 1 mm long; styles 3; fruits

ovoid-ellipsoid, 2 - 5 mm long, white to pale yellowish; seeds 18 - 27, globose-ellipsoid, ca 0.5 mm, reticulate, brownish.

Fl. & Fr.: Almost throughout the year.

Habitat: Muddy substratum in tidal and subtidal zones, with other seagrasses.

Distrib.: Australia to Indo W. Pacific. TN: Chengalpattu, Kanyakumari, Pudukkottai, Ramanathapuram, S. Arcot, Thanjavur, Tirunelveli and Tuticorin. GM: Common along mainland shores and Appa, Karaichalli, Kurusadai, Muyal, Pullivasal and Van Islands.

Use: Occasionally used as a manure for coconut and other plantations.

Specimens examined (Total 45) PD & PU 103500; Ap Is. PD 101587; Ku Is. KR & RG 86850; Kc Is. PD & PU 107314; Mu Is. PD & PU 106817; Pu Is. PD & PU 106850; Va Is. PD & PU 107524

4. *H. ovata* Gaudich., Voy. Uranie t. 40, f. 1. 1827; Hartog, Seagrass. 251. 1970 & in FM 1, 6: Addend. 953. 1972; FTN 3: 2. 1989; SCCI 28. 1992. *H. minor* (Zoll.) Hartog in Steenis, Fl. Males. 1, 5: 410, f. 17b. 1957. *Lemnopsis minor* Zoll., Syst. Verz. 1: 75. 1854. [*Elaipaasi*, *Murungaipaasi*]

Dioecious, rhizomatous herb; root one at each node, to 6 cm long; internodes to 4.2 cm long; scales 2, obovate or oblong-elliptic, retuse, convolute, 1.5 - 4 mm long, transparent. Leaves oblong-elliptic or linear-oblong, acute or obtuse; cross-veins 3 - 9 pairs, subopposite or alternate; petioles to 2.5 cm long. Flower solitary, axillary, 2-spathed. Male flower to 3 cm long; spathes elliptic-lanceolate or lanceolate, acuminate; tepals 3, elliptic, obtuse or hooded, 3 - 4 mm long; stamens 3; anthers oblong. Female flower 1.2 - 3 cm long; spathes lanceolate; ovary ellipsoid, ca 1 mm long; fruits ovoid-ellipsoid; seeds ca 20, globose-ellipsoid, ca 0.8 mm, reticulate, brownish.

Fl. & Fr.: Throughout the year.

Habitat: Fine sandy soft muddy bottoms, in pure formations or sometimes with species of *Halodule* and *Halophila*.

Distrib.: Indian and Pacific Oceans. TN: Pudukkottai, Ramanathapuram, S. Arcot, Thanjavur, Tirunelveli and Tuticorin. GM: Common along mainland shores and Kaswari, Pullivasal, Manoli, Muyal and Van Islands.

Specimens examined: (Total 18) PD 107400; Ka Is. KKL 2945; Ma Is. PD 101119; Mu Is. KKL 2919; Pu Is. PD 100546; Va Is. KKL 2901.

5. *H. stipulacea* (Forssk.) Asch. in Bot. Zeitung (Berlin) 25: 95. 1867; Hartog in FM 1, 5: 411. 1957 & Seagrass. 258. 1970; FTN 3: 2. 1989; SCCI 30. 1992. *Zostera stipulacea* Forssk., Fl. Aegypt.-Arab. 158. 1775. *Halophila balfourii* Soler. in Beih. Bot. Centralbl. 30: 47. 1913; FPM 1398. 1928. [*Elaipasi*, *Kadalpassi*]

Rhizomatous herb; root one at each node, to 7.5 cm long; internodes to 4.5 cm long; scales 2, broadly elliptic, 4 - 12 mm long, transparent. Leaves linear-oblong, obtuse; cross-veins 4 - 14 pairs; petioles to 1.2 cm long. Flower solitary, axillary, spathed; spathes 2, oblong - elliptic or ovate, obtuse, ciliate on midrib. Male flower not known. Female flower ca 1.7 cm long; ovary ovoid or ellipsoid, ca 1 mm across; hypanthium to 4 mm long; styles 3, slender, papillose adaxially; fruits ca 3 mm across; seeds ca 25, globose.

Fl. & Fr.: Feb. - April.

Habitat: Muddy substratum, with species of *Halodule*, *Halophila* and *Cymodocea rotundata*.

Distrib.: W. Indian Ocean. TN: Pudukkottai, Ramanathapuram, Thanjavur and Tuticorin. GM: Rare. Earlier collected along mainland shores at Keelakarai, Pudumadam and Thonithurai and Kurusadai Island, all in Ramanathapuram. Now collected along Kaswari Island.

Use: *Halophila* leaf extract with turmeric is used to cure cuts and burns by local people.

Specimens examined: (Total 14) KKL 3001; Ka Is. PD 102201; Ku Is. KKL 3014; KR & RG 86837.

3. *Hydrilla* Rich.

Old world tropics, unispecific.

H. verticillata (L. f.) Royle, Ill. Bot. Himal. Mts. 376. 1839; FBI 5: 659. 1888; FPM 1396. 1928; FM 1, 5: 385. 1957; FTC 3: 1545. 1983; FTN 3: 2. 1989; RHFC 9: 101. 1995. *Serpicula verticillata* L. f., Suppl. Pl. 416. 1782; Roxb., Pl. Coromandel t. 164. 1802.

Submerged, floating herb; stem slender, rooting at nodes. Leaves 3 - 4 in a whorl, oblong, acute, serrate. Male flowers: spathe axillary, solitary, subglobose; pedicels ca 1 mm long; sepals 3, ovate, obtuse, ca 1.2 mm long; petals 3, oblong-spatulate; stamens 3. Female flowers: spathe tubular, ca 3 mm long; sepals 3, oblong-lanceolate, ca 2.5 mm long; petals 3, linear, ca 1.8 mm long, white; ovary cylindrical, ca 3.5 mm long; styles 3; fruits cylindrical, ca 5 mm long, muricate.

Fl. & Fr.: Nov. - Feb.

Habitat: Stagnant ponds.

Distrib.: TN: All districts. GM: Mainland coast, frequent.

Uses: Used in aquaria; a good oxygenator, also eaten by some types of fish. Used as a green manure after drying.

Specimens examined: (Total 19) PD & PU 107070; SAM 104688.

4. *Lagarosiphon* Harvey

Trop. Africa and Madagascar, 9 species and one in India.

L. alternifolia (Roxb.) Druce in Bot. Soc. Exch. Club Brit. Isles 1916: 630. 1917; FPM 1396. 1928; PIAS 93: 15. 1984. *Vallisneria alternifolia* Roxb., Fl. Ind. 3: 750. 1832; IIB 1: t. 11. 1840. *Nechamandra roxburghii* Planch. in Ann. Sci. Nat. Bot. 11: 78. 1849. *Nechamandra alternifolia* (Roxb.) Thwaites, Enum. Pl. Zeyl. 332. 1864; IFTC t. 687. 1982; FTC 3: 1546. 1983; FTN 3: 2. 1989; RHFC 9: 103. 1995. *Lagarosiphon roxburghii* (Planch.) Benth. in Benth. & Hook. f., Gen. Pl. 3: 451. 1880; FBI 5: 659. 1888.

Dioecious, submerged herb; branches elongate, glabrous. Leaves oblong-linear or elliptic-oblong, membranous. Male flowers numerous; spathe sessile, axillary, solitary, ovate-oblong; sepals 3; petals 3; stamens 2 or 3; staminodes sometimes present. Female flower: spathe similar to that of male flower; sepals 3; petals 2 or 3; ovary obovoid; styles 3; fruits ovoid; seeds numerous, ellipsoid, pitted.

Fl. & Fr.: Oct. - May.

Habitat: Freshwater streams, with *Ceratophyllum demersum*, *Vallisneria natans* etc.

Distrib.: India, Nepal and Sri Lanka. TN: Almost all districts. GM: Mainland coast, frequent.

Specimens examined: (Total 51) PD & PU 107014, 107245.

5. *Ottella* Pers.

Tropics and subtropics, ca 30 species and one in India.

O. alismoides (L.) Pers., Syn. Pl. 1: 400. 1805; FBI 5: 662. 1888; FPM 1398. 1928; FM 1, 5: 398. 1957; IFTC t. 688. 1982; FTC 3: 1546. 1983; FTN 3: 2. 1989; RHFC 9: 100. 1995.

Submerged, succulent herb. Leaves floating, ovate-suborbicular, prominently undulate; petioles trigonous, to 15 cm long. Flower solitary; spathe winged, 2 - 4 cm long; wings undulate; mouth 5 - 6-toothed. Sepals 3, oblong, ca 1 cm long. Petals 3, orbicular, ca 2 cm, white. Stamens 6; anthers linear. Ovary narrowly oblong, as long as spathe. Fruits ellipsoid, winged, ca 3 cm long; seeds many, oblong with pulpy testa.

Fl. & Fr.: May - Jan.

Habitat: Still waters in perennial streams and tanks, with *Monochoria vaginalis*, *Pistia stratiotes* etc.

Distrib.: Australia, throughout Trop. Asia and Sri Lanka. TN: Almost all districts. GM: Mainland coast, common.

Uses: Leaves used as a vegetable. Fruits edible. Plant rubefacient. Leaves used in topicals to cure haemorrhoids.

Specimens examined: (Total 10) PD 102271; PD & PU 107012.

6. *Thalassia* Banks & Sol. ex C. König

Caribbean, Indian and Pacific Oceans, 2 species and one in India.

T. hemprichii (Ehrenb.) Asch. in Petermanns Geogr. Mitt. 17: 242. 1871; Hartog in FM 1, 5: 406. 1957 & Seagrass. 232. 1970; Lakshm. & Rajeswari in Curr. Sci. 51: 373. 1982; FIN 3: 2, 1989; SCCI 33. 1992; RHFC 9: 97. 1995. *Schizotheca hemprichii* Ehrenb. in Abh. Königl. Akad. Wiss. Berlin 1832(1): 429. 1834.

Dioecious, rhizomatous herb; root one at each node, to 19 cm long; internodes 2 - 5 mm long with persistent scale-scars; scales ovate, truncate, obtuse, 5 - 8 mm long, hyaline; stem to 9 cm long; sheaths obconical, ca 11 cm long, hyaline. Leaves linear, falcate, obtuse or emarginate, serrulate at apex, entire or serrulate, ca 15 cm long, 7 - 13-nerved. Flowers spathed; spathes oblong-lanceolate, acute or obtuse, entire or serrulate at apex, 1.5 - 2.5 cm long. Male flowers: peduncle ca 3 cm long; pedicels 2 - 3 mm long; tepals 3, elliptic; stamens 3 - 12; anthers oblong. Female flowers: peduncle 1 - 1.5 cm long; pedicels very short; tepals 3, elliptic; ovary conical; hypanthium 2 - 3 mm long; styles 6; stigmas 10 - 15 mm long; fruits globose, 1.4 - 2 cm, 3-ridged, warty; seeds 3 - 9, obconical-obovoid, 6 - 8 mm long, dark brownish.

Fl. & Fr.: March - April.

Habitat: Muddy substratum, in pure formations, sometimes with *Cymodocea* spp. and *Enhalus acoroides*.

Distrib.: Indian and Trop. W. Pacific Oceans. TN: Chengalpattu, Pudukkottai and Ramanathapuram. GM: Common along mainland shores and Kurusadai, Manoli, Moyal and Pulliyasai Islands.

Specimens examined: (Total 22) KR & RG 86869; Ku Is. KKL 2868; KR 85898; Ma Is. KKL 2922; Mu Is. KKL 2914; Pu Is. KKL 2930.

7. *Vallisneria* L.

Trop. and warm temperate regions, 5 species, 2 in India and one in Tamil Nadu.

V. natans (Lour.) Hara in J. Jap. Bot. 49: 136. 1974; FTC 3: 1547. 1983; FTN 2: 3. 1989. *Physkium natans* Lour., Fl. Cochinch. 663. 1790. *Vallisneria spiralis* auct. non L. 1753; IIB 1: tt. 23 & 24. 1840; FBI 5: 660. 1888, p.p.; FPM 1396. 1928.

Submerged herb. Leaves radical, ribbon-like, to 40 cm long, serrulate. Spathe 3-lobed. Flowers unisexual; sepals petaloid, 3-toothed; petals minute or absent. Male flowers clustered on a short peduncle; stamens 1 - 3. Female flower solitary; pedicel filiform, to 20 cm long, coiled and spring-like in fruit; ovary oblong; styles 3; stigmas 3-lobed; fruits oblong, ca 7 cm long; seeds cylindrical.

Fl. & Fr.: Oct. - March.

Habitat: Still waters, with *Najas marina*, *Salvinia molesta* etc.

Distrib.: Spain and warm regions of the Old and New Worlds, throughout India. TN: Almost all districts. GM: Near-still waters along the edges of the Tambraparani river near Athur and a stream near Thiruchendur, common. Elsewhere rare.

Uses: Plant stomachic, refrigerant and demulcent; also used in leucorrhoea. Young leaves eaten in salads.

Specimens examined: (Total 32) PD & PU 107271, 107281.

95. MUSACEAE

Musa paradisiaca L. [*Valai*], the banana, with a number of varieties, is cultivated for its fruits; fruits eaten raw or cooked.

96. CANNACEAE

Canna indica L. is cultivated as an ornamental in gardens for the flowers of different shades.

97. AMARYLLIDACEAE

Crinum L.

Tropics and subtropics, ca 120 species, 11 in India, 4 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|-------------------------|
| 1a. Umbels 15 - 20-flowered; perianth-lobes linear, white | 1. <i>C. asiaticum</i> |
| b. Umbels 5 - 7-flowered; perianth-lobes lanceolate, white with pink tinge ... | 2. <i>C. latifolium</i> |

1. *C. asiaticum* L., Sp. Pl. 292. 1753; FBI 6: 280. 1892; FPM 1504. 1928; FTC 3: 1624. 1983; FTN 3: 32. 1989. *C. toxicarium* Roxb., Fl. Ind. 2: 134. 1824; Wight, Icon. tt. 2021 & 2022. 1853.

Bulbous herb. Leaves radical, linear-lanceolate, shortly acuminate. Fruits subglobose.

Fl. & Fr.: July - Dec.

Distrib.: India and Sri Lanka. TN: All districts, also cultivated. GM: Mainland coast, cultivated.

Uses: Bulb emetic; also used in biliousness and in strangury and other urinary troubles. Leaves and roots diaphoretic and emetic, used as a substitute for ipecac.

Specimens examined: (Total 5) KSK 102791; PD & PU 106848.

2. *C. latifolium* L., Sp. Pl. 291. 1753; Wight, Icon. tt. 2019 & 2020. 1853; FBI 6: 283. 1892; FPM 1504. 1824; FTC 3: 1625. 1983; FTN 3: 33. 1989. [*Vishamungi*]

Bulbous herb; bulbs globose, 3 - 10 cm. Leaves radical, linear-lanceolate, undulate, acuminate. Scape ca 40 cm long. Bracts 2, oblong-lanceolate, ca 8 cm long. Perianth-tube ca 12 cm long, cylindric, curved, white (pinkish when dry); lobes lanceolate, acuminate, ca 9 x 1.5 cm. Stamens 6, unequal; filaments filiform, 5 - 6 cm long; anthers versatile, ca 3 cm long. Ovary oblong, ca 1 cm long; style slender, longer than stamens, pale reddish; stigma subcapitate. Fruits subglobose, ca 3.5 cm across; seed one in each locule, trigonous, ca 1.5 cm across, dirty white, sometimes partly greenish.

Fl. & Fr.: Nov. - Jan.

Habitat: Sandy soil, with *Caralluma adscendens* and *Cardiospermum canescens*.

Distrib.: Old World tropics. TN: Coimbatore, Madurai, Nilgiri, Tirunelveli and Tuticorin. GM: Occasional on Appa, Karaichalli and Kurusadai Islands. Not common on mainland coast.

The seeds, most of which sprout soon after falling from the fruits right under the plant, are capable of floating (Ridley, 1930). However, most of them seem to perish from the absence of freshwater. As the plants mostly occur a little away from the shore, a study of their dispersal to the islands especially when it is not common on the mainland coast must be interesting.

Use: Bulbs used in rheumatism and leaf juice in earache.

Specimens examined: (Total 17) Ku Is. VB 1791; SVP & DD 88164; Kc Is. PD & PU 107306; SAM 104739.

98. AGAVACEAE

Key to the genera

- | | |
|---|-----------------------|
| 1a. Shrubs; leaves not semiterete, spinescent along margins;
inflorescence a panicle | 1. <i>Agave</i> |
| b. Herbs; leaves semiterete, not spinescent; inflorescence a raceme | 2. <i>Sansevieria</i> |

1. *Agave* L.

Southern United States and Trop. S. America, ca 100 species, 8 in India, 4 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|------------------------|
| 1a. Leaves oblong-lanceolate, spinescent at apex and margins | 1. <i>A. cantala</i> |
| b. Leaves linear-oblong, acute, not spinescent along margins..... | 2. <i>A. vera-cruz</i> |

1. *A. cantala* Roxb., Fl. Ind. 2: 167. 1832; FPM 1505. 1928; FTN 3: 34. 1989. *A. americana* auct. non L. 1753; FBI 6: 277. 1892; FPM 1505. 1982. [*Kathalai*]

Shrub; stem stout. Leaves radical, 80 - 100 x 10 - 15 cm. Flowers in terminal panicles; scape ca 5 m high, woody. Perianth tubular for ca 2.3 cm, 6-lobed; lobes ovate, acute, ca 2 cm long. Stamens 6. Style filiform; stigma 3-lobed. Flowers often modified into bulbils.

Fl. & Fr.: April - June.

Native of America. Often planted as a hedge plant.

2. *A. vera-cruz* Mill., Gard. Dict. ed. 8, n. 7. 1768; FPM 1505. 1928; FTN 3: 34. 1989. [*Kathalai*]

Shrub; stem stout. Leaves crowded in rosettes, succulent, subglaucous, 50 - 100 x 8 - 12 cm. Flowers in terminal panicles; scape 4 - 6 m high, woody. Perianth tubular for ca 2 cm, 6-lobed. Fruits elliptic-oblong, ca 3 cm long.

Fl. & Fr.: March - July.

Habitat: Native of America. Often planted as a hedge plant.

2. *Sansevieria* Thunb. nom. cons.

Trop. and S. Africa, S. Asia, Arabia and Madagascar, ca 50 species, 4 in India and one in Tamil Nadu.

S. roxburghiana Schult. & Schult. f., Syst. Veg. 7: 357, f. 12 D & E. 1829; FBI 6: 271. 1892; FPM 1520. 1928; FTC 3: 1631. 1983; FTN 3: 34. 1989. *S. zeylanica* Roxb., Pl. Coromandel t. 184. 1805, non (L.) Willd. 1799. [*Marul*]

Perennial herb; rhizome creeping. Leaves basal, sessile, semiterete, 25 - 35 x 2 - 3 cm with scattered black horizontal bars above. Racemes to 90 cm long; flowers dense. Perianth tubular for ca 1.2 cm, 6-lobed; lobes ca 1 mm long. Stamens 6. Ovary obovoid, ca 1.2 mm long; style linear, filiform; stigma simple, obscurely lobed.

Fl. & Fr.: Jan. - Feb.

Habitat: Coastal scrub jungles, in shades of *Euphorbia antiquorum*, also cultivated as a hedge plant.

Distrib.: S. India and Sri Lanka. TN: Most districts. GM: Mainland coast in Tirunelveli, occasional.

Use: Leaf juice is boiled and used in earache.

99. LILIACEAE

1a. Twining or climbing herbs	2
b. Erect herbs	3
2a. Plants armed; cladodes acicular; leaves scaly; perianth white	2. <i>Asparagus</i>
b. Plants unarmed; cladodes absent; leaves ovate-lanceolate; perianth scarlet red to orange yellow	5. <i>Gloriosa</i>
3a. Leaves succulent; perianth orange-coloured	1. <i>Aloe</i>
b. Leaves not succulent; perianth not orange-coloured	4

- | | |
|--|-----------------|
| 4a. Leaves oblong-elliptic; capsules subglobose | 7. Scilla |
| b. Leaves linear; capsules not subglobose | 5 |
| 5a. Bulbs subglobose-globose; perianth purplish | 6. Iphigenia |
| b. Bulbs ovoid or absent; perianth not purplish | 6 |
| 6a. Perianth-lobes white; capsules winged or angled | 3. Chlorophytum |
| b. Perianth-lobes pale yellowish or brownish; capsules neither winged nor angled | 7 |
| 7a. Perianth-lobes pale yellowish, more than 3-nerved; capsules obovoid | 4. Dipsadi |
| b. Perianth-lobes brownish, 2 - 3-nerved; capsules ellipsoid | 8. Urginea |

1. Aloe L.

Trop. and S. Africa, Madagascar and Arabia, ca 200 species and one in India.

A. vera (L.) Burm. f., Fl. Indica 83. 1768; FPM 1520. 1928; IFTC t. 740. 1982; FTC 3: 1639. 1983; FTN 3: 37. 1989. *A. perfoliata* L. var. *vera* L., Sp. Pl. 320. 1753. [*Sothukathalai*]

Erect herb. Leaves radical, succulent with thick transparent jelly-like substance inside, spinulose along margins, ca 60 x 7 cm, glaucous green with white patches. Scapes to 1 m long, usually simple, rarely 2 - 3-branched, cylindrical; bracts ovate-acuminate, ca 0.5 cm long, coriaceous. Flowers many, spiral, in a raceme, cylindrical, ca 3 cm long. Perianth 6-lobed; lobes linear-oblong, subacute or obtuse, ca 1.5 cm long, reddish orange. Stamens 6; filaments filiform, as long as perianth; anthers linear, versatile. Ovary oblong, ca 1 mm long; style cylindrical, ca 2.3 mm long; stigma capitate. Capsules ellipsoid-oblong, ca 1.5 x 1 cm, brownish.

Fl. & Fr.: Sept. - Jan.

Habitat: Sandy soil, in shades of trees and shrubs, with *Achyranthes aspera*, *Aerva persica*, *Cymbopogon caesioides* and *Indigofera oblongifolia*.

Distrib.: Native of the Mediterranean. TN: All districts. GM: Frequent on mainland coast and Anaipar, Appa, Karaichalli, Kuruasalai, Mural, Pullivasal, Puhvinichalli, Upputhanni and Van Islands.

Uses: Fresh juice of leaves is cathartic and refrigerant; used in liver and spleen ailments and eye troubles. Found useful in x-ray burns, dermatitis, cutaneous leishmaniasis and other skin disorders. Leaves and flower-stalks pickled. Leaves yield a fibre. A dye is prepared from the plant.

It is an ingredient in the herbal product, a tablet, 'Aloes Compound' and 'Aloes Compound (Vet)' (Anon., 1996a).

Specimens examined: (Total 23) An Is. KSK 102387; Ap Is. PD 101544; Kc Is. PD & PU 107299; Pu Is. PD 101424.

2. *Asparagus* L.

Old World tropics, 50 - 60 species, 19 in India, 7 in Tamil Nadu and one in GM.

A. racemosus Willd., Sp. Pl. 2: 152. 1799; Wight, Icon. t. 2056. 1853; FBI 6: 316. 1892; FPM 1517. 1928; FM 1, 9: 216. 1979; IFTC t. 741. 1982; FTC 3: 1639. 1983; FTN 3: 38. 1989. [*Thannervittankilangu*]

Climbing shrub; older stem woody, spinescent; cladodes falcate, 1 - 2 cm long. Racemes to 8 cm long, branched; bracts scarious; pedicels jointed in middle. Perianth white, 6-lobed; lobes obovate, obtuse or rounded, 2 - 5 mm long. Stamens 6, opposite perianth-lobes; filaments basally adnate, ca 1 mm long; anthers globose. Ovary obovoid, ca 2 mm long; style very short or stigma sessile, bifid. Berries globose, ca 5 mm, red.

Fl. & Fr.: Aug. - Jan.

Habitat: Sandy soil, on small trees like *Dichrostachys cinerea*, *Euphorbia antiquorum* and *Thespesia populnea*.

Distrib.: Australia, India, Java, Sri Lanka and Trop. Africa. TN: Almost all districts. GM: Frequent on mainland coast and common on Kurusadai, Manoli, Muyal, Pullivasal, Puluvinichalli, Pumarichan, Shingle and Thalairy Islands.

The red berries are likely to be dispersed by birds such as red-vented and white-browed bulbuls (Balasubramanian, 1996), hence common on islands.

Uses: Herb tonic, diuretic and galactagogue. Fresh root juice is mixed with honey and given in dyspepsia. It is also a constituent of medicinal oils used for nervous and rheumatic complaints. Known as 'satawari' in Indian medicine, it is an ingredient in a variety of Ayurvedic preparations such as 'Children tonic' used for vigour, in 'Gintona' capsule, an immunomodulator, 'Rasnik' a tonic, and 'Ashree' 'Amyron', 'Gypan', 'Deltaviton', 'Geri-forte', 'Lactare', 'Lukol', 'One-be', 'Revinin', 'Siotone', 'Suepentine' 'Vinomyn forte', all used as antiageing (Tripathi & al., 1996) and in the herbal product, 'Balawardhan' (capsules and drops) (Anon., 1996a). The plant as a herbal drug commands a price of Rs.47/- per kg in the Indian market (Anon., 1996b).

Specimens examined: (Total 109) PD & PU 10708, 107098; Ku Is. PD 100605; Pu Is. PD 101426; Sh Is. PD & PU 106863.

3. *Chlorophytum* Ker Gawl.

Old World tropics, 215 species, 12 in India, 8 in Tamil Nadu and one in GM.

C. laxum R. Br., Prodr. 277. 1810; FBI 6: 336. 1892; FPM 1526. 1928; FTN 3: 39. 1989. *Phalangium parviflorum* (Dalzell) Wight, Icon. t. 2039. 1853. *Chlorophytum parviflorum* Dalzell in Hooker's J. Bot. Kew Gard. Misc. 2: 141. 1850.

Perennial, scapigerous herb. Leaves 2-ranked, recurved, linear-lanceolate, acute, acuminate, 8 - 16 x 0.3 - 0.5 cm. Scape slender, flexuous, 10 - 15 cm long. Inflorescence a raceme. Perianth white. Capsules globose-oblong, 3-winged or angled; seeds suborbicular.

Fl. & Fr.: May - Oct.

Habitat: Open wastelands.

Distrib.: Paleotropics. TN: Coimbatore, Kanyakumari, Madurai, Tiruchirapalli and Tirunelveli. GM: Mainland coast, occasional. Collected on Tirunelveli coast.

Specimens examined: (Total 19) JGT 10.

4. *Dipcadi* Medik.

Africa, India and Mediterranean, ca 55 species, 9 in India and one in Tamil Nadu.

D. montanum (Dalzell) Baker var. *madrasicum* (Barnes & C.E.C. Fisch.) Deb & S. Dasgupta in J. Bombay Nat. Hist. Soc. 75: 59. 1978; FTN 3: 39. 1989. *D. madrasicum* Barnes & C.E.C. Fisch. in Bull. Misc. Inform. 1940: 301. 1941. (Fig. 56)

Bulbous herb; bulbs ovoid, 1 - 3 cm long. Leaves 2 - 3, linear, acute, glabrous. Scape 30 - 45 cm high, glabrous. Racemes 5 - 12-flowered; pedicels ca 1 cm long; bracts scarious, ca 1 cm long. Perianth campanulate, ca 1.5 cm long, 6-lobed; lobes subequal; outer 3 basally connate for 4 mm, oblong, rounded, fairly hooded at apex, 1.4 - 1.5 x 0.2 - 0.3 cm, coriaceous, pale yellowish green; nerves many in middle. Stamens 6; filaments connate for ca 8 mm; anthers versatile, linear-oblong, ca 4 mm long. Ovary obovoid, ca 7 x 2 mm; style simple, ca 4 mm long; stigma capitate. Capsules obovoid, deeply 3-lobed, stramineous; seeds ellipsoid, obscurely winged, brownish black.

Fl. & Fr.: Nov. - Jan.

Habitat: Sandy soil, under shade of *Acacia planifrons*, with *Eragrostis amabilis* and *Lopholepis ornithocephala*.

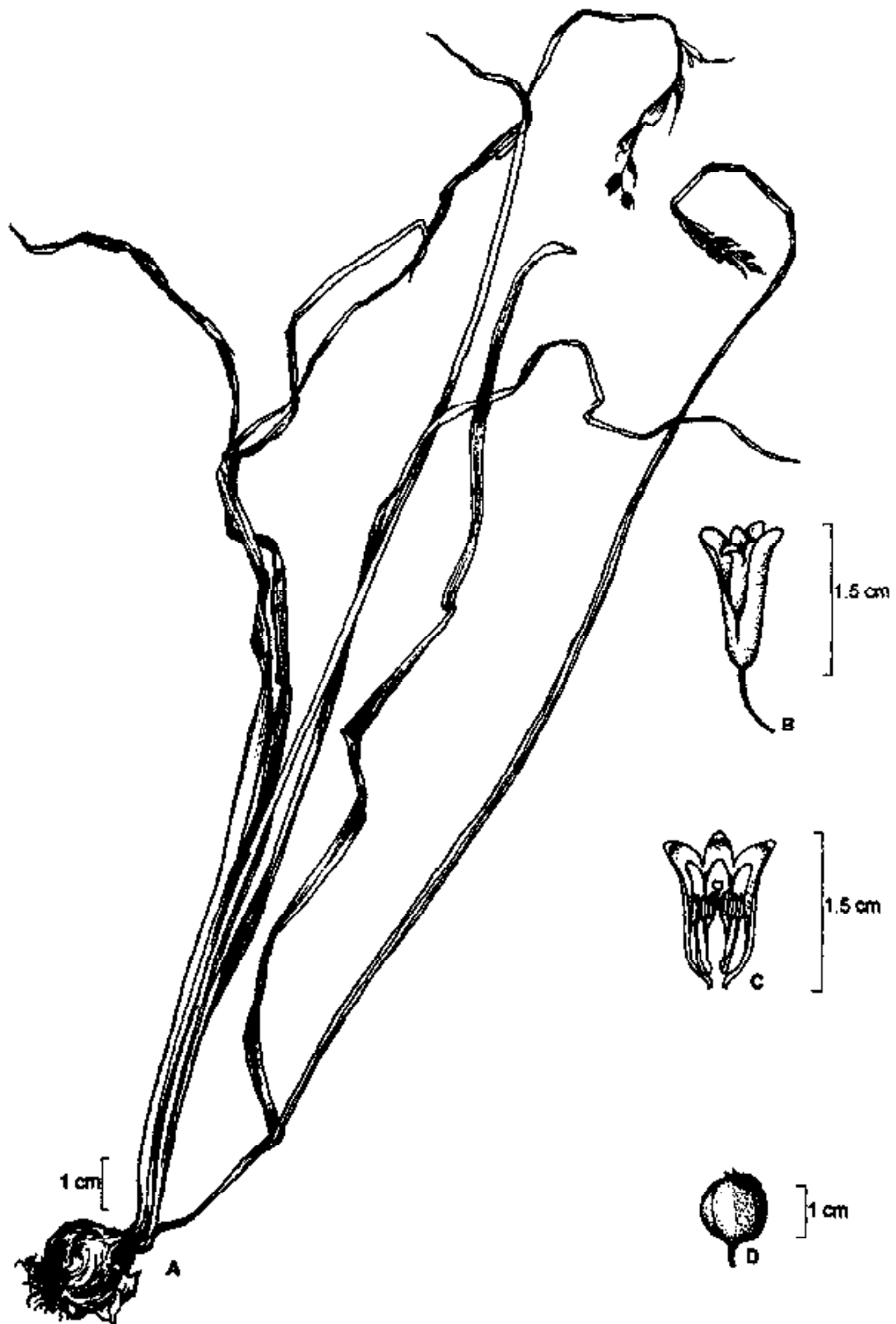


Fig. 56 (A -D). *Dipcadi montanum* (Dalzell) Baker var. *madrasicum* (Barnes & C.E.C. Fisch.) Deb & S. Dasgupta
 A. Habit B. Flower C. Flower split open D. Capsule

Distrib.: Deccan, Tamil Nadu and Madhya Pradesh. Endemic. TN: Chengalpattu, Coimbatore, Tirunelveli and Tuticorin. GM: Mainland coast at Thillaiivanamthoppu near Vijayapathy in Tirunelveli, frequent and on Karaichalli Island.

There are only 6 collections at MH. Though there were many plants on the coast referred to above, only one was in flowers. Local villagers informed that a large number of plants would be in flowers if it rains continuously for many days in monsoon (Oct. - Dec.). Only a few plants were present on Karaichalli Island. It needs further field observations to determine its exact status.

Use: Bulbs are eaten in times of scarcity.

Specimens examined: (Total 7) KMS 8403; VN 3961; PD & PU 107214; Kc Is. SAM 104723.

5. *Gloriosa* L.

Old World tropics, unispecific.

G. superba L., Sp. Pl. 305. 1753; Wight, Icon. t. 2047. 1853; FBI 6: 358. 1892; FPM 1519. 1928; FM 1, 9: 193. 1979; IFTC t. 743. 1982; FTC 3: 1643. 1983; FTN 3: 40. 1989. [*Kalapaikilangu, Kanvalikilangu*] (Fig. 57; Photo 10)

Climbing, robust herb; stem leafy throughout. Leaves ovate-lanceolate, rounded or cordate, entire, cirrhose, coriaceous, glabrous. Flowers much showy, axillary, solitary or subcorymbose; pedicels 2 - 4 cm long. Perianth-lobes 6, petaloid, linear-lanceolate, acute, undulate, ca 7 cm long, green when young, scarlet red to orange yellow when mature. Stamens 6; filaments filiform, ca 1 cm long; anthers versatile, linear, ca 4 cm long. Ovary 3-loculed; style filiform, 3-fid, deflexed. Capsules oblong, 4 - 8 cm long, reddish; seeds globose, brownish.

Fl. & Fr.: Oct. - Jan.

Habitat: Sandy soil, on small trees/shrubs like *Dichrostachys cinerea*, *Pemphis acidula*, *Suriana maritima* and *Thespesia populnea*.

Distrib.: TN: Most districts. GM: Common in coastal scrub jungles and on Appa, Kurusadai, Muyal, Pullivasal Pumarichan and Thalaiyari Islands.

The red fruits may be attractive to birds which may pick up the seeds and disperse.

Uses: Tubers regarded tonic, stomachic and anthelmintic; intensely poisonous in large doses; also used to promote labour pain and as an abortifacient; externally used for neuralgic pains and skin disorders. Toxic properties are due to the presence of alkaloids, chiefly

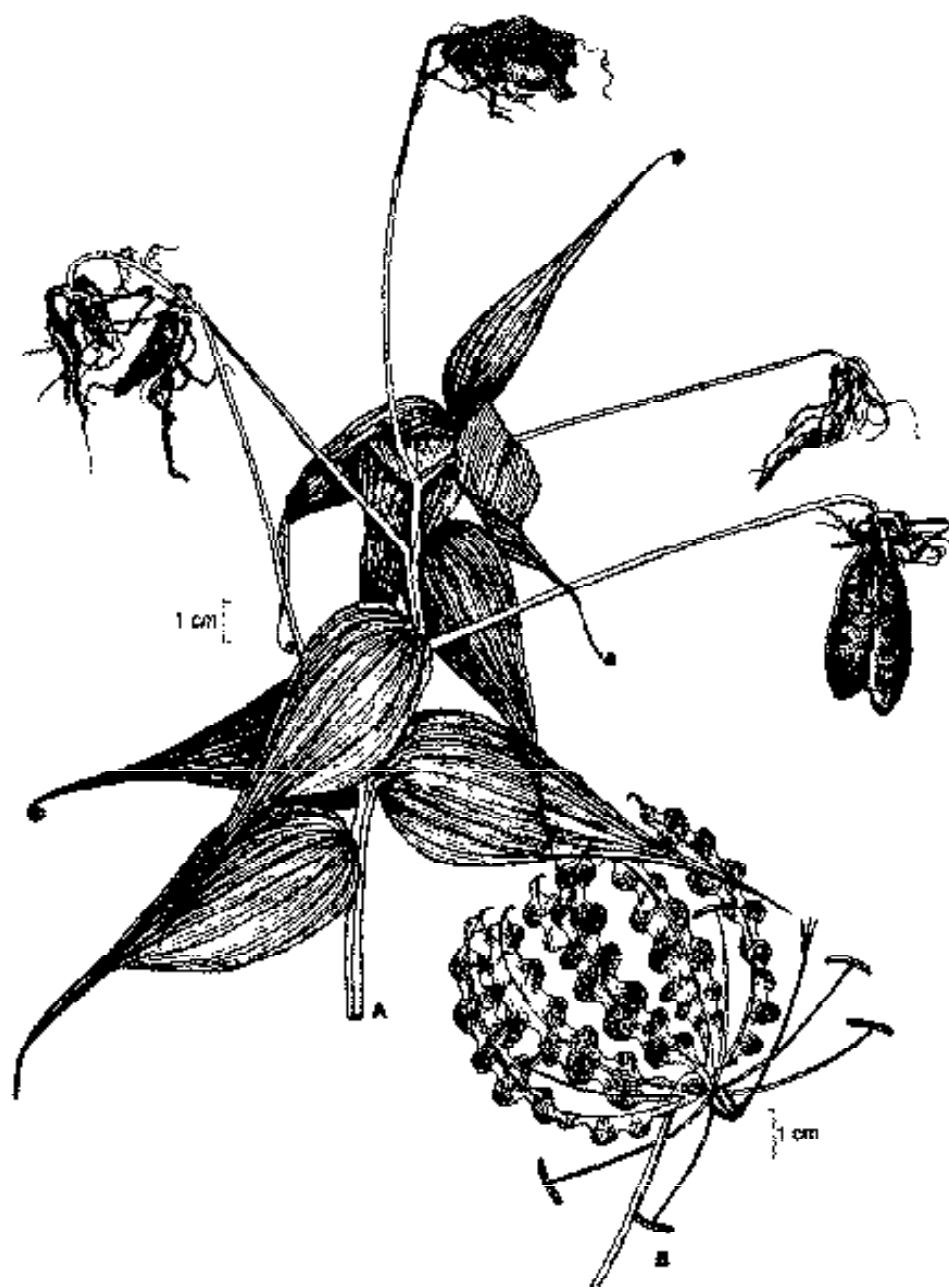


Fig. 37(A & B). *Gloriosa superba* L.
A. Twig with capsule B. Flower

colchicine which is used in treatment of gout and rheumatism, and also to induce polyploidy in plants.

Plants are cultivated in Tamil Nadu plains on large scale for the tuber a 'vegetable drug'. It commands a price of Rs.34/- per kg in the Indian market (Anon., 1996b). Seeds which are reportedly exported command a very high price.

Specimens examined: (Total 87) PD 101125; Ku Is. PD 100603; Mu Is. PD & PU 106813; Pu Is. PD & PU 106853; Pv Is. KSK 102336.

6. *Iphigenia* Kunth

Old World tropics, 9 species, 6 in India and one in Tamil Nadu.

I. indica (L.) A. Gray ex Kunth, Enum. Pl. 4: 213. 1843; FBI 6: 357. 1892; FPM 1528. 1928; FM 1, 9: 198. 1979; IFTC t. 744. 1982; FTC 3: 1643. 1983; FTN 3: 40. 1989. *Melanthium indicum* L., Mant. Pl. 226. 1771. [*Neerpanai*]

Bulbous, erect herb, ca 25 cm; bulbs subglobose-globose, 1.2 - 1.5 x 0.5 - 1.2 cm, narrow above, covered by a brownish sheath. Leaves linear, flat, acuminate, 5 - 15 x 0.4 - 0.6 cm, glabrous; midnerve prominent; sheaths stramineous brown. Flowers 1 or 2. Perianth dark purple, 6-lobed; lobes linear, recurved, acute, 0.5 - 1 x 0.5 - 0.1 cm, spreading. Stamens 6, opposite perianth-lobes; filaments subulate; anthers versatile, oblong-ovoid, ca 1.3 x 1.2 mm. Ovary obovoid-oblong, 1.5 - 2.5 x 1 - 1.5 mm; styles 3, recurved, ca 1 mm long. Capsules oblong, obtuse at both ends, ca 6 x 4 mm, 3-valved, loculicidally dehiscent; seeds obovoid, ca 1.5 mm; pedicels 1.5 - 4.5 cm long in fruit.

Fl. & Fr.: Nov. - Jan.

Habitat: Sandy soil, with *Cyperus arenarius*, *Ipomoea pes-caprae* and *Vernonia cinerea*.

Distrib.: Australia, India, Malesia, Myanmar and Sri Lanka. TN: Chengalpattu, Coimbatore, Madurai, Nilgiri, Ramanathapuram, Salem, Tiruchirapalli, Tirunelveli and Tuticorin. GM: Frequent throughout mainland coast and on Kurusadai, Muyal, Nallathanni and Upputhanni Islands.

Uses: Bulbs used in colic. Flowers yield a red dye.

Specimens examined: (Total 50) PD 100445; Ku Is. DD & SRR 88215; Mu Is. PD 100340; Nt Is. KSK 102360; Ut Is. PD & PU 106613.

7. *Scilla* L.

Tropics and temperate regions, ca 80 species, 3 in India and one in Tamil Nadu.

S. hyacinthina (Roth) J.F. Macbr. in Contr. Gray Herb. 56: 14. 1918; BOBSI 17: 46. 1978; FFI 7: 14. 1981; FTC 3: 1646. 1983; FTN 3: 40. 1989. *Ledebouria hyacinthina* Roth, Nov. Pl. Sp. 195. 1821; Wight, Icon. t. 2040. 1853. *Scilla indica* (Wight) Baker in Saunders, Refug. Bot. 3: 12. 1870, non Roxb. 1832; FBI 6: 348. 1892; FPM 1527. 1928. *Barnardia indica* (Roth) Wight, Icon. t. 2041. 1853. [*Narivengayam*]

Bulbous, scapigerous herb; bulb tunicate. Leaves radical, oblong-elliptic, subacute or rounded. Racemes many-flowered; bracts small, scarious; pedicels ca 0.5 cm long. Perianth greenish purple, 6-lobed; lobes oblong. Stamens 6; filaments filiform, ca 2 mm long, basally adnate to perianth; anthers oblong, versatile. Ovary shortly stipitate, 3-loculed, 6-ovuled; style filiform, ca 2 mm long; stigma capitate. Capsules subglobose.

Fl. & Fr.: Aug. - Dec.

Habitat: Sandy soil, usually in shade of *Acacia planifrons* trees.

Distrib.: Abyssinia, India and Sri Lanka. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Bulbs employed as a substitute for *Urginea maritima* and *U. indica*. Used as an expectorant, cardiac, stimulant and diuretic.

Specimens examined: (Total) 43) KMS 13726; SAM 104788, 106339.

8. *Urginea* Steinh.

Southern Europe, Africa and Australia, ca 120 species, 6 in India, 3 in Tamil Nadu and one in GM.

U. indica (Roxb.) Kunth, Enum. Pl. 4: 333. 1843; Wight, Icon. t. 2063. 1853; FBI 6: 347. 1892; FPM 1527. 1928; BOBSI 16: 118. 1974 & FFI 7: 17. 1981; FIFTC t. 617. 1988; FTN 3: 341. 1989. *Scilla indica* Roxb., Fl. Ind. 2: 147. 1832. *S. coromandeliana* Roxb., Fl. Ind. 2: 148. 1832. *Urginea coromandeliana* (Roxb.) Hook. f., Fl. Brit. India 6: 347. 1892; FPM 1527. 1928. *U. wightiana* Hook. f., Fl. Brit. India 6: 347. 1892. *U. govindappae* Boraiah & Fatima in Bull. Bot. Surv. India 12: 128. 1970.

Bulbous, scapigerous herb; bulbs 2 - 4 cm across. Leaves radical, linear, acute. Scape to 30 cm long. Racemes ca 2 cm long; pedicels 2 - 3 cm long. Perianth brownish, 6-lobed; lobes oblong, obtuse, 2 - 3-nerved in middle. Stamens 6; filaments flat, ca 1.2 cm long;

anthers oblong, ca 3 mm long. Ovary oblong-ovoid, ca 7 mm long; style cylindrical; stigma obconic. Capsules ellipsoid, 1-1.5 cm long; seeds many, flat, blackish.

Fl. & Fr.: April - May.

Habitat: Dry and sandy localities.

Distrib.: India and Trop. Africa. TN: Chengalpattu, Coimbatore, Ramanathapuram, Tiruchirapalli and Tirunelveli. GM: Throughout mainland coast, frequent.

Uses: Bulbs are a source of the drug known as the Indian squill; used as a cardiogenic, stimulant, expectorant and diuretic. In large doses, however, it is emetic and cathartic and may cause cardiac depression. Alcoholic extract of bulbs possesses anticancer activity against human epidermoid carcinoma of the nasopharynx in tissue culture, also shows hypoglycaemic action. Bulbs are also used in dropsy, rheumatism and skin disorders.

Specimens examined: (Total 11) PD & PU 106511; SNC & SVP 87109.

100. PONTEDERIACEAE

Key to the genera

- | | |
|--|----------------------|
| 1a. Free floating herbs; leaves cuneate or truncate at base;
petioles swollen in middle | 1. <i>Eichhornia</i> |
| b. Rooted herbs; leaves cordate at base; petioles not swollen | 2. <i>Monochoria</i> |

1. *Eichhornia* Kunth

Trop. America, ca 7 species and one in India.

E. crassipes (Mart.) Solms in A. & C. DC., Monogr. Phan. 4: 527. 1883; FPM 1530. 1928; FM 1, 4: 259. 1951; IFTC t. 747. 1982; FTC 3: 1649. 1983; FTN 3: 42. 1989. *Pontederia crassipes* Mart., Nov. Gen. Sp. Pl. 1: 9, t. 4. 1823.

Leaves ovate-rhomboid, obtuse. Flowers dense, in terminal racemes. Perianth tube ca 1 cm long; lobes 6, unequal, 2-3 cm long, bluish violet. Stamens 6, unequal; filaments hairy. Ovary oblong, ca 0.5 cm long; style slender, ca 2 cm long, glabrous; stigma globose, hairy. Capsules ovoid-oblong or linear; seeds ovoid, ribbed.

Fl. & Fr.: Jan. - May.

Habitat: Streams and stagnant waters. Mostly in dense pure formations, sometimes with *Ottelia alismoides*, *Lagarosiphon alternifolia*, *Pistia stratiotes* etc.

Distrib.: Naturalized throughout India. TN: All districts. GM: Frequent on mainland coast streams and tanks, so dense that the water bodies are choked.

Uses: Eaten by cattle. Yields a fibre suitable for wicker and basket work and chair bottoms. Recommended as a source of cellulose. Plant also used as a manure.

Specimens examined: (Total 33) PD 107246.

2. *Monochoria* K. Presl

Northeast Africa to China and Australia, 5 species, 2 in India and Tamil Nadu and one in GM.

M. vaginalis (Burm.f.) K. Presl, Reliq. Haenk. 1: 128. 1827; FBI 6: 363. 1892; FPM 1529. 1928, incl. var. *plantaginea* (Roxb.) Solms; IFTC t. 748. 1982; FTC 3: 1650. 1983; FTN 3: 42. 1989. *Pontederia vaginalis* Burm.f., Fl. Indica 80. 1768.

Aquatic herb; rootstock spongy. Leaves ovate, acuminate; petioles to 30 cm long. Peduncle from a canaliculate sheath, ca 35 cm long, pinkish. Perianth campanulate, blue with pink tinge; lobes 6, narrowly oblong-obovate, acute, membranous along margins, 3-nerved. Stamens 6; filaments filiform; anthers linear-oblong, 3-4 mm long. Ovary ellipsoid, ca 6 mm long, glandular; style slender; stigma trifid. Fruits ellipsoid, ca 1 cm long.

Fl. & Fr.: May - Jan.

Habitat: Edges of streams and tanks and in water-logged fields, usually with *Eichhornia crassipes*, *Ottelia alismoides* and *Pistia stratiotes*.

Distrib.: China, India, Japan, Malesia, Sri Lanka and Trop. Africa. TN: Most districts. GM: Mainland coast streams, tanks and nearby rice fields, frequent.

Uses: Aerial parts eaten as a vegetable.

Specimens examined: (Total 67) PD & PU 107044, 107276; SAM 104687.

101. COMMELINACEAE

Key to the genera

- | | |
|---|---------------------|
| 1a. Flowers enclosed in leaf sheath | 4. <i>Tenningia</i> |
| b. Flowers not enclosed in leaf sheath | 2 |
| 2a. Flowers in panicles, not subtended by spatheous bracts | 3. <i>Murdannia</i> |
| b. Flowers in cymes, subtended by spatheous bracts | 3 |
| 3a. Floral bracts conspicuous; cymes scorpioid; filaments bearded | 2. <i>Cyanotis</i> |

b. Floral bracts inconspicuous; cymes not scorpioid; filaments glabrous

1. *Commelina*

1. *Commelina* L.

Tropics and subtropics, ca 150 species, 23 in India, 18 in Tamil Nadu and 4 in GM.

Key to the species

1a. Spathes funnel-shaped	1. <i>C. benghalensis</i>
b. Spathes ovate or ovate-lanceolate	2
2a. Leaves ensiform, subacute at apex	3. <i>C. ensifolia</i>
b. Leaves not ensiform, acute to acuminate at apex	3
3a. Seeds reticulately pitted	2. <i>C. clavata</i>
b. Seeds smooth or obscurely rugose	4. <i>C. imberbis</i>

1. *C. benghalensis* L., Sp. Pl. 41. 1753; Wight, Icon. t. 2065. 1853; FBI 6: 370. 1892; FPM 1529. 1931; FTC 3: 1657. 1983; FTN 3: 43. 1989. [*Kanavalai*]

Decumbent herb; stem slender, dichotomously branched, glabrous. Leaves sessile or shortly petiolate, ovate or oblong, obtuse, pubescent; sheaths short, pubescent. Spathes 1-3 together, shortly pedunculate. Sepals small, oblong, pubescent. Petals orbicular, blue. Stamens 3; anthers oblong; staminodes 3. Ovary 3-loculed. Capsules pyriform; seeds oblong, pitted.

Fl. & Fr.: Aug. - Jan.

Habitat: Shades and wet localities, with *Acalypha indica* and *Aerva* spp.

Distrib.: Africa and throughout Trop. Asia. TN: All districts. GM: Throughout mainland coast and Anaipar, Appa, Kurusadai, Manoli, Manoliputti, Muyal and Thalaiyari Islands.

Uses: Leaves used as a potherb in times of scarcity. Herb considered demulcent, emollient and laxative.

Specimens examined: (Total 74) KSK 103325; SAM 104754; An Is. KSK 102374; Ap Is. PD 101565; Ku Is. KSK 102307; Mu Is. PD 100645.

2. *C. clavata* C.B. Clarke, Commelyn. Cyrtandr. Bengal. t. 5. 1874; FBI 6: 371. 1892; FPM 1539. 1931; Fyson, Fl. S. Indian Hill St. 2: t. 551. 1932; FTC 3: 1657. 1983; FTN 3: 44. 1989.

Diffuse herb, rooting at nodes. Leaves ovate-lanceolate or elliptic, acuminate, glabrous; sheaths glabrous or pubescent. Spathes ovate-lanceolate, acuminate. Cymes axillary. Sepals

ovate-oblong. Petals blue. Stamens 3; staminodes 3. Capsules oblong, 2-valved, ca 4.5 mm long; seeds cylindrical, truncate at one end, brownish-black.

Fl. & Fr.: Sept. - Jan.

Habitat: Wet localities, particularly rice fields.

Distrib.: India, Java and Sri Lanka. TN: Chengalpattu, Coimbatore, Kanyakumari, Madurai, Nilgiri, Ramanathapuram, Salem, Tiruchirapalli and Tirunelveli. GM: Mainland coast, occasional.

Specimens examined: (Total 35) VB 2076.

3. *C. ensifolia* R. Br., Prodr. 269. 1810; FBI 6: 374. 1892; FPM 1538. 1931; FTC 3: 1658. 1983; FTN 3: 44. 1989. *C. undulata* R. Br. var. *setosa* C.B. Clarke in A. & C. DC., Monogr. Phan. 3: 179. 1881; FBI 6: 373. 1892.

Diffuse, glabrous herb. Leaves ensiform, subacute, glabrous; sheaths glabrous or sparsely pubescent, bearded at mouth. Spathe solitary, shortly pedunculate, cucullate, broadly ovate, cordate, acute, dorsally hirsute. Flowers 1 - 3, on a short peduncle. Sepals 3, ovate. Petals 3, ovate, bluish. Stamens 3; staminodes 3. Ovary 2-loculed. Capsules to 6 mm long; seeds ovoid, to 4 mm long, smooth.

Fl. & Fr.: Sept. - Feb.

Habitat: Wetlands and cultivated fields, with *Amaranthus viridis*, *Brachiaria reptans* etc.

Distrib.: Australia, S. India and Sri Lanka. TN: Chengalpattu, Coimbatore, Madurai, Nilgiri, N. Arcot, Ramanathapuram, Tiruchirapalli, Tirunelveli and Tuticorin. GM: Occasional on mainland coast. Collected at Athur in Tuticorin and Kundukal in Ramanathapuram.

Specimens examined: (Total 47) KSK 102982; PD 102273; VB 1585.

4. *C. imberbis* Ehrenb. ex Hassk. in Schweinf., Beitr. Fl. Aethiop. 206. 1867; FTN 3: 44. 1989. *C. persicariaefolia* Wight ex C.B. Clarke in A. & C. DC., Monogr. Phan. 3: 171. 1881, non DC. 1816; FBI 6: 372. 1892. *C. jacobii* C. E.C. Fisch. in Bull. Misc. Inform. 1928: 277. 1928 & FPM 1539. 1931.

Diffuse herb; stem glabrous; internodes 4 - 10 cm long. Leaves sessile, ovate or oblong-elliptic, entire, acute-acuminate, glabrous; sheaths to 2 cm long, glabrous. Spathe ovate, acute or acuminate, 1 - 3 together, pubescent or glabrous, 2 - 3-flowered. Sepals ovate,

connate for ca 2 mm. Petals ca 4 mm long, blue. Stamens 3, ca 2.5 mm long; staminodes 3. Capsules quadrate, 5 - 7 mm long, glabrous; seeds cylindric, ca 3 mm long, brownish.

Fl. & Fr.: June - Feb.

Habitat: In shades, with *Boerhavia diffusa*, *Celosia polygonoides* and *Portulaca* spp.

Distrib.: India and Sri Lanka. TN: Ramanathapuram and Tiruchirapalli. GM: Occasional on mainland coast. Once collected on way to Rameswaram. Earlier collected on Kurusadai and Pullivasal Islands.

Specimens examined: (Total 45) PD 100431; VB 1585; Ku Is. DDS & JSR 93559; VB 1454.

2. *Cyanotis* D. Don nom. cons.

Old World tropics, ca 30 species, 16 in India, 14 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|-------------------------|
| 1a. Leaves glabrous; bract ca 3 cm long | 2. <i>C. cristata</i> |
| b. Leaves pubescent; bract ca 1 cm long | 1. <i>C. arcotensis</i> |

1. *C. arcotensis* R.S. Rao in *Blumea* 14: 345. 1966; FTC 3: 1661. 1983. *C. papilionacea* auct. (L.) Schult. & Schult. f. 1830; FBI 6: 384. 1892; FPM 1549. 1931; FTN 3: 47. 1989.

Annual herb; stem sparsely pubescent. Leaves lanceolate, acute or subacute; sheaths ca 0.5 cm long, hirsute. Cymes axillary or terminal; bract ovate-lanceolate, acute, ciliate along margins; bracteoles 2-seriate, to 8 in a series, slightly falcate, acuminate. Sepals 3, oblong-lanceolate, ca 5 mm long, hirsute. Petals ovate, ca 3 mm long, blue. Stamens 6; staminal filaments hairy. Capsules trigonous, ca 3 mm long; seeds oblong, trigonous, truncate, ca 1.5 mm long, transversely ridged, stramineous brown.

Fl. & Fr.: Nov. - Jan.

Distrib.: S. India. Endemic. TN: Chengalpattu, Coimbatore, Ramanathapuram, Thanjavur, Tirunelveli and Tuticorin. GM: Mainland coast, occasional. Collected at Perunkulam in Ramanathapuram and Periyathalai in Tuticorin.

Specimens examined: (Total 24) KSK 102898; PD 101472.

2. *C. cristata* (L.) D. Don, Prodr. Fl. Nepal. 46. 1825; Wight, Icon. t. 2082. 1853; FBI 6: 385. 1892; FPM 1549. 1931; FTC 3: 662. 1983; FTN 3: 46. 1989. *Commelina cristata* L., Sp. Pl. 42. 1753.

Annual, diffuse herb; stem slender, pubescent. Leaves oblong, subacute or obtuse, ciliate along margins; sheaths ca 1 cm long, hirsute. Bract foliaceous, exceeding cyme; bracteoles to 10, 2-seriate, falcate, ovate, acute, ciliate along margins. Sepals lanceolate, acuminate. Corolla purple; tube longer than sepals; lobes ovate. Stamens 6; filaments fusiform, bearded above; anthers oblong. Ovary oblong; style naked. Capsules oblong, trigonous; seeds trigonous, ca 1.5 mm long, striate with 2 large pits, blackish.

Fl. & Fr.: Sept. - Jan.

Habitat: Sandy and wet localities, with *Achyranthes aspera*, *Bulbostylis barbata* and *Euphorbia hirta*.

Distrib.: Trop. Africa, India, Malesia, Mauritius and Sri Lanka. TN: Almost all districts. GM: Frequent on mainland coast and Kurusadai and Moyal Islands.

Use: A good forage, and contains albuminoids.

Specimens examined: (Total 22) PD 101160, 101185; Ku Is. PD 99785; Mu Is. PD 100641.

3. *Murdannia* Royle nom. cons.

Tropics, ca 50 species, 22 in India, 17 in Tamil Nadu and one in GM.

M. spirata (L.) Brückn. in Engl. & Prantl, Nat. Pflanzenfam. ed. 2, 15a: 173. 1930; FTC 3: 1667. 1983; FTN 3: 50. 1989. *Commelina spirata* L., Mant. Pl. 176. 1771. *Aneilema spiratum* (L.) R. Br., Prodr. 271. 1810; FBI 6: 377. 1892; FPM 1545 1931.

Annual herb; stem pubescent. Leaves lanceolate-ovate, acute, undulate, glabrous; sheaths ca 0.5 cm long, pubescent. Flowers in corymbs; bracts small, ovate, acute or subacute, glabrous. Sepals 3, oblong, ca 3 mm long. Petals 3, oblong, ca 3 mm long, bluish. Stamens 3; filaments bearded; staminodes 3. Capsules trigonous, ca 3 mm long; seeds 3 - 7, cuboid, angular, ca 1 mm long, stramineous brown.

Fl. & Fr.: Dec. - Feb.

Habitat: Wet and sandy localities, with *Commelina benghalensis*, *Cyanotis cristata* and *Cyperus compressus*.

Distrib.: China, India, Malesia and Sri Lanka. TN: Chengalpattu, Madurai, Nilgiri, Pudukkottai, S. Arcot, Thanjavur, Tiruchirapalli and Tirunelveli. GM: Mainland coast, frequent.

Specimens examined: (Total 59) KSK 102986; PD & PU 106525.

4. *Tonningia* Neck. ex A. Juss.

Tropics, 2 species.

Key to the species

- | | |
|---|------------------------|
| 1a. Stem glabrous; leaves linear or linear-lanceolate; petals violet-blue | 1. <i>T. axillaris</i> |
| b. Stem hirsute on one side; leaves oblong-elliptic; petals lilac | 2. <i>T. cucullata</i> |

1. *T. axillaris* (L.) Kuntze, Revis. Gen. Pl. 721. 1891; FTN 3: 50. 1989. *Commelina axillaris* L., Sp. Pl. 42. 1753. *Cyanotis axillaris* (L.) Schult. & Schult. f., Syst. Veg. 7: 1154. 1830; FBI 6: 388. 1892; FPM 1550. 1931. *Amischophacelus axillaris* (L.) R.S. Rao & Kammathy in J. Linn. Soc., Bot. 59: 306. 1966; IFTC t. 750. 1982; FTC 3: 1655. 1983. [*Vatukaiipul*]

Annual herb; stem suberect, to 40 cm high. Leaves sessile, acute-acuminate, glabrous, spinulose along margins; sheaths ciliate. Flowers clustered in sheaths. Sepals lanceolate or spatulate, acuminate, sparsely hairy. Petals broadly ovate, subacute. Stamens 6; filaments bearded. Ovary 3-loculed, woolly. Capsules shortly stipitate, oblong-ellipsoid, 4 - 5 mm long; seeds compressed, truncate at one end, pitted, brownish.

Fl. & Fr.: Aug. - Jan.

Habitat: Wet localities, with *Fimbristylis* spp., *Isachne globosa* etc.

Distrib.: E. Asia, India and Trop. Australia. TN: Almost all districts. GM: Mainland coast, frequent.

Uses: Plant used in tympanitis. Seeds are used as food in times of scarcity. It contains 55 - 64% starch and 14 - 16% albuminoids.

Specimens examined: (Total 89) PD & PU 107033; VB 1020.

2. *T. cucullata* (Roth) Kuntze, Revis. Gen. Pl. 722. 1891; FTN 3: 50. 1989. *Trades-cantia cucullata* Roth, Nov. Pl. Sp. 189. 1821. *Cyanotis cucullata* (Roth) Kunth, Enum. Pl. 4: 107. 1843; FBI 6: 389. 1892; FPM 1550. 1931. *Amischophacelus cucullata* R.S. Rao & Kammathy in J. Linn. Soc., Bot. 59: 306. 1966.

Creeping herb; stem rooting at nodes. Leaves acute, glabrous, spinulose along margins; sheaths turbinate. Flowers clustered in sheaths. Sepals lanceolate-oblong, acute. Petals ovate. Stamens 6. Ovary 3-loculed, oblong-obovoid, glabrous, ca 7 mm long; seeds subquadrate, obscurely pitted.

Fl. & Fr.: Nov. - Feb.

Habitat: Sandy and semidry localities.

Distrib.: S. India. Endemic. TN: Coimbatore, N. Arcot, Ramanathapuram and Tiruchirappalli. GM: Mainland coast, occasional.

Specimens examined: (Total 18) PD & PU 106978; VB 1628.

102. ARECACEAE (nom. alt. PALMAE)

Key to the genera

- | | |
|--|--------------------|
| 1a. Leaves flabelliform; petioles spinescent | 1. Borassus |
| b. Leaves pinnatisect; petioles not spinescent | 2 |
| 2a. Trunk not covered with leaf bases; lower leaflets not modified into spines | 2. Cocos |
| b. Trunk covered with leaf bases; lower leaflets modified into spines | 3. Phoenix |

1. **Borassus L.**

Old World tropics, 7 species and one in India.

B. flabellifer L., Sp. Pl. 1187. 1753; FBI 6: 482. 1893; FPM 1562. 1931; FTC 3: 1670. 1983; FTN 3: 51. 1989. *B. flabelliformis* Murray, Syst. Veg. ed. 13, 827. 1774; Roxb., Pl. Coromandel tt. 71 & 72. 1796. [*Panai*]

Dioecious tree, to 30 m tall. Leaves 1 - 1.5 m across; segments 60 - 70, folded, linear-lanceolate; petioles green, spinescently black-serrate along margins. Male flowers: spikes cylindric, densely clothed with scaly bracts; stamens 6. Female flowers globose; staminodes 6 - 8; ovary globose; drupes 10 - 15 cm across, dark brown to black outside, orange-red inside, fibrous-pulpy.

Fl. & Fr.: March - June.

Habitat: Plains, particularly sandy seashores, usually with *Acacia planifrons*. Also cultivated.

Distrib.: Africa and SE. Asia. TN: All districts. GM: Common on mainland coast, and planted on Kurusadai, Moyal and Nallathanni Islands.

Uses: It is one of the toddy-yielding palms. Leaves were used as writing material in ancient times, also for palm-leaf books, fans, thatching, mats, hats, bags, buckets, primitive flutes etc. Juice is a source of gur and jaggery. Seeds and pulp of tender fruits are edible; tender shoots are also eaten. Leaf stalks yield a fibre used for brushes and brooms. Wood used in hut construction, for rafters, pillars and posts, and for crude bridges. It has a number of various other uses (Davis & Johnson, 1987).

The cotyledonary sheath in the germinating nuts is reported to be infected by the fungi *Rhizoctonia solani* as well as species of *Alternaria* and *Curvularia* leading to tuber rot. The extent of seedling mortality in natural state needs to be assessed.

This palm which was ubiquitous until recently throughout the coast is losing its ubiquitousness. The trees are felled on a large scale for use as firewood in brick kilns. The yawning gap between felling and planting is so wide that there is no guarantee that the plants would exist till the end of the next century. Certain conservation measures were suggested by Davis and Johnson (*l.c.*). It seems that they just went unnoticed and/or unheeded.

2. *Cocos* L.

Eastern Malesia and Barrier Reef (?), now widely cultivated throughout the tropics, unispecific.

C. nucifera L., Sp. Pl. 1188. 1753; Roxb., Pl. Coromandel t. 73. 1796; FBI 6: 482. 1893; FPM 1557. 1931; FTC 3: 1672. 1983; FTN 3: 52. 1989. [*Thennai*]

Monoecious tree, ca 25 m tall. Leaves ca 5 m long; pinnae 100 - 200, linear, acute, 40 - 75 x 2 - 5 cm. Flowers unisexual in dense panicles with a female flower at base and many male flowers above, subtended by a woody bract. Male flowers: perianth-lobes 6; stamens 6. Female flowers globose; perianth-lobes pale yellow; drupes ellipsoid, 3-sided, 25 - 35 cm long, greenish yellow.

Fl. & Fr.: Throughout the year.

Distrib.: Tropical shores. Cultivated. GM: Commonly cultivated on mainland coast and Moyal and Nallathanni Islands. Both the islands together have a few thousand trees.

Uses: Meat of seeds eaten raw or used in food articles, pastries, and confectionery; also much used as dry copra for extraction of a fatty oil, coconut oil, employed in food products, and in soaps, cosmetics, salves, shampoos, shaving creams, and toilet preparations. Fibre from the husk is used for mats, ropes, baskets, brushes etc. Coconut milk is a refreshing drink. Leaves are woven into mats and baskets. Wood is used for cabinets, buildings, and as fuel.

3. Phoenix L.

Tropics and subtropics, 17 species, 7 in India, 4 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|------------------------|
| 1a. Trunk ca 30 cm high; leaves ca 1 cm long | 2. <i>P. pusilla</i> |
| b. Trunk ca 3 m high; leaves ca 2.5 m long | 1. <i>P. loureirii</i> |

1. *P. loureirii* Kunth, Enum. Pl. 3: 257. 1841; FTC 3: 1674. 1983; FTN 3: 53. 1989. *P. humilis* Royle var. *pedunculata* Becc. in Malesia 3: 379, 387, t. 44, ff. 13 - 15, 18 - 21, 25 - 27. 1890; FBI 6: 427. 1892; FPM 1560. 1931. [*Malaieecham*]

Tree. Leaflets ca 170, linear, entire, acute-acuminate, 20 - 25 x 1 - 2.5 cm, pungent; basal ca 12 pairs modified into spines. Spathe ca 15 cm long; spadix ca 20 x 30 cm; branches simple, ca 15 cm long, 20 - 30-flowered, spreading. Female flowers oblong or subglobose, ca 4 x 3 mm; calyx cupular, ca 2.5 x 2.5 mm, 3-toothed; petals 3, imbricate, truncate, tridentate ca 2.5 x 3 mm, 7-nerved; carpels 3, free; ovary ca 4 mm long; stigma sessile, uncinate; fruits oblong, ca 2 x 1 cm, reddish orange, black when ripe.

Fl. & Fr.: Jan. - March.

Habitat: Road sides.

Distrib.: China, India, Indo-China and Myanmar. TN: All hilly districts. GM: Rare. Once collected on mainland coast, near a temple, on way to Anjukramam near Kanyakumari. Perhaps cultivated.

Uses: Leaves used for thatching and making mats, baskets, fancy handbags, brooms etc. Fruits edible; pith from the upper portion of stem eaten. Roots and pith of young stems used as an aperient.

Specimens examined: (Total 50) PD & PU 107074.

2. *P. pusilla* Gaertn., Fruct. Sem. Pl. 1: 24, t. 9. 1788; FTN 3: 53. 1989. *P. farnifera* Roxb., Pl. Coromandel t. 74. 1796; FBI 6: 424. 1892; FPM 1559. 1931. [*Ithi*]

Undershrub; stem fully covered by leaves. Leaflets linear, acuminate, pungent, 15 - 20 x 1 - 1.2 cm, lower few modified into spines. Spathe ca 15 cm long, concave, stramineous yellow; spadix ca 70 cm long; peduncle ca 20 cm long. Male flowers to 55, oblong, ca 6 x 3 mm; calyx cupular, 3-toothed; teeth triangular or broadly ovate; petals 3, ovate, oblique; subacute-obtuse, coriaceous. Stamens 6; anthers sessile, linear, ca 3.5 mm long. Female flowers ca 20 on a peduncle, spreading, globose, ca 3 mm; calyx cupular, 3-toothed, many-nerved; petals 3, imbricate, orbicular, coriaceous; staminodes 6; carpels 3, free; ovary

oblong, ca 2 mm long; stigma sessile, uncinata; fruits ellipsoid, apiculate, ca 1 cm long, pinkish red, brownish black when ripe.

Fl. & Fr.: Dec. - Feb.

Habitat: Sandy localities.

Distrib.: India and Sri Lanka. TN: Chengalpattu, Coimbatore, Ramanathapuram, Salem, S. Arcot, Thanjavur, Tiruchirapalli and Tirunelveli. GM: Frequent on mainland coast of Ramanathapuram and Kurusadai, Pullivasal, Pumarichan and Shingle Islands.

People who visit the islands are said to collect the edible fruits. Birds such as red-vented and white-browed bulbuls are reported to pick up the fruits and disperse (Balasubramanian, 1996). Crows are also reported to pick up the fruits. But then, it is confined to a few islands only.

Uses: Starch of stem eaten in times of scarcity. Terminal bud eaten as a vegetable. Fruits edible. It is also prescribed in respiratory diseases and fever; fresh sap cooling and laxative. Tree yields a gum used in diarrhoea and urinary disorders. Leaves used for thatching and for coarse mats. Petioles are split and woven into baskets.

Specimens examined: (Total 47) PD 101173; PD & PU 106916; Ku Is. DD & SRR 20570; PD 99774; PD & PU 106888.

103. PANDANACEAE

Pandanus Parkinson

Old World tropics, ca 600 species, 15 in India, 4 in Tamil Nadu and one in GM.

P. fascicularis Lam., *Encycl.* 1: 372. 1785; *FBI* 6: 485. 1893; *FTN* 3: 54. 1989. *P. odoratissimus* L. f., *Suppl. Pl.* 424. 1782, nom. illeg.; *RHFC* 3: 311. 1981; *FTC* 3: 1680. 1983; *FIFTC* t. 618. 1988. *P. tectorius* sensu C.E.C. Fisch. in *FPM* 1570. 1931, non Sol. ex Parkinson 1774. [*Thalai*]

Small tree or large shrub, to 5 m high; stem supported by stout aerial roots. Leaves ensiform, caudate-acuminate, spinose along margins, to 1.5 m long, coriaceous, glaucous green. Male spadix 7 - 10 cm long, pendulous; spikes numerous, subsessile, cylindrical; spathes foliaceous. Staminal column ca 1.5 cm long; anthers longer than filaments, fragrant, yellow. Female spadix solitary, ca 4 cm across. Carpels obpyramidal, in groups of 6 - 10, green; stigma short. Fruits oblong, 10 - 15 cm across, yellowish red when mature; drupes to 40, turbinate, angular.

Fl. & Fr.: Nov. - Jan.

Habitat: Sandy seashores and edges of streams, also cultivated.

Distrib.: Shores of Trop. Asia, Mauritius and Polynesia. TN: All districts. GM: Throughout mainland coast, particularly common in Ramanathapuram. Also common on Kurusadai and Shingle Islands.

Uses: Male flowers valued for their fragrance and used for hair decoration by women-folk. Also used for extraction of Kewda attar and Kewda water, used for scenting clothes, bouquets, lotions, cosmetics, soaps, hair oils, tobacco and agarbattis, and for flavouring foods, sweets, syrups, and soft drinks respectively. Seeds are also edible. Leaves employed for thatching huts, mat-making, cordage, hats, baskets, etc. It is also a source of paper-making material. Oil and otto used as a stimulant and antispasmodic. Juice of the inflorescence used for rheumatic arthritis in veterinary medicine. Anthers used for diseases of blood. Leaves used in leprosy, scabies and heart diseases.

Specimens examined: (Total 22) Ku Is. PD 106895; Sh Is. PD 100364.

104. TYPHACEAE

Typha L.

Cosmopolitan, 10 - 12 species, 3 in India and one in Tamil Nadu.

T. angustata Bory & Chaub., Exp. Sci. Moree Bot. 1: 338. 1833; FBI 6: 489. 1893; FPM 1571. 1931; IFTC t. 736. 1982; FTC 3: 1684. 1983; FTN 3: 54. 1989. *T. angustifolia* auct. non L. 1753; Roxb., Fl. Ind. 3: 507. 1832. [*Chambu*]

Perennial, tufted herb, to 2 m high. Leaves linear, sheathing at base, acute, entire. Spikes terminal, cylindrical, monoecious. Male flowers above; perianth hairy; stamens 2. Female flowers below; ovary long-stalked, linear, ca 1 mm long, hairy; style capillary; stigma clavate or filiform.

Fl. & Fr.: Aug. - May.

Habitat: Edges of perennial streams, ponds and lakes and marshy places.

Distrib.: N. Asia, N. Africa and throughout India. TN: All districts. GM: Throughout mainland coast. Kurusadai is the only island which harbours a good patch in the salt marsh in the middle. Not collected in flowers here, nor recorded by earlier workers. Its presence there may show that it is a salt-tolerant plant.

Uses: Rhizome, young shoot and inflorescence eaten in various ways; flowers made into a sweetmeat, and the soft sweet core or marrow of immature spike is a delicacy. Rhizome astringent and diuretic. Seed yields a fatty oil. Leaves plaited into ropes, winnow-

ing trays and mats; also employed as a caulking material. The silky florets are used for stuffing.

Dried immature spikes are used for indoor decoration.

Specimens examined: (Total 53) PD 100387, 102270.

105. ARACEAE

Key to the genera

- 1a. Plants cormous 2
- b. Plants cormless 3
- 2a. Leaves peltate, cordate-sagittate 1. *Colocasia*
- b. Leaves neither peltate nor cordate-sagittate 4. *Theriophonum*
- 3a. Plants with rootstock; leaves linear-lanceolate; spathe 5 - 8 cm long, purplish green 2. *Cryptocoryne*
- b. Plants without rootstock, free-floating; leaves obovate; spathe ca 1.5 m cm long, white 3. *Pistia*

1. *Colocasia* Schott nom. cons.

Trop. Asia, 6 species, 5 in India and one in Tamil Nadu.

C. esculenta (L.) Schott in Schott & Endl., Melet. Bot. 18. 1832; IFTC tt. 766 & 979C. 1982; FTC 3: 1691. 1983; RHFC 6: 54. 1987; FTN 3: 56. 1989. *Arum esculentum* L., Sp. Pl. 965. 1753. *Colocasia antiquorum* Schott in Schott & Endl., Melet. Bot. 18. 1832; FBI 6: 523. 1893; FPM 1580. 1931. [*Chembu*]

Corms subterranean, 5 - 10 x 2 - 3 cm. Leaves many from base, acute; petioles to 75 cm long, spongy, sheathing at base. Peduncle ca 35 cm long, greenish; spathe 25 - 30 x 4 - 6 cm, tubular below; limb bright yellow-orange; spadix to 30 cm long, yellowish with pistillate flowers at base for 3 - 5 cm, sterile flowers for ca 2 cm and staminate flowers at top for ca 5 cm. Appendix 3 - 6 cm long. Pistils intermingled with pistillodes; ovary globose; style short; stigma discoid.

Fl. & Fr.: May - Oct.

Habitat: Marshy localities and along streams, with *Cyperus pangorei* and *Saccharum spontaneum*.

Distrib.: Pantropical, hotter parts of India and Sri Lanka. TN: All districts, also cultivated. GM: Along streams on mainland coast in Kanyakumari, less frequent.

Uses: Tubers used as a vegetable. It may be used for production of industrial alcohol. Young leaves eaten like spinach. Juice of petioles used as an astringent and styptic. Taro mucilage may be used as a size for impermeable paper. Flower used for soups and gruels, gravies and puddings. Taro-lactin and taro-malt are good for infants and the invalid.

Specimens examined: (Total 26) PD & PU 107060.

2. *Cryptocoryne* Fisch. ex Wydler

Indomalesia, ca 50 species, 9 in India, 4 in Tamil Nadu and one in GM.

C. spiralis (Retz.) Fisch. ex Wydler in *Linnaea* 5: 428. 1830; Wight, *Icon.* t. 773. 1844; FBI 6: 494. 1893; FPM 1575. 1931; FTC 3: 1694. 1983; FTN 3: 57. 1989. *Arum spiralis* Retz., *Obs. Bot.* 1: 30. 1779. [*Nattaivadayam*]

Aquatic herb; rootstock creeping, woody; roots stout. Leaves clustered at base, undulate, subacute-acute, 10 - 30 x 0.5 - 1.5 cm, glabrous. Spathe-limb spirally twisted, lamellate inside. Spadix 1.5 - 2.5 cm long, enclosed by spathe. Staminate flowers above, sessile, crowded; pistillate flowers below, 3 - 5, united forming an ovoid syncarpium; style short. Sterile flowers few at middle. Fruits 4 - 6 x 3 - 4 mm.

Fl. & Fr.: Nov. - March.

Habitat: Edges of ponds, tanks and streams.

Distrib.: South & E. India and Sri Lanka. TN: Almost all districts. GM: Mainland coast in Kanyakumari, common. Most populations were found partly submerged. Inflorescence is buried in soil for more than half, hence likely to go unnoticed unless observed carefully.

Uses: Rhizomes used in abdominal complaints, also used in cough and vomiting in infants.

Specimens examined: (Total 8) PD & PU 107011.

3. *Pistia* L.

Tropics, unispecific.

P. stratiotes L., *Sp. Pl.* 963. 1753; FBI 6: 497. 1893; FPM 1573. 1931; FTC 3: 1696. 1983; RHFC 6: 100. 1987; FTN 3: 57. 1989. [*Antharathamara*]

Stemless, stoloniferous herb. Leaves spongy, rounded or retuse at apex, densely pubescent. Spathe gibbous, closed below. Stamens few, connate below; anthers linear.

Female flower solitary, naked; ovary obliquely adnate to spathe; style conical; stigma discoid; fruits membranous, few-seeded; seeds oblong.

Fl. & Fr.: Dec. - Feb.

Habitat: Still waters of streams and lakes, with *Monochoria vaginalis*, *Ottelia alismoides* etc.

Distrib.: TN: All districts. GM: Mainland coast, common.

Uses: An excellent food for fish. Leaves cooked and eaten, rich in vitamins A, B and C. Ash rich in potassium salts, valued as a manure and applied to ring worm of the scalp. Juice of leaves boiled in coconut oil and applied externally in skin diseases.

Specimens examined: (Total 28) KMS 13719; PD 102269.

4. *Therlophonum* Blume

India and Sri Lanka, ca 5 species, 4 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|--------------------------|
| 1a. Spadix-appendix stipitate, club-shaped, included; sterile flowers not dimorphic | 1. <i>T. infaustum</i> |
| b. Spadix-appendix not stipitate, subulate, exserted; sterile flowers dimorphic | 2. <i>T. sivaanganum</i> |

1. *T. infaustum* N.E. Br. in J. Linn. Soc., Bot. 18: 260. 1881; FBI 6 513. 1893; FPM 1679. 1931; KB 37: 882. 1982. [*Pettikilangu*]

Cormous herb. Leaves hastate-sagittate, rarely ovate-cordate; midlobe acute, mucronate; lateral lobes rounded to ovate. Spathe pale green to pale purple, convolute at base; limb oblong; spadix with 5 - 9 pistillate flowers at base, contiguous with sterile flowers; male flowers above an interspace. Berries 6 - 9, 2 - 5-seeded; seeds ovoid to obovoid.

Fl. & Fr.: Oct. - Dec.

Habitat: Open semishaded areas, on clayey soil or sandy loam.

Distrib.: Malabar coast, hills and plains of Tamil Nadu. Endemic. GM: It is reported to occur on Tirunelveli coast (Thiyagaraj, 1994). Being dormant the corms may not throw up shoots unless it rains continuously for days and being an ephemeral the plant may dry up if there is a dry spell in between.

Specimens examined: (Total 4) JGT 12 (vegetative).

2. *T. sivagangam* (Ramam. & Sebastine) Bogner in Bull. Bot. Surv. India 10: 244. 1968; KB 37: 289. 1982; FTC 3: 1701. 1983; FTN 3: 59. 1989. *Pauella sivagangana* Ramam. & Sebastine in Bull. Bot. Surv. India 8: 348, ff. 1-9. 1966. [*Pettikilangu*]

Cormous herb. Leaves ovate-oblong, linear-oblong to linear-lanceolate, narrowed at base, acute, mucronate. Spathe usually purple, convolute at base; limb ovate; spadix with 6 - 8 pistillate flowers at base; male flowers dense, without interspace. Berries 6 - 8, 3 4-seeded; seeds ovoid.

Fl. & Fr.: Oct. - Nov.

Habitat: Wastelands in plains, on sandy loam.

Distrib.: Tamil Nadu plains. Endemic. GM: Reported to occur on mainland coast in Tirunelveli (Thiyagaraj, 1994). This ephemeral, like the previous species, might have been overlooked.

Specimens examined: (Total 5) JGT 11 (vegetative).

106. LEMNACEAE

Lemna L.

Cosmopolitan, 9 species, 4 in India, 2 in Tamil Nadu and one in GM.

L. gibba L., Sp. Pl. 970. 1753; FBI 6: 556. 1893; FPM 1593. 1931; FTN 3: 59. 1989.

Aquatic, free-floating, scale-like herb; root solitary. Frond orbicular or obovoid. Male flowers in pairs; stamens 2. Female flower solitary; ovary globose; utricles 1 - 7-seeded.

Habitat: Still waters.

Distrib.: Cosmopolitan. TN: All districts. GM: Mainland coast, occasional. Collected at Punnakayal in Tuticorin.

Specimens examined: (Total 5) PD 102218 (vegetative).

107. ALISMATACEAE

Limnophyton Miq.

Old World tropics, unispecific.

L. obtusifolium (L.) Miq., Fl. Ned. Ind. 3: 242. 1856; FBI 6: 560. 1893; FPM 1595. 1931; IFTC tt. 773 & 978d. 1982; FTC 3: 1708. 1983; FTN 3: 60. 1989. *Sagittaria obtusifolia* L., Sp. Pl. 993. 1753.

Aquatic, to 50 cm high herb. Leaves radical, reniformly sagittate, subobtuse, 10 - 17 x 8 - 15 cm. Flowers in whorls. Male flowers above; bisexual flowers below. Sepals orbicular, ca 3 mm, ribbed, greenish. Petals obovate, ca 4 mm, white. Stamens 6. Female flowers 15 - many on a small receptacle. Achenes obovoid, 1 - 1.6 cm long, wrinkled.

Fl. & Fr.: Dec. - Feb.

Habitat: Marshy localities and edges of tanks and ponds.

Distrib.: TN: Chengalpattu, Madurai, Ramanathapuram, S. Arcot and Salem. GM: Earlier collected on mainland coast in Ramanathapuram.

Specimens examined: (Total 39) VB 1244, 1675.

108. NAJADACEAE

Najas L.

Cosmopolitan, ca 35 species, 14 in India, 5 in Tamil Nadu and one in GM.

N. marina L., Sp. Pl. 1015. 1753; FM 1, 6: 162. 1962; FTC 3: 1712. 1983; FTN 3: 61. 1989. *N. major* All., Fl. Pedem. 2: 221. 1785; FBI 6: 569. 1893.

Aquatic, submerged herb; internodes with spinous teeth. Leaves linear, septate; sheath oblique. Flowers unisexual. Male flower: spathe membranous; perianth distinctly lobed; anthers elliptic. Female flower: spathe closely appressed to ovary; ovary obovoid, trigonous; style 3-fid; stigmas 3; fruits ovoid-subglobose, ca 3 x 1.5 mm.

Habitat: Streams and ponds, with *Potamogeton pectinatus*, *Vallisneria natans* etc.

Distrib.: Cosmopolitan. TN: S. Arcot and Tuticorin. GM: Mainland coast, rare. Once collected in Tambraparani river at Athur in Tuticorin.

Specimens examined: (Total 8) PD & PU 107274A.

109. APONOGETONACEAE

Aponogeton L. f. nom. cons.

Old World tropics, 44 species, 7 in India, 5 in Tamil Nadu and one in GM.

A. natans (L.) Engl. & Krause in Engl., Pflanzerr. 24: 11. 1906; FPM 1598. 1931; FTC 3: 1714. 1983; FIFTC t. 620. 1988; FTN 3: 61. 1989. *Saururus natans* L., Mant. Pl. 227. 1771. *Aponogeton monostachyon* L. f., Suppl. Pl. 214. 1782; Roxb., Pl. Coromandel t. 81. 1798; FBI 6: 564. 1893. [*Kottikizhangu*]

Aquatic herb; rootstock tuberous. Leaves oblong, obtuse, glabrous. Spikes elongate, ca 3 cm. Tepals 2, obovate-lanceolate, ca 1.5 mm long, pinkish. Stamens 6. Fruits globose, 3 - 4 mm, beaked; seeds 4 - 8, terete, ca 1.5 mm long.

Fl. & Fr.: Nov. - March.

Habitat: Marshy localities and ponds and lakes.

Distrib.: Australia, India, Sri Lanka and Trop. Asia. TN: All districts. GM: Mainland coast, occasional.

Use: The starchy tuberous rootstocks are boiled and eaten.

Specimens examined: (Total 58) PD & PU 106528; SAM 104684.

110. POTAMOGETONACEAE

Key to the genera

- | | |
|---|-----------------------|
| 1a. Fresh water plants; perianth-lobes 4 | 3. <i>Potamogeton</i> |
| b. Brackish water (<i>Ruppia</i>) or marine plants; perianth absent | 2 |
| 2a. Leaves terete, fleshy; flowers in dichasial cymes | 5. <i>Syringodium</i> |
| b. Leaves flat or filiform, not fleshy; flowers solitary or in pairs..... | 3 |
| 3a. Leaves filiform; flower solitary; fruits long-stipitate | 2. <i>Ruppia</i> |
| b. Leaves flat; flowers in pairs; fruits not stipitate | 4 |
| 4a. Rhizomes moniliform; fruits not angular | 2. <i>Halodule</i> |
| b. Rhizomes not moniliform; fruits angular..... | 1. <i>Cymodocea</i> |

1. *Cymodocea* K.D. König nom. cons.

Coasts of W. Africa and the Canary Islands to the Mediterranean and Indopacific, 4 species and 2 in India.

Key to the species

- | | |
|--|------------------------|
| 1a. Leaves less than 0.5 cm wide, rarely faintly serrulate at apex | 1. <i>C. rotundata</i> |
| b. Leaves more than 0.5 cm wide, distinctly serrulate at apex | 2. <i>C. serrulata</i> |

1. *C. rotundata* Ehrenb. & Hempr. ex Asch. in Sitzungsber. Ges. Naturf. Freunde Berlin 1870: 84. 1871; FPM 1602. 1931; Hartog, Seagrass. 166. 1970; FTN 3: 61. 1989; SCCI 37. 1992.

Dioecious herb; rhizome creeping; internodes to 4 cm long; root one at each node, branched. Stem erect, to 30 cm high; internodes to 1 cm long, with persistent leaf-scars. Leaves 3 - 4, linear, falcate, obtuse, emarginate, 2.5 - 19 x 0.3 - 0.5 cm, 9 - 14-nerved; ligule triangular; sheaths obconical, 1.5 - 8 cm long. Perianth absent. Male flowers terminal, pedicellate; anthers ca 1 cm long. Female flowers sessile; ovary minute; style ca 0.5 cm long; stigma ca 3 cm long, spirally coiled; fruits 1 or 2, laterally compressed, ca 1 x 0.6 cm with 3 parallel ridges.

Habitat: Sandy and muddy bottoms, usually as pure formations, sometimes with other seagrasses.

Distrib.: Trop. Indian and W. Pacific Oceans. TN: Chengalpattu, Pudukkottai, Ramathapuram, Thanjavur and Tirunelveli. GM: Common along mainland shores and Kurusadai, Manoli, Moyal and Pullivasal Islands.

Specimens examined: (Total 14) NP & KR 85303; KR 85755; Ku Is. KKL 38; Ma Is. KKL 2924; Mu Is. KKL 2916; Pv Is. KKL 2929 (Vegetative).

2. *C. serrulata* (R. Br.) Asch. & Magnus in Sitzungsber. Ges. Naturf. Freunde Berlin 1870: 84. 1871; FBI 6: 570. 1893; FPM 1602. 1931; Hartog, Seagrass. 171. 1970; FTN 3: 62. 1989; SCCI 39. 1992. *Caulinia serrulata* R. Br., Prodr. 339. 1810. (Fig. 58)

Dioecious herb; rhizome creeping; internodes to 1.5 cm long; root one at each node, branched. Stem to 70 cm high, unbranched; internodes to 2.5 cm long with persistent leaf-scars. Leaves 2 - 5, linear, falcate, obtuse or emarginate, 5 - 23 x 0.6 - 1 cm, 12 - 22-nerved; ligule triangular; sheaths broadly triangular or obconical, 1.5 - 4 cm long, pink to pale brown. Perianth absent. Male flower solitary, terminal, pedicellate; anthers 2, linear-elliptic, ca 7 mm long. Female flowers 2, sessile or subsessile; ovary subglobose, ca 1.5 x 0.5 mm; style 1, bifid, ca 1.4 cm long; stigma equal or subequal, 1 - 2.5 cm long; fruits ellipsoid, 4-angular, 7 - 9 x 2 - 4 mm, brownish.

Fl. & Fr.: March - April & Sept. - Oct.

Habitat: Muddy and coral substrata in tidal and subtidal zones, with other seagrasses.

Distrib.: Trop. Indian and W. Pacific Oceans. TN: Almost throughout. GM: Common along mainland shores and Appa, Karaichalli, Kurusadai, Moyal, Pullivasal and Van Islands.

Use: Seeds and rhizomes of *Cymodocea* spp. are edible.

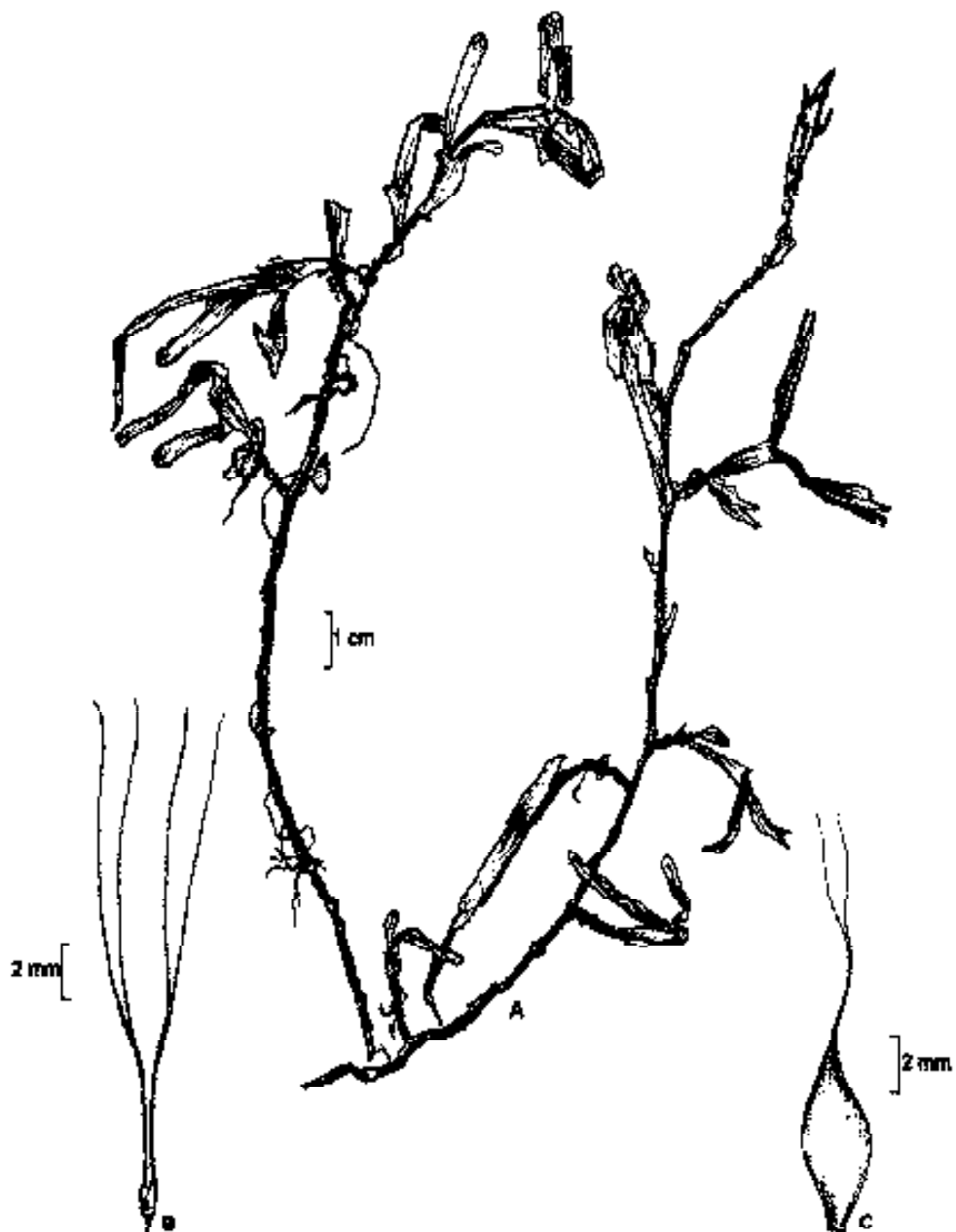


Fig. 68 (A - C). *Cymodocea serrulata* (R. Br.) Asch & Magnus
 A. Habit B. Petiole C. Fruit

Specimens examined: (Total 42) KSK 103387; PD & PU 106699; Ap Is. PD 101589; Kc Is. SAM 104745; Ku Is. SVP & DD 88138; Mu Is. PD 106803; Va Is. PD & PU 107312.

2. *Halodule* Endl.

Tropics, 6 species and 3 in India.

Key to the species

- | | |
|--|------------------------|
| 1a. Leaves obtuse and serrulate at apex | 1. <i>H. pinifolia</i> |
| b. Leaves neither obtuse nor serrulate at apex | 2 |
| 2a. Leaves tridentate at apex | 2. <i>H. uninervis</i> |
| b. Leaves bidentate at apex | 3. <i>H. wrightii</i> |

1. *H. pinifolia* (Miki) Hartog in *Blumea* 12: 309, f. 10. 1964 & *Seagrass*. 158. 1970; Hartog & Zong-Dai in *Curr. Sci.* 57: 1172. 1988; FTN 3: 62. 1989; SCCI 44. 1992. *Diplanthera pinifolia* Miki in *Bot. Mag. (Tokyo)* 46: 787, f. 9. 1932.

Dioecious herb; rhizome creeping, branched, moniliform; internodes to 5 cm long; roots 1 - 7 at each node. Stem erect, to 2 cm; internodes very short; scales linear-oblong, convolute, oblique, 0.5 - 1.5 cm long. Leaves 2 - 3, linear, obtuse-retuse or subtruncate, serrate, 10 - 30 cm long, 3-nerved. Male flowers 2, pedicellate, subequal, dorsally connate; anthers oblong, 3 - 5 mm long. Female flowers sessile, enclosed by leaf sheaths; ovary ovoid; styles 1 - 1.5 cm long; fruits globose-subglobose or ovoid, ca 2 mm across.

Fl. & Fr.: Feb. - July.

Habitat: Sandy and muddy substrata, mangrove creeks, fine sandy substratum, with other seagrass species of *Cymodocea*, *Halodule*, *Halophila* and *Syringodium*.

Distrib.: Indian and W. Pacific Oceans. TN: Throughout. GM: Common along mainland shores and Karichalli, Kaswari, Kurusadai, Muyal, Pullivasal and Pumarichan Islands.

Specimens examined: (Total 20) PD 100517, 100439; Ka Is. PD 102202; Kc Is. SAM 104748; Ku Is. PD & PU 106892; Mu Is. PD & PU 106802; Pv. Is. PD & PU 106858.

2. *H. uninervis* (Forssk.) Asch. in Boiss., *Fl. Orient.* 5: 24. 1882; Hartog, *Seagrass*. 147. 1970; FTN 3: 62. 1989; SCCI 48. 1992. *Zostera uninervis* Forssk., *Fl. Aegypt.-Arab.* 157. 1775. *Diplanthera uninervis* (Forssk.) Asch. in Engl. & Prantl, *Nat. Pflanzenfam.* 1: 37. 1897; FPM 1602. 1931. *Cymodocea australis* Trimen, *Syst. Cat. Fl. Pl. Ceylon* 99. 1885; FBI 6: 570. 1893.

Dioecious herb; rhizome creeping, branched, moniliform; internodes to 4.5 cm long; roots 1 - 6 at each node. Stem to 19 cm high; internodes to 2.5 cm long; scales linear-oblong,

oblique, 0.7 - 1.2 cm long, hyaline. Leaves 2 - 4, linear, obtuse, 5 - 25 cm long, 3-nerved; lateral nerves end in a tooth; sheaths linear, folded along margins, 1.5 - 5 cm long. Male flowers 2, pedicellate, subequal; anthers oblong, 3 - 4.5 mm long. Female flowers sessile, enclosed by leaf sheaths; ovary ovoid; styles 2 - 4 cm long; fruits subglobose to ovoid, ca 2 mm across.

Fl. & Fr.: June - July.

Habitat: Sandy and muddy substrata, with other seagrasses.

Distrib.: Indian and W. Pacific Oceans. TN: Throughout. GM: Common along mainland shores and Kurusadai, Kaswari, Moyal, Purnarichan, Shingle and Van Islands.

Use: Dugongs feed on the plants (Anon., 1987).

Specimens examined: (Total 25) KSK 103489; Ka Is. PD 102204; Ku Is. KKL 2864; Mu Is. KKL 2920; Pu Is. PD 100566; Sh Is. KKL 3026; Van Is. PD & PU 103535.

3. *H. wrightii* Asch. in Sitzungsber. Ges. Naturf. Freunde Berlin 1868: 24. 1868; Hartog in *Blumea* 12: 304, ff. 6-8. 1964 & *Seagrass*. 154. 1970; SCCI 53. 1992. *Diplanthera wrightii* (Asch.) Asch. in Engl. & Prantl, *Nat. Pflanzenfam.* 1: 37. 1897.

Dioecious herb; rhizome creeping, branched, moniliform; internodes to 2.5 cm long; roots 1 - 7 at each node. Stem to 4.5 cm high; internodes to 0.7 cm long; scales linear-oblong, oblique, convolute, 0.7 - 1.3 cm long. Leaves 2 - 3, linear, bidentate or bicuspidate, 5 - 12 cm long, 3-nerved; sheaths linear, convolute, 1 - 3.5 cm long. Male flowers 2, pedicellate, subequal; anthers oblong, 3 - 5 mm long. Female flowers sessile, enclosed by leaf sheaths; ovary ovoid; style to 2.8 cm long, terminal or subterminal; fruits globose-subglobose or ovoid, ca 2 mm across.

Fl. & Fr.: March - July.

Habitat: Sandy to black muddy and coral substrata, with species of *Halophila* and *Halodule*.

Distrib.: Carribbean and Gulf of Mexico. TN: Ramanathapuram and S. Arcot. GM: Along mainland shores and islands. Now collected around Manoli Island, not common.

Specimens examined: (Total 5) RG & KR 86839A; Ma Is. PD 101470.

3. *Potamogeton* L.

Cosmopolitan, ca 90 species, 18 in India, 4 in Tamil Nadu and one in GM.

P. pectinatus L., Sp. Pl. 127. 1753; FBI 6: 567. 1893; FPM 1600. 1931; FTC 3: 1716. 1983; FTN 3: 62. 1989.

Aquatic herb; branchlets distichous, filiform. Leaves acicular, puberulous. Spikes axillary, ca 2.5 cm long. Flowers sessile. Perianth-lobes 4, obovate-oblong. Stamens 4. Ovary linear; stigma subsessile, decurrent. Drupelets obovoid, 3.5 - 4 x 2 - 3 mm, obscurely beaked.

Fl. & Fr.: Jan. - March.

Habitat: Ponds and tanks, with *Hydrilla verticillata*, *Vallisneria natans* etc.

Distrib.: Cosmopolitan. TN: Chengalpattu, Coimbatore, Dharmapuri, S. Arcot and Tuticorin. GM: Once collected on mainland coast at Athur in Tuticorin, rare.

Specimens examined: (Total 6) PD & PU 107274B; 107243.

4. *Ruppia* L.

Subtropics and temperate regions, 1 - 7 species and one in India.

R. maritima L., Sp. Pl. 127. 1753; FPM 1600. 1931; BOBSI 23: 112. 1983; FTN 3: 61. 1989. *R. rostellata* Koch ex Rehb., Iconogr. Bot. Pl. Crit. 2: 66. 1824; FBI 6: 668. 1893. (Fig. 59)

Submerged, much branched herb; rootstock creeping, much branched, slender, 2.5 - 5 x 0.1 - 0.2 cm. Leaves filiform, acute, stramineous green; sheaths narrow, membranous, hyaline. Inflorescence a spadix; spathe ca 5 mm long, hyaline, 4 - 6-flowered; peduncle 2 - 4 x 0.2 - 0.3 mm. Flowers sessile, minute. Perianth absent. Stamens 2, sessile, reniform, pale yellowish. Ovary ca 0.5 mm long; style very short; stigma peltate, 4-lobed. Achenes long-stipitate, ovoid, ca 2 x 1.5 mm, dark brownish; peduncles elongate in fruiting.

Fl. & Fr.: April - Sept.

Habitat: Slow-flowing or still brackish water streams with *Chara* sp.

Distrib.: Temperate and subtropical regions. TN: Chengalpattu, Ramanathapuram and Tuticorin. GM: Earlier collected at Tuticorin. Now collected at Punnakayal near Tambra-parani estuary; rare.

The 2 earlier collections from Tamil Nadu coast at MH are from Tuticorin and Ramanathapuram respectively. It was collected in the vicinity of Hare Island (D.D. Sundararaj, *in litt.*) which is now connected to the mainland coast and no longer an island. The sea in the said area is so rough now that it is unlikely to occur here. Rajeswari and

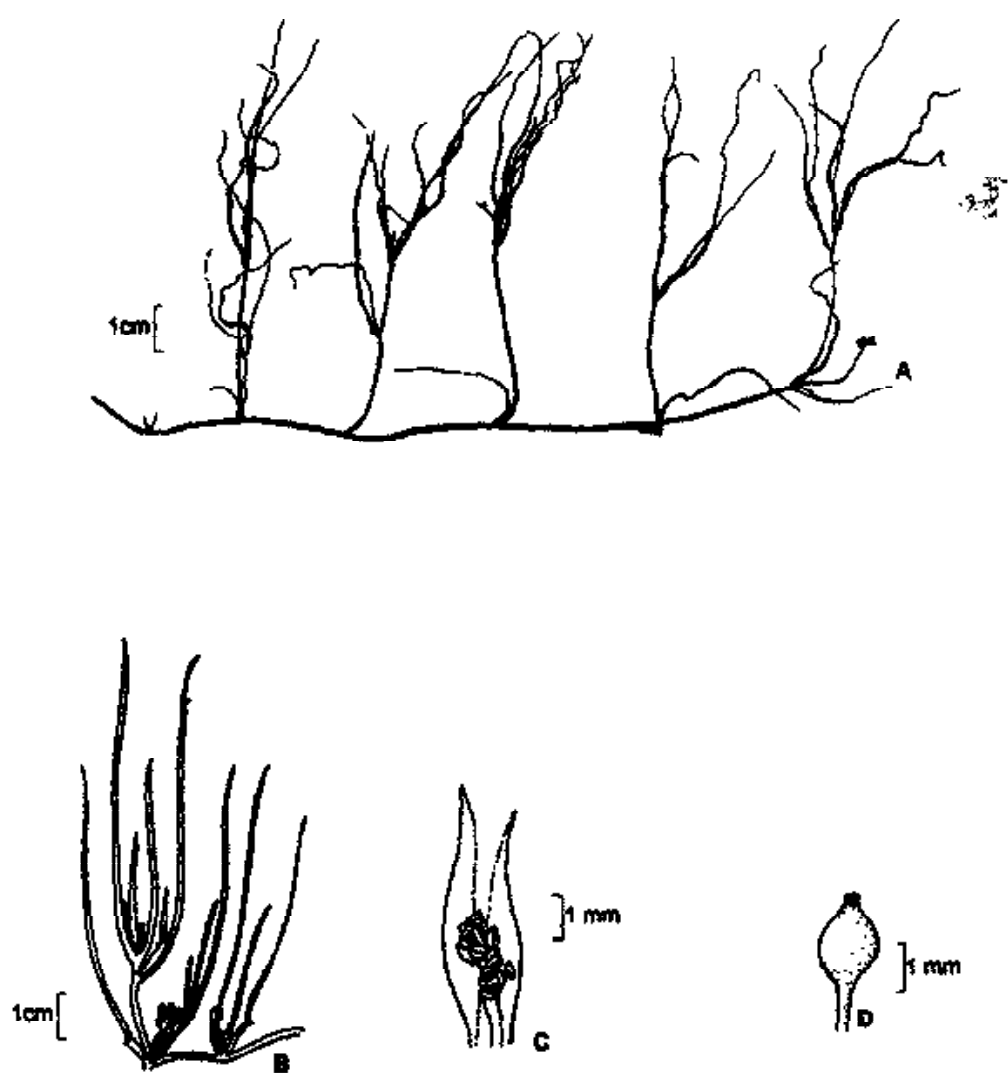


Fig. 29 (A - D). *Ruppia maritima* L.

A. Habit B. Portion of fertile shoot C. Inflorescence D. Fruit

Lakshmanan (1983) reported from Kurusadai Island. We could neither collect it here nor have seen material collected by them. Livingstone and Henry (1994) included following Mayuranathan (1929) without seeing any specimen. This species appears to be rare on the Tamil Nadu coast.

A number of birds are reported to feed on the plant and disperse (Ridley, 1930). However, it is extremely rare in the region.

Uses: Flowering herb depurant and vulnerary. Favourite food of milk-fish.

Specimens examined: (Total 5) DD 87145; PD 102214.

5. *Syringodium* Lindau

Indian and W. Pacific Oceans, 2 species and one in India.

S. isoetifolium (Asch.) Dandy in J. Bot. 77: 116. 1939; Hartog, Seagrass. 177. 1970; FTN 3: 62. 1989; SCCI 55. 1992. *Cymodocea isoetifolia* Asch. in Sitzungsber. Ges. Naturf. Freunde Berlin 1867: 3. 1867; FBI 6: 570. 1893; FPM 1602. 1931. (Fig. 60)

Dioecious herb; rhizome creeping, branched; internodes to 3 cm long; roots 1 - 5 at each node; scales linear-oblong, obtuse, 1.5 - 2.2 cm long. Stem to 60 cm high; internodes to 7.5 cm long. Leaves 2 - 3, terete, to 40 cm long; sheaths tubular, 1 - 6.5 cm long. Flowers in terminal cymes, subtended by reduced leaf-sheaths and scales; sheaths oblong, to 3.5 cm long. Male flowers pedicellate; stamens 2, oblong, 2.5 - 3.5 cm long. Female flowers 2, sessile; ovary 2, ovoid; style single, terete, 1 - 7 mm long; stigma bifid, recurved, 3.5 - 5 mm long; fruits ellipsoid, angular, 4 - 6 mm long.

Fl. & Fr.: Throughout the year.

Habitat: Coral flats, and sandy to muddy substrata, with *Cymodocea serrulata*, *Halodule* spp. and *Halophila ovalis*.

Distrib.: Australia and Trop. Indian Ocean. TN: Throughout. GM: Common along mainland shores and Appa, Karaichalli, Kaswari, Kurusadai, Muyal, Pumarichan, Up-puthanni and Van Islands.

Specimens examined: (Total 61) KSK 103467; SAM 106392; Ap Is. PD 101588; Ka Is. PD & PU 107514; Kc Is. PD 102098; Ku Is. NP & KR 85333; Mu Is. PD & PU 106801; Pu Is. PD & PU 106849; Ut Is. PD & PU 106618; Va Is. PD & PU 107526.

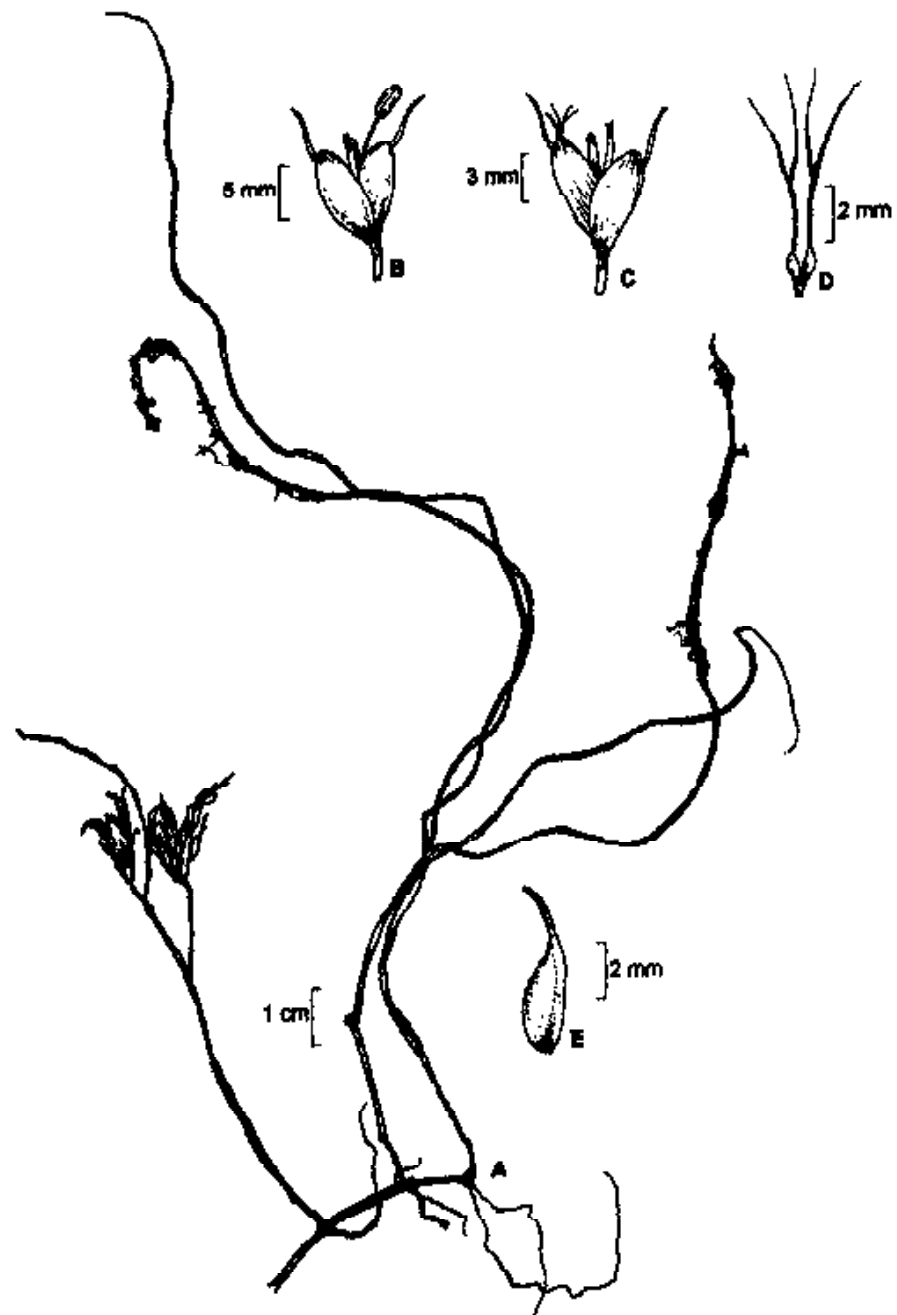


Fig. 60(A - E). *Syringodium isoetifolium* (Asch.) Dandy
 A. Habit B. Male flower C. Female flower D. Pistil E. Fruit

111. ERIOCAULACEAE

Eriocaulon L.

Tropics and subtropics, ca 400 species, 70 in India, 21 in Tamil Nadu and one in GM.

E. quinquangulare L., Sp. Pl. 87. 1753; FBI 6: 582. 1893; FPM 1620. 1931; FTC 3: 1721. 1983; FTN 3: 64. 1989.

Annual herb; culms tufted, ca 10 cm high. Leaves linear, acute, 2.2 - 5 x 0.2 - 0.3 cm, glabrous, pinkish. Flowers in terminal, globose-ovoid head, 4 - 5 mm across; involucrel bracts linear-oblong, to 1.2 mm long; floral bracts obovate, acuminate, glabrous, to 1.8 mm long. Male floret: calyx 3-lobed, spathaceous, oblong-spatulate, ciliate; corolla tubular below, 3-lobed above; lobes linear-spatulate, pilose; stamens 6. Female floret stipitate; calyx 3-lobed; lobes linear-spatulate, pilose at apex; corolla 3-lobed; lobes linear-spatulate, free, ciliate at apex; ovary sessile; style single; stigmas 3; seeds many, ellipsoid, pale yellowish.

Fl. & Fr.: Nov. - Feb.

Habitat: Marshy localities, with *Cyperus* spp., *Ludwigia adscendens* etc.

Distrib.: India, Myanmar and Sri Lanka. TN: All districts. GM: Mainland coast, occasional.

Specimens examined: (Total 94) PD 101679; VB 1193, 1658.

112. CYPERACEAE

Key to the genera

1a. Culms setaceous	2
b. Culms not setaceous	3
2a. Stamens 3; achenes with persistent style base, not apiculate	1. <i>Bulbostylis</i>
b. Stamens 1 or 2; achenes without persistent style base, minutely apiculate ..	8. <i>Rikkella</i>
3a. Involucrel bracts much reduced or absent	4
b. Involucrel bracts well-developed	5
4a. Leaves reduced to a sheath; involucrel bracts absent; hypogynous bristles present	3. <i>Eleocharis</i>
b. Leaves not reduced to a sheath; involucrel bracts much reduced; hypogynous bristles absent	4. <i>Fimbristylis</i>
5a. Glumes spiral; involucrel bract solitary	9. <i>Schoenoplectus</i>
b. Glumes distichous; involucrel bracts more than one	6
6a. Rachilla persistent	7

- | | | |
|-----|---|--------------------|
| b. | Rachilla deciduous | 8 |
| 7a. | Stigmas 3; achenes trigonous or flattened, if flattened one edge not against rachilla | 2. <i>Cyperus</i> |
| b. | Stigmas 2; achenes flattened with one edge against rachilla | 7. <i>Pycnus</i> |
| 8a. | Glumes 3 - 7-nerved; stamens 2 or 3; stigmas 2 | 5. <i>Kyllinga</i> |
| b. | Glumes 9-nerved; stamen 1; stigmas 3 | 6. <i>Mariscus</i> |

1. *Bulbostylis* Kunth nom. cons.

Tropics and subtropics, ca 100 species, 5 in India, 3 in Tamil Nadu and 2 in GM.

Key to the species

- | | | |
|-----|---|-----------------------|
| 1a. | Spikelets in heads | 1. <i>B. barbata</i> |
| b. | Spikelets not in heads, simple or subcompound | 2. <i>B. puberula</i> |

1. *B. barbata* (Rottb.) Kunth ex C.B. Clarke in Fl. Brit. India 6: 516. 1893; FPM 1662. 1931; FM 1, 7: 539. 1974; IFTC t. 778. 1982; FTC 3: 1725. 1983; RHFC 5: 327. 1985; FTN 3: 65. 1989. *Scirpus barbatus* Rottb., Descr. Pl. Rar. 27. 1772.

Annual herb; culms caespitose, slender, to 20 cm high, striate, glabrous. Leaves basal, filiform, shorter than or as long as culms; sheaths 2 - 2.5 cm long, membranous, bearded at mouth, stramineous or hyaline. Heads terminal, 1 - 1.5 cm across; involucre bracts 1 - 3, setaceous, spreading, ca 2 cm long, smooth or scabrid. Spikelets sessile, lanceolate, 4 - 5 x 1 - 3 mm, 6 - 10-flowered. Glumes lanceolate-ovate, cuspidate, 2 - 3.5 x 0.8 - 1.5 mm, keeled, glabrous or ciliolate along margins, reddish brown; keel greenish. Stamens 1 - 3; filaments 0.4 - 1 mm long; anthers linear, 0.8 - 1 mm long. Ovary oblong-obovoid, ca 0.5 mm long; style single, flat, dilated at base, 0.6 - 1.8 mm long, articulate; stigmas 3, 0.6 - 1 mm long. Achenes stipitate, oblong-obovoid, 0.5 - 1 mm long; style base persistent, stramineous.

Key to the subspecies

- | | | |
|-----|--|------------------------------|
| 1a. | Culms ca 0.5 mm thick; heads ca 1 cm across; spikelets ca 4 mm long; glumes less than 3 mm long, glabrous along margins | 1.1. subsp. <i>barbata</i> |
| b. | Culms ca 1 mm thick; heads ca 1.5 cm across; spikelets ca 5 mm long; glumes more than 3 mm long, ciliolate along margins | 1.2. subsp. <i>pulchella</i> |

1.1. subsp. *barbata*: T. Koyama in Bot. Mag. (Tokyo) 93: 341. 1980 & RHFC 5: 327. 1985; FTN 3: 65. 1989, p.p. *Bulbostylis barbata* (Rottb.) Kunth ex C.B. Clarke var. *barbata*: FBI 6: 651. 1893.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy and wet localities, with *Cleome angustifolia*, *Portulaca tuberosa* etc.

Distrib.: Tropics and subtropics of the Old World and SE. USA. TN: All districts. GM: Common on mainland coast and frequent on Anaipar, Kaswari, Kurusadai, Manoli, Mullai, Muyal, Nallathanni, Shingle, Upputhanni and Van Islands.

Use: Herb boiled in water and the brew given in dysentery.

Specimens examined: (Total 85) KSK 102903; PD & PU 106495; An Is. KSK 102369; Ka Is. PD & PU 107513; Mu Is. PD 100632; Ut Is. PD 101640; Va Is. KSK 102389.

1.2. subsp. *pulchella* (Thwaites) T. Koyama in Bot. Mag. (Tokyo) 93: 341. 1980 & RHFC 5: 328. 1985. *Isolepis pulchella* Thwaites, Enum. Pl. Zeyl. 350. 1864. *Bulbostylis barbata* (Rottb.) Kunth ex C.B. Clarke var. *pulchella* (Thwaites) C.B. Clarke in Fl. Brit. India 6: 652. 1893.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy seashores, with *Dactyloctenium aegyptium*, *Trachys muricata* and *Vernonia cinerea*.

Distrib.: S. India and Sri Lanka. TN: Ramanathapuram and Tuticorin. GM: Common on mainland coast and most islands but not on those of the Tuticorin group. Earlier collected at Tuticorin (*vide* Clarke, *l.c.*).

Specimens examined: (Total 10) PD 100414; RW 2891; Ap Is. PD 101586; Ku Is. PD 99792; Mp Is. PD 101439; Ni Is. PD 101616; Pu Is. PD 100547; Pv Is. PD 101418; Th Is. PD 101505.

2. *B. puberula* (Poir.) Kunth ex C.B. Clarke in Fl. Brit. India 6: 652. 1893; FPM 1662. 1931; FM 1, 7: 540, f. 37. 1974; RHFC 5: 326. 1985; V.S. Ramach. & Balasub. in Sci. & Cult. 56: 209. 1990. *Scirpus puberulus* Poir. in Lam., Encycl. 6: 767. 1804.

Annual herb; culms densely tufted, slender, to 40 cm high, glabrous or pubescent. Leaves shorter than culms, filiform, pubescent; sheaths stramineous to brownish. Rays to 5, 1 - 5 mm long; involucre bracts 2 - 4, filiform, dilated at base, to 4 cm long, membranous. Spikelet solitary, ovate-oblong, 4 - 8 x 1.4 - 1.6 mm, 5 - 14-flowered. Glumes broadly ovate, acute, 1.7 - 2.2 x 1.5 - 2 mm, keeled, short-mucronate at apex, greenish to brown, densely pubescent. Stamen 1; filament slender; anther oblong-linear, 0.5 - 0.7 mm long. Ovary obovoid; style simple, 0.7 - 1 mm long; stigmas 3, shorter than style. Achenes obovoid, triquetrous, 0.7 - 1 mm long, transversely wrinkled, white-stramineous; style base conical.

Fl. & Fr.: Dec. - Feb.

Habitat: Wet and sandy localities, with *Fimbristylis argentea*, *Murdannia spirata* and *Riklrella squarrosa*.

Distrib.: Madagascar, Malesia, also Southern U.S.A., Trop. Africa and Asia. TN: Ramanathapuram. GM: Rare on mainland coast, collected on way to Sethukarai.

Specimens examined: PD & PU 106520; VB 1646, 1866.

2. *Cyperus* L.

Tropics and subtropics, ca 600 species, 71 in India, 65 in Tamil Nadu and 14 in GM.

Key to the species

1a. Annual herbs	2
b. Perennial herbs	6
2a. Spikelets in a head	3
b. Spikelets spreading, not in a head	5
3a. Plant prostrate	12. <i>C. pygmaeus</i>
b. Plants erect	4
4a. Glumes orbicular to broadly ovate; stamens 2	7. <i>C. difformis</i>
b. Glumes oblong-lanceolate or oblong-elliptic; stamen 1.....	3. <i>C. castaneus</i>
5a. Glumes broadly ovate, mucronate, more than 3 mm long	4. <i>C. compressus</i>
b. Glumes orbicular, rounded or emarginate, less than 3 mm long	10. <i>C. Iria</i>
6a. Rhizome dichotomously branched	1. <i>C. arenarius</i>
b. Rhizome not dichotomously branched	7
7a. Culms triquetrous	8
b. Culms trigonous or subterete	11
8a. Culms arising from bulb-like tubers	2. <i>C. bulbosus</i>
b. Culms not arising from bulb-like tubers	9
9a. Plants more than 40 cm high; involucrel bracts 4 - 5, more than 17 cm long	11. <i>C. pangorei</i>
b. Plants less than 40 cm high; involucrel bracts 3, less than 17 cm long	10
10a. Leaves reduced to sheaths; glumes nerveless	9. <i>C. halpan</i>
b. Leaves not reduced to sheaths, 3/4 as long as culms; glumes 5 - 8-nerved	13. <i>C. rotundus</i>
11a. Inflorescence a head	5. <i>C. conglomeratus</i>
b. Inflorescence not a head	12
12a. Culms subterete, more than 1 m high	6. <i>C. corymbosus</i>
b. Culms trigonous, less than 1 m high	13
13a. Leaves as long as culms; achenes ellipsoid, ca 0.8 mm long	7. <i>C. exaltatus</i>
b. Leaves shorter than culms; achenes oblong, ca 1.5 mm long	14. <i>C. stoloniferus</i>

1. *C. arenarius* Retz., Obs. Bot. 4: 9. 1786; FBI 6: 602. 1893; FPM 1640. 1931; FTC 3: 1733. 1983; RHFC 5: 208. 1985; FIFTC t. 630. 1988; FTN 3: 68. 1989. (Fig. 61)

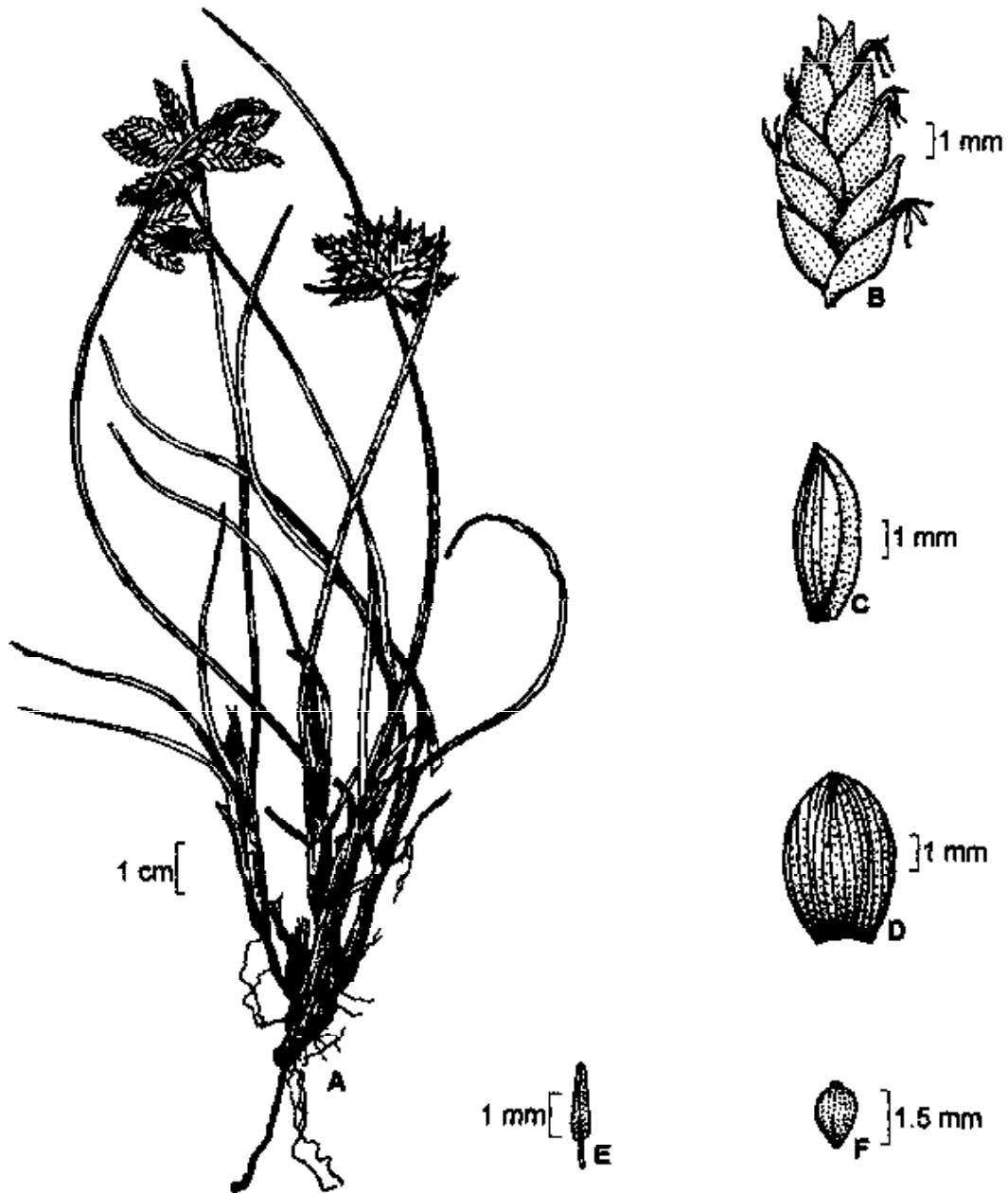


Fig. 61 (A - F). *Cyperus arenarius* Retz.

A. Habit B. Spikelet C & D. Glume lateral & ventral views
 E. Stamen F. Achene

Perennial; rhizome creeping, dichotomously branched, covered with reddish brown scales; culms terete, 2 - 35 cm high, rigid. Leaves usually shorter than culm, 1.5 - 25 x 0.1 - 0.2 cm, involute, obtuse, often recurved, coriaceous; sheaths stramineous with reddish brown nerves. Involucral bracts 3, foliaceous, basal one usually longer, sometimes to 15 cm. Inflorescence capitate. Spikelets 3 - 10, 6 - 16-flowered, ovate to elliptic, 0.5 - 1 x 0.2 - 0.5 cm, stramineous. Glumes distichous, ovate-elliptic, obtuse, apiculate, 4 - 5.5 x 3 - 3.5 mm, coriaceous, 13-nerved; nerves reddish brown. Stamens 3; filaments ca 1 mm long, brownish; anthers ca 2 mm long, yellow with a reddish appendage at apex. Ovary oblong, ca 1 x 0.3 mm; style short; stigmas 3, ca 2 mm long. Achenes obovoid, trigonous, 1.7 x 1 mm, yellowish brown.

Fl. & Fr.: Throughout the year.

Habitat: Sandy seashores, with *Cyperus bulbosus*, *C. conglomeratus* subsp. *pachyrhizus* and *Launaea sarmentosa*.

Distrib.: India, Iran, Pakistan, Sri Lanka and Vietnam. TN: Chengalpattu, Kanyakumari, Ramanathapuram, Thanjavur, Tirunelveli and Tuticorin. GM: Common throughout mainland coast and on islands.

Use: Good sand binder.

Specimens examined: (Total 35) KSK 102909; PD 100416, 102237; An Is. KSK 102382; Ap Is. PD 101581; Ku Is. PD 99776; Nt Is. PD 101612; Pu Is. PD 100555; Pv Is. KSK 102353; Vm Is. KSK 102388.

2. *C. bulbosus* Vahl, Enum. Pl. 2: 342. 1805; FBI 6: 611. 1893; FPM 1641. 1931; RHFC 5: 179. 1985; FTN 3: 68. 1989.

Perennial; culms triquetrous, erect, 8 - 25 cm, with a basal black bulb at base; bulbs 0.5 - 1 x 0.5 - 0.7 cm, covered with a scale-like structure, leathery, split into segments at maturity. Leaves several, involute, as long as or mostly longer than culm, tufted from base, smooth; sheaths membranous, whitish brown. Involucral bracts surpassing inflorescence, to 8 cm long. Spikelets spicate, 4 - 16-flowered, 1 - 1.5 cm long. Glumes ovate, acute-mucronate, 2 - 2.5 x 1.5 - 1.8 mm; nerves 7 - 9; midnerve green, prominent, reddish brown at periphery; rachilla winged, persistent. Stamens 3; filaments ca 0.4 mm long; anthers ca 2 mm long. Style ca 1 mm long; stigmas 3, ca 2 mm long. Achenes obovoid, trigonous, ca 1.5 x 0.5 mm, brownish black.

Fl. & Fr.: Aug. - Feb.

Habitat: Sandy localities, with *Cyperus arenarius*, *Iphigenia indica*, *Riklrella squarrosa* etc.

Distrib.: Malesia, N. Australia, S. Asia and Trop. Africa. TN: Chengalpattu, Coimbatore, Kanyakumari, Ramanathapuram, Tirunelveli and Tuticorin. GM: Common on mainland coast and most islands.

Uses: Roasted tubers have the flavour of potatoes; baked into bread or cooked into puddings. Further studies are required on the nutritional aspects.

Peafowl on Moyal Island are reported to feed on the bulbs.

Specimens examined: (Total 31) KSK 102751; An Is. KSK 102383; Ap Is. PD 101570; Ku Is. KSK 102306; Ma Is. PD 100692; Mu Is. PD 101447; Nt Is. PD 101619; Pu Is. PD 100561; Pv Is. PD 101430; Sh Is. PD 100351; Th Is. PD 101503; Vm Is. KSK 102392.

3. *C. castaneus* Willd., Sp. Pl. 1: 278. 1797; FBI 6: 598. 1893; FPM 1639. 1931; FM 1, 7: 630. 1974; RHFC 5: 206. 1985; FIFTC t. 631. 1988; FTN 3: 68. 1989.

Tufted annual; culms to 10 x 1 cm. Leaves shorter than or as long as culms. Involucral bracts 2 - 5, surpassing inflorescence. Inflorescence a head, 1.5 - 2.5 cm across. Spikelets 5 - 30, congested, linear, subacute, 0.5 - 2 x 0.1 - 0.2 cm, 20 - 50-flowered. Glumes oblong-lanceolate, obtuse or emarginate, 1.2 - 1.5 x 0.2 - 0.3 mm, 3-nerved, dark reddish brown. Stamen 1; anther ca 0.2 mm long. Ovary oblong, ca 0.1 mm long; style ca 0.6 mm long; stigmas 3, ca 0.5 mm long. Achenes oblong, 0.6 - 0.9 x 0.2 - 0.3 mm, brownish.

Fl. & Fr.: Nov. - Feb.

Habitat: Open places.

Distrib.: India to Malesia and N. Australia. TN: Chengalpattu, N. Arcot, Pudukkottai, Ramanathapuram, Tiruchirapalli and Tirunelveli. GM: Mainland coast, frequent.

Specimens examined: (Total 18) VB 1245.

4. *C. compressus* L., Sp. Pl. 46. 1753, emend. Dandy in Exell, Cat. S. Tome 357. 1944; FBI 6: 605. 1893; FPM 1640. 1931; FM 1, 7: 617. 1974; RHFC 5: 194. 1985; FTC 3: 1734. 1983; FIFTC t. 632. 1988; FTN 3: 69. 1989.

Annual; culms tufted, prostrate or erect, triquetrous, ca 30 cm high, smooth. Leaves usually shorter than culms, acuminate, scabrid towards tip; sheaths ca 6 x 0.5 cm, reddish purple. Inflorescence simple; involucral bracts 3 - 6; the lower most to 15 x 0.3 cm; rays 1 - 5, ca 5 cm long, spreading, sheathed at base; sheath ca 0.5 mm long, reddish purple. Spikelets 3 - 20, subdigitate, linear-oblong, ca 1.5 x 0.3 cm, 8 - 20-flowered. Glumes broadly ovate, 3 - 3.8 x 1.7 - 2 mm, mucronate with ca 1 mm long mucro, yellowish, 9 - 11-nerved, strongly keeled; keel greenish, ca 0.5 mm wide. Stamens 3; anthers ca 0.5 mm long. Style

single; stigmas 3. Achenes stipitate, trigonous with angles prominent like a wing, obovoid, ca 1.5 x 0.6 mm, smooth, brownish.

Fl. & Fr.: Sept. - Feb.

Habitat: Wet places and also on rocks and hard grounds, with *Boerhavia diffusa*, *Coelachyrum lagopoides* and *Dactyloctenium aegyptium*.

Distrib.: Asia from Iran and Afghanistan through the Indian subcontinent north-eastwards to China and Japan and eastwards to Malesia and Australia, also in E. Africa. Introduced into the New World. TN: Almost all districts. GM: Common on mainland coast and occasional on islands.

Use: Used as a fodder.

Specimens examined: (Total 71) KSK 102752, 102740; PD 101155, 101157, 102297.

5. *C. conglomeratus* Rottb. subsp. *pachyrrhizus* (Nees ex Boeck.) T. Koyama in Bot. Mag. (Tokyo) 93: 344. 1980 & RHFC 5: 211. 1985. *Cyperus pachyrrhizus* Nees ex Boeck. in Linnaea 35: 545. 1868; FBI 6: 602. 1893; FPM 1640. 1931; FTN 3: 72. 1989. (Fig. 62)

Perennial; rootlets slender, densely hairy, brownish; culms trigonous, basally bulged and sheathed, rigid, to 1 m high; sheaths dark reddish brown, striate. Leaves clustered from base, involute, minutely serrulate, obtuse at apex, 30 cm to as long as culms, 0.3 - 0.5 cm wide, coriaceous. Heads globose, 3 - 5 cm; involucre bracts 3, foliaceous, coriaceous; basal one facing downwards, 8 - 11 cm long. Spikelets strongly appressed, lanceolate, 1 - 2 cm long, stramineous. Glumes to 20 in each spikelet, distichous, broadly ovate, apiculate-cuspidate, 5 - 6.2 x 2.5 - 3 mm, 14-nerved; midnerve greenish; other nerves reddish. Stamens 3; filaments ca 0.5 mm long; anthers linear, ca 2.5 mm long. Style short; stigmas 3, ca 1.5 mm long. Achenes obovoid, trigonous, ca 1.8 x 0.8 mm, yellowish brown.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy seashores, with *Halopyrum mucronatum*, *Sesuvium portulacastrum*, *Spinifex littoreus* etc.

Distrib.: S. India and Sri Lanka. TN: Ramanathapuram, Tirunelveli and Tuticorin. GM: Common on all islands. Only around Tuticorin on mainland coast, very rare.

Uses: Good sand binder. The dried heads can be used in interior decoration.

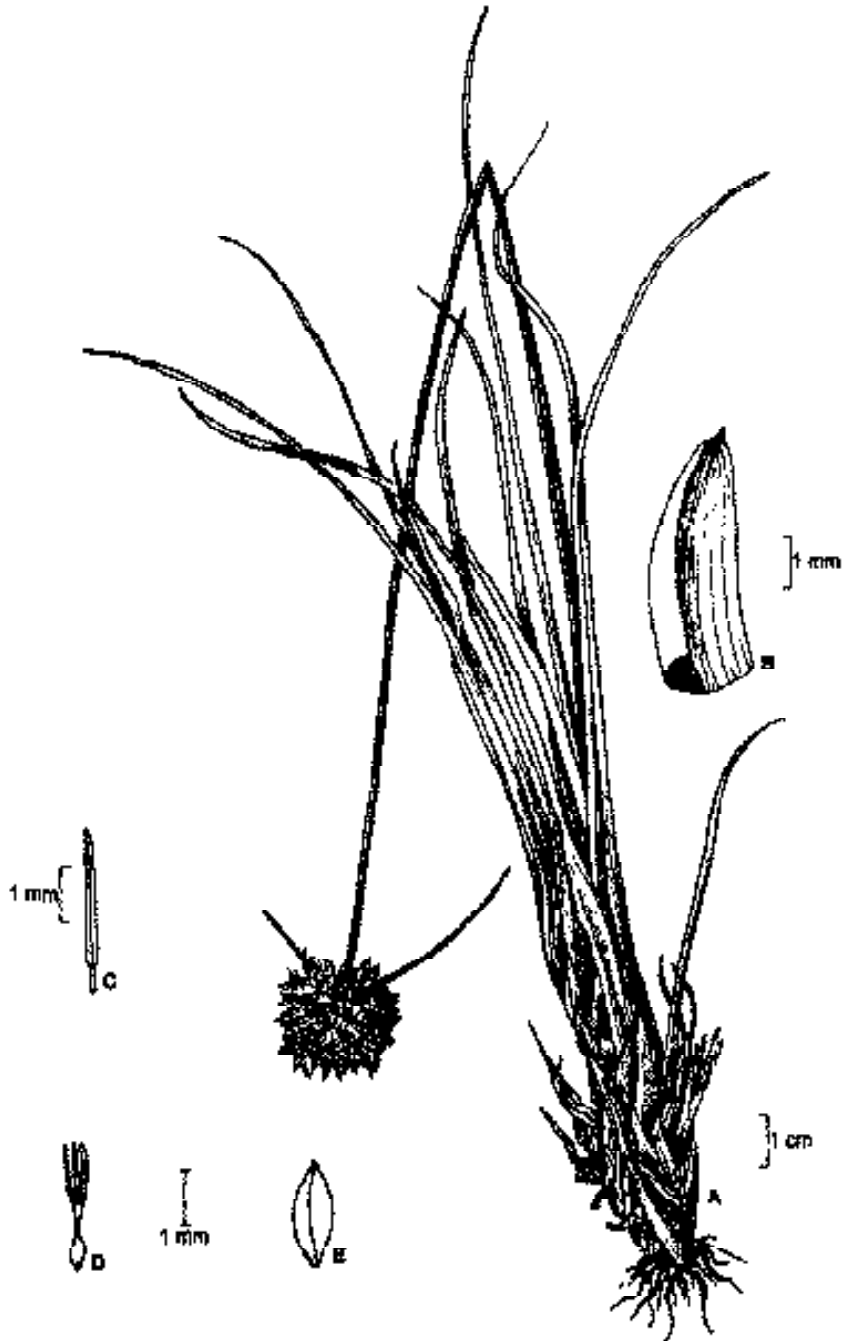


Fig. 42(A-E) *Cyperus unglomeratus* Roth. subsp. *pachyrhizus* (Nees ex Boeck.) T. Koyama
 A. Habit B. Glume C. Stamen D. Pistil E. Achene

Specimens examined: (Total 21) PD & PU 103533; Kc Is. PD 102087; Ku Is. NP & KR 85354; Ma Is. KSK 102331; Mu Is. PD 100656; Pc Is. PD & PU 106589; Pu Is. PD 100546; Pv Is. PD 101401; Ut Is. PD 101651.

6. *C. corymbosus* Rottb., Descr. Icon. Rar. Pl. 42, t. 7, f. 4. 1773; FBI 6: 612. 1893; FPM 1641. 1931; FTC 3: 1735. 1983; RHFC 5: 175. 1985; FIFTC t. 633. 1988; FTN 3: 69. 1989.

Perennial; rhizome creeping, woody, to 5 mm thick; culm subterete, 1 - 1.5 m high, glabrous, glaucous-green. Leaves ca 3 cm long; sheaths 3 - 4 at base, obliquely truncate at mouth, to 35 cm long, membranous. Inflorescence compound, subdense, 10 - 17 x 4 - 9 cm; involucre bracts 2 - 4, to 3.5 cm long; primary rays 6 - 15, unequal, ca 10 cm long; secondary rays to 2 cm long; spikes with 10 - 15 spikelets. Spikelets 5 - 18 x 1 - 1.5 mm. Glumes ovate-oblong or lanceolate-oblong, obtuse, 1.8 - 2.2 x 0.8 - 1 mm, brownish, hyaline along margins. Stamens 3; anthers ca 1 mm long; connectives subdeltoid. Ovary oblong; style simple; stigmas 3. Achenes oblong, trigonous, 1 - 1.2 x 0.2 - 0.3 mm, greyish brown.

Fl. & Fr.: Nov. - Feb.

Habitat: Marshy places, with *Cyperus* spp., *Monochoria vaginalis*, *Polygonum glabrum* etc.

Distrib.: India, Madagascar, Myanmar, Nepal, N. Australia, Trop. W. Africa, Trop. S. America and the W. Indies. TN: Chengalpattu, Salem and Tuticorin. GM: Mainland coast, rare. Once collected at Athur in Tuticorin.

Specimens examined: (Total 7) PD & PU 107268.

7. *C. difformis* L., Cent. Pl. 2: 6. 1756; FBI 6: 599. 1893; FPM 1640. 1931; FM 1, 7: 629. 1974; RHFC 5: 206. 1985; IFTC t. 781. 1982; FTC 3: 1736. 1983; FTN 3: 69. 1989.

Annual; culms tufted, triquetrous, 10 - 60 cm high. Leaves canaliculate, abruptly acuminate, shorter than culms, scaberulous along margins towards tip; sheaths stramineous brown. Heads globose, ca 1 cm, dense; involucre bracts 2 - 3; the lowest to 25 cm long; primary rays 3 - 9, spreading, unequal. Spikelets numerous, stellately spreading, linear-oblong, 2 - 8 x 1 - 1.25 mm, 10 - 30-flowered. Glumes orbicular to broadly obovate, obtuse or emarginate, 0.5 - 0.8 x 0.7 - 1 mm, membranous, hyaline along margins, green with purplish brown tinge. Stamens 2, rarely one; anthers oblong, ca 1 mm long. Style simple, very short; stigmas 3. Achenes broadly stipitate, obovoid-ellipsoid, triquetrous, apiculate, 0.5 - 0.7 mm long, stramineous brown.

Fl. & Fr.: Dec. - June.

Habitat: Weed in rice fields, with *Echinochloa colona*, *Fimbristylis argentea* and *F. miliacea*.

Distrib.: S. Europe through India and China to Japan and Malesia, also on Pacific Islands and Australia; introduced into C. America and S. Africa. TN: All districts. GM: Common on mainland coast.

Specimens examined: (Total 54) PD & PU 107024.

8. *C. exaltatus* Retz., Obs. Bot. 5: 11. 1789; FBI 6: 617. 1893; FPM 1642. 1931; FM 1, 7: 602. 1974; RHFC 5: 173. 1985; FTC 3: 1737. 1983; FIFTC tt. 637 & 638. 1988; FTN 3: 70. 1989. (Fig.63)

Perennial; rhizome short, woody; culms tufted, trigonous, ca 1 m high. Leaves as long as culms, coriaceous, scabrous along margins; sheaths purplish brown. Inflorescence compound or decomposed; involucre bracts 4 - 6, foliaceous, to 80 cm long; primary rays 5 - 9, unequal, to 18 cm long, smooth; secondary rays to 5 cm long. Spikes digitate, 2 - 5 x 0.7 - 1.5 cm. Spikelets spicate, loose, linear-lanceolate, 0.4 - 10 x 1 - 2 mm, 10 - 20-flowered. Glumes broadly ovate, obtuse, 1.5 - 2 x 1.2 - 1.5 mm, 3 - 5-nerved, stramineous brown, keeled; keel greenish. Stamens 3; anthers oblong, ca 0.6 mm long. Style simple; stigmas 3. Achenes ellipsoid, trigonous, shortly apiculate, ca 0.8 x 0.4 mm, yellowish brown.

Fl. & Fr.: Sept. - Jan.

Habitat: Marshy places and cultivated fields with *Hygrophila schulli*, *Pycneus polystachyos* var. *laxiflorus* etc.

Distrib.: Pantropical. TN: All districts. GM: Mainland coast, frequent.

Use: Plant suitable for paper-making.

Specimens examined: (Total 45) ANH 5328; KMS 13729; PD 102263.

9. *C. halpan* L., Sp. Pl. 45. 1753 (as "*haspan*"); FBI 6: 600. 1893; FPM 1640. 1931; FM 1, 7: 624. 1974; FTC 3: 1738. 1983; RHFC 5: 203. 1985; FIFTC t. 639. 1988; FTN 3: 71. 1989.

Perennial, rhizomatous; roots reddish; culms tufted, triquetrous, to 40 cm high. Leaves as long as culms; blades reduced to lanceolate appendages of sheaths, scaberulous towards tip; sheaths to 6 cm long, purplish red. Inflorescence compound or decomposed, to 15 cm across; involucre bracts 2 or 3, foliaceous, to 10 cm long; primary rays 10 - 20, unequal, to 15 cm long; secondary rays ca 2.5 cm long. Spikelets digitate, linear-lanceolate, acute, 10 - 30-flowered. Glumes oblong-ovate, obtuse or mucronate, 1 - 1.5 x 0.5 - 0.7 mm, pale brownish with purple spots, nerveless. Stamen 1; anther ca 0.5 mm long. Ovary obovoid;

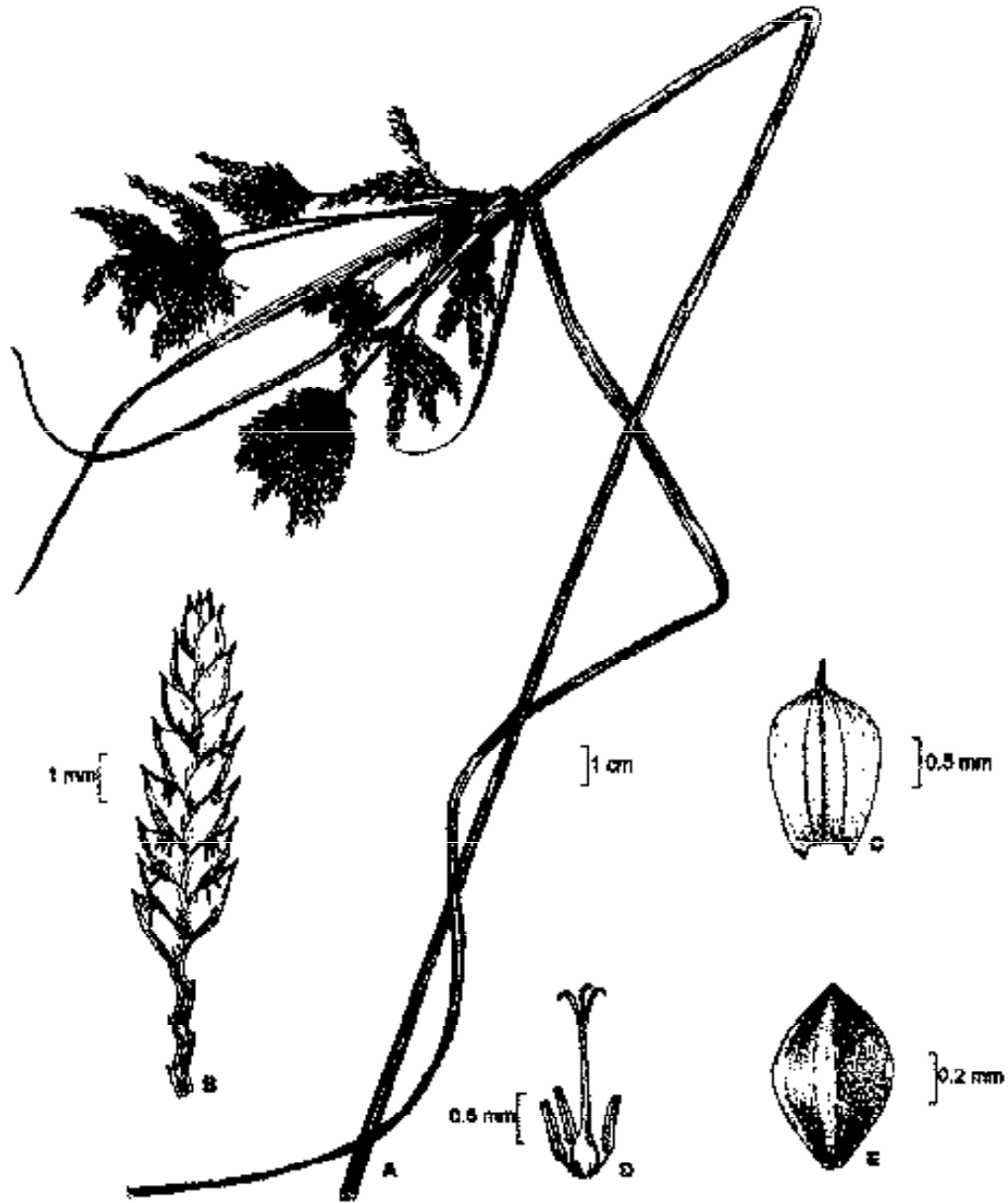


Fig. 63 (A - E). *Cyperus exaltatus* Retz.

A. Habit B. Spikelet C. Glume D. Pistil & stamens E. Achene

style simple; stigmas 3. Achenes stipitate, broadly obovoid, trigonous, apiculate, 0.4 - 0.5 mm long, verruculose, creamy-yellow.

Fl. & Fr.: April - Nov.

Habitat: Wet places and rice fields, with *Cyperus difformis*, *Eriochloa procera* and *Fimbristylis bisumbellata*.

Distrib.: Tropics and subtropics. TN: Chengalpattu, Coimbatore, Kanyakumari, Nilgiri, Tiruchirapalli and Tirunelveli. GM: Mainland coast, frequent.

Specimens examined: (Total 18) PD & PU 107023.

10. C. Irla L., Sp. Pl. 45. 1753; FBI 6: 606. 1893; FPM 1640. 1931; FM 1, 7: 616. 1974; RHFC 5: 196. 1985; FTC 3: 1738. 1983; FTN 3: 71. 1989.

Annual; roots reddish brown; culms tufted, triquetrous, slender, to 16 cm high. Leaves basal, usually shorter than culms, flat, acuminate, scabrous along margins towards tip; sheaths to 5 cm long, reddish brown. Inflorescence compound; involucrel bracts 3 - 5, spreading, foliaceous, acuminate; the lower most to 12 x 0.3 cm, 1 - 3 surpassing inflorescence; primary rays 3 - 5, slender, erect, unequal, to 6 cm long; secondary rays many, very short, ca 1 cm long. Spikes 1 - 3 cm long, spicate, loose, oblong-ovoid, narrow. Spikelets 8 - 25, linear-oblong, 8 - 16-flowered; rachilla wingless, slender; internodes 0.5 - 0.6 mm long. Glumes orbicular, rounded, emarginate, ca 1 x 1 mm, keeled, membranous, 3-nerved, greenish yellow, nerveless on sides. Stamens 2; anthers oblong, ca 0.2 mm long, stramineous yellow; style simple, short; stigmas 3, ca 0.5 mm long, thin. Achenes stipitate, oblong-obovoid, trigonous, faintly flattened, cuneate at base, ca 1 x 0.6 mm, smooth, brownish.

Fl. & Fr.: June - Jan.

Habitat: Wet situations and rice fields, with *Dactyloctenium aegyptium*, *Kyllinga hyalina* and *Peplidium maritimum*.

Distrib.: Asia from Iran and Afghanistan through the Indian subcontinent north-eastwards to China and Japan, and eastwards to Malesia and Australia, also E. Africa. TN: Almost all districts. GM: Frequent on mainland coast and rare on islands. Once collected on Thalaiyari Island.

Uses: Culms woven into mats. Used as a fodder. Also a stimulant, tonic, astringent and stomachic.

Specimens examined: (Total 50) PD 101677; Th Is. PD 101520.

11. *C. pangorei* Rottb., Descr. Pl. Rar. 18. 1772 & Descr. Icon. Rar. Pl. 31, t. 7, f. 3. 1773; FPM 1641. 1931; FTC 3: 1740. 1983; RHFC 5: 176. 1985; FIFTC tt. 642 & 643. 1988; FTN 3: 72. 1989. *C. tagetum* Roxb., Fl. Ind. 1: 211. 1820; FBI 6: 613. 1893.

Perennial; rhizome clothed with brown scales; culms tufted, acutely triquetrous, 60 - 150 cm high. Leaves reduced to sheaths, very rarely blades present, to 10 cm long; sheaths cataphylloid, 20 - 30 cm long, purplish brown. Inflorescence compound, lax, 6 - 12 x 7 - 16 cm; involucre bracts 4 - 5, foliaceous, acute, 17 - 30 cm long; rays 5 - 7, unequal, to 9 cm long. Spikes ovate, 2 - 3 cm long with 5 - 15 spikelets. Spikelets linear, subacute, 1 - 2 x 0.1 - 0.15 cm. Glumes oblong, obtuse, 2.2 - 2.7 x 0.8 - 1 mm, pale brownish with reddish brown spots. Stamens 3; anthers ca 1 mm long. Style simple, ca 3 mm long; stigmas 3. Achenes oblong-obovoid, trigonous, apiculate, 1.25 x 0.2 - 0.3 mm, brownish.

Fl. & Fr.: Nov. - Feb.

Habitat: Marshy localities.

Distrib.: India, Myanmar, Nepal and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Use: Used for making mats.

Specimens examined: (Total 56) PD 107063; VB 1771, 2123.

12. *C. pygmaeus* Rottb., Descr. Icon. Rar. Pl. 20, t. 14, ff. 4 & 5. 1773; FM 1, 7: 634. 1974; RHFC 5: 214. 1985; FTC 3: 1742. 1983; FIFTC t. 646. 1988; FTN 3: 74. 1989. *Juncellus pygmaeus* (Rottb.) C.B. Clarke in Fl. Brit. India 6: 596. 1893; FPM 1629. 1931. (Fig. 64)

Annual; culms tufted, cushion-like, trigonous, to 10 cm long. Leaves canaliculate, acute, usually longer than culms, 1 - 3 mm wide, scabrous along margins; sheaths ca 2 cm long, membranous, hyaline with pale reddish brown nerves. Involucre bracts 3 - 5, foliaceous, dilated at base, acuminate, erect, ca 10 cm long, surpassing inflorescence. Inflorescence a congested lobed head, 0.5 - 1 cm. Spikelets dense, ovate, 2.5 - 3 x 1 - 1.5 mm, 6 - 14-flowered. Glumes lanceolate-ovate, acute, 1.5 - 1.7 x 0.3 - 0.5 mm, hyaline; nerves 3 - 5, greenish. Stamen 1; filament ca 4 mm long; anther linear, ca 0.4 mm long, yellow. Ovary linear-oblong; style simple, ca 0.4 mm long; stigmas 2, glabrous, ca 0.5 mm long. Achenes linear-oblong, ca 1.1 x 0.2 mm, pale brown.

Fl. & Fr.: Sept. - May.

Habitat: Edges of ponds and lakes, with *Cyperus compressus*, *Fimbristylis argentea* etc.

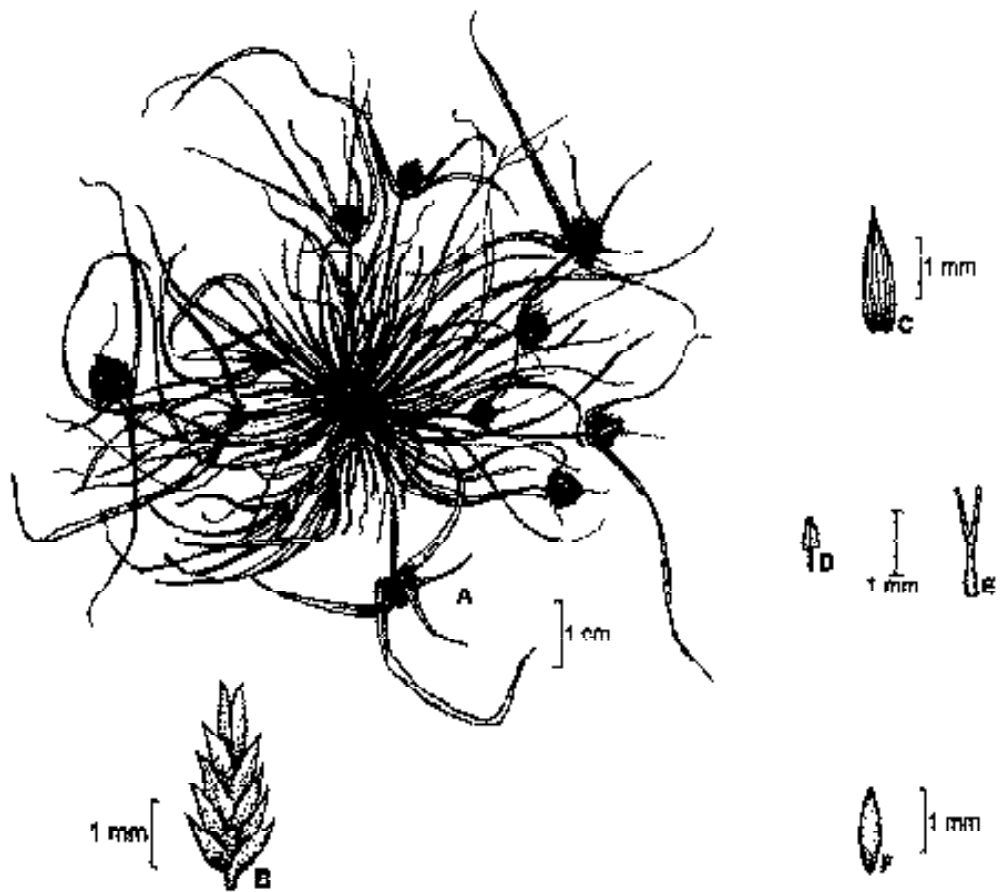


Fig. 64(A - F). *Cyperus pygmaeus* Komb.
 A. Habit B. Spikelet C. Glume D. Stamen E. Pistil
 F. Achene

Distrib.: Eurasia, from the Mediterranean and E. Africa through Asia Minor and India to SE. Asia, Malesia and Australia. TN: Chengalpattu, Coimbatore, Pudukkottai, Ramana-
nathapuram, Salem and Tuticorin. GM: Mainland coast, rare. Once collected at Athur in
Tuticorin. There are not many collections from the interior either at MH.

Specimens examined: (Total 15) PD 102298.

13. *C. rotundus* L., Sp. Pl. 45. 1753; FBI 6: 614. 1893; FPM 1641. 1931; FTC 3: 1742.
1983; RHFC 5: 181. 1985; FIFTC t. 647. 1988. [*Koraikilangu*]

Perennial; culms triquetrous, 30 - 40 cm high. Leaves clustered at base, 3/4 as long as
culms, acute-acuminate, serrulate along margins and tip; sheaths membranous, stramineous
to reddish brown or pale greenish-stramineous. Involucral bracts 3 - 6, acute, to 16 cm long,
foliaceous; primary rays 5 - 8, to 8 cm long, sheathed. Spikelets 3 - 13, linear-lanceolate or
lanceolate to ovate, 2 - 36-flowered; rachilla winged. Glumes broadly ovate or lanceolate-
ovate, obtuse or acute, 3 - 4 x 1.8 - 2 mm, hyaline along margins, 5 - 8-nerved. Stamens 3;
filaments ca 0.5 mm long; anthers linear, 1.2 - 1.9 mm long. Style short; stigmas 3. Achenes
(immature) oblong-obovoid, ca 1.2 x 0.5 mm, yellowish brown.

Key to the subspecies

- | | |
|--|--------------------------------|
| 1a. Rhizome stoloniferous, terminating in a tuber; involucral bracts 3;
spikelets 12 - 36-flowered; glumes obtuse at apex | 13. 1. subsp. <i>rotundus</i> |
| b. Rhizome not terminating in a tuber; involucral bracts 5 - 6; spikelets 2 -
12-flowered; glumes acute at apex | 13. 2. subsp. <i>tuberosus</i> |

13. 1. subsp. *rotundus* : Kük. in Engl., Pflanzenz. 101: 107. 1935; FM 1, 7: 604. 1974;
FTN 3: 74. 1989.

Fl. & Fr.: Nov. - March.

Habitat: Wastelands and road sides, with *Boerhavia diffusa*, *Brachiaria distachya*,
Fimbristylis cymosa etc.

Distrib.: Tropics. TN: Almost all districts. GM: Common on mainland coast, rare on
islands. Once collected on Pulivinchalli Island.

Uses: Dried roots are aromatic, used in perfumes and agarbatties (incense sticks); were
employed by Scythians for embalming. Accredited with diuretic, diaphoretic and astringent
properties, used in stomach and bowel complaints. Yields an essential oil.

It is an ingredient in the Ayurvedic preparation, "Aswagandhi-leheyam" used as
antiageing (Tripathi & al., 1996). Also an ingredient in the herbal product "Abhayasam", a

tablet, as well as 'Chittukkuruvileliyam' a semisolid preparation used for invigoration (Anon., 1996).

Specimens examined: (Total 92) KSK 102739, 103460, PD 100487, 100520; Pc Is. KSK 102351.

13. 2. subsp. *tuberosus* (Rottb.) Kük. in Engl., Pflanzenr. 101: 113. 1935; FTN 3: 74. 1989. *C. tuberosus* Rottb., Descr. Pl. Rar. 18. 1772 & Descr. Icon. Rar. Pl. 28, t. 7, f. 1. 1773; FBI 6: 616. 1893.

Fl. & Fr.: Jan. - March.

Habitat: Sandy localities, with *Chrysopogon fulvus*, *Dactyloctenium aegyptium* and *Eragrostis amabilis*.

Distrib.: Australia, India and Mauritius. TN: Coimbatore, N. Arcot and Thanjavur. GM: Mainland coast, rare. Collected near Pambar and Munaiyadu in Ramanathapuram.

Specimens examined: (Total 10) KSK 102953; PD 101151.

14. *C. stoloniferus* Retz., Obs. Bot. 4: 10. 1786; FBI 6: 615. 1893; FPM 1641. 1931; FM 1, 7: 606, f. 50. 1974; RHFC 5: 180. 1985; FTC 3: 1743. 1983; FIFTC t. 649. 1988; FTN 3: 75. 1989.

Perennial; rhizome stoloniferous; tubers ovoid, woody, covered with fibrous blackish brown scales; culms trigonous, 10 - 40 x 0.2 - 0.4 cm, smooth. Leaves clustered at base, linear, acute-acuminate, 7 - 35 x 0.2 - 0.3 cm; sheaths stramineous. Inflorescence terminal, simple to subcompound; involucre bracts 3 - 5, erect; the lower 2 foliaceous, surpassing spikes, to 20 cm long, faintly serrulate at tip; primary rays 3 - 7, 1 - 5 cm long. Spikes ovate, 0.5 - 1.5 cm long with 4 - 10 spikelets. Spikelets distichous, lanceolate, acute, 0.5 - 1.25 x 0.1 - 0.2 cm, 10 - 20-glumed. Glumes ovate, subacute, 2.5 - 3 x 1 - 1.5 mm, reddish brown, 3-nerved. Stamens 3; anthers ca 1.5 mm long; connectives minute. Stigmas 3, ca 1.5 mm long. Achenes oblong, trigonous, ca 1.5 x 0.5 mm, yellowish brown.

Fl. & Fr.: Throughout the year.

Habitat: Sandy soil, with *Cyperus* spp., *Spinifex littoreus* and *Sporobolus madraspatanus*.

Distrib.: Australia, India, Madagascar, Malesia, Mauritius and Vietnam. TN: Chengalpattu, Coimbatore, Dharmapuri and Ramanathapuram. GM: Common on mainland coast and frequent on Appa and Nallathanni Islands.

Uses: Tubers a stimulant and cardiac tonic; also used in perfumery. A good sand binder.

Specimens examined: (Total 30) KSK 102745, 102780, 103312; PD 100469, 102212; Ap Is. PD 101571; Nt Is. KSK 102365.

Of the 14 species only 7 occur on various islands. The achenes may be dispersed by birds as most of them occur in marshy or wet situations (Ridley, 1930).

3. *Eleocharis* R. Br.

Cosmopolitan, ca 150 species, 20 in India, 8 in Tamil Nadu and one in GM.

E. geniculata (L.) Roem. & Schult., Syst. Veg. 2: 150. 1817; FM 1, 7: 536. 1974; FTC 3: 1748. 1983; RHFC 5: 264. 1985; FIFTC t. 654. 1988; FTN 3: 76. 1989. *Scirpus geniculatus* L., Sp. Pl. 48. 1753. *Eleocharis capitata* R. Br., Prodr. 225. 1810; FBI 6: 627. 1893; FPM 1648. 1931.

Annual; culms tufted, slender, angular, 5 - 40 cm high, striate, glabrous, glaucous green; sheaths 0.5 - 3 cm long, purplish. Spikelets ovoid-globose or ovoid-ellipsoid, 3 - 7 x 3 - 4 mm; flowers many, dense. Glumes broadly elliptic-ovate, obtuse, 1.8 - 2 x 1 - 1.5 mm, reddish brown, 1-nerved. Stamens 2 or 3; anthers linear-oblong, ca 0.5 mm long. Ovary obovoid; style ca 1.6 mm long, bifid. Achenes obovoid, ca 1 mm long, biconvex, with conical style base; hypogynous bristles 6 - 8, longer than achenes, reddish brown.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet sandy localities and rice fields, with *Aeluropus lagopoides*, *Cyperus compressus* and *Fimbristylis argentea*.

Distrib.: Pantropical. TN: Chengalpattu, Kanyakumari, Madurai, N. & S. Arcot, Ramanathapuram, Salem, Tiruchirapalli and Tirunelveli. GM: Mainland coast, frequent.

Specimens examined: (Total 56) ANH 49512; PD & PU 106941.

4. *Fimbristylis* Vahl nom. cons.

Tropics, ca 250 species, 89 in India, 51 in Tamil Nadu and 10 in GM.

Key to the species

1a. Annual herbs	2
b. Perennial herbs	7
2a. Leaves ligulate	3
b. Leaves eligulate	5
3a. Spikelet solitary	9. <i>F. polytrichoides</i>
b. Spikelets in compound or decomposed corymbs	4

4a. Glumes mucronate; stamen 1	2. <i>F. bisumbellata</i>
b. Glumes obtuse; stamens 2	5. <i>F. dichotoma</i>
5a. Spikelets in terminal head	1. <i>F. argentea</i>
b. Spikelets solitary or, umbelliform or corymbose	6
6a. Achenes linear-oblong with glandular margins	6. <i>F. dipsacea</i>
b. Achenes obovoid, eglandular	8. <i>F. millacea</i>
7a. Leaves ligulate	8
b. Leaves eligulate	9
8a. Glumes 1.8 - 2.5 mm long, 3-nerved	3. <i>F. complanata</i>
b. Glumes 3 - 4 mm long, 1-nerved	7. <i>F. ferruginea</i>
9a. Involucral bracts 2 or 3; spikelets less than 1 mm long; glumes less than 2 mm long	4. <i>F. cymosa</i>
b. Involucral bract 1; spikelets more than 1 mm long; glumes 6 - 8 mm long	10. <i>F. triflora</i>

1. *F. argentea* (Rottb.) Vahl, Enum. Pl. 2: 294. 1805; FBI 6: 640. 1893; FPM 1659. 1931; FM 1, 7: 586. 1974; FTC 3: 1752. 1983; RHFC 5: 314. 1985; FIFTC t. 658. 1988; FTN 3: 77. 1989. *Scirpus argenteus* Rottb., Descr. Pl. Rar. 27. 1772 & Descr. Icon. Rar. Pl. 51, t. 17, f. 6. 1773. (Fig. 65)

Annual; culms tufted, trigonous, canaliculate, slender, ca 5 cm high, striate. Leaves clustered at base, linear, subacute, scabrid, eligulate; sheaths creamy green. Heads terminal, ca 0.5 cm across, with 4 - 5 spikelets; involucral bracts 3, foliaceous, erect, surpassing spikelets, subacute, scabrid; the lower most to 3 cm long. Spikelets oblong-ovate, obtuse, 4 - 5 x 1.5 - 2 mm, many-flowered. Glumes spiral, imbricate, ovate, acute, ca 1.5 x 0.7 mm, pale greenish to pale brownish. Stamen 1; filament short, brownish; anther linear, ca 0.5 mm long, yellowish. Ovary oblong, ca 0.4 x 0.1 mm; style flat, dilated at base, ca 0.7 mm long; stigmas 2, slender, ca 0.6 mm long, shortly ciliate. Achenes broadly obovoid, acute, ca 0.6 x 0.4 mm, white.

Fl. & Fr.: Feb. - Oct.

Habitat: Shores of lakes, streams and ponds and wet localities, usually with *Cyperus compressus*, *C. pygmaeus* and *Fimbristylis dipsacea*.

Distrib. India, SE. Asia and Sri Lanka. TN: Almost all districts. GM: Mainland coast, occasional.

Specimens examined: (Total 60) PD 102299; PD & PU 106523, 107034.

2. *F. bisumbellata* (Forssk.) Bubani, Dodecanthea 30. 1850; FPM 1658. 1931; FM 1, 7: 579. 1974; FTC 3: 1752. 1983; RHFC 5: 312. 1985; FIFTC t. 659. 1988; FTN 3: 77. 1989. *Scirpus bisumbellatus* Forssk., Fl. Aegypt.-Arab. 15. 1775. *Fimbristylis dichotoma* sensu C.B. Clarke in FBI 6: 635. 1893, p.p., non (L.) Vahl 1805.

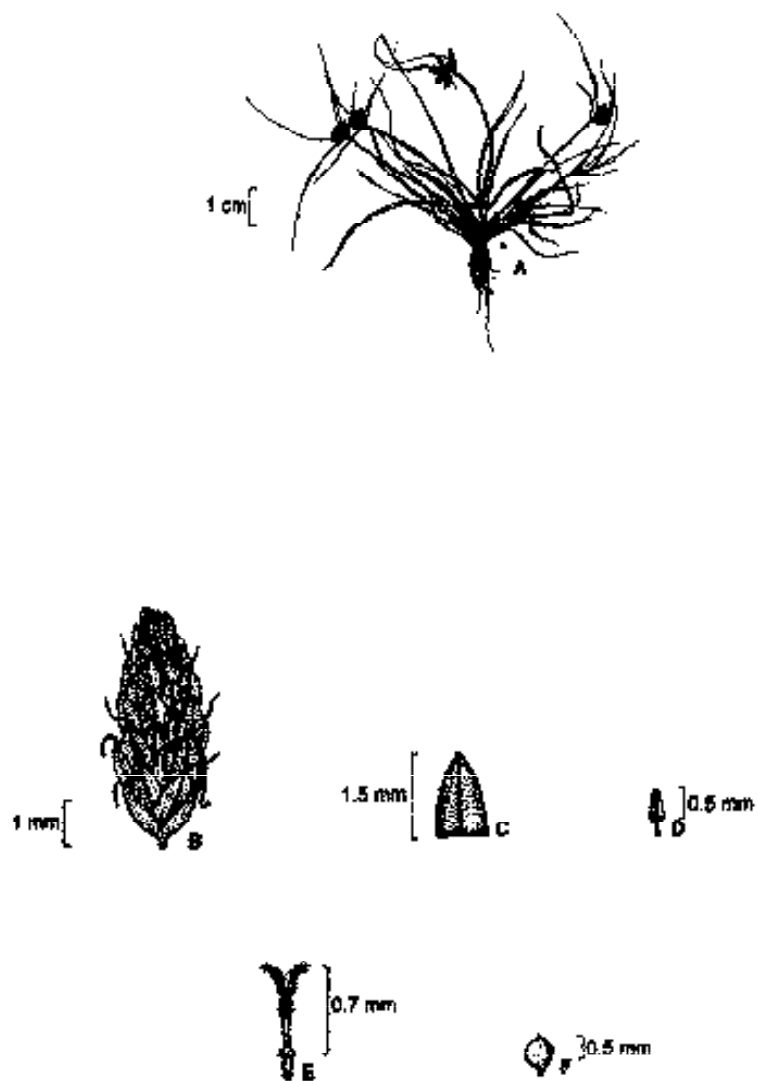


Fig. 68(A - F). *Fimbristylis argentea* (Rottb.) Vahl
 A. Habit B. Spikelet C. Glume D. Stamen E. Pistil
 F. Achene

Annual; culms densely tufted, trigonous, 5 - 25 cm high. Leaves shorter than culms, glabrous above, pubescent beneath; ligule with a fringe of hairs; sheaths membranous, 1 - 3 cm long. Inflorescence compound or decomposed corymbs with many spikelets; involucreal bracts 1 - 3; the lowest as long as or surpassing corymb; rays 4 - 10, filiform. Spikelet solitary, oblong-ovoid, 2.6 x 1.2 - 1.5 mm, 10 - 30-flowered. Glumes broadly ovate, mucronate, 1.5 - 1.8 x 0.5 - 1 mm, keeled, membranous, 3-nerved, stramineous brown. Stamen 1; anther oblong, ca 0.5 mm long. Ovary obovoid; style flat at base, ciliate above; stigmas 2. Achenes stipitate, obovoid, 0.5 - 0.8 mm long, stramineous.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet places and rice fields, usually with *Cyperus difformis*, *Fimbristylis miliacea* and *Echinochloa colona*.

Distrib.: Pantropical. TN: Almost all districts. GM: Mainland coast, common.

Specimens examined: (Total 41) PD & PU 107022.

3. *F. complanata* (Retz.) Link, Enum. Hort. Berol. Alt. 1: 292. 1827; FBI 6: 646. 1893; FPM 1659. 1931; FM 1, 7: 548. 1974; FTC 3: 1752. 1983; RHFC 5: 284. 1985; FIFTC t. 661. 1988; FTN 3: 77. 1989. *Scirpus complanatus* Retz., Obs. Bot. 5: 14. 1788.

Perennial; culms tufted, trigonous, 20 - 90 cm high, glabrous. Leaves shorter than culms, acuminate; ligule with a fringe of hairs; sheaths to 8 cm long, stramineous. Inflorescence corymbose, compound or decomposed; involucreal bracts 2 - 4, erect; the lowest one to 5 cm long; primary rays 2 - 5, to 7 cm long. Spikelet solitary, oblong or lanceolate-ovate, 4 - 9 x 1 - 2 mm, 5 - 20-flowered. Glumes ovate or lanceolate-ovate, mucronate, 1.8 - 2.5 x 0.5 - 1 mm, stramineous brown, 3-nerved. Stamens 3; anthers ca 1 mm long. Style ca 1.2 mm long, glabrous; stigmas 3, ca 1.2 mm long. Achenes obovoid, trigonous, ca 0.6 mm long, verruculose, white.

Fl. & Fr.: Dec. - April.

Habitat: Wet and marshy localities, with *Bacopa monnieri*, *Eleocharis geniculata* and *Kyllinga monocephala*.

Distrib.: Pantropical. TN: Chengalpattu, Coimbatore, Kanyakumari, Nilgiri, Salem, Tiruchirappalli and Tirunelveli. GM: Mainland coast, frequent. Once collected at Chinnammuttam near Kanyakumari.

Specimens examined: (Total 20) PD & PU 107003.

4. *F. cymosa* R. Br. subsp. *spathacea* (Roth) T. Koyama in *Micronesia* 1: 83. 1964 & RHFC 5: 31. 1985. *F. spathacea* Roth, Nov. Pl. Sp. 24. 1821; FBI 6: 640. 1893; FPM 1659.

1931. *F. cymosa* R. Br., Prodr. 228. 1810: FTC 3: 1754. 1983; FIFTC t. 662. 1988; FTN 3: 78. 1989.

Perennial; rhizome short, clothed with brownish fibrous sheaths or scales; culms rigid, erect, compressed-triangular, 4 - 40 x 0.1 - 0.2 cm, glabrous. Leaves clustered at base, shorter than culms, linear, flat, faintly involute, abruptly acuminate, 1 - 18 x 0.1 - 0.2 cm, coriaceous, scabrid along margins, eligulate. Inflorescence compound to decomposed; involucre bracts 2 - 3, erect, oblique, very short, ca 1 cm long; primary rays 3 - 6, to 4 cm long, smooth. Spikelets solitary or clustered, ovoid or oblong-elliptic, obtuse-subacute, 2 - 6 x 1 - 2 mm, many-flowered. Glumes spiral, closely imbricate, boat-shaped or broadly ovate, mucous, 1.6 - 1.8 x 1 - 1.3 mm, membranous, hyaline along margins, shiny with a reddish brown triangle and 3 - 5-nerved in centre. Stamens 2 - 3; filaments flat, truncate, 0.1 mm long, pale brownish; anthers linear, acute, 0.6 - 0.8 x 0.1 - 0.2 mm; connectives small, yellowish. Ovary oblong, 0.2 - 0.3 x 0.1 - 0.2 mm; style flat, dilated at base; stigmas 2, faintly fimbriate, 0.5 - 0.6 mm long. Achenes obovoid, rounded at apex, obliquely and fairly cuneate at base, flat, biconvex, 0.8 - 0.6 mm long, smooth or verrucose, brownish.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy and marshy habitats, with *Fimbristylis polytrichoides*, *Salicornia brachiata* and *Sporobolus tremulus*.

Distrib.: Tropics and subtropics. TN: Chengalpattu, Coimbatore, Madurai, N. & S. Arcot, Ramanathapuram, Thanjavur, Tiruchirapalli and Tuticorin. GM: Common on mainland coast and all islands.

Use: Culms used for making mats.

Specimens examined: (Total 56) PD 102163; Ku Is. PD 100601; Ka Is. PD 102192; Mp Is. PD 101444; Mu Is. PD 100325; Nt Is. PD 101611; Pv Is. PD 101409; Th Is. PD 101509; Vm Is. KSK 102033.

5. *F. dichotoma* (L.) Vahl, Enum. Pl. 2: 287. 1805; FBI 6: 635. 1893, p.p.; FPM 1658. 1931; FM 1, 7: 575. 1974; FTC 3: 1754. 1983; RHFC 5: 306. 1985; FIFTC t. 663. 1988; FTN 3: 78. 1989. *Scirpus dichotomus* L., Sp. Pl. 50. 1753. *Fimbristylis diphylla* Vahl, Enum. Pl. 2: 289. 1805; Mayur. in Bull. Gov. Mus., New Ser., Nat. Hist. Sect. 2: 312. 1929.

Annual, or short-lived perennial; culms tufted, trigonous, 10 - 70 cm high, glabrous or pilose. Leaves shorter than culms, acuminate, glabrous or sparsely pubescent; ligule with a fringe of hairs; sheaths densely hairy or glabrescent, pale brownish. Inflorescence corymbose, simple to decomposed; involucre bracts 2 - 5, shorter or as long as inflorescence; primary rays 2 - 12, to 10 cm long, unequal. Spikelets 2 - 10, rarely one, ovate or oblong-ovate, 3 - 10 x 2.5 - 3 mm, many-flowered. Glumes broadly ovate, obtuse, 1.5 - 2.7 x 1.5 - 2.2 mm, 3-nerved on sides, stramineous brown. Stamens 2; anthers to 0.6 mm long.

Ovary obovoid; style flat, dilated at base, fimbriate above middle; stigmas 2. Achenes obovoid, 1 - 1.2 mm long, verruculose, stramineous.

Fl. & Fr.: Oct. - Jan.

Habitat: Wet places and rice fields.

Distrib.: Cosmopolitan. TN: Almost all districts. GM: Mainland coast, not common.

Specimens examined: (Total 62) ARKS 96826 (CAL); VB 22266.

6. *F. dipsacea* (Rottb.) C.B. Clarke in Fl. Brit. India 6: 635. 1893; FPM 1658. 1931; FM 1, 7: 590. 1974; FTC 3: 1755. 1983; RHFC 5: 321. 1985; FIFTC t. 664. 1988; FTN 3: 78. 1989. *Scirpus dipsaceus* Rottb., Descr. Icon. Rar. Pl. 56, t. 12, f. 1. 1773. (Fig. 66)

Annual; roots fibrous; culms densely tufted, setaceous, smooth, trigonous, to 10 cm high. Leaves narrowly linear, short, faintly scabrid, eligulate; sheaths membranous, truncate at mouth, incurved, whitish. Inflorescence a single spike or umbelliform; involucre bracts 3 - 7, setaceous, 1.5 - 3 cm long, surpassing spikes; primary rays 1 - 6, subequal, ca 1 cm long. Spikelets globose or oblong-ovoid, obtuse, ca 0.5 x 0.3 cm, many-flowered. Glumes spiral, dense, oblong or oblong-elliptic, ca 2 x 0.3 mm, stramineous; nerves 1 - 3, thick, greenish, surpassing glume and forming an excurrent awn of ca 1 mm long. Stamen 1; filament ca 0.2 mm long; anther linear, ca 0.3 mm long. Style slender, dilated at base, ca 0.2 mm long; stigmas 2, slender, ca 0.5 mm long, glabrous. Achenes linear-oblong, ca 0.7 x 0.3 mm, glandular-margined, creamy white.

Fl. & Fr.: Sept. - Dec.

Habitat: Muddy shores of freshwater bodies and wet sandy grounds, with *Cyperus pygmaeus*, *Dactyloctenium aegyptium*, *Fimbristylis argentea* etc.

Distrib.: S. India, S. & E. Asia and Trop. Africa. TN: Chengalpattu, Coimbatore, Salem, Tirunelveli and Tuticorin. GM: Mainland coast, occasional. Once collected at Athur in Tuticorin. Earlier collected in the Tambraparani river delta.

Specimens examined: (Total 11) DD 87071; PD 102296.

7. *F. ferruginea* (L.) Vahl, Enum. Pl. 2: 291. 1805; FBI 6: 638. 1893; FPM 1658. 1931; FM 1, 7: 572. 1974; FTC 3: 1757. 1983; RHFC 5: 305. 1985; FIFTC t. 667. 1988; FTN 3: 79. 1989. *Scirpus ferrugineus* L., Sp. Pl. 50. 1753. (Fig. 67)

Perennial; rhizome short; culms slightly bulged at base, covered with stramineous greyish brown scales, ca 3 cm long, densely tufted, often forming a clump, 25 - 60 cm high,

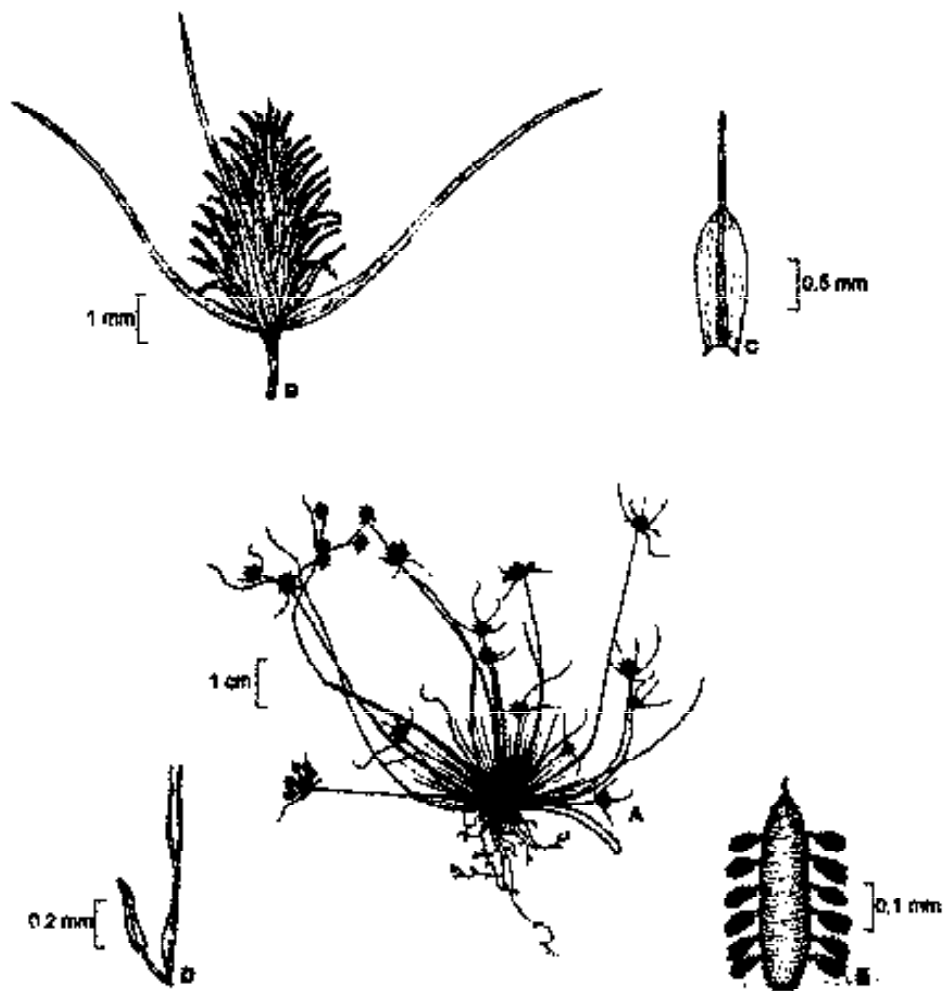


Fig. 66(A - E). *Fimbristylis dipazum* (Retz.) C.B. Clarke
 A. Habit B. Spikelet C. Glume D. Pistil & stamen
 E. Achene

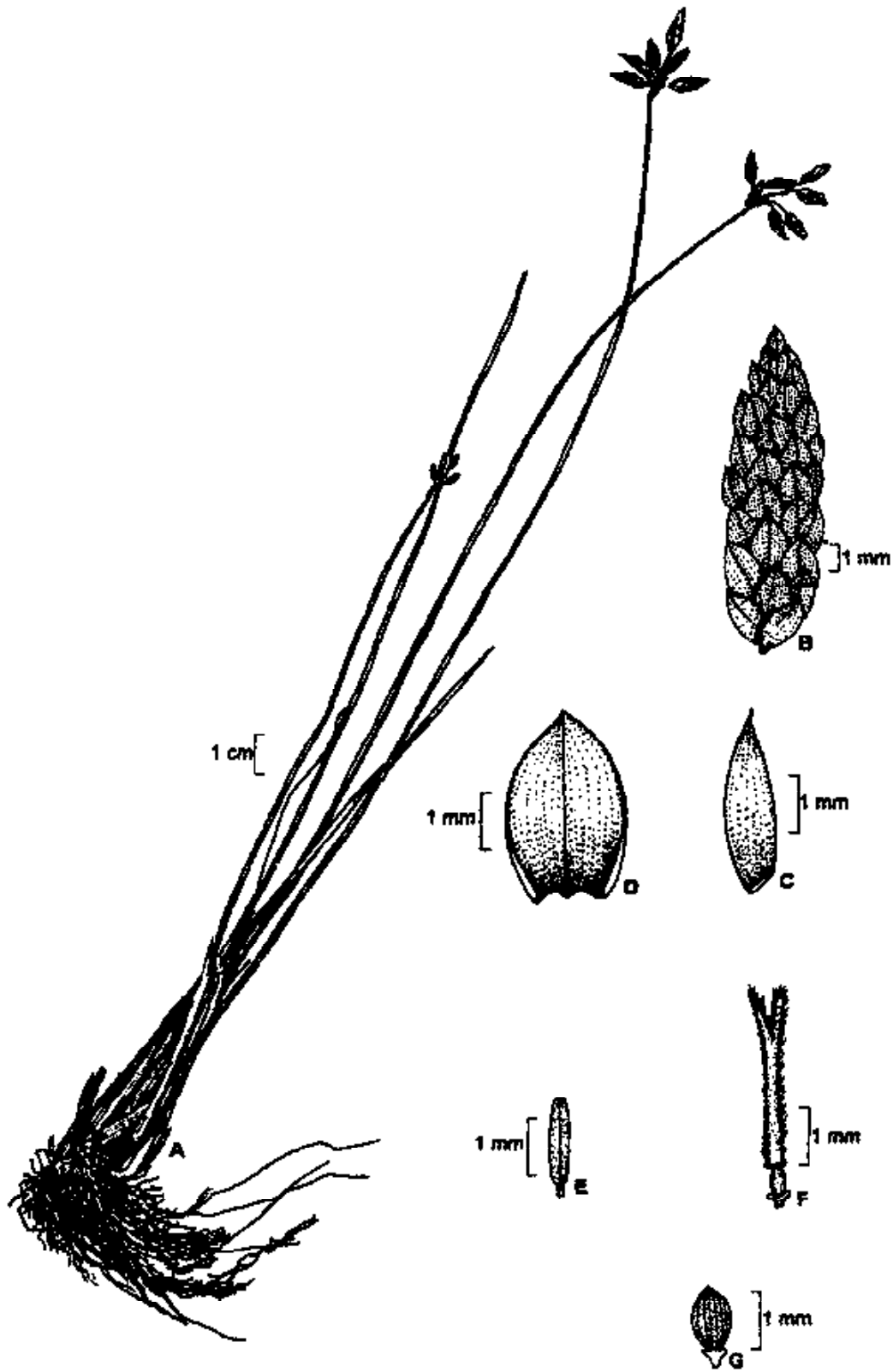


Fig. 67 (A - G). *Finbristylis ferroginea* (L.) Vahl
 A. Habit B. Spikelet C & D. Glume lateral & ventral views E. Stamen
 F. Pistil G. Achene

glabrous. Leaves shorter than culms, linear, subacute, coriaceous, spinulose; ligule with a fringe of hairs; sheaths oblique at mouth, membranous, hyaline along margins, stramineous brown. Inflorescence simple or subcompound; involucre bracts 1 - 3, foliaceous, abruptly acute, to 2 cm long; rays 1 - 5, 0.5 - 1 cm long. Spikelets lanceolate-ovate, acute, 1 - 2 x 0.5 - 0.8 cm, many-flowered. Glumes spiral, imbricate, broadly ovate, subacute, mucronate, 3 - 4 x 2 - 2.5 mm, chartaceous, pale brownish, 1-nerved. Stamens 3, yellowish; filaments flat, short; anthers ca 1.5 mm long. Style flat, ca 2 mm long, ciliate; stigmas 2, ca 1 mm long, ciliate, reddish brown. Achenes obovoid, cuneate at base, ca 1.3 x 0.7 mm, smooth, pale yellowish brown.

Fl. & Fr.: Throughout the year.

Habitat: Wet and marshy localities, with *Fimbristylis cymosa*, *Striga asiatica* etc.

Distrib.: Pantropical. TN: Almost all districts. GM: Common on mainland coast and Appa, Kaswari, Kurusadai, Manoli and Muyal Islands.

Specimens examined: (Total 47) KSK 102018; PD 102210; Ap Is. PD 101546; Ku Is. DD & SSR 93553; PD 100600; Ka Is. PD 102186; Ma Is. PD 100686; Mu Is. KSK 102995.

8. *F. miliacea* (L.) Vahl, Enum. Pl. 2: 287. 1805, quoad basionym; FBI 6: 644. 1893, p.p.; FPM 1660. 1931, p.p.; FM 1, 7: 552. 1974; FTC 3: 1757. 1983; RHFC 5: 296. 1985; FIFTC t. 669. 1988; FTN 3: 79. 1989. *Scirpus miliaceus* L., Syst. Nat. ed. 10, 868. 1759. *Fimbristylis quinquangularis* (Vahl) Kunth, Enum. Pl. 2: 229. 1837; FBI 6: 644. 1893; FPM 1659. 1931. *Scirpus quinquangularis* Vahl, Enum. Pl. 2: 279. 1805.

Annual; culms densely tufted, 4 - 5-angled, 20 - 80 cm high, glabrous. Leaves linear, acuminate, 10 - 50 cm long, glabrous, scabrid along margins towards apex, eligulate; sheaths obliquely truncate at mouth, brownish. Inflorescence compound or decompound, corymbose; involucre bracts 2 - 5, setaceous, short; primary rays 3 - 7, unequal, 1 - 5 cm long. Spikelet solitary, ovate, 1.5 - 3 x 1 - 1.5 mm, many-flowered. Glumes broadly ovate, obtuse, 1 - 1.2 x 0.6 - 0.8 mm, reddish brown, 3-nerved. Stamen 1; anther ca 0.6 mm long. Ovary obovoid; style flat, not fimbriate; stigmas 3, ca 0.5 mm long. Achenes obovoid, trigonous, ca 0.7 mm long, verruculose, stramineous brown.

Fl. & Fr.: Dec. - April.

Habitat: Rice fields, with other weeds like *Echinochloa colona*, *Eragrostis japonica*, *Isachne globosa* etc.

Distrib.: Tropics and subtropics. TN: Chengalpattu, Coimbatore, Kanyakumari and S. Arcot. GM: Mainland coast, frequent. Collected near Kanyakumari.

Specimens examined: (Total 80) PD & PU 107030, 107045.

9. *F. polytrichoides* (Retz.) R. Br., Prodr. 226. 1810; FBI 6: 632. 1893; FPM 1658. 1931; FM 1, 7: 586. 1974; FTC 3: 1759. 1983; RHFC 5: 318. 1985; FIFTC t. 672. 1988; FTN 3: 80. 1989. *Scirpus polytrichoides* Retz., Obs. Bot. 4: 11. 1786. (Fig. 68)

Annual, or short-lived perennial; roots tufted, blackish brown; culms caespitose, filiform, to 30 x 0.1 cm, striate, glabrous. Leaves shorter than culms, filiform, convolute, fleshy, coriaceous, distantly spinulose along margins; ligule with a row of brownish hairs; sheaths thin, membranous; mouth concave, obliquely truncate. Spike solitary, terminal, 0.5 x 0.2 - 0.5 cm, lanceolate-ovate or oblong, obtuse, many-flowered, brownish; involucre bracts short, ca 1 cm long. Glumes spiral, closely imbricate, oblong-elliptic, obtuse, ca 3 x 1 mm, hyaline along margins, thin, membranous, with reddish brown minute spots above, 1-nerved, greenish. Stamens 3; filaments flat, ca 0.3 mm long, pale yellow; anthers linear, acute at apex with pinkish connective, ca 1.1 x 0.2 mm, yellowish. Ovary oblong, ca 0.4 x 0.2 mm, creamy; style flat, dilated at base, 0.5 - 0.7 x ca 0.1 mm; stigmas 2, flat, ca 1 mm long, fimbriate, stramineous yellow. Achenes obovate, biconvex, cuneate at base, obtuse-rounded at apex, ca 1.1 x 0.8 mm, verrucose, greyish brown; style base not persistent.

Fl. & Fr.: Nov. - March.

Habitat: Marshy localities and wet sandy soil, usually in mangroves, also with *Fimbristylis ferruginea*, *Sporobolus tremulus* etc.

Distrib.: Old World tropics, and from Africa to Australia. TN: Chengalpattu, Ramanathapuram, S. Arcot, Thanjavur and Tuticorin. GM: Common on mainland coast and Kurusadai, Manoli, Manoliputti and Moyal Islands.

Earlier collected only on Kurusadi Island and Thirupullani in Ramanathapuram. Now collected on a few more islands and certain other places on mainland coast.

Specimens examined: (Total 32) PD 100463; Ku Is. PD 100574; Ma Is. PD 100684; KSK 102330; Mp Is. PD 101454; Mu Is. PD 100324.

10. *F. triflora* (L.) K. Schum. ex Engl. in Abh. Königl. Akad. Wiss. Berlin 14. 1894; RHFC 5: 271. 1985; FIFTC t. 676. 1988; FTN 3: 82. 1989. *Cyperus triflorus* L., Mant. Pl. 189. 1771. *Fimbristylis tristachya* (Vahl) Thwaites, Enum. Pl. Zeyl. 434. 1864, non R. Br. 1810; FBI 6: 649. 1893; FPM 1660. 1931. *Abildgaardia tristachya* Vahl, Enum. Pl. 2: 297. 1805. (Fig. 69)

Perennial; culms densely tufted, 30 - 90 cm high, glabrous. Leaves half or as long as culms, linear, subacute, incurved, coriaceous, scabrous along margins, eligulate; sheaths 2 - 8 cm long, stramineous brown. Inflorescence corymbose; involucre bract foliaceous, very short. Spikelets lanceolate or ovate, acute, 1.3 - 3 x 0.4 - 0.6 cm, many-flowered. Glumes distichous, broadly ovate, cuspidate, 6 - 8 x 4 - 5 mm, stramineous brown with dark reddish brown spots, hyaline along margins, 4 - 6-nerved. Stamens 3; filaments flat, ca 1 mm long;

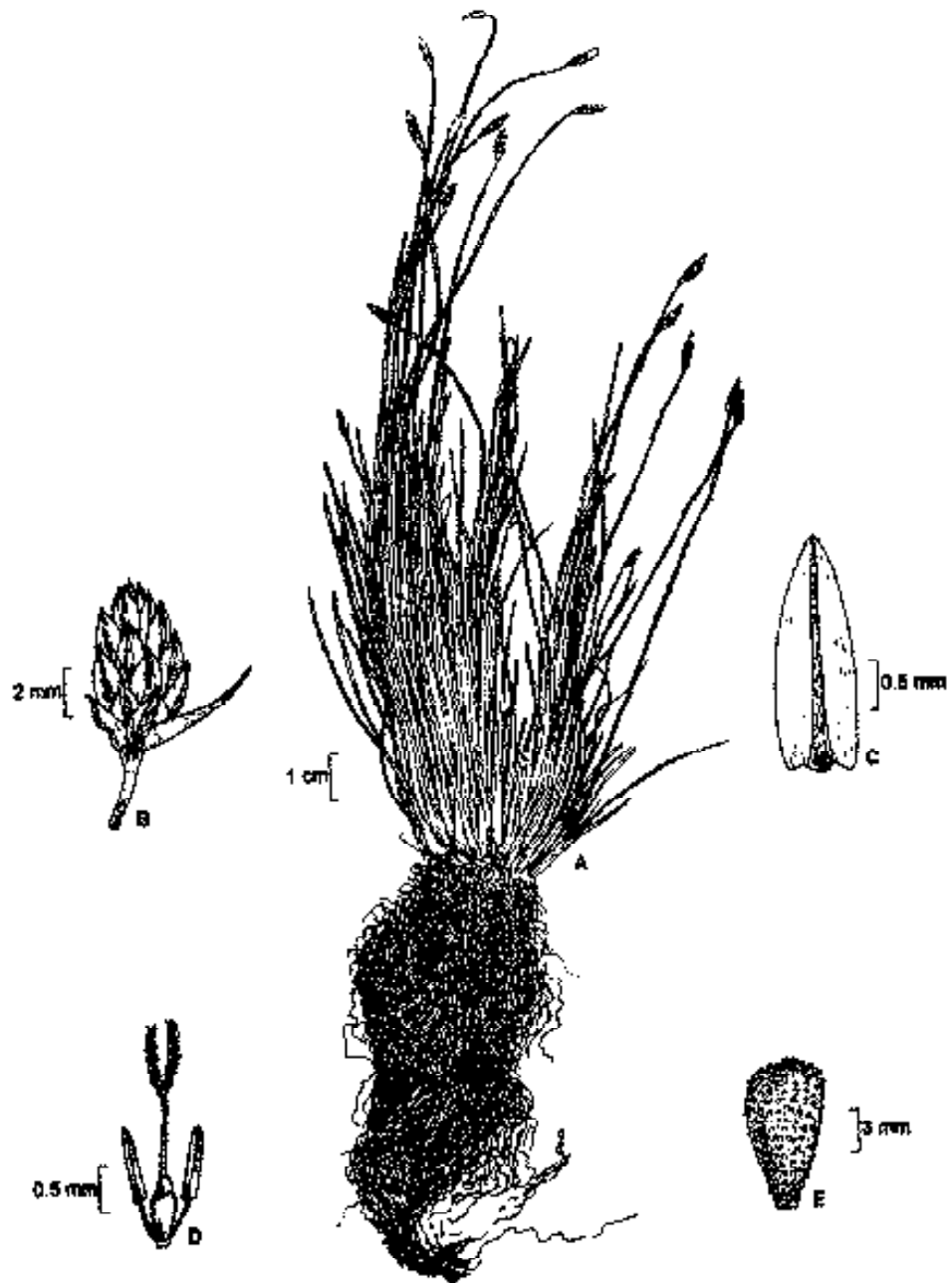


Fig. 66 (A - E). *Fimbristylis palytrichoides* (Renz.) R. Br.
 A. Habit B. Spikelet C. Glume D. Pistil & stamens
 E. Achene

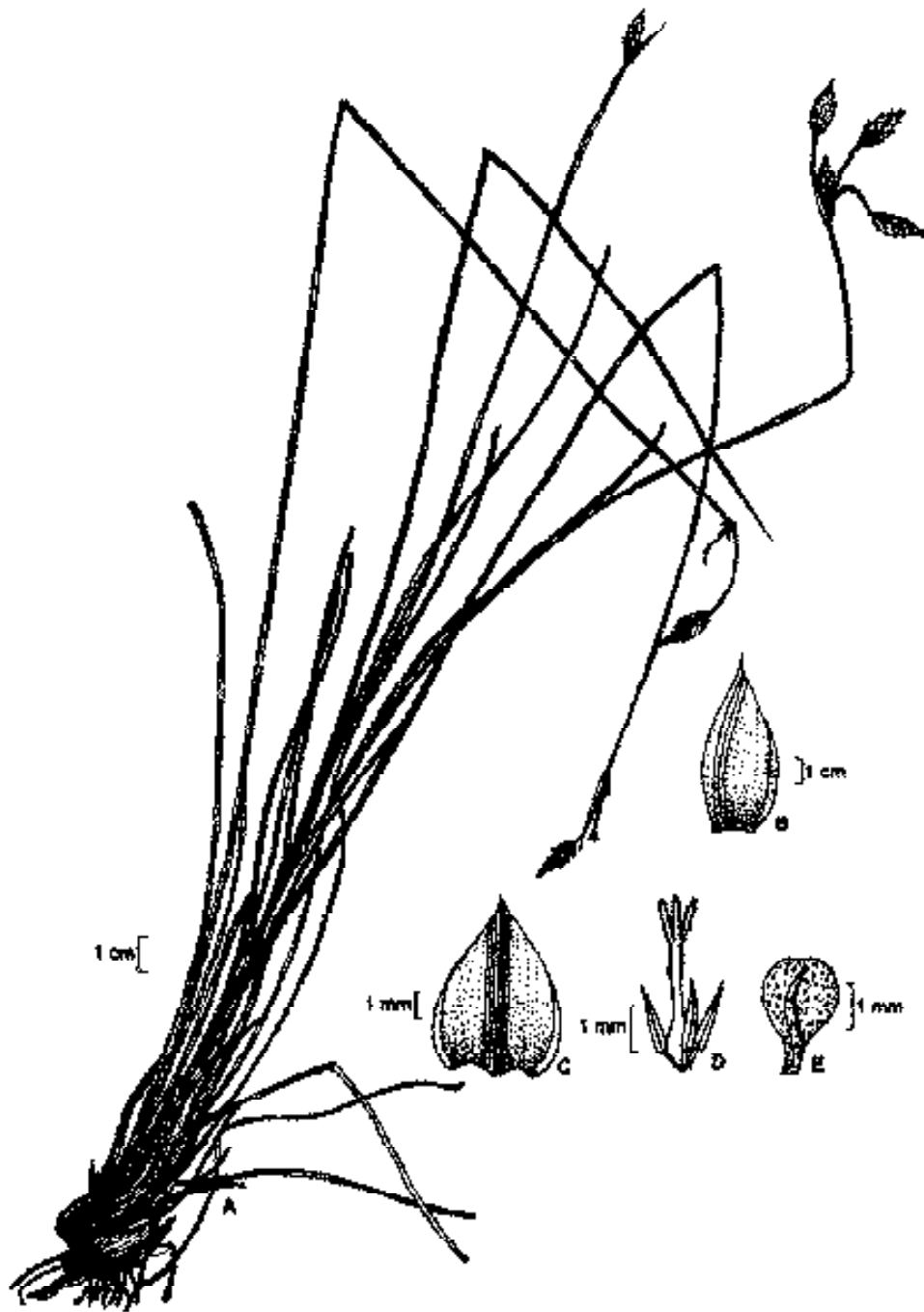


Fig. 69 (A - E). *Fissuristyle trifida* (L.) K. Schum. ex Engl.
 A, Habitus B & C, Glume lateral & ventral views D, Pistil & stamens
 E, Achene

anthers linear, ca 3 mm long. Ovary obovoid, ca 1 mm long; style single, flat, fimbriate above middle; stigmas 3. Achenes obovoid, trigonous, 2.5 - 3.2 x 1.3 - 1.5 mm, brownish.

Fl. & Fr.: Nov. - Jan.

Habitat: Sandy (Nallathanni) and marshy (Kurusadai) localities, found as pure patches or sometimes associated with *Fimbristylis cymosa* and *F. ferruginea*.

Distrib.: S. India, Sri Lanka and Trop. Africa. TN: Chengalpattu, Madurai, Ramnathapuram and S. Arcot. GM: Earlier collected only on Kurusadai Island. Now collected on Kurusadai and Nallathanni Islands, rare on the former and common on the latter. Not collected on mainland coast.

Specimens examined: (Total 16) Ku Is. DD & SRR 88191; PD & PU 106898; Nt Is. PD & PU 106629.

Of the 10 species only 4 occur on islands. The achenes of these species may be disseminated by seawater and also by birds (Ridley, 1930).

5. *Kyllinga* Rottb. nom. cons.

Cosmopolitan, ca 40 species, 7 in India and Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|------------------------|
| 1a. Spikes not in heads | 2. <i>K. hyalina</i> |
| b. Spikes in heads | 2 |
| 2a. Culms obtusely trigonous; heads 3-spiked; stamens 2 | 1. <i>K. bulbosa</i> |
| b. Culms triquetrous; heads one-spiked; stamens 3 | 3. <i>K. nemoralis</i> |

1. *K. bulbosa* P. Beauv., Fl. Oware 1: 11, t. 8, f. 1. 1804; RHFC 5: 245. 1985. *Kyllinga triceps* Rottb., Descr. Icon. Rar. Pl. 14, t. 4, f. 6. 1773, nom. illeg.; FBI 6: 587. 1983; FPM 1623. 1931; FTC 3: 1768. 1983. *Cyperus triceps* (Rottb.) Endl., Cat. Horti Vindob. 1: 94. 1842; FM 1, 7: 659. 1974; FTN 3: 75. 1989.

Perennial; culms tufted, obtusely trigonous, 5 - 20 cm high, glabrous; sheaths shorter than culms, brownish. Inflorescence capitate; spikes sessile, globose, 5 - 8 mm; involucre bracts 3 or 4, foliaceous, reflexed, to 10 cm long. Spikelets oblong or lanceolate-oblong, acute, 1.7 - 2 x 0.5 - 0.7 mm, 1-flowered. Glumes ovate-oblong or lanceolate-oblong, acute, 1.5 - 1.7 x 0.9 - 1 mm, pale greenish, 5 - 7-nerved. Anthers oblong-linear, ca 0.5 mm long. Ovary oblong; style simple; stigmas 2. Achenes oblong, laterally flattened, 1.2 x 0.4 - 0.6 mm, brownish.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet localities and sandy places, with *Enneapogon elegans*, *Paspalidium geminatum*, *Zornia diphylla* etc.

Distrib.: Australia, China, India, Malesia and Trop. Africa. TN: Most districts. GM: Mainland coast, frequent. Collected at Kulasekaranpattanam in Tuticorin and on way to Sayalkudi in Ramanathapuram.

Uses: Root oil is used for stimulating liver and to relieve pruritus.

Specimens examined: (Total 62) PD & PU 107334; SAM 106302.

Note: Though Hooper (in Saldanha & Nicolson, Fl. Hassan 688. 1976) gave *K. tenuifolia* Steud. as the correct name for this species, T. Koyama (1985) is followed here.

2. *K. hyalina* (Vahl) T. Koyama in J. Jap. Bot. 51: 313. 1976 & RHFC 5: 242. 1985; FTC 3: 1766. 1983. *Cyperus hyalinus* Vahl, Enum. Pl. 2: 329. 1805; FM 1, 7: 655. 1974; FTN 3: 71. 1989. *Pycnus pumilus* C.B. Clarke in Fl. Brit. India 6: 591. 1893, quoad descr. *P. hyalinus* (Vahl) Domin, Biblioth. Bot. 80: 417. 1915; FPM 1627. 1931. (Fig. 70)

Annual; culms tufted, triquetrous, 5 - 20 cm high, glabrous. Leaves clustered at base, linear, acuminate, as long as or longer than culms, 1 - 3 mm wide, spinulose; sheaths 1 - 5 cm long, membranous, stramineous with purple striations. Inflorescence subcompund; involucre bracts 3 or 4, foliaceous, erect, acuminate, to 10 cm long, spinulose at apex; primary rays 2 - 5 cm long; rachilla winged. Spikes ovate-oblong, 1.2 x 0.5 - 0.7 cm. Spikelets 4 - 8, subopposite, lax, lanceolate-ovate, 6 - 9 x 2 - 4 mm, 6 - 10-flowered; internodes 2 - 3 mm long. Glumes imbricate, ovate-oblong, 3 - 4.5 x 1.5 - 2 mm, pale yellowish; nerves 3 - 5, forming a mucro. Stamens 2; filaments ca 0.5 mm long, thin, pale brown; anthers oblong, ca 0.4 mm long, yellowish; connectives white. Style simple; stigmas 2, slender, ca 1 mm long, glabrous. Achenes ellipsoid-oblong, truncate-emarginate, ca 1.7 x 1 mm.

Fl. & Fr.: Oct. - Dec.

Habitat: Wet loamy soil, with *Cyperus bulbosus*, *Eclipta prostrata*, *Peplidium maritimum* etc.

Distrib.: Malesia, Mascarene Islands, N. Australia, S. & E. India, Trop. Africa and Vietnam. TN: Chengalpattu, Coimbatore, Nilgiri and Ramanathapuram. GM: Occasional on mainland coast and rare on islands. Once collected on Thalayiari Island.

Specimens examined: (Total 17) KSK 102887; SAM 104706; Th Is. PD 101517.

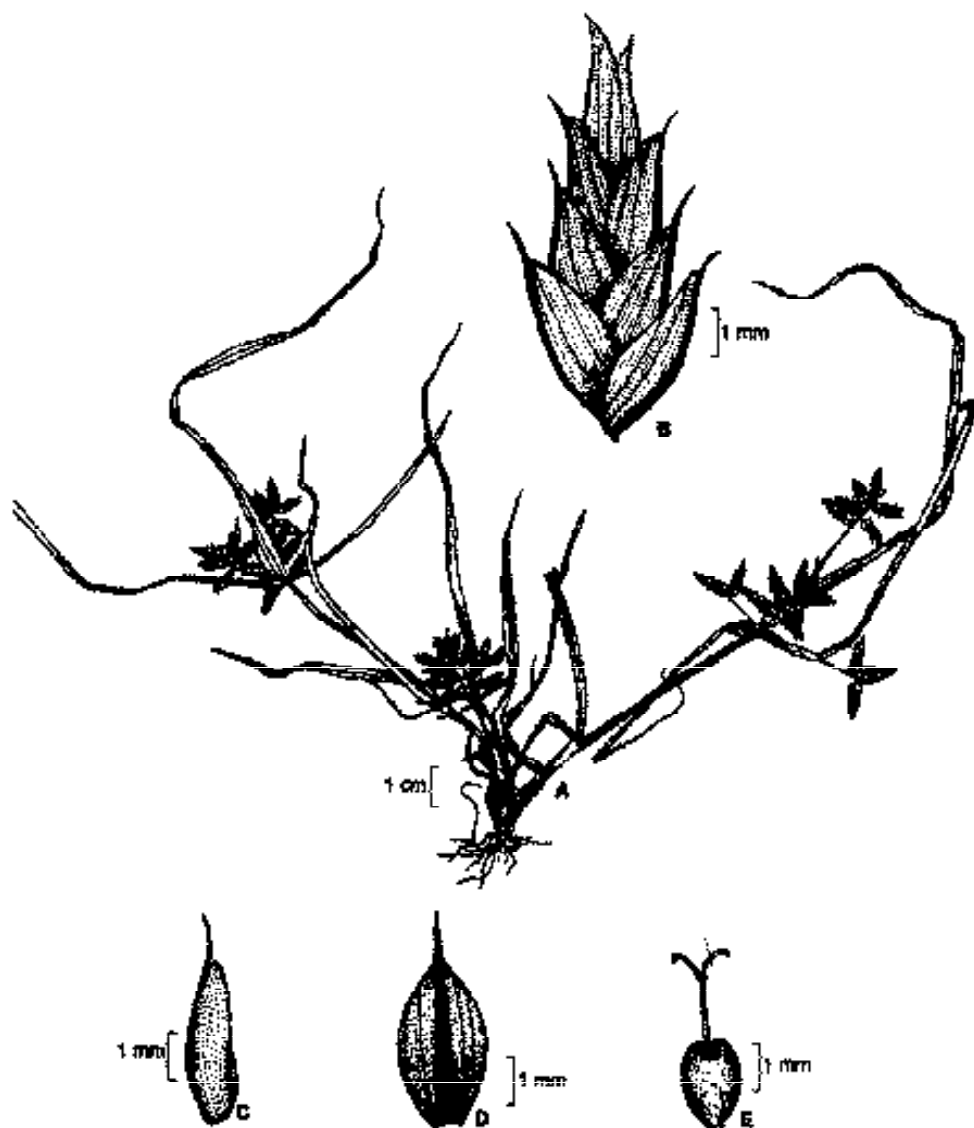


Fig. 70(A - E). *Kyllinga byobea* (Valid) T. Koyama
 A. Habit B. Spikelet C & D. Glume lateral & ventral views
 E. Achene

3. *K. nemoralis* (J.R. & G. Forst.) Dandy ex Hutch. & Dalziel, Fl. W. Trop. Africa 2: 487. 1936; FTC 3: 1767. 1983; RHFC 5: 249. 1985; FIFTC t. 684. 1988. *Thryocephalon nemoralis* J.R. & G. Forst., Char. Gen. Pl. 129, t. 65. 1775. *Kyllinga monocephala* Rottb., Descr. Icon. Rar. Pl. 13, f. 4. 1773, nom. illeg.; FBI 6: 588. 1893; FPM 1623. 1931. *Cyperus kyllinga* Endl., Cat. Horti Vindob. 1: 94. 1842; FM 1, 7: 659. 1974; FTN 3: 71. 1989.

Perennial; rhizome creeping; culms triquetrous, 10 - 45 cm high. Leaves usually shorter than culms; sheaths brown to purplish brown. Involucral bracts 3 or 4, foliaceous, spreading, reflexed; the lower most to 30 cm long. Spikelets ovate-elliptic or lanceolate-ovate, 2.5 - 3.5 x 1 - 1.5 mm, 1- or 2-flowered. Glumes boat-shaped, acute, 2.5 - 3.5 mm long, membranous, keeled, reddish brown, 3 - 4-nerved; nerves short-mucronate. Stamens 3; anthers linear, 0.5 - 1 mm long. Ovary obovoid, biconvex, 1.25 - 1.5 x 0.5 - 0.7 mm, brownish. Achenes stipitate, obovoid, ca 1.5 mm long, yellowish.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet places, with *Aeluropus lagopoides*, *Bacopa monnieri* and *Eleocharis geniculata*.

Distrib.: Pantropical, but relatively scarce in Trop. America. TN: Almost all districts. GM: Mainland coast, frequent. Collected at Chinnamuttam in Kanyakumari and Sethukarai in Ramanathapuram.

Uses: Decoction of the aromatic rhizomes used as a diuretic, refrigerant, demulcent and tonic; also given in fevers and diabetes to relieve thirst. Rhizomes yield an essential oil used for the same purposes as the decoction.

Specimens examined: (Total 56) PD & PU 106542, 107005.

6. *Mariscus* Vahl nom. cons.

Cosmopolitan, ca. 200 species, 13 in India, 6 in Tamil Nadu and one in GM.

M. squarrosus (L.) C.B. Clarke in Fl. Brit. India 6: 623. 1893; RHFC 5: 229. 1985; FIFTC t. 691. 1988. *Cyperus squarrosus* L., Cent. Pl. 2: 6. 1756; FTN 3: 75. 1989; FM 1, 7: 631. 1974. *Cyperus aristatus* Rottb., Descr. Pl. Rar. 22. 1772 & Descr. Icon. Rar. Pl. 38, t. 6, f. 1. 1773; FBI 6: 606. 1893; FPM 1640. 1931.

Annual; roots fibrous; culms caespitose, triquetrous, slender, to 15 cm high. Leaves flat, linear, acute-acuminate, usually shorter than culms, 3 - 8 x ca 0.2 cm, smooth; sheaths membranous, purplish. Inflorescence a simple single head to 1 - 4-rayed umbel; involucral bracts 3, foliaceous; the lower most to 8 cm long. Spikes ellipsoid, 0.5 - 1.5 cm long. Spikelets imbricate-spicate, 8 - 20-flowered, dense, oblong-elliptic, ca 5 mm long. Glumes oblong-elliptic, 1 - 1.5 x 0.8 - 1 mm, stramineous to reddish brown, membranous, 9-nerved;

midnerve greenish, tapering with 1 - 1.5 mm long awn. Stamen 1; filament ca 0.5 mm long; anther oblong, 0.3 - 0.4 x ca 0.1 mm, yellowish; stigmas 3. Achenes ellipsoid-obovoid, trigonous, 0.7 - 1 x 0.4 - 0.5 mm, with persistent style base, yellowish pale brown.

Fl. & Fr.: July - Jan.

Habitat: Wet localities, with *Cyperus compressus*, *Pycneus pumilus* etc.

Distrib.: Cosmopolitan. TN: All districts. GM: Common on mainland coast and frequent on Appa, Kurusadai, Manoli, Moyal, Pumarichan and Thalayiari Islands.

The achenes are dispersed by seawater (Ridley, 1930).

Specimens examined: (Total 52) PD 101147; Ap Is. PD 101580; Ku Is. PD 100617; Ma Is. PD 101443; Mu Is. PD 100642; Pu Is. PD 100558; Th Is. PD 101501.

7. *Pycneus* P. Beauv.

Tropics and subtropics, ca 70 species, 14 in India, 9 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|---------------------------|
| 1a. Perennial; involucrel bracts more than 4 | 2. <i>P. polystachyos</i> |
| b. Annuals; involucrel bracts less than 4 | 2 |
| 2a. Glumes obtuse at apex, nerveless; stamens 2 | 1. <i>P. flavidus</i> |
| b. Glumes acute at apex, 3 - 5-nerved; stamen 1 | 3. <i>P. pumilus</i> |

1. *P. flavidus* (Retz.) T. Koyama in J. Jap. Bot. 51: 313. 1976 & RHFC 5: 222. 1985; FTC 3: 1777. 1983; FIFTC t. 693. 1988. *Cyperus flavidus* Retz., Obs. Bot. 5: 13. 1788; FM 1, 7: 648. 1974; FTN 3: 71. 1989. *C. globosus* All., Fl. Pedem. 49. 1789. *C. capillaris* J. König ex Roxb., Fl. Ind. 1: 198. 1820. *Pycneus globosus* (All.) Rchb., Fl. Germ. Excurs. 140. 1830; FPM 1627. 1931. *P. capillaris* (J. König ex Roxb.) Nees in Linnaea 9: 283. 1834; FBI 6: 591. 1893.

Culms tufted, trigonous, to 60 cm high. Leaves setaceous, canaliculate, acuminate, scabrid towards tip; sheaths pale reddish brown. Inflorescence simple or subcompound; involucrel bracts 2 - 4, to 25 cm long; primary rays 3 - 6, erect, slender, to 5 cm long; secondary rays 1 - 3 cm long. Spikes ovoid with 5 - 20 spikelets. Spikelets spreading, linear, 1 - 2 x 0.2 - 0.25 cm, 20 - 40-flowered. Glumes oblong-ovate, obtuse, 1.5 - 2.5 x 1 - 1.5 mm, hyaline along margins, chartaceous, nerveless, stramineous brown. Stamens 2; anthers oblong, ca 0.5 mm long. Ovary oblong; style simple; stigmas 2. Achenes oblong-obovoid, apiculate, 0.7 - 1.5 mm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Rice fields and open wet places, with other weeds like *Fimbristylis miliacea*, *Ischaemum indicum* etc.

Distrib.: Warmer parts of the eastern hemisphere. TN: Chengalpattu, Coimbatore, Kanyakumari, Nilgiri, N. & S. Arcot, Salem and Tiruchirapalli. GM: Mainland coast, common.

Specimens examined: (Total 55) PD & PU 107047.

2. *P. polystachyos* (Rottb.) P. Beauv., Fl. Oware 2: 48, t. 86, f. 2. 1807; FBI 6: 592. 1893; RHFC 5: 219. 1985. *Cyperus polystachyos* Rottb., Descr. Ic. Rar. Nov. Pl. 39, t. 11, f. 1. 1773. *C. polystachyos* Rottb. var. *laxiflorus* Benth., Fl. Austral. 7: 261. 1878; FM 1, 7: 649. 1974; FTN 3: 73. 1989. *Pycreus polystachyos* (Rottb.) P. Beauv. var. *laxiflorus* (Benth.) C.B. Clarke in Fl. Brit. India 6: 592. 1893; FTC 3: 1778. 1983; FIFTC.t. 695. 1988. (Fig.71)

Rhizome short, covered with stramineous sheaths; culms tufted, trigonous, ca 1 m high, 2 - 3 mm thick, glabrous. Leaves shorter than culms, flat, acute-acuminate, ca 30 x 0.3 cm, glabrous; sheaths membranous, stramineous, basally purplish. Inflorescence simple or compound, open; involucre bracts 7, foliaceous, serrulate, acute; the lower most one to 25 cm long; primary rays 6 - 10, spreading, slender, 1 - 12 cm long, basally covered by ca 0.5 cm long purplish truncate sheaths. Spikes ovate with 5 - 10 spikelets. Spikelets linear-lanceolate, acute, 0.4 - 0.8 x 0.1 - 0.2 cm, stramineous-green, 8 - 16-flowered; rachilla persistent, faintly winged; internodes between glumes ca 0.7 mm long. Glumes ovate-lanceolate, acute, 1.8 - 2 x 0.5 - 0.8 mm, hyaline along margins, 3-nerved; nerves thick, greenish. Stamens 2; filaments slender, ca 0.3 mm long; anthers basifixed, linear, ca 0.5 mm long. Style slender, inarticulate, ca 0.5 mm long; stigmas 2, ca 0.6 mm long. Achenes oblong-ellipsoid, ca 1.1 x 0.3 mm, stramineous yellow.

Fl. & Fr.: Throughout the year.

Habitat: Along streams, with *Cyperus exaltatus*, *Echinochloa colona* and *Eclipta prostrata*.

Distrib.: Cosmopolitan. TN: Kanyakumari, Tiruchirapalli, Tirunelveli and Tuticorin. GM: Mainland coast, rare. Collected at Athur and Chinnamuttam in Tuticorin and Kanyakumari.

Earlier collections from Tamil Nadu at MH are all from the W. Ghats in Tirunelveli and Ramanathapuram. Collected for the first time on seacoast.

Specimens examined: (Total 19) PD 102264; PD & PU 107002.

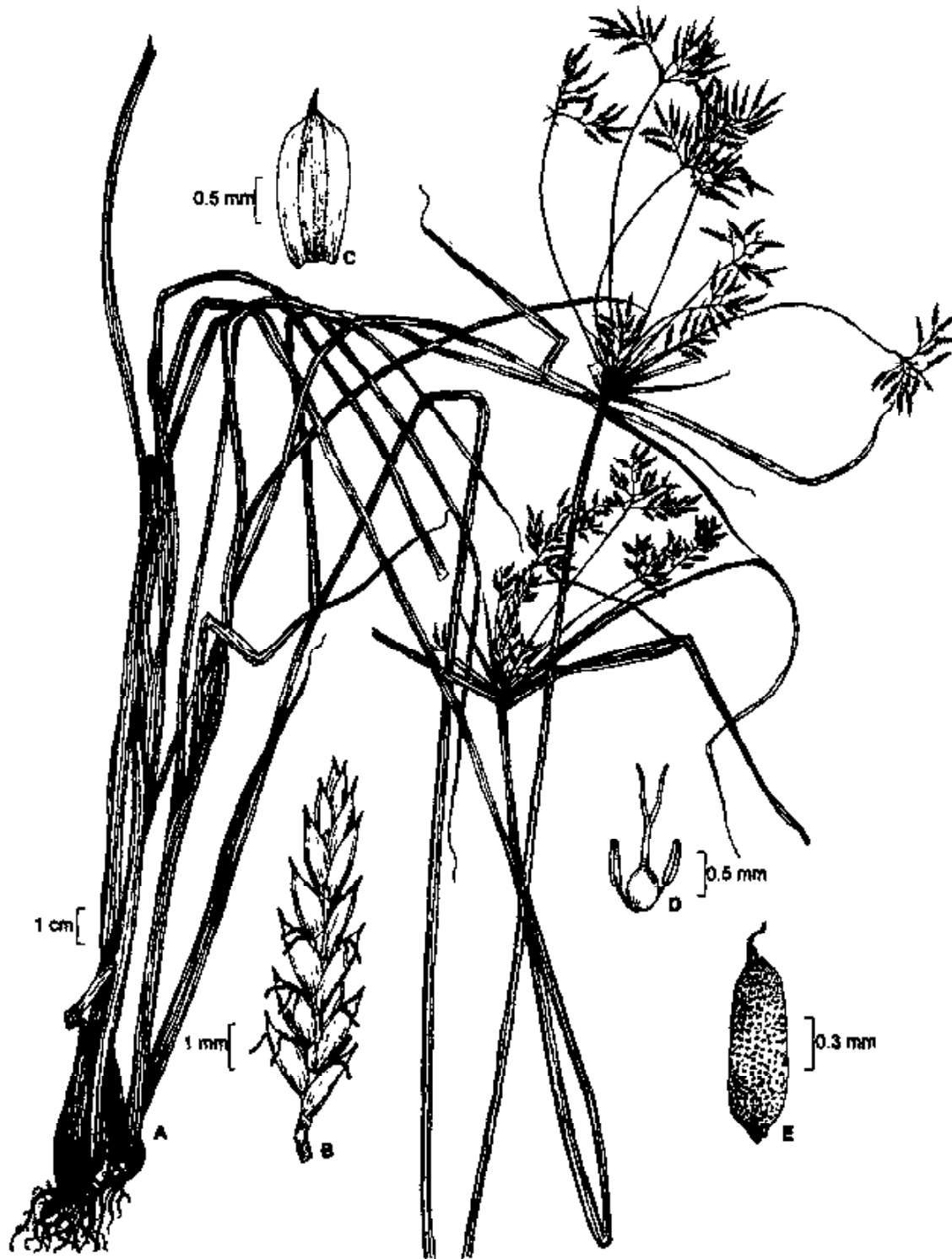


Fig. 71(A - E). *Pycnos polystachyos* (Rottb.) P. Beauv.

A. Habit B. Spikelet C. Glume D. Pistil & stamens E. Achene

3. *P. pumilus* (L.) Nees in *Linnaea* 9: 283. 1835; FBI 6: 591. 1893, quoad basionym; FPM 1627. 1931; RHFC 5: 224. 1985; FTC 3: 1778. 1983. *Cyperus pumilus* L., *Cent. Pl.* 2: 6. 1756; FM 1, 7: 650. t. 66. 1974; FTN 3: 73. 1989. *Pycnus nitens* Nees in *Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur.* 19(1): 53. 1843; FBI 6: 591. 1893.

Roots fibrous, pale yellowish; culms caespitose, triquetrous, slender, to 15 cm high, glabrous. Leaves linear, acute to acuminate, equal, sometimes surpassing culms, 2.5 - 15 x ca 0.2 cm; sheaths membranous, stramineous to reddish brown. Inflorescence a simple to subcompound umbel; primary rays 1 - 4; involucre bracts 3, foliaceous, acute-acuminate; the lower most ca 10 cm long. Spikes clustered, ovoid-subglobose; spikelets few to many, linear, 8 - 32-flowered. Glumes ovate, 1 - 1.2 x ca 1 mm, yellowish brown, 3 - 5-nerved in centre, nerveless and whitish on sides, strongly keeled; keel greenish; arista awn-like, acute, ca 0.5 mm long. Stamen 1; anther oblong, ca 0.2 x 0.1 mm, yellowish. Stigmas 2. Achenes obovoid, flattened, ca 0.8 x 0.25 mm, truncate at apex with persistent style-scar, dark brownish.

Fl. & Fr.: Aug. - Feb.

Habitat: Wet localities, with *Cyperus bulbosus*, *Riklrella squarrosus*, *Spermacoce hispida* etc.

Distrib.: India through Vietnam and S. China eastwards to Malesia and Australia. TN: Chengalpattu, Coimbatore, Nilgiri, N. & S. Arcot, Pudukkottai, Ramanathapuram, Tiruchirappalli and Tirunelveli. GM: Common on mainland coast and Kurusadai, Manoli, Muiyal, Nallathanni and Thalaiyari Islands.

Specimens examined: (Total 32) Ku Is. PD 100614; Ma Is. PD 100690; Mu Is. PD 100629; Nt Is. PD 101617; Th Is. PD 101508.

8. *Riklrella* J. Raynal

Old World tropics, 4 species and one in India.

R. squarrosa (L.) J. Raynal in *Adansonia* 13: 154. 1973; FTC 3: 1782. 1983; RHFC 5: 254. 1985. *Scirpus squarrosus* L., *Mant. Pl.* 181. 1771; FBI 6: 663. 1893; FPM 1666. 1931; FM1,7: 516. 1974; FTN 3: 85. 1989. (Fig. 72)

Annual; roots fibrous, purplish; culms tufted, slender, setaceous, glabrous, 5 - 25 cm high. Leaves linear, incurved, subacute, 1 - 2 cm long, smooth; sheaths pale stramineous white or hyaline with purplish striations, eligulate. Inflorescence capitate, pseudolateral; involucre bracts 1 - 3, foliaceous, dilated at base; the basal one continuous with stem, 1.5 - 4 cm long; the other 2 shorter. Spikelets sessile, 1 - 4, elliptic-oblong, obtuse, 0.5 - 1 x 0.2 - 0.3 cm. Glumes spiral, compact, narrowly obovate, caudate, ca 1.5 x 0.5 mm, reddish brown, 3-nerved. Stamens 1 or 2; anthers oblong, ca 0.2 mm, yellow. Ovary oblong, ca 0.4

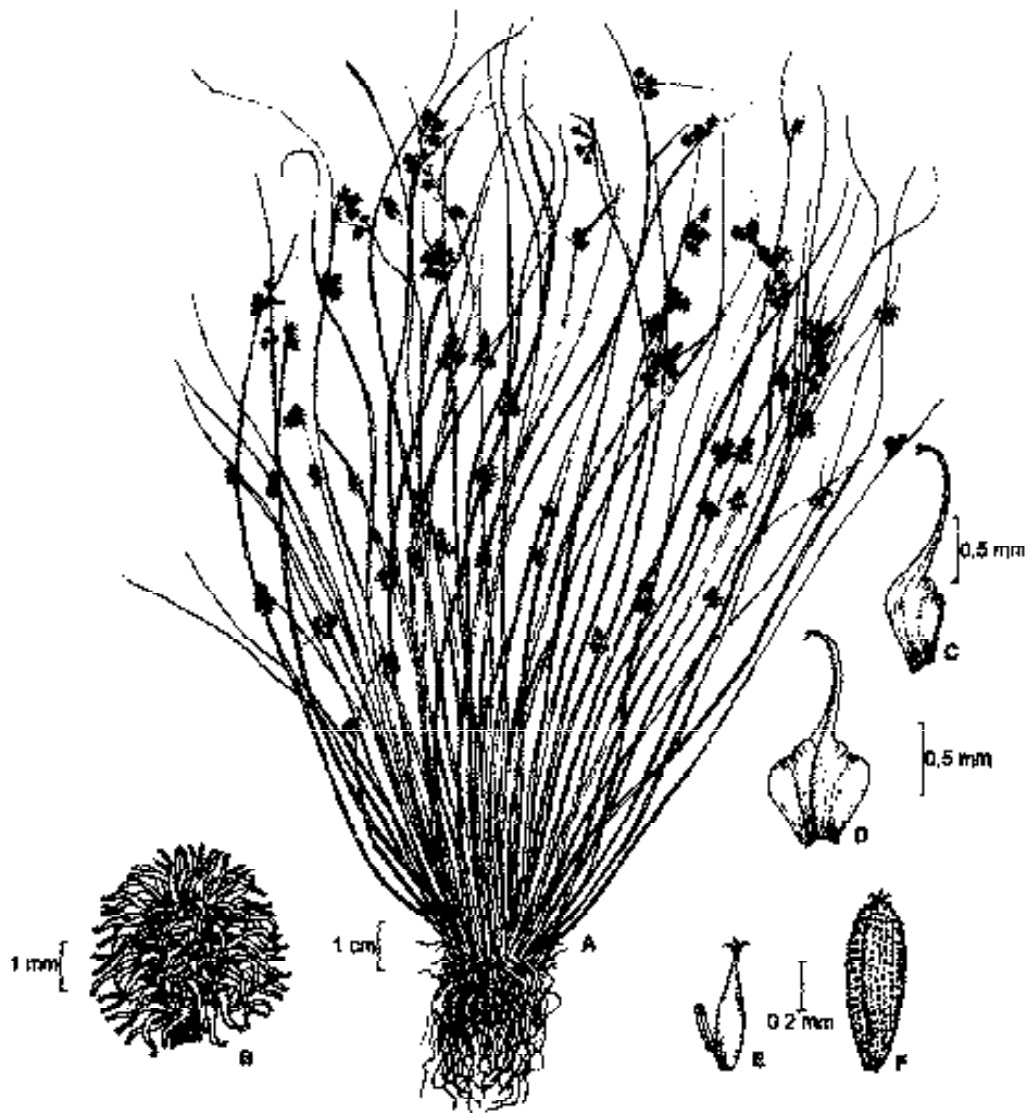


Fig. 72(A - F). *Rhipidella squarrosa* (L.) J. Raynal

A. Habit B. Spikelet C & D. Glume lateral & dorsal views E. Pistil & stamen F. Achene

mm long; stigma sessile, 3-lobed, recurved, slender, ca 0.1 mm long. Achenes oblong, trigonous, obtuse, ca 0.7 x 0.2 mm, pale yellowish.

Fl. & Fr.: Nov. - March.

Habitat: Wet sandy open places, with *Cyperus arenarius*, *C. bulbosus*, *Peplidium maritimum* etc.

Distrib.: India, Malasia, S. Asia, Sri Lanka and Thailand to Vietnam. TN: Almost all districts. GM: Frequent on mainland coast and Appa, Kurusadai and Thalayiari Islands.

Specimens examined: (Total 49) PD & PU 106532; Ap Is. PD 101556; Ku Is. PD 100576; Th Is. PD 101511.

9. *Schoenoplectus* (Rchb.) Palla nom. cons.

Cosmopolitan, ca 200 species, 17 in India, 11 in Tamil Nadu and 4 in GM.

Key to the species

1a. Annual herb	4. <i>S. supinus</i>
b. Perennial herbs	2
2a. Culms transversely septate	1. <i>S. articulatus</i>
b. Culms not septate	3
3a. Achenes ca 2 mm long; hypogynous bristles 4, fimbriate	2. <i>S. littoralis</i>
b. Achenes 3 - 3.5 mm long; hypogynous bristles 6, retroseely barbed	3. <i>S. maritimus</i>

1. *S. articulatus* (L.) Palla in Bot. Jahrb. Syst. 10: 299. 1888; FTC 3: 1783. 1983; RHFC 5: 163. 1985. *Scirpus articulatus* L., Sp. Pl. 47. 1753; FBI 6: 656. 1893; FPM 1666. 1931; FM 1, 7: 513. 1974; FTN 3: 84. 1989.

Short-lived perennial; culms tufted, terete, 20 - 80 cm high, hollow, transversely septate, glabrous. Leaves reduced to sheaths, cylindrical, to 20 cm long, obliquely truncate at mouth, brownish. Inflorescence a pseudolateral head, 2 - 4 cm across. Spikelets dense, oblong, subacute, 0.7 - 1.5 x 0.3 - 0.4 cm, many-flowered. Glumes spiral, ovate, acute, mucronate, 3.5 - 5 x 2 - 2.5 mm, membranous, greenish, tinged with reddish brown, 1-nerved. Stamens 3; anthers ca 1.1 mm long. Ovary obovoid; styles ca 2 mm long; stigmas 3, ca 0.5 mm long. Achenes obovoid, triquetrous, ca 2 x 1.5 mm, brownish; hypogynous bristles absent.

Fl. & Fr.: Nov. - Feb.

Habitat: Marshy localities and rice fields, with other weeds like *Paspalidium geminatum* and *Eragrostis gangetica*.

Distrib.: India, Malesia, Trop. Australia and Vietnam. TN: Chengalpattu, Kanyakumari, Madurai, Ramanathapuram, S. Arcot, Tiruchirappalli and Tirunelveli. GM: Mainland coast, frequent. Once collected near Kanyakumari.

Uses: Dried plants used for thatching. Tubers given to stop diarrhoea and vomiting.

Specimens examined: (Total 43) PD & PU 107015.

2. *S. litoralis* (Schrad.) Palla in Verh. K.K. Zool.-Bot. Ges. Wien 38: 49. 1888 & Bot. Jahrb. Syst. 10: 299. 1888. *Scirpus litoralis* Schrad., Fl. Germ. 1: 142, t. 5, f. 7. 1806.

Rhizomatous, perennial; culms tufted, 0.5 - 2 m high, 0.3 - 1 cm thick, terete or trigonous, tapering towards tip or not. Leaves linear, acute or acuminate, 1 - 15 x 0.15 - 0.5 cm; ligule membranous, acute or obtuse, 0.1 - 0.5 cm wide; sheaths 5 - 40 cm long, stramineous to purplish red. Inflorescence pseudolateral; involucre bracts 1.5 - 8 cm long, scabrid near spikelet; rays 3 - 9; primary rays 1 - 3.5 cm long; secondary rays to 1 cm long. Spikelets 5 - 16, ovate or lanceolate, acute, 0.5 - 2 x 0.2 - 0.3 cm, many-flowered (ca 70). Glumes broadly ovate or boat-shaped, notched, or lobed with obtuse, or subacute apex, 3.5 - 4 x 2 - 2.5 mm, reddish brown or stramineous with brown spots, one-nerved; nerve ending in a short mucro; mucro 1 - 5 mm long, glabrous or scabrid minutely ciliate. Stamens 3; filaments flat, 0.5 - 1 mm long; anthers linear, 1.1 - 1.5 mm long; connectives ovate, somewhat rounded or conical with 10 - 12 scale-like projections. Ovary oblong or obovoid, 0.5 - 0.8 mm long; style simple, 1.2 - 1.5 mm long; stigmas 2, 1.5 - 2.5 mm long. Achenes obovoid, ca 2 x 1.5 mm, pale brownish; hypogynous bristles 4, densely or sparsely fimbriate, ca 3 mm long, brownish.

Key to the subspecies

- | | |
|--|------------------------------|
| 1a. Culms trigonous; ligule obtuse; connective of anthers ovate-rounded; hypogynous bristles densely fimbriate | 2.1. subsp. <i>litoralis</i> |
| b. Culms terete; ligule acute; connective of anthers ovate-conical; hypogynous bristles sparsely fimbriate | 2.2. subsp. <i>thermalis</i> |

2.1. subsp. *litoralis*: T. Koyama in RHFC 5: 157. 1985. (Fig. 73)

Fl. & Fr.: July - Jan.

Habitat: Edges of slow-flowing stream, on clayey soil, with *Schoenoplectus litoralis* subsp. *thermalis*, *S. maritimus* and *Typha angustata*.

Distrib.: N. regions of the Old World (Townsend, 1962); Europe and W. Asia (Koyama, 1985), and India. This subspecies is added here to the flora of India. TN: Tuticorin. GM: Mainland coast, rare. Collected at Tuticorin.

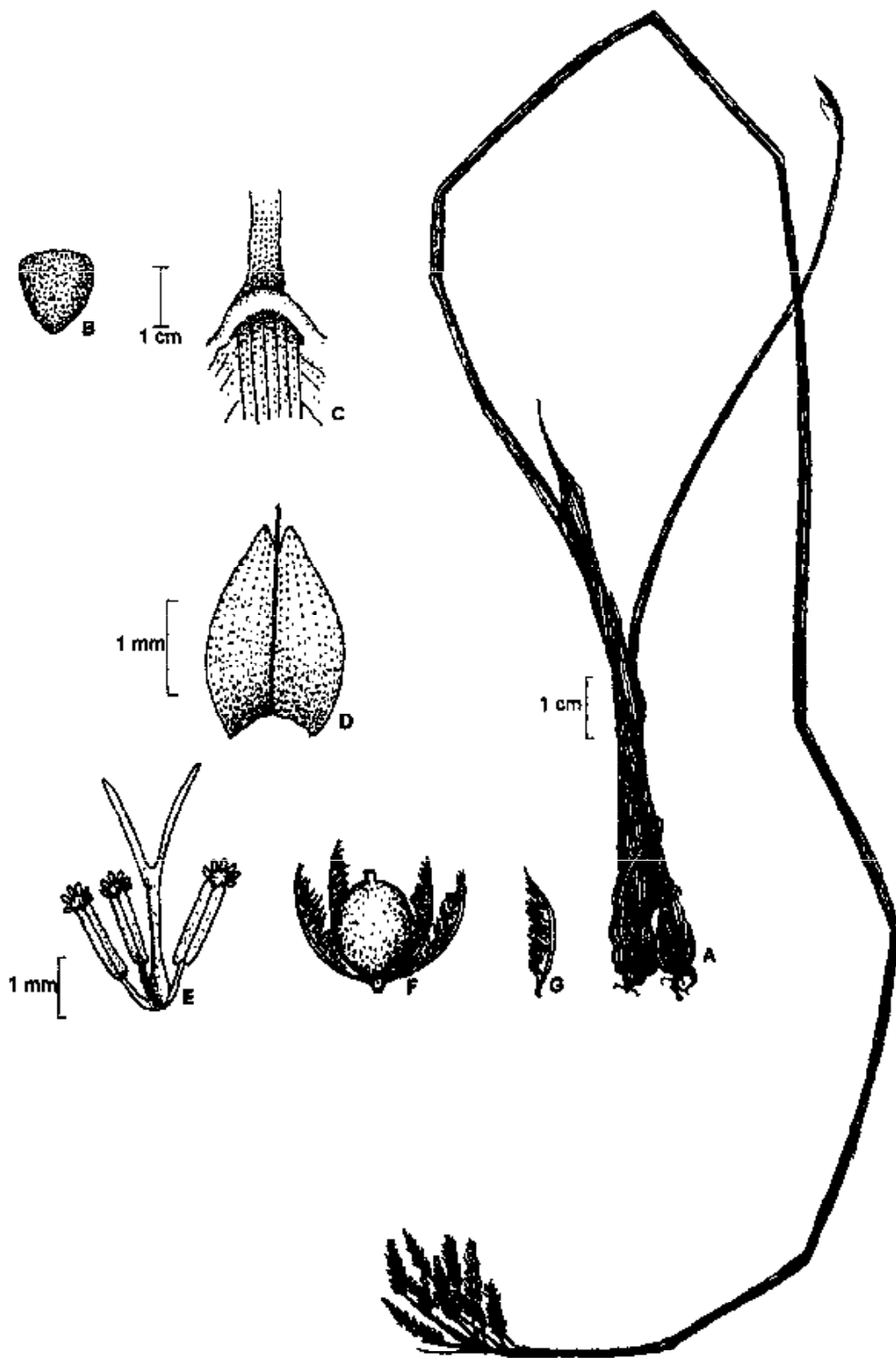


Fig. 73 (A - G). *Schoenoplectus litoralis* (Schrad.) Palla subsp. *litoralis*
 A. Habit B. Culm T.S. C. Ligule D. Glume E. Pistil & stamens F. Achene
 G. Hypogynous bristle

Specimens examined: PD & PU 104638, 107286.

2.2. subsp. *thermalis* (Trab.) Murb., Contr. Fl. Maroc 1: 18. 1922; S.S. Hooper in C. J. Saldanha & Nicolson, Fl. Hassan 698. 1976; Karth. & al., Fl. Ind. Enum. Monocot. 69. 1989. *Scirpus thermalis* Trab. in Batt. & Trab., Fl. Algérie 2: 99. 1895. *S. subulatus* Vahl, Enum. Pl. 2: 218. 1806. *S. pterolepis* Kunth, Enum. Pl. 2: 168. 1837. *Schoenoplectus litoralis* (Schr.) Palla var. *pterolepis* (Kunth) C.B. Clarke in Durand & Schinz, Consp. Fl. Afric. 8: 625. 1895. *S. litoralis* (Schr.) Palla subsp. *subulatus* (Vahl) T. Koyama in Dassan., Rev. Handb. Fl. Ceylon 5: 157. 1985; Karth. & al., Fl. Ind. Enum. Monocot. 69. 1989. *Scirpus litoralis* auct. non Schr. 1806: FBI 6: 659. 1893; FPM 166. 1931; FM 1, 7: 510. 1974; FTC 3: 1785. 1983; FIFTC t. 703. 1988; FTN 3: 85. 1989. *S. litoralis* Schr. var. *subulatus* (Vahl) Chiov., Pl. Nov. Aethiop. 16. 1928; T. Koyama in J. Fac. Sci. Univ. Tokyo, Sect. 3, Bot. 7: 324. 1958 (isonym). *S. litoralis* subsp. *litoralis*: sensu Karth. & al., Fl. Ind. Enum. Monocot. 69. 1989, non (Schr.) Palla 1888. (Fig. 74)

Fl. & Fr.: Aug. - Feb.

Habitat: Edges of slow-flowing streams, on clayey soil, with *Schoenoplectus maritimus*, *S. litoralis* subsp. *litoralis* and *Typha angustata*.

Distrib.: Arabia, Australia, Madagascar, New Caledonia and New Guinea, S. Africa, Trop. E. & W. Africa (Townsend, 1962); India, Malesia and Micronesia (Koyama, 1985). TN: Most districts. GM: Mainland coast, rare. Collected at Tuticorin and Thiruchendur.

Notes: Townsend (1962) discussed the taxonomy, nomenclature and distribution of *Scirpus subulatus* Vahl (= *Schoenoplectus litoralis* subsp. *thermalis*) at length. He narrated the shifting of *S. subulatus* from species to infraspecific ranks in *S. litoralis* over the years by various authors. Though he concluded that *S. litoralis* and *S. subulatus* are distinct taxonomic entities, he was not unequivocal about the rank of the latter. Stated Townsend (*l.c.*), "In view of the apparent geographical separation it is suggested that the terete-culmed plant (*S. subulatus*) be given subspecific rank. There does not appear to be any combination published involving the epithet *subulatus* in this grade and thus the correct name will be subsp. *thermalis* (Trab.) Murb." Without leaving at that he picked up the thread and stated at the end again, "In view of the slight difference in the latter plant (*S. subulatus*) it is suggested that this becomes variety *pterolepis* (Kunth) C.B. Clarke of *Schoenoplectus litoralis* (Schr.) Palla subsp. *thermalis* (Trab.) Murb. Though Hooper's (in Saldanha & Nicolson, 1976) citation might make one believe that Townsend took sides with the subscribers of subspecies rank he did not subscribe exclusively to that. His was a neither here nor there stand.

Though the taxonomic distinction between *S. litoralis* and *S. thermalis* is not that great there are differences as shown by us in the key including the densely and sparsely fimbriate hypogynous bristles to sufficiently warrant the status of a subspecies as treated by Koyama (1985). It may be further emphasized that in the field the vegetative distinctly dark green,

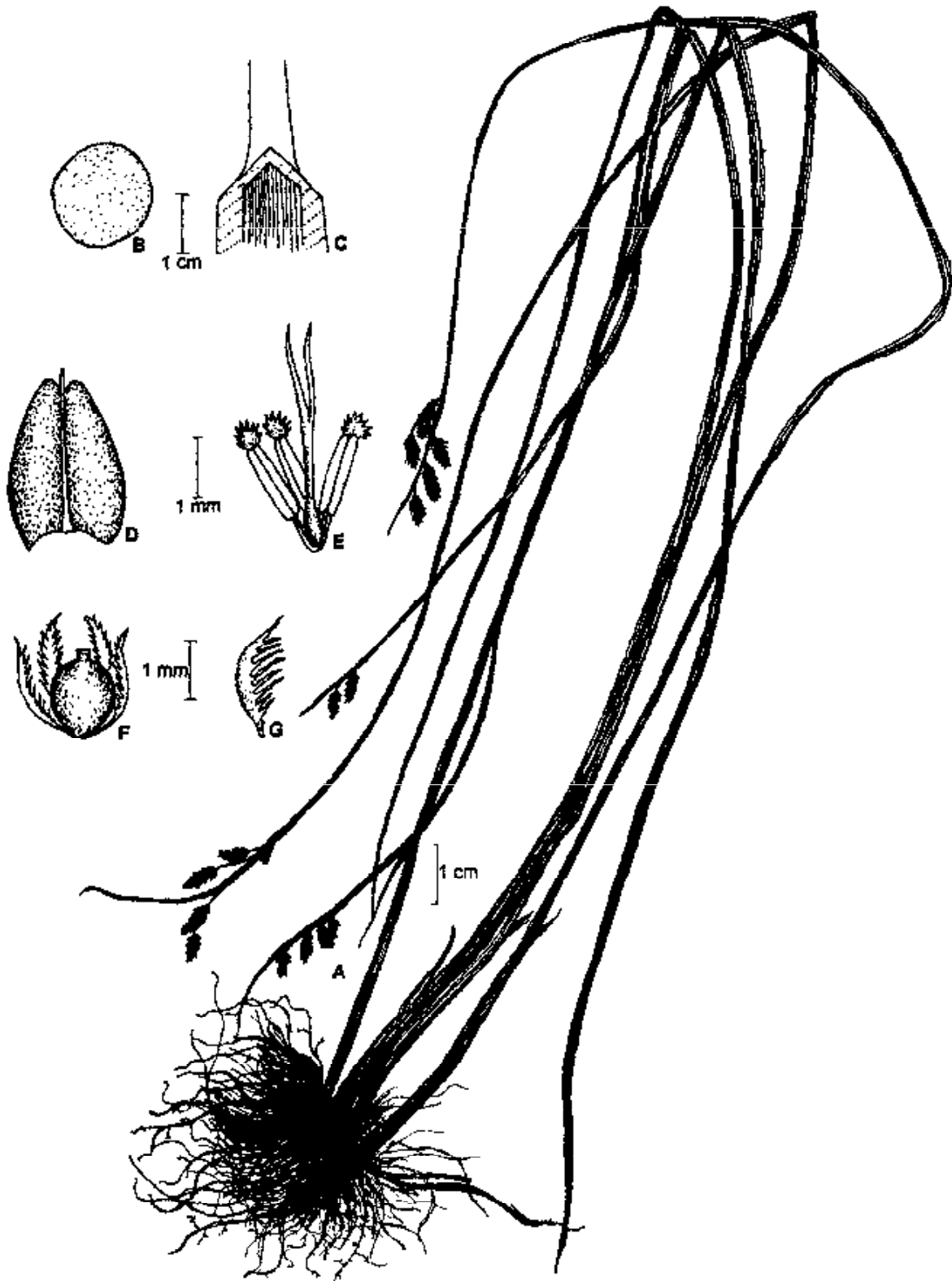


Fig. 74(A - G). *Schoenoplectus litoralis* (Schrad.) Palla subsp. *thermalis* (Trab.) Murb
 A. Habit B. Culm 1 S C. Ligule D. Glume E. Pistil & stamens F. Achene G. Hypogynous bristle

terete and gradually tapering culms of *S. litoralis* subsp. *thermalis* sticking out from water like upturned rat-tails are unlikely to be mistaken for subsp. *litoralis*.

Plants of subsp. *litoralis* were collected only at Tuticorin. It is the first report of this subspecies outside its known range. It is not known whether the plants exist since long or came to get established only sometime ago but had been overlooked by earlier workers/collectors. Tuticorin having become a major seaport in recent years the latter proposition may seem more convincing.

Specimens examined: (Total 20) PD & PU 104637, 107247; SAM 104648.

3. *S. maritimus* (L.) Lye in Blyttia 29: 145. 1971; Karth. & al., Fl. Ind. Enum. Monocot. 69. 1989. *Scirpus maritimus* L., Sp. Pl. 51. 1753; FBI 6: 658. 1893; FPM 1666. 1931; FM 1, 7: 499. 1974; FTN 3: 85. 1989. (Fig. 75)

Rhizomatous, tufted perennial; culms triquetrous, 70 - 80 cm high. Leaves as long as or longer than the culms, linear, acuminate, glabrous, eligulate; sheaths reddish brown. Inflorescence terminal; involucre bracts 3, foliaceous. Spikes 5 - 12, ovate, 1 - 4.5 x 0.3 - 0.5 cm, many-flowered. Glumes spiral, imbricate, elliptic or ovate, cuspidate, 5 - 6 x 2 - 3 mm. Stamens 3. Ovary obovoid; style single, glabrous; stigmas 3. Achenes obovoid, trigynous, 3 - 3.5 x 1.8 - 2 mm, pale brownish; hypogynous bristles 6, retrorsely barbed.

Fl. & Fr.: Almost throughout the year.

Habitat: Marshy localities, with *Aeluropus lagopoides*, *Fimbristylis ferruginea*, *Schoenoplectus litoralis*, *Sporobolus tremulus* and *Typha angustata*.

Distrib.: Trop. and temperate regions. TN: Ramanathapuram and Tuticorin. GM: Mainland coast, frequent. Earlier collected at Peruvayal and Sethupathinagar in Ramanathapuram. Now collected at Valinokkam in Ramanathapuram and Veppalodai and Tuticorin.

Its distribution in Coimbatore in the flora of Tamil Nadu was based on a specimen collected at the Central Farm of the Agricultural College (CR s.n.). Being a coastal plant, it must have been an introduction there. It was collected a little away from the seacoasts in Ramanathapuram (VB 1783). This time around it was collected in different places on mainland coast in Ramanathapuram and Tuticorin. Populations are few and far between, hence it is not a common species.

Specimens examined: (Total 12) CR s.n.; PD & PU 103595, 104635, 106583, 106670, 106679, 107285; SAM 104660; VB 1783, 2126.

4. *S. supinus* (L.) Palla subsp. *lateriflorus* (J. F. Gmel.) T. Koyama in Hara & al., Enum. Fl. Pl. Nepal 1: 119. 1978 & RHFC 5: 158. 1985. *Scirpus lateriflorus* J. F. Gmel.,

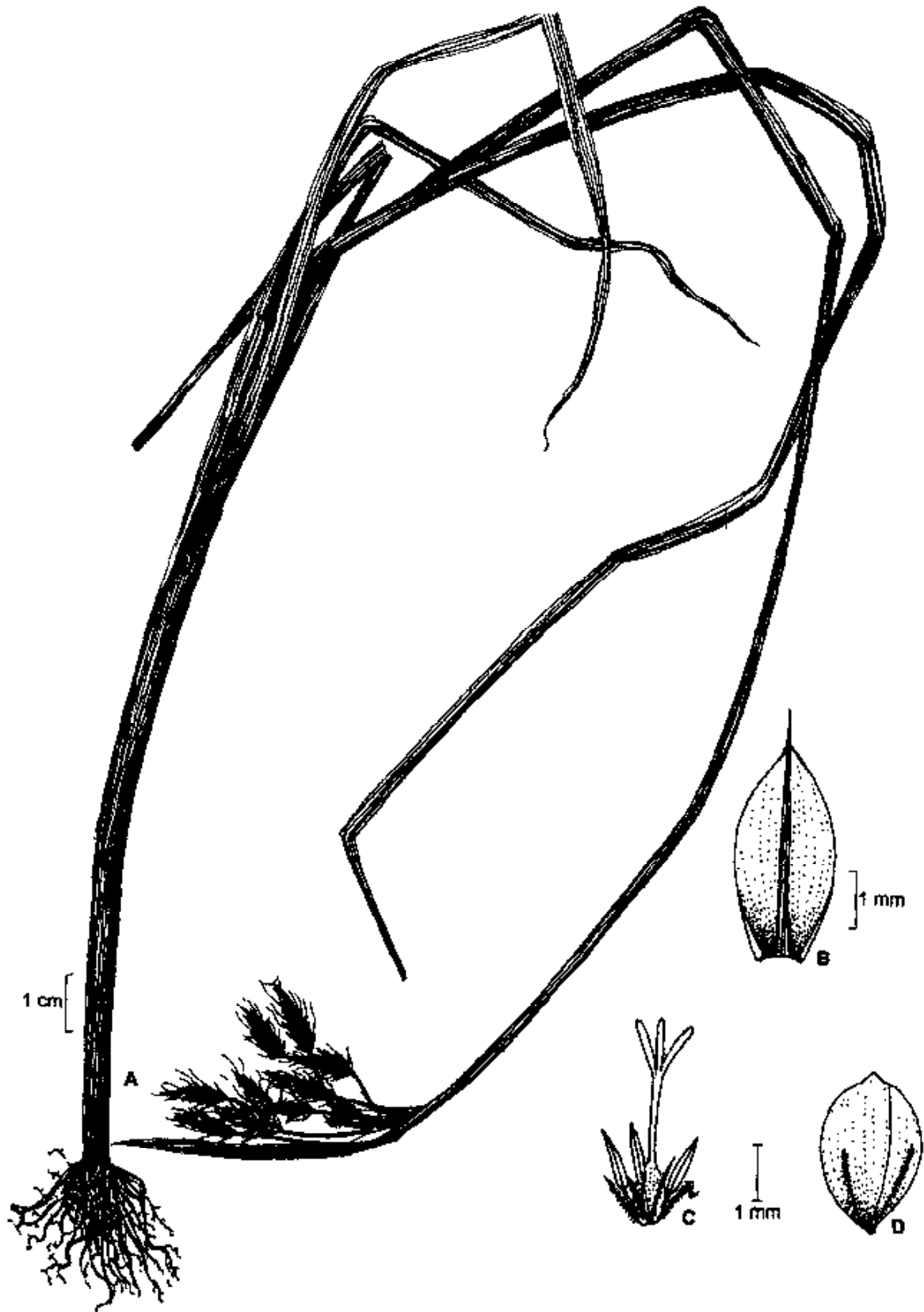


Fig. 75(A - D). *Schoenoplectus maritimus* (L.) Lye
 A. Habit B. Glume C. Pistil, stamens & hypogynous bristles
 D. Achene

Syst. Nat. 1: 127. 1791; FM 1, 7: 514. 1974; FTN 3: 85. 1989. *S. supinus* L. var. *uninodis* C.B. Clarke in Fl. Brit. India 6: 656. 1893. *S. supinus* auct. non L. 1753: FBI 6: 655. 1893; FPM 1666. 1931. *Schoenoplectus lateriflorus* (J. F. Gmel.) Lye in Bot. Not. 124: 290. 1971; FTC 3: 1784. 1983.

Annual; culms tufted, trigonous or subterete, to 30 cm high. Leaves reduced to sheaths, 5 - 15 cm long, obliquely truncate at mouth. Inflorescence pseudolateral, capitate; involucre bracts 1 or 2, to 12 cm long. Spikelets to 20, lanceolate-ovate, 4 - 8 x 2 - 3 mm, many-flowered. Glumes ovate-elliptic, 2 - 2.5 x 1.5 - 1.7 mm, membranous, stramineous with reddish brown spots, 3-nerved. Stamens 3; anthers oblong, ca 0.5 mm long. Ovary obovoid; style ca 1.5 mm long; stigmas 3. Achenes obovoid, trigonous, apiculate, 1 - 1.2 mm long, transversely wrinkled; hypogynous bristles absent.

Fl. & Fr.: Sept. - May.

Habitat: Marshy areas and rice fields, with *Ammannia baccifera*, *Fimbristylis miliacea* and *Ischaemum indicum*.

Distrib.: Australia and SE. Asia. TN: All districts. GM: Mainland coast, frequent.

Specimens examined: (Total 47) PD & PU 107015, 107039.

113. POACEAE (nom. alt. GRAMINEAE)

Key to the genera

- | | |
|---|------------------------|
| 1a. Spikelets strictly with 2 florets, falling entire at maturity, articulate below glumes, often dorsally compressed | 2 |
| b. Spikelets with 1 - several florets, breaking up at maturity above glumes, if falling entire then not 2-flowered, often more or less laterally compressed | 29 |
| 2a. Spikelets dissimilar, often in pairs or in threes, one sessile and others pedicellate | 3 |
| b. Spikelets similar, solitary or paired, sessile | 17 |
| 3a. Inflorescence supported by spathes | 4 |
| b. Inflorescence not supported by spathes | 10 |
| 4a. Racemes solitary or subdigitate | 5 |
| b. Racemes neither solitary nor subdigitate but in panicles | 8 |
| 5a. Lower glume of sessile spikelets pitted on back | 24. <i>Eremopogon</i> |
| b. Lower glume of sessile spikelets not pitted on back | 6 |
| 6a. Upper lemma of sessile spikelets unawned | 35. <i>Manisuris</i> |
| b. Upper lemma of sessile spikelets awned | 7 |
| 7a. Sessile spikelets pistillate; awn ca 8 mm long; paleate | 3. <i>Andropogon</i> |
| b. Sessile spikelets bisexual; awn ca 19 mm long; epaleate | 15. <i>Dichanthium</i> |

8a. Involucral spikelets present	32. Ischaemum
b. Involucral spikelets absent	9
9a. Plants non-aromatic; sessile spikelets with 2 florets	4. Apluda
b. Plants aromatic; sessile spikelets with a single floret	12. Cymbopogon
10a. Spikelets unawned	11
b. Spikelets awned	13
11a. Inflorescence a raceme; sessile spikelets globose	36. Mnecithea
b. Inflorescence a panicle; sessile spikelets lanceolate or oblanceolate, or absent	12
12a. Panicles 5 - 25 cm long; spikelets all pedicellate	29. Imperata
b. Panicles 40 - 70 cm long; spikelets both sessile and pedicellate;	42. Saccharum
13a. Raceme solitary	27. Heteropogon
b. Racemes more than one	14
14a. Spikelets in threes, one sessile, the other two pedicellate	10. Chrysopogon
b. Spikelets binate or solitary	15
15a. Roots aromatic; inflorescence a panicle;	49. Vetiveria
b. Roots non-aromatic; inflorescence not a panicle;	16
16a. Lower glume of sessile spikelets pitted	6. Bothriochloa
b. Lower glume of sessile spikelets not pitted	31. Ischaemum
17a. Plants dioecious; bracts pungent	44. Spinifex
b. Plants monoecious; bracts not pungent	18
18a. Spikelets subtended by one or more bristles	19
b. Spikelets neither subtended nor surrounded by bristles	20
19a. Inflorescence a spiciform raceme; involucre of bristles thickened into a hard cup; upper lemma smooth	8. Cenchrus
b. Inflorescence a panicle; involucre of bristles not thickened as above; upper lemma rugose or indurate	43. Setaria
20a. Spikelets awned	19. Echinochloa
b. Spikelets unawned	21
21a. Inflorescence a spiciform or effuse panicle	22
b. Inflorescence a spiciform raceme	24
22a. Lower glume and the lowest rachilla-internode swollen into a callus	25. Eriochloa
b. Lower glume and the lowest rachilla-internode not swollen into a callus	23
23a. Leaf sheaths ciliate along margins; upper floret bisexual	38. Panicum
b. Leaf sheaths not ciliate along margins; upper floret pistillate	28. Holcolemma
24a. Spikelets clustered, mixed with scaly empty glumes	46. Trachys
b. Spikelets neither clustered nor mixed with scaly empty glumes	25
25a. Lower glume present	26
b. Lower glume absent or if present, scaly	28
26a. Culms bearded at nodes; lower glume adaxial	7. Brachiaria
b. Culms not bearded at nodes; lower glume abaxial	27
27a. Culms rooting at lower nodes; lower glume orbicular, nerveless	39. Paspallidium

b. Culms not rooting at nodes; lower glume ovate, 5-nerved	48. <i>Urochloa</i>
28a. Lower glume absent; grains 1.5 - 1.6 mm long	40. <i>Paspalum</i>
b. Lower glume present, scaly; grains 2 - 2.5 mm long	16. <i>Digitaria</i>
29a. Lemmas deeply cleft into 9 awns	21. <i>Enneapogon</i>
b. Lemmas entire or 2-lobed, awnless, or rarely 1- or 3-awned	30
30a. Spikelets with 1 fertile floret with or without 1 or 2 male or sterile florets	31
b. Spikelets with 2 or more fertile florets	39
31a. Inflorescence a solitary or digitate spike or rarely spiciform racemes	32
b. Inflorescence usually a panicle, either open or contracted, very rarely spiciform	38
32a. Spikelets breaking up at maturity above persistent glumes	33
b. Spikelets falling entire at maturity either singly or in cluster	35
33a. Spike solitary	37. <i>Oropetium</i>
b. Spikes 2 or more	34
34a. Lemmas awned; rachilla produced above, bearing 1 - 3 empty lemmas	9. <i>Chloris</i>
b. Lemmas unawned, rachilla not or rarely produced, empty lemmas absent or rarely 1	13. <i>Cynodon</i>
35a. Lower glume well-developed	36
b. Lower glume minute or absent	37
36a. Glumes awned; lower glume neither clasping floret, nor resembling a bird's head	41. <i>Perotis</i>
b. Glumes unawned; lower glume clasping floret, resembling a bird's head	34. <i>Lopholepis</i>
37a. Spikelets in clusters; lower glume reduced to a scale; upper glume spinose; lemma 3-nerved	47. <i>Tragus</i>
b. Spikelet solitary; lower glume absent; upper glume not spinose; lemma 1-nerved	50. <i>Zoysa</i>
38a. Glumes longer than lemmas; lemma 3-awned	5. <i>Aristida</i>
b. Glumes shorter than lemmas; lemma unawned	45. <i>Sporobolus</i>
39a. Spikelets with 2 florets; lemmas hardened or leathery	30. <i>Isachne</i>
b. Spikelets with 3 or more florets; lemmas membranous	40
40a. Inflorescence in dense heads	41
b. Inflorescence not in heads	42
41a. Lemmas 9-nerved; grains oblong	2. <i>Aeluropus</i>
b. Lemmas 3-nerved; grains ovoid-ellipsoid	11. <i>Coelachyrum</i>
42a. Inflorescence of (sub)digitate or whorl of spikes	43
b. Inflorescence of open or contracted panicles or spiciform racemes, if spikes then not as above	45
43a. Spikes terminating in a sharp point	14. <i>Dactyloctenium</i>
b. Spikes terminating in a spikelet	44
44a. Spikes 1.5 - 4.5 cm long; spikelets shortly awned; grains oblong,	

less than 1 mm long	10. <i>Acrachne</i>
b. Spikes 5 - 15 cm long; spikelets unawned; grains trigonous, more than 1 mm long	20. <i>Eleusine</i>
45a. Spikelets sessile, with 2 or 3 florets; glumes awned	17. <i>Dinebra</i>
b. Spikelets subsessile or pedicellate, with more than 3 florets; glumes unawned	46
46a. Internodes of rachilla bearded at tip with long hairs; hairs to half as long as lemma	26. <i>Halopyrum</i>
b. Internodes of rachilla glabrous, or only with short hairs	47
47a. Inflorescence a solitary spike	22. <i>Eragrostiella</i>
b. Inflorescence a panicle, rarely a spike	48
48a. Lemmas emarginate or 2-lobed	18. <i>Diplachne</i>
b. Lemmas entire	49
49a. Spikelets prominently secund, sessile; lemmas hairy on back	33. <i>Leptochloa</i>
b. Spikelets not secund, pedicellate; lemmas not hairy on back.....	23. <i>Eragrostis</i>

1. *Acrachne* Wight & Arn. ex Chiov.

Old World tropics, 4 species, 3 in India and 2 in GM.

Key to the species

1a. Spikes less than 2.5 cm long; spikelets less than 2.5 mm long, dense; interspace between two spikelets ca 0.5 mm long	1. <i>A. henrardiana</i>
b. Spikes more than 3.5 cm long; spikelets more than 3.5 mm long, lax; interspace between two spikelets ca 1 mm long	2. <i>A. sundararajii</i>

1. *A. henrardiana* (Bor) S.M. Phillips in Kew Bull. 37: 158. 1982; FTN 3: 87. 1989; Karth. & al., Fl. Ind. Enum. Monocot. 178. 1989; JETB 14: 495. 1990; *Dactyloctenium henrardianum* Bor in Blumea 3 (Suppl.): 44. 1946 & GBCIP 489. 1960. *Arthrochloa henrardiana* (Bor) J.W. Lorch in J. Indian Bot. Soc. 39: 490. 1960; BOBSI 4: 220. 1962; BOBSI 8: 80. 1966. *Normanboria henrardiana* (Bor) Butzin in Taxon 27: 301. 1978; Karth. in S.K. Jain & R.R. Rao, Assess. Threat. Pl. India 249. 1983; BOBSI 28: 239. 1986.

(Fig. 76)

Annual; culms caespitose, terete, erect, to 60 cm, glabrous; lower nodes dark purplish; internodes 3 - 15 cm long. Leaves linear-lanceolate, 3 - 15 x 0.2 - 0.5 cm, minutely spinulose along margins, pilose for half the length above; ligule membranous; sheaths shorter than internodes, pilose above for half the length, purplish. Spikes racemose, in whorls of 2 - 4, 1.5 - 2 cm long. Spikelets ovate, ca 2.5 x 2 mm, 2 - 4-flowered, stramineous green; lower glume ovate, acute, 1.2 - 1.5 x 0.4 - 0.6 mm, 1-nerved; upper glume oblong-elliptic, 2.1 - 2.4 x 0.6 - 0.7 mm, 1-nerved, awned; awn 1.1 - 1.4 mm long; lemmas 2, persistent; lower lemma ovate, 1.8 - 2 x 0.8 - 1 mm, awned; awn 0.8 - 1 mm long, 3-nerved; upper lemma ovate, ca 2 x 1 mm, awned; awn ca 0.9 mm long, geniculate; paleas lanceolate, acute, keeled,

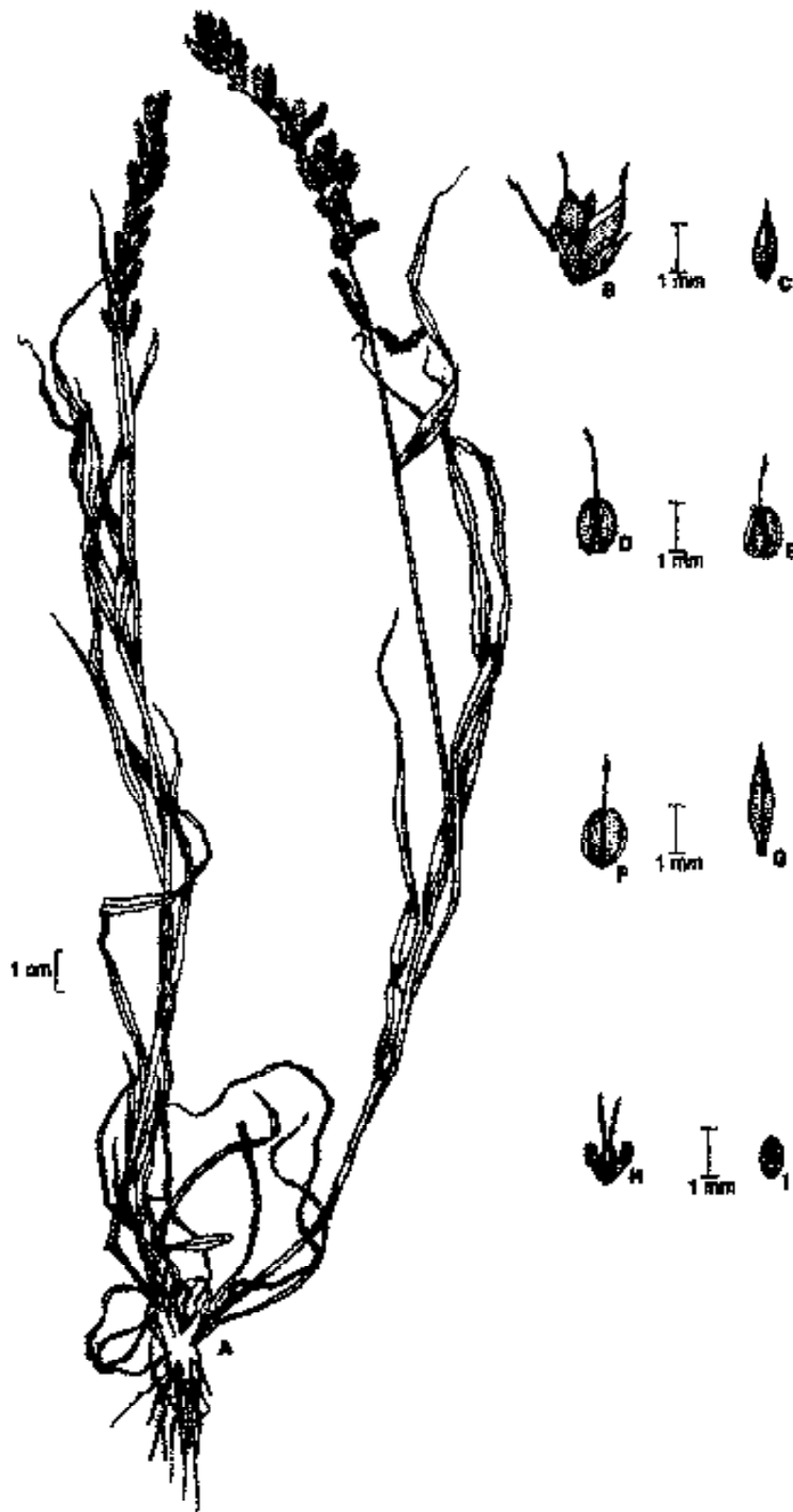


Fig. 76 (A - I). *Anathopus hausermannii* (Dor) S.M. Phillips
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lower lemma
 F. Upper lemma G. Palea H. Pencil of stamens I. Grain.

1.8 - 2 x 0.3 - 0.4 mm. Stamens 3; filaments slender; anthers linear, ca 0.5 mm long. Ovary oblong, 0.5 - 0.6 mm long; styles 2; stigmas 2, ca 1 mm long, plumose. Grains oblong, ca 0.8 mm long, transversely zonate, grooved in middle, yellowish brown.

Fl. & Fr.: Almost throughout the year.

Habitat: Coconut groves and under shades of *Acacia planifrons* and *Borassus flabellifer* trees in coastal scrub jungles. Usually associated with *Hedyotis graminifolia*, *Phyllanthus maderaspatensis* and sometimes with *Aerva lanata* and *Gloriosa superba*.

Use: Very good fodder grass.

Distrib.: India: Endemic to Tamil Nadu coast, particularly GM.

Notes: *Dactyloctenium henrardianum* by Bor (1946) was based on Daniel & Raju 20089, collected at Pamban in Ramanathapuram Distr. Earlier it had been collected in Peninsular India in the 17th and 18th centuries by Rottler (? Klein) and Wight respectively. But the herbarium names they provided had remained unpublished. It was considered as a rare species by various authors (Karthikeyan, 1983; Jain, 1986; Balasubramaniam & Ramachandran, 1990).

Material of this species was collected on Nallathanni Island close to Valinokkam on the mainland coast in Ramanathapuram for the first time. It was later collected at Kanyakumari and a number of places on mainland coast in Ramanathapuram and Tirunelveli. At Sethukarai and Pamban (type locality) it was found to be quite common in well protected and unweeded coconut groves adjoining the seashore. In unprotected and weeded groves, on the contrary, it was absent. Goats relish this grass. Its absence from open and unprotected areas and consequent rarity may be attributed to the voracious goats around. In Kanyakumari too it was found to occur only in coconut groves. However, in places like Periyathalai in Tuticorin and Valinokkam in Ramanathapuram where coconut groves adjoining the seashore are not common, it was found to occur in shades of trees of *Acacia planifrons* and *Borassus flabellifer*, both almost ubiquitous throughout the Gulf of Mannar. Particularly interesting is its association with *Hedyotis graminifolia* which is also a common plant especially on the islands opposite the mainland coast of Valinokkam. This grass occurs almost throughout the mainland coast of the Gulf of Mannar. However, it is rare on islands, was collected only on two occasions from two patches of a few individuals only on Nallathanni Island. The plants here too were found to occur in the shade of an *Acacia planifrons* tree but were robust. This is the only island in the Gulf of Mannar, as the name indicates in Tamil, has potable water. Fresh water appears to be one of the requirements for its existence. However, it is not known what insular factors prevented it from spreading further and becoming common on this island.

Specimens examined: Rottler s.n. (K, MH photo!); Wight s.n. (K!, MH photo!); D. Daniel & S.R. Raju 20089 (K holotype; MH photo!); VB 2155, 1161, 1318; KSK 102828,

103324; *Jeyajothi* 45; *PD & PU* 106460, 106946, 106953, 106960, 107206, 107236; *Nt. Is. KSK* 102361; *PD* 101622.

2. *A. sundararajii* Umamahesw. & al. in *Kew Bull.* 52: 1007, f. 1.1997. (Fig.77)

Annual; culms erect, ca 25 cm high, glabrous, rooting at lower nodes; lower nodes pinkish. Leaves linear-lanceolate, acuminate, 3 - 16 x 0.8 - 1 cm, with bulbous-based hairs on midnerve and lower 3/4; lateral nerves prominent; ligule lacerate, membranous; sheaths to 5 cm long, glabrous or pilose above. Inflorescence a raceme of spikes, ca 15 cm long; spikes to 30; peduncle grooved, interspace between spikes to 2 cm long; spikes 1 - 4 at a node, 3.5 - 4.5 x 0.1 - 0.2 cm. Spikelets ovate, 3.5 - 4 x 1 - 2 mm, 4 - 5-flowered, lax, interspace between two spikelets ca 1 mm long; lower glume lanceolate, ca 1.5 x 1 mm, 1-nerved, spinulose on nerve, shortly awned; upper glume elliptic, 2-lobed, ca 1.1 x 0.7 mm, 1-nerved, spinulose or scabrid on nerve, awned; awn ca 1.2 mm long; lemma broadly ovate, ca 1.5 (-1.8) x 1 (-1.2) mm, 3-nerved, spinulose on nerve, awned; awn ca 0.7 mm long; palea lanceolate, subacute, keeled, ca 1.7 x 0.5 mm, scabrid. Lodicules 2, ca 0.2 mm long. Stamens 3; filaments ca 0.3 mm long; anthers ca 0.7 mm long. Ovary oblong, ca 0.3 mm long; styles 2, slender, ca 0.4 mm long; stigmas 2, ca 0.6 mm long, plumose.

Fl.: Nov.

Habitat: Sandy soil, in shades of *Acacia planifrons* trees. Rare.

Distrib.: S. India. TN: Kanyakumari, Vivekananthapuram (GM) seacoast.

Specimens examined: SAM 106403 (CAL holotype; MH isotypes).

2. *Aeluropus* Trin.

Mediterranean to India, 3 species and one in India.

A. lagopoides (L.) Trin. ex Thwaites, *Enum. Pl. Zeyl.* 374. 1864 (as "*lagopodioides*"); *FPM* 1843. 1934; *GBCIP* 380. 1960; *FTC* 3: 1789. 1983; *FTN* 3: 87. 1989; *RHFC* 8: 22. 1994. *Dactylis lagopoides* L., *Mant. Pl.* 33. 1767. *Aeluropus villosus* Trin. ex C.A. Mey., *Verz. Pfl. Casp. Meer.* 18. 1831; *FBI* 7: 334. 1896. (Fig. 78)

Stoloniferous perennial; culms tufted, to 30 cm high, glabrous, leafy throughout. Leaves distichous, linear-lanceolate, subacute, 0.4 - 7.5 x 0.2 - 0.3 cm, coriaceous; ligule membranous; sheaths coriaceous, glabrous or pilose. Inflorescence a terminal head, ca 1.7 x 1 cm. Spikelets ovate, 2.5 - 3.5 x 1.5 - 2 mm, hirsute; lower glume lanceolate, acute, ca 2 x 0.5 mm, 3 - 5-nerved; upper glume ovate, subacute or obtuse, ca 2.3 x 1 mm, 7-nerved; lemma ovate, ca 2.6 x 1.2 mm, 9-nerved; palea oblong-elliptic, 3-dentate, ca 2.3 x 1 mm, 2-nerved, hyaline. Stamens 3; anthers linear. Styles 2, free; stigmas 2, plumose. Grains oblong, dorsiventrally flattened, ca 1 x 0.5 mm, pale brownish.

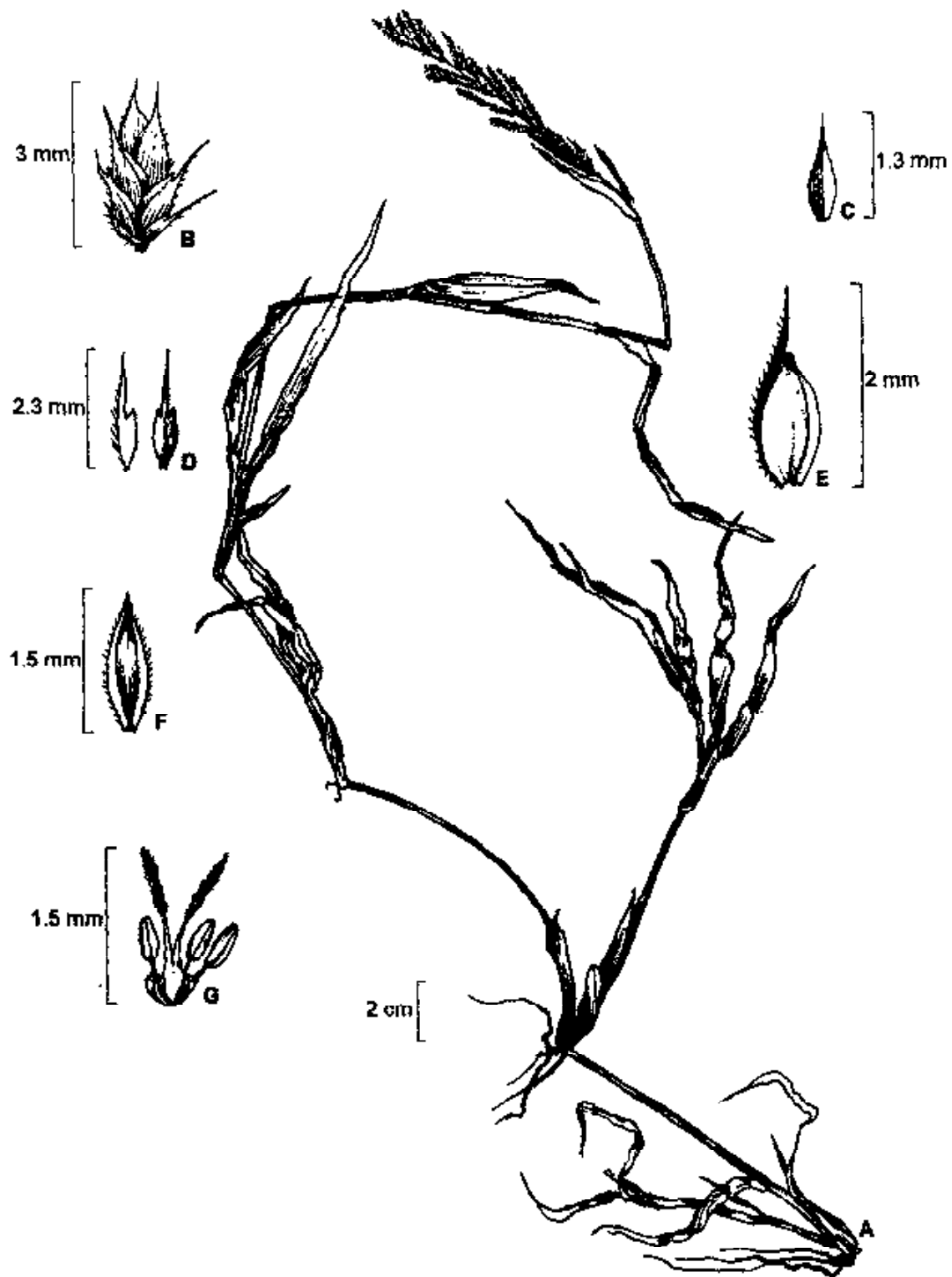


Fig. 77(A - G). *Acrachne sundararajii* Umamahesw. & al.
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens with lodicules

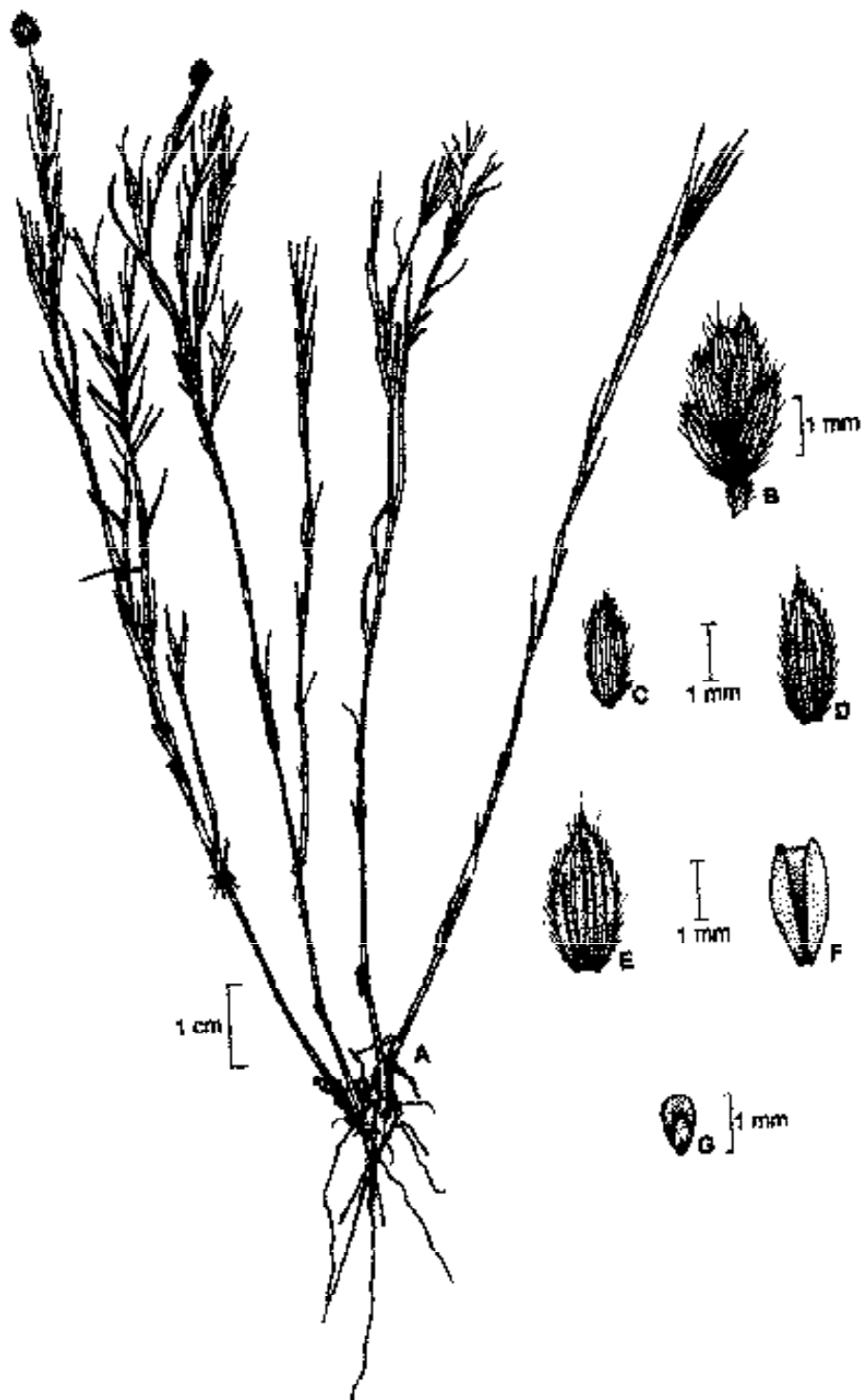


Fig. 78(A - G). *Aeluropus lagopoides* (L.) Trin. ex Thwaites
 A. Habit B. Spikelet C. Lower glume D. Upper glume
 E. Lemma F. Palea G. Grain

Fl. & Fr.: Throughout the year.

Habitat: Sandy shores as well as marshy places with *Salicornia brachiata* in the latter. Also occurs along salt pans with *Sporobolus spicatus* and *S. tremulus*.

Distrib.: S. India to E. India, Sri Lanka and to the Mediterranean and NE. Africa. TN: Chengalpattu, Ramanathapuram, S. Arcot, Thanjavur, Tirunelveli and Tuticorin. GM: Frequent, almost throughout the mainland coast. Earlier collected only on Kurusadai Island, now collected on Manoli, Manoliputti, Muyal and Pullivasal Islands where it may form extensive pure patches or with *Salicornia brachiata* here and there.

On islands it usually occurs in marshy areas where a number of birds are frequent. It might have reached the islands through birds.

Specimens examined: (Total 15) PD 102067, 102209, 106932; Ku Is. DD & SRR 88214; Mu Is. PD 100655; Pv Is. PD & PU 106857.

3. *Andropogon* L.

Tropics and subtropics, ca 100 species, 8 in India, 5 in Tamil Nadu and one in GM.

A. pumilus Roxb., Fl. Ind. 1: 277. 1820; FBI 7: 170. 1896; FPM 1453. 1934; GBCIP 93. 1960; FTC 3: 1799. 1983; FTN 3: 88. 1989.

Annual; culms to 40 cm high, glabrous. Leaves linear, acuminate, 3 - 5 cm long, glabrous; ligule membranous; sheaths keeled, glabrous. Racemes 1 - 2 cm long. Spikelets spathed. Sessile spikelets pistillate, linear, ca 4 x 0.5 mm, awned; awn ca 8 mm long; lower glume lanceolate, notched, keeled, ca 3 x 0.3 mm, 2-nerved; upper glume elliptic, acute with a short mucro, ca 3.5 x 1 mm, 3-nerved; lower lemma lanceolate, acute; upper lemma linear, notched, ca 8 mm long, awned; palea minute. Lodicules 2. Ovary oblong; styles 2; stigmas 2, plumose. Pedicellate spikelets staminate, elliptic or lanceolate, ca 5 mm long; lower glume ovate, acute, ca 3 x 0.5 mm, 11-nerved; upper glume elliptic, mucronate, ca 3 x 0.5 mm, 3-nerved; lemma similar to lower glume but 2-nerved. Lodicules 2. Stamens 3; anthers oblong, ca 2 mm long.

Fl. & Fr.: Nov. - April.

Habitat: Bunds of rice fields and on sandy soils.

Distrib.: Drier parts of India. TN: Chengalpattu, Coimbatore, Ramanathapuram, Tiruchirapalli and Tirunelveli. GM: Rare; earlier collected at Narikuli on mainland coast and Kurusadai Island, both in Ramanathapuram.

Seeds of *Andropogon* spp. are eaten by birds and dispersed (Ridley, 1930). However, it has been collected only on one island.

Use: A good fodder grass.

Specimens examined: (Total 15) VB 1716; Ku Is. DD & SRR s.n.

4. *Apluda* L.

Trop. Asia, unispecific.

A. mutica L., Sp. Pl. 82. 1753; FPM 1750. 1934; GBCIP 93. 1960; FTC 3: 1800. 1983; FTN 3: 89. 1989; RHFC 8: 36. 1994. *A. varia* Hack. subsp. *mutica* (L.) Hack. & subsp. *aristata* Hack. in A. & C. DC., Monogr. Phan. 6: 196. 1889; FBI 7: 150. 1896; HSIG tt. 141 & 143. 1921. [*Mandapuf*] (Fig. 79)

Perennial; culms tufted, 30 - 150 cm high. Leaves linear-lanceolate, acuminate, 5 - 30 x 0.3 - 0.5 cm, glabrous; ligule membranous; sheaths pinkish green. Panicles lanceolate-ovate, 5 - 15 x 1 - 3 cm. Spikelets 10 - 12 x 4 - 5 mm, spathed. Sessile spikelets 6.5 - 7 x 1.5 - 2 mm, awned; lower glume lanceolate, coriaceous, 9 - 15-nerved, stramineous yellow; upper glume boat-shaped, acute, chartaceous, 9-nerved. Lower floret usually staminate, rarely pistillate. Upper floret bisexual; lemmas oblong-lanceolate, acute, notched, 4 - 5 x 1.5 - 2 mm; paleas lanceolate, ovate, acute, keeled, 2-nerved. Lodicules 2. Stamens 3; anthers ca 3 mm long. Ovary linear-oblong; styles 2, ca 1.2 mm long; stigmas 2, ca 3 mm long, feathery. Pedicellate spikelets sterile or fertile, linear-lanceolate, 7 - 10 x 0.8 - 1 mm; glumes lanceolate or ovate, 6 - 6.5 x 1.8 - 2 mm, 9 - 15-nerved; lemmas and paleas similar to that of sessile spikelet except the upper lemma being unawned.

Fl. & Fr.: Dec. - March.

Habitat: Sandy and wet soils, with *Cymbopogon caesius*, *Cyperus conglomeratus* subsp. *pachyrrhizus* and *Halopyrum mucronatum*.

Distrib.: Plains and hills of India, throughout SE. Asia to Australia. TN: All districts. GM: Frequent on mainland coast and common on Appa, Manoli, Manoliputti, Pullivasal, Pumarichan, Thalaiyari and Valai Islands. On Manoli, Manoliputti, Pullivasal and Pumarichan Islands large areas are occupied by this grass a little behind the shores as well as a little interior, in the latter case it may occur with *Cymbopogon caesius*.

Specimens examined: (Total 20) PD & PU 106907; Ma Is. KSK 103320, PD 100680; Pu Is. PD 100556; Th Is. PD 101524.

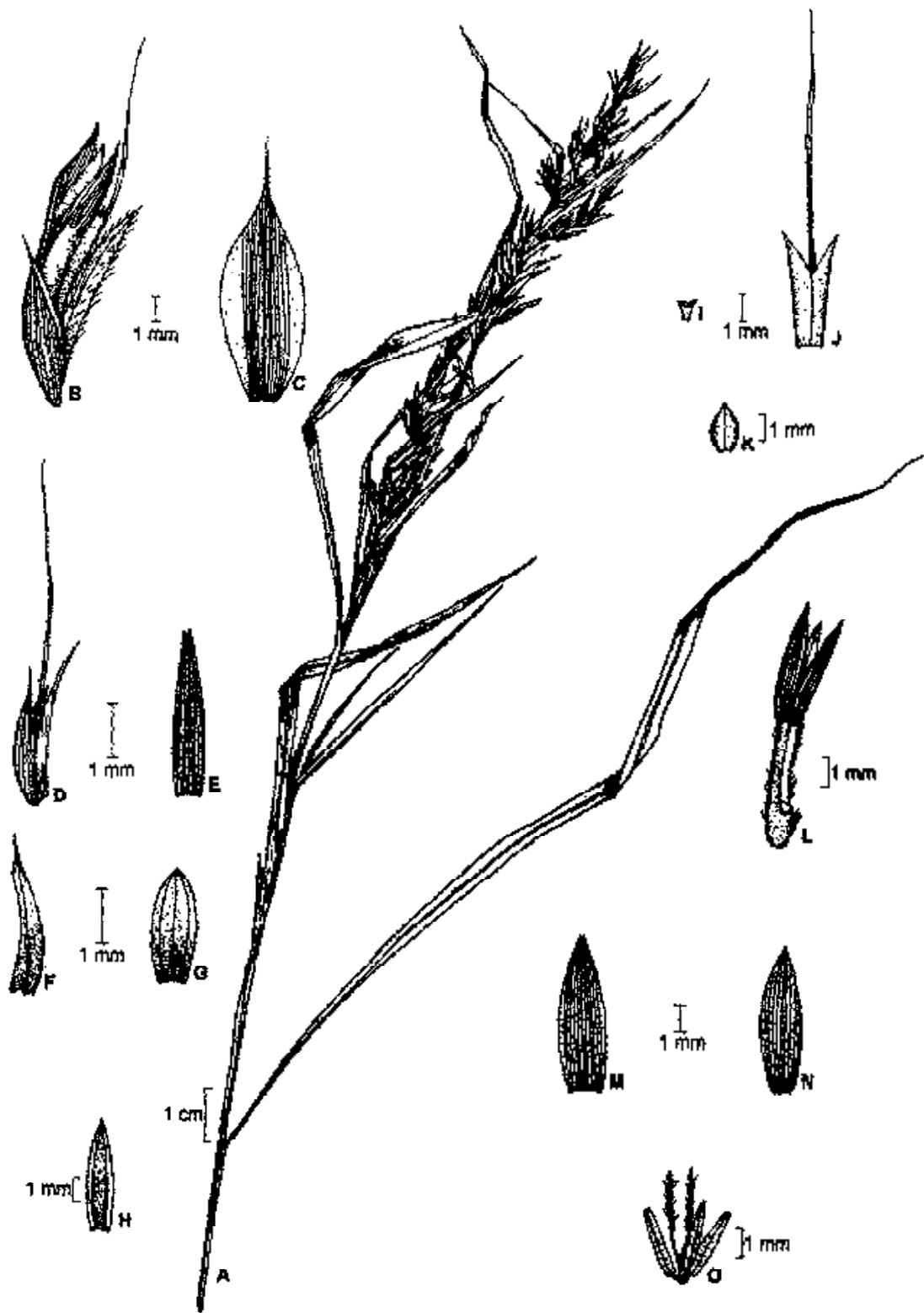


Fig. 79(A - O). *Aploda rufica* L.

A, Habit B, Spikelet C, Spatha D, Sessile spikelet E, Lower glume F, Upper glume
 G, Lower lemma H, Palea I, Lodicule J, Upper lemma K, Palea L, Pedicellate spikelet
 M, Lower glume N, Upper glume O, Pistil & stamens

5. *Aristida* L.

Tropics, ca 260 species, 16 in India, 5 in Tamil Nadu and 2 in GM.

Key to the species

- 1a. Annual; spikelets less than 3 cm long; lemma ca 7 mm long with
ca 1.6 cm long mid-awn 1. *A. adscensionis*
- b. Perennial; spikelets more than 5 cm long; lemma ca 12 mm
long with ca 4.5 cm long mid-awn 2. *A. setacea*

1. *A. adscensionis* L., Sp. Pl. 82. 1753; FBI 7: 224. 1896; HSIG tt. 171 & 172. 1921; GBCIP 408, t. 43. 1960; FTC 3: 1801. 1983; FIFTC t. 712. 1988; FTN 3: 89. 1989. *A. depressa* Retz., Obs. Bot. 4: 22. 1786; FPM 1809. 1934; GBCIP 409. 1960; RHFC 8: 39. 1994. [*Oosipul*]

Culms terete, ca 30 cm high, glabrous. Leaves linear, acute, convolute, to 15 cm x 1.5 mm; ligule with a fringe of hairs; sheaths glabrous. Panicles ca 10 cm long, lax; rachis scabrid; pedicels 1 - 3 mm long. Spikelets linear, ca 2.3 cm long; lower glume linear, ca 4 x 0.8 mm, aristate or mucronate, 1-nerved; upper glume linear, ca 7 x 0.6 mm, shortly mucronate, 1-nerved; callus ca 0.5 mm long, silver-hairy; lemma linear, spinulose along margins, 3-awned, scabrid; lateral awns ca 13 mm long; palea oblong, ca 1 x 0.3 mm, membranous. Anthers linear, ca 1.5 mm long. Ovary oblong, ca 0.8 x 0.2 mm long. Grains linear, compressed, ca 5 mm long, pale brownish.

Fl. & Fr.: Oct. - June.

Habitat: Road sides, wastelands and occasionally on sandy soils, with *Alysicarpus monilifer*, *Tragus roxburghii* etc.

Distrib.: Old and New Worlds, but not common in India. TN: All districts. GM: Mainland coast, frequent.

Use: Young plants grazed by cattle.

Specimens examined: Total (12) KSK 103311; PD 101132.

2. *A. setacea* Retz., Obs. Bot. 4: 22. 1786; FBI 7: 225. 1896; HSIG t. 173. 1921; FPM 1809. 1934; GBCIP 412. 1960; FTC 3: 1803. 1983; FIFTC t. 714. 1988; FTN 3: 90. 1989; RHFC 8: 40. 1994.

Culms terete, ca 90 cm high, glabrous. Leaves linear, acuminate, ca 40 x 0.3 cm, scabrous; ligule ciliate; sheaths to 10 cm long, glabrous. Panicles effuse, ca 30 cm long. Spikelets clustered, linear, awned; lower glume linear, ca 12 x 1 mm, awned, 1-nerved;

upper glume linear, ca 19 x 1 mm, awned, 1-nerved; lemma convolute, 3-awned; lateral awns ca 3.5 cm long, scabrous; palea oblong, obtuse, ca 1.5 x 0.3 mm. Anthers linear, ca 2.5 mm long. Ovary oblong or linear, 1 - 2 x 0.2 - 0.3 mm. Grains linear, 7.5 - 8 mm long, brownish.

Fl. & Fr.: May - Feb.

Habitat: Road sides and near sandy coastal habitats, with *Allmania nodiflora*, *Eragrostis amabilis*, *Zornia diphylla* etc.

Distrib.: India, Mascarene Islands, Myanmar and Sri Lanka. TN: All districts. GM: Mainland coast at Vivekananthapuram near Kanyakumari. A common grass in the interior, but rare on the coast.

Use: Used for making brooms and tatties.

Specimens examined: (Total 68) KSK 102823, 102854B; PD & PU 106971.

6. *Bothriochloa* Kuntze

Tropics, ca 35 species, 11 in India, 7 in Tamil Nadu and one in GM.

B. pertusa (L.) A. Camus in Ann. Soc. Linn. Lyon 76: 164. 1930; GBCIP 109. 1960; FTC 3: 1809. 1983; FTN 3: 94. 1989; RHFC 8: 83. 1994. *Holcus pertusus* L., Mant. Pl. 301. 1771. *Amphilophis pertusus* (L.) Nash ex Stapf in Agric. News (Barbados) 15: 179. 1916; FPM 1731. 1934. *Andropogon pertusus* (L.) Willd., Sp. Pl. 4: 922. 1806; FBI 7: 173. 1896. [*Chinna karai pul*]

Perennial; culms tufted, erect, 15 - 60 cm; nodes bearded. Leaves lanceolate, acute, 10 - 20 x 0.2 - 0.5 cm, sparsely hirsute; ligule short, ciliate; sheaths keeled. Racemes 2 - 10, digitate or subdigitate, 2 - 8 cm long; rachis internodes and pedicels ciliate. Sessile spikelets ovate, acute, 3 - 4 x 0.5 - 1 mm; lower glume elliptic, bifid, ca 3.5 x 1 mm, 7 - 9-nerved, densely hairy below middle, single-pitted above; upper glume boat-shaped, acuminate, ca 3.5 x 1 mm, 3 - 5-nerved. Lower floret sterile. Upper floret bisexual; lower lemma ovate-lanceolate, 2.5 - 3 x 0.8 - 1 mm, 3 - 5-nerved, epaleate; upper lemma stipitate, awned; awn ca 17 mm long with ca 7 mm long brown column, epaleate. Stamens 3; anthers ca 1.5 mm long. Ovary oblong, ca 0.4 mm long; styles 2, ca 1 mm long; stigmas 2, ca 1.5 mm long, plumose. Pedicellate spikelet similar to the sessile one; upper floret staminate or sterile.

Fl. & Fr.: Nov. - March.

Habitat: Wet places, with *Aerva persica*, *Panicum repens* etc.

Distrib.: Arabia to SE. Asia and Trop. Africa. TN: Almost all districts. GM: Collected only on mainland coast, at Vattakottai in Kanyakumari and Narikuli in Ramanathapuram.

Use: A good fodder grass.

Specimens examined: (Total 38) VB 1719; KSK 102766, 102806; PD & PU 106918.

7. *Brachiaria* (Trin.) Griseb.

Tropics, ca 90 species, 21 in India, 13 in Tamil Nadu and 4 in GM.

Key to the species

- | | |
|---|------------------------|
| 1a. Leaf sheaths ciliate along one margin; panicles less than 5 cm long | 2 |
| b. Leaf sheaths ciliate along both margins; panicles more than 5 cm long | 3 |
| 2a. Racemes usually 2, rarely 3; spikelet solitary | 1. <i>B. distachya</i> |
| b. Racemes 3 - 12; spikelets in pairs | 4. <i>B. reptans</i> |
| 3a. Ligule with a fringe of hairs; grains oblong, more than 2 mm long | 2. <i>B. ramosa</i> |
| b. Ligule membranous; grains obovoid, less than 2 mm long | 3. <i>B. remota</i> |

1. *B. distachya* (L.) Stapf in Prain, Fl. Trop. Africa 9: 565. 1919; FPM 1769. 1934; GBCIP 281. 1960; FTC 3: 1811. 1983; FIFTC t. 724. 1988; FTN 3: 95. 1989; RHFC 8: 87. 1994. *Panicum distachyon* L., Mant. Pl. 183. 1771; FBI 7: 37. 1896; HSIG tt. 97 & 98. 1921. (Fig. 80)

Stoloniferous annual or perennial; culms tufted, prostrate; nodes pubescent; internodes glabrous. Leaves lanceolate, acute, 1 - 3 x 0.3 - 0.5 cm, pubescent on both surfaces and along margins, scabrid; ligule triangular with a fringe of hairs, sheaths pubescent. Panicles 2 - 4 cm long; racemes linear, 2 - 3 cm long. Spikelets lanceolate, apiculate, ca 2.5 x 1 mm; lower glume broadly ovate, acute, ca 1.5 x 1 mm, 5-nerved; upper glume ovate, apiculate, ca 2.2 x 1.2 mm, 5-nerved. Lower floret sterile; lemma similar to upper glume; palea oblong, subacute. Upper floret bisexual; lemma oblong, obtuse or subacute, ca 2 x 1 mm, rugose, coriaceous, 3-nerved; palea oblong, obtuse, ca 1.8 x 0.8 mm, 2-nerved. Lodicules 2. Anthers ca 0.7 mm long. Ovary ellipsoid; styles 2; stigmas 2, plumose. Grains ellipsoid, ca 1.6 x 0.8 mm, dark brownish.

Fl. & Fr.: Nov. - Jan.

Habitat: Road sides.

Distrib.: India, Malesia to Australia, Myanmar and Sri Lanka. TN: Chengalpattu, Coimbatore, Madurai, Nilgiri, Ramanathapuram, Salem and S. Arcot. GM: Mainland coast, frequent.

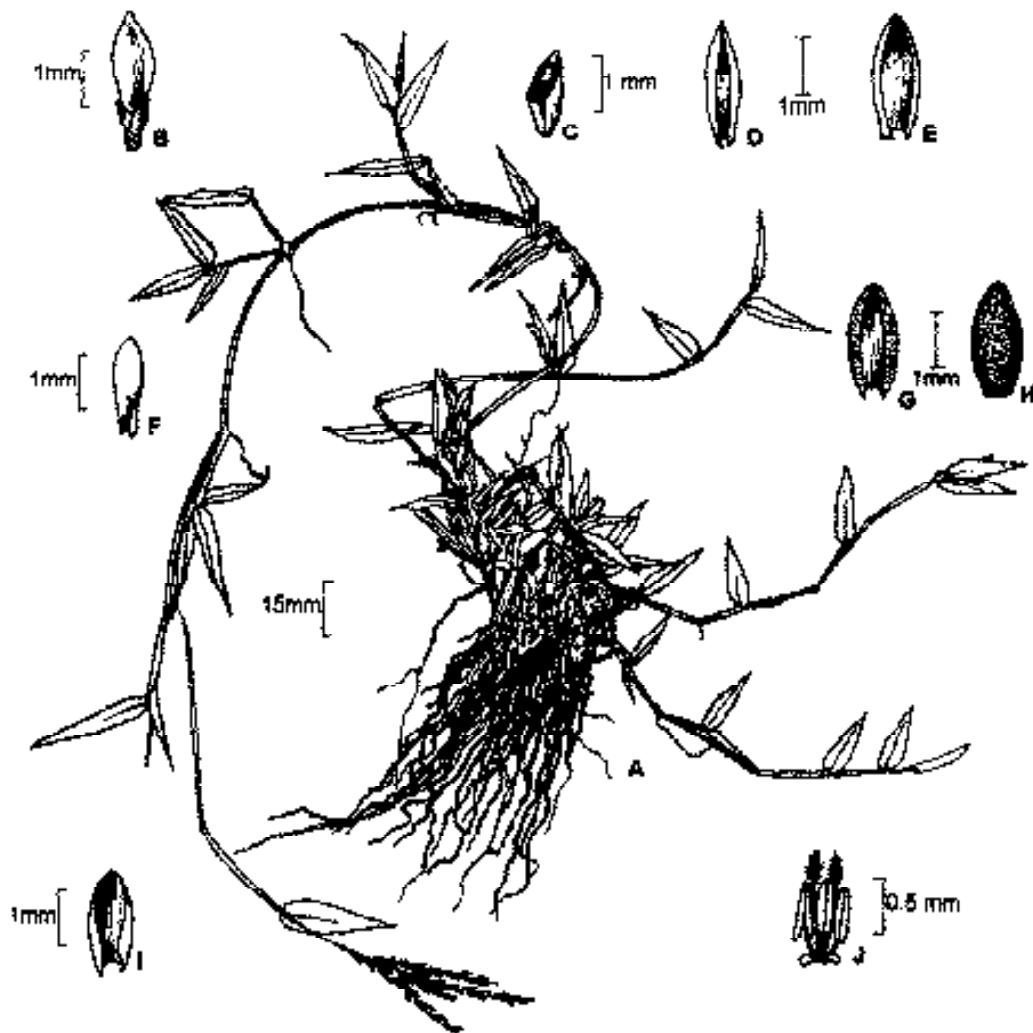


Fig. 20(A - J). *Brachiaria distachya* (L.) Stapf

A. Habit B. Spikelet C. Lower glume D. Upper glume E & F. Lemmas & paleas of lower florets
 G & H. Lemmas dorsal & ventral views I. Palea of upper floret J. Pistil & stamens

Use: A fodder grass.

Specimens examined: (Total 42) PD 100501; VB 1107.

2. **B. ramosa** (L.) Stapf in Prain, Fl. Trop. Africa 9: 542. 1919; FPM 1770. 1934; GBCIP 284. 1960; FTC 3: 1812. 1983; FIFTC t. 726. 1988; FTN 3: 96. 1989; RHFC 8: 91. 1994. *Panicum ramosum* L., Mant. Pl. 29. 1767; FBI 7: 36. 1896; HSIG tt. 95, 96. 1921. [*Sanampul*].

Annual; culms tufted, 15 - 30 cm high, pubescent. Leaves linear, acuminate, 2 - 10 x 0.5 - 1 cm, pubescent; sheaths ca 3.5 cm long, pubescent. Panicles ca 10 cm long; racemes 3 - 8, 0.5 - 5 cm long, spreading. Spikelets lax, pedicellate, obovate, apiculate, unequal, 2.8 - 3.1 x 1 - 1.25 mm, pubescent; lower glume ovate, acute, 1.5 - 2 x 1 - 1.2 mm, 5-nerved, pubescent; upper glume ovate, acute, ca 3.1 x 1.5 mm, pubescent, 5-nerved. Lower floret sterile; lemma and palea similar to upper glume. Upper floret bisexual; lemma broadly elliptic, acute, 2.3 - 2.5 x 1.5 - 1.8 mm, finely rugose, 3-nerved; palea elliptic, acute, ca 2 x 1.5 mm, keeled, rugose, nerveless. Anthers ca 0.7 mm long. Grains ca 2.5 x 1.2 mm, brownish.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet localities and coconut groves, with *Chloris barbata*, *Cyperus* spp., and *Epaltes divaricata*.

Distrib.: Old World tropics. TN: Almost all districts. GM: Common on mainland coast and occasional on Nallathanni Island.

Use: A good fodder grass.

Specimens examined: (Total 82) PD & PU 106977; VB 2365; Nt Is. PD 101618.

3. **B. remota** (Retz.) Haines, Bot. Bihar Orissa 1005. 1924; FPM 1770. 1934; GBCIP 285. 1960; FTC 3: 1813. 1983; FIFTC t. 727. 1988; FTN 3: 96. 1989, var. *remota*: Davidse in RHFC 8: 92. 1994. *Panicum remotum* Retz., Obs. Bot. 4: 17. 1786; FBI 7: 38. 1896.

Perennial; culms 30 - 45 cm high. Leaves linear-lanceolate, 5 - 23 x 0.2 - 1 cm, glabrous; ligule ca 1.5 x 2 mm; sheaths rounded, 2.5 - 5 cm long, sparsely pubescent. Panicles 5 - 15 cm long, minutely scabrid; racemes 2 - 4 cm long. Spikelet solitary, oblanceolate, subacute, ca 3 x 1 mm, glabrous; lower glume ovate, acute, ca 2 x 1.2 mm, 5-nerved; upper glume ovate or oblong, acute, ca 2.9 x 1.5 mm, 7-nerved. Lower floret sterile; lemma oblong, acute, ca 2.9 x 1.5 mm, 5-nerved; palea oblong, obtuse, ca 2 x 0.6 mm, nerveless. Upper floret bisexual; lemma oblong, subacute, ca 2.2 x 1.5 mm, rugose, nerveless; palea oblong, subacute, ca 2 x 1.2 mm, 2-nerved. Anthers ca 1.2 mm long. Ovary obovoid; styles 2; stigmas 2, plumose. Grains ca 1.8 x 0.8 mm.

Fl. & Fr.: Nov. - Feb.

Habitat: Cultivated fields and sandy localities, with *Aerva persica*, *Dactyloctenium aegyptium* and *Trachys muricata*.

Distrib.: India and Sri Lanka. TN: Coimbatore, Madurai, Nilgiri, Pudukkottai, Salem and Tiruchirapalli. GM: Common on mainland coast in Ramanathapuram (Pamban), and Pullivasal and Pumarichan Islands.

Specimens examined: (Total 19) PD 100545; Pu Is. PD 100552; Pv Is. PD 101417.

4. *B. reptans* (L.) C.A. Gardner & C. E. Hubb. in Hooker's Icon. Pl. sub t. 3363. 1938; GBCIP 285. 1960; FIPTC t. 728. 1988; FTN 3: 96. 1989; RHFC 8: 94. 1994. *Panicum reptans* L., Syst. Nat. ed. 10, 870. 1759. [*Chanipul*]

Creeping annual; culms slender; nodes pubescent; internodes glabrous. Leaves lanceolate, acuminate, 1.5 - 6 x 0.4 - 0.7 cm, glabrous, scabrid along margins; ligule with a fringe of hairs, ca 2 mm wide; sheaths to 3.5 cm long, ciliate. Panicles spreading; racemes 1 - 3 cm long. Spikelets ovate, acute, ca 2 x 0.8 mm; the lower shortly-pedicellate; the upper long-pedicellate, ca 1.7 mm long; lower glume broadly ovate, obtuse, ca 0.5 x 0.7 mm, nerveless; upper glume ovate, acute, ca 2 x 1 mm, 7-nerved. Lower floret sterile; lemma ovate, acute, ca 2 x 1 mm, 5-nerved; palea oblong, acute, ca 1.8 x 0.8 mm, keeled. Upper floret fertile; lemma oblong, apiculate, ca 1.3 x 1 mm, rugose, coriaceous; palea oblong, obtuse, ca 1.2 x 0.6 mm, keeled. Anthers ca 0.8 mm long. Grains obovoid, ca 1.1 x 0.7 mm.

Fl. & Fr.: Aug. - Feb.

Habitat: Moist localities, rice fields and road sides, with *Eragrostis japonica*, *Eriochloa procera* and *Vicoa indica*.

Distrib.: Old and New World tropics. TN: All districts. GM: Mainland coast, frequent.

Specimens examined: (Total 51) KSK 102002; PD 102278; PD & PU 107344.

8. *Cenchrus* L.

Africa, America and India, 22 species, 8 in India, 5 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|------------------------|
| 1a. Involucral bristles not forming a cup at base, ciliate | 1. <i>C. ciliaris</i> |
| b. Involucral bristles forming a cup at base, not ciliate | 2 |
| 2a. Mature spikes purplish; outer bristles few; inner bristles subulate | 3. <i>C. setigerus</i> |
| b. Mature spikes not purplish; outer bristles many; inner | |

bristles filiform

2. *C. pennisetiformis*

1. *C. ciliaris* L., Mant. Pl. 302. 1771; FPM 1794. 1934; GBCIP 287. t. 33. 1960; IFTC tt. 819 & 820. 1982; FTC 3: 1816. 1983; FTN 3: 98. 1989. *Pennisetum cenchroides* Rich. in Pers., Syn. Pl. 1: 72. 1805; FBI 7: 88. 1896; HSIG t. 119. 1921. [*Kolukattai*] (Fig. 81)

Stoloniferous perennial; culms terete, erect, ca 60 cm, glabrous. Leaves linear, acute-acuminate, 2.5 - 13 x 0.1 - 0.3 cm, ciliate above; ligule with a fringe of hairs; sheaths 3.5 - 6 x 0.1 - 0.3 cm. Spikes 2.5 - 3 cm long; spikelets 20 - 30, spiral, lanceolate, ca 5 x 1.2 mm; rachis winged. Florets 1 - 4 in a whorl of involucrel bristles; bristles filiform, ciliate along margins, purplish. Lower glume broadly ovate, acute-acuminate, 3 - 3.5 x 1.5 - 1.8 mm, 1-nerved; upper glume ovate, acute, 3.8 - 4 x 1 - 1.2 mm, 5-nerved; lower lemma lanceolate-ovate, acuminate, 4.8 - 5 x 1 - 1.3 mm, 5-nerved; upper lemma lanceolate, 2-nerved, otherwise similar to lower lemma; palea lanceolate-elliptic, 4.2 - 4.5 x 1 - 1.5 mm, 2-nerved. Ovary oblong, ca 0.5 x 0.2 mm. Grains oblong, ca 1.5 x 0.7 mm, yellowish brown.

Fl. & Fr.: Almost throughout the year.

Habitat: Road sides, waste places and also on sandy soil, with *Cenchrus setigerus*, *Chloris barbata* etc.

Distrib.: Westward to Sicily, Trop. Africa and the Canaries, India and the Mediterranean. TN: Coimbatore, Nilgiri, Ramanathapuram, Tiruchirapalli and Tuticorin. GM: Frequent on mainland coast and rare on Nallathanni and Upputhanni Islands.

Use: An excellent and valuable fodder grass.

Specimens examined: (Total 42) KSK 102827; PD 100460, 102132; PD & PU 103511; SAM 104670; Nt Is. PD 101623; PD & PU 106630; Ut Is. PD & PU 106612.

2. *C. pennisetiformis* Hochst. & Steud. ex Steud., Syn. Pl. Glumac. 1: 109. 1854; GBCIP 289. 1960; FTN 3: 98. 1989. *Pennisetum cenchroides* Rich. var. *echinoides* Hook. f., Fl. Brit. India 7: 88. 1896; HSIG t. 116. 1921. (Fig. 82)

Perennial; culms tufted, terete, to 60 cm high, pilose near spikes. Leaves lanceolate, acute, ca 25 x 0.5 cm, hispid-hairy; ligule with a fringe of hairs; sheaths ca 6 cm long, scabrid. Spikes 2.5 - 5 cm long. Spikelets 15 - 30, zig-zag, 1 or 2-flowered; rachis winged, spinulose; involucrel bristles to 2 mm long; outer bristles filiform; inner ones basally flattened, ca 8.5 cm long, spinulose or hairy; lower glume ovate, acute, 2 - 2.2 x 1 - 1.2 mm, 1-nerved; upper glume ovate, truncate, 3.2 - 3.5 x 1.5 - 2 mm, 6-nerved; lower lemma ovate-lanceolate, acute-acuminate, 4 - 4.2 x 1 - 1.5 mm, 5-nerved; upper lemma ovate-lanceolate, 3.5 - 3.8 x 1 - 1.2 mm, 2-nerved; palea lanceolate-elliptic, 2.8 - 3 x 0.8 - 1 mm; nerves prominent. Ovary oblong, 0.5 - 0.8 x 0.3 - 0.5 mm. Grains oblong, 1.5 - 1.8 x 0.8 - 1 mm, yellowish brown.

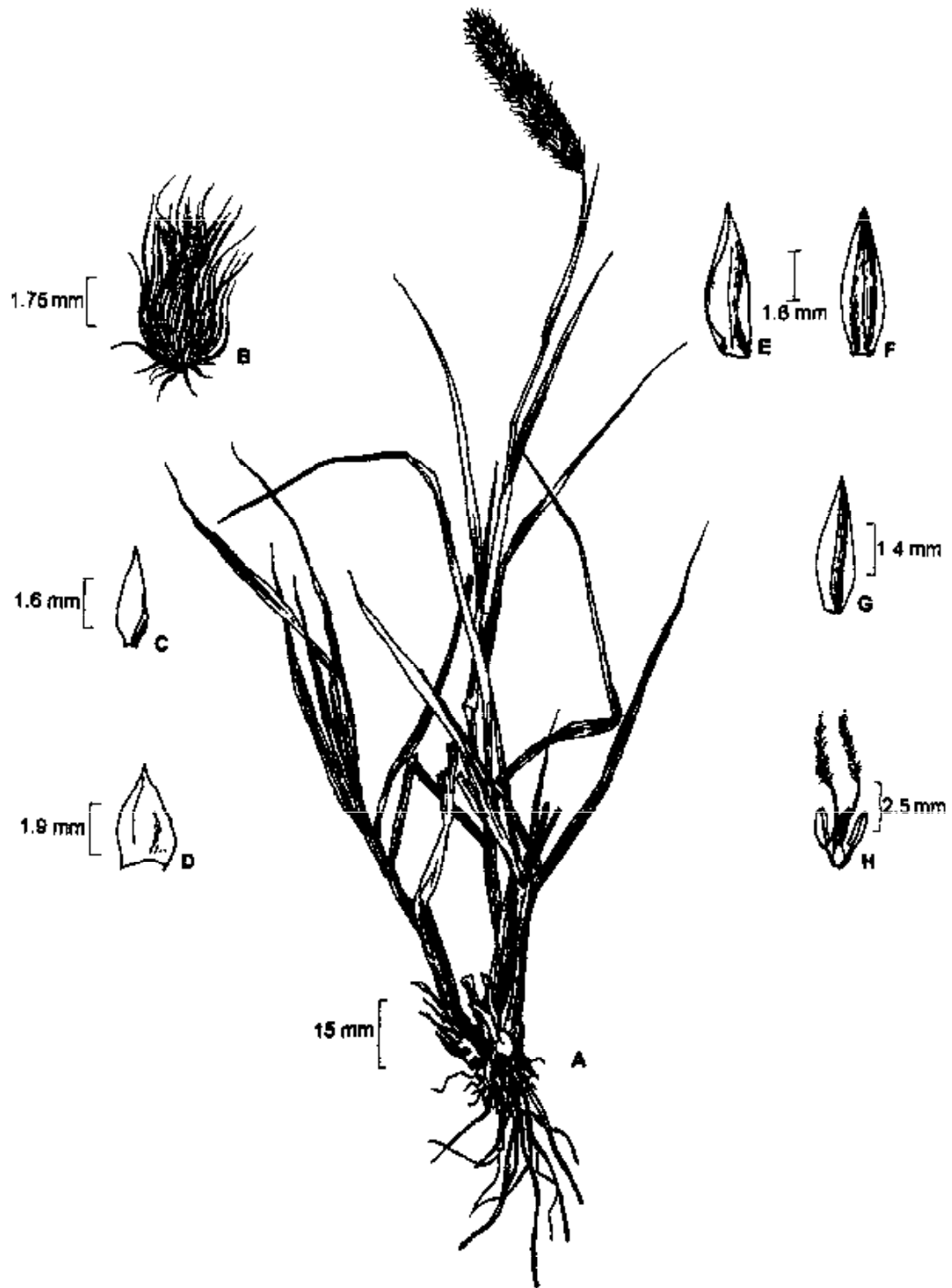


Fig. 81(A - H). *Cenchrus ciliaris* L.
 A, Habit B, Spikelet C, Lower glume D, Upper glume
 E & F, Lemma G, Palea H, Pistil & stamens

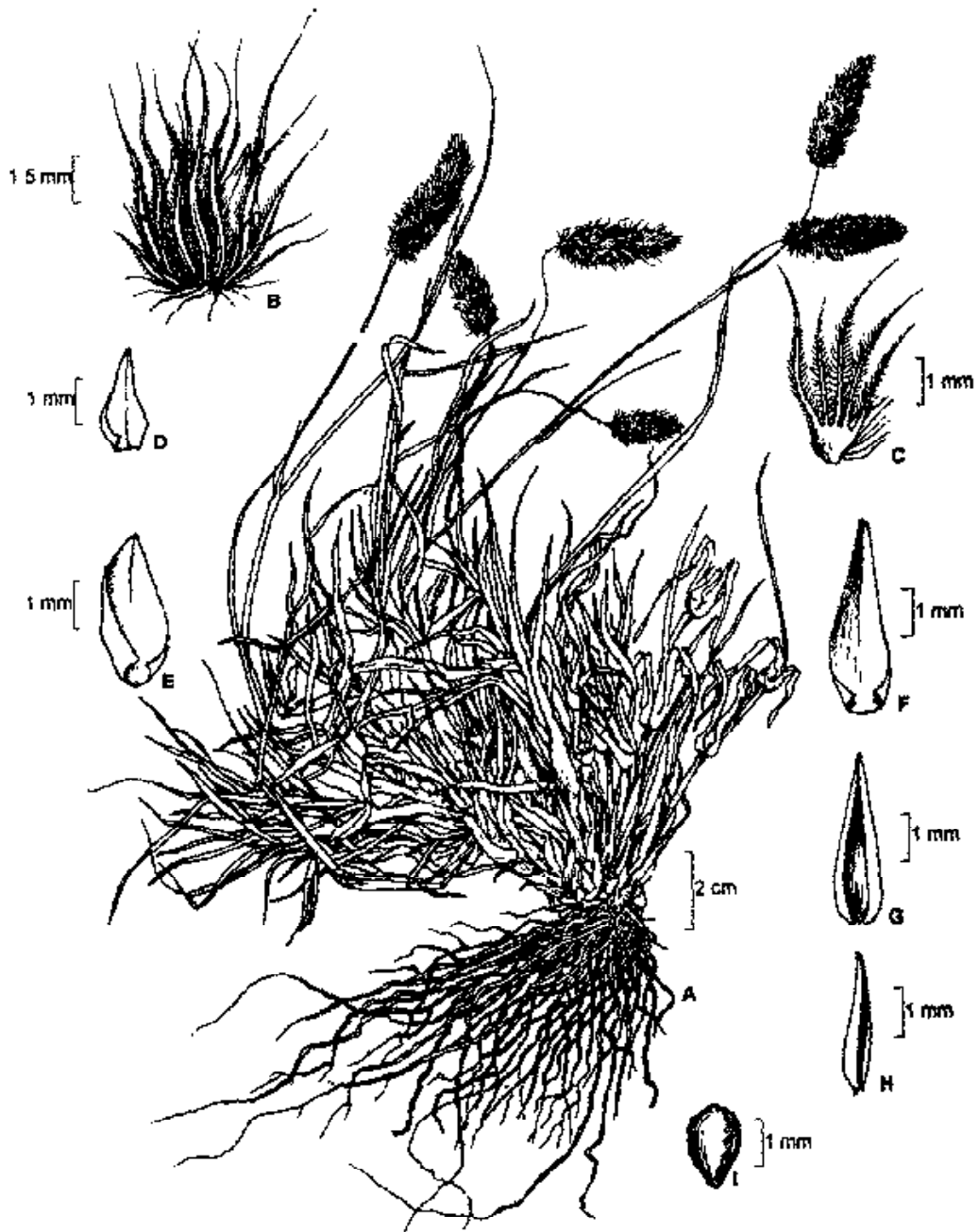


Fig. 82 (A - I). *Cynchrus pennisetiformis* Hochst. & Steud. ex Steud
 A. Habit B. Spikelet C. Involucre D. Lower glume E. Upper glume
 F. Lower lemma G. Upper lemma H. Palea I. Grain

Fl. & Fr.: March - July.

Habitat: Sandy and also wet localities, with *Cenchrus ciliaris*, *Chloris barbata* and *Sporobolus maderaspatanus*.

Distrib.: Mediterranean to India, NE. Africa, Myanmar and Sri Lanka. TN: Chengalpattu, Coimbatore, Kanyakumari and Salem. GM: Occasional on mainland coast, collected at Veppalodai and Tuticorin.

Use: Used as a valuable fodder.

Specimens examined: (Total 11) ANH 61567; PD & PU 103589, 107357.

3. *C. setigerus* Vahl, Enum. Pl. 2: 395. 1805; FPM 1794. 1934; GBCIP 290. 1960; FTN 3: 98. 1989. *C. biflorus* auct. non Roxb. 1820; FBI 7: 89. 1896, p.p.; HSIG t. 117. 1921. (Fig.83)

Perennial; culms tufted, erect, 30 - 45 cm, glabrous. Leaves linear, acuminate, pilose only at base; ligule ca 3 mm wide, fringed with short hairs; sheaths glabrous. Spikes ca 5 cm long. Spikelets 4 - 4.5 x 2.5 - 3 mm; involucre bristles to 2 mm long; outer bristles very short; inner bristles acute, glabrous or faintly scabrid, 3-flowered; lower glume ovate, acute, ca 2 x 1 mm, 1-nerved; upper glume elliptic, acute, ca 2.8 x 1 mm, 1-nerved. Lower floret ca 3.5 x 1.2 mm; lower lemma ovate, acute, ca 3.5 x 1.2 mm, 5-nerved; palea oblong, ca 2 x 0.5 mm, keeled. Upper floret ovate, ca 4 x 1 mm; lemma ovate or lanceolate, mucronate, ca 4 x 1.2 mm, 5-nerved; palea ovate, acute, ca 3.5 x 1.2 mm, keeled, 1-nerved. Anthers linear, ca 1.8 mm long. Ovary oblong, ca 0.4 mm long; styles 2, slender; stigmas 2, ca 1 mm long, feathery. Grains oblong, ca 1.5 x 0.6 mm.

Fl. & Fr.: Aug. - Jan.

Habitat: Sandy wet and calcareous soils.

Distrib.: NW. India and NE. Trop. Africa. TN: Chengalpattu, Coimbatore, Tiruchirappalli, Tirunelveli and Tuticorin. GM: Occasional on mainland coast, collected at Tuticorin and Veppalodai nearby. Rare on islands. Once collected on Appa Island.

Earlier reported from Chengalpattu, Coimbatore, Tiruchirappalli and Tirunelveli districts. The report from Tirunelveli is based on *D. Daniel* 86676, collected in the Tambraparni river delta, now in Tuticorin. It has been now collected on Appa Island and Pamban in Ramanathapuram and at Tuticorin port. On Appa Island it was found to occur in an area of about 7 acres on the elevated rocky southern side almost as a pure stand with a sprinkling of *Aloe vera*, *Apluda mutica*, *Cymbopogon caesius*, *Gloriosa superba* etc.

Use: Good fodder.

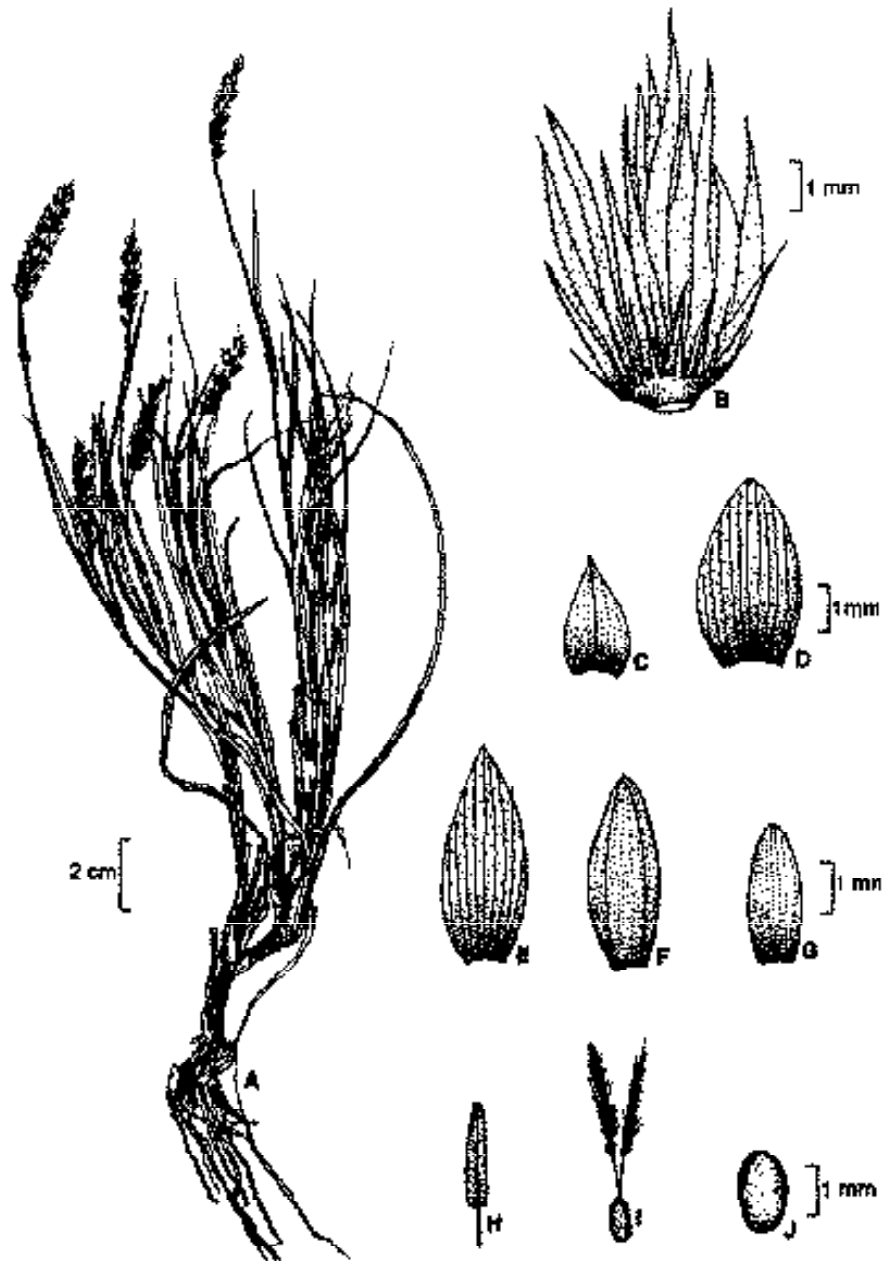


Fig. 63 (A - J). *Carex setigera* Vahl

A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lower lemma F. Upper lemma G. Palea H. Stamen I. Pistil J. Grain

Specimens examined: (Total 13) DD 86676; PD 101552; PD & PU 107356; SAM 104662; Ap Is. PD 101552.

9. *Chloris* Sw.

Tropics and subtropics, ca 55 species, 10 in India, 9 in Tamil Nadu and 3 in GM.

Key to the species

- | | |
|---|------------------------|
| 1a. Culms pubescent; sterile lemmas in a spikelet 4..... | 3. <i>C. wightiana</i> |
| b. Culms glabrous; sterile lemmas in a spikelet 2 or 3..... | 2 |
| 2a. Glumes glabrous on nerve; sterile lemmas 2; palea oblong..... | 1. <i>C. barbata</i> |
| b. Glumes scabrid on nerve; sterile lemmas 3; palea obovate..... | 2. <i>C. virgata</i> |

1. *C. barbata* Sw., Fl. Ind. Occid. 1: 200. 1797; FBI 7: 292. 1896; HSIG tt. 199, 200 & 201. 1921; FPM 1838. 1934; GBCIP 465. 1960; FTC 3: 1820. 1983; FIFTC t. 732. 1988; FTN 3: 99. 1989; RHFC 8: 113. 1994. [*Kodaipul*]

Annual or short-lived perennial; culms erect, 35–50 cm. Leaves linear-lanceolate, acuminate, glabrous; sheaths shorter than internodes, 2–5 x 0.1–0.3 cm, pubescent at mouth. Spikes 6–12, 3–6 cm long. Spikelets 2-seriate, subsessile, ca 3 mm long; glumes persistent; lower glume lanceolate, acute, ca 2 x 0.5 mm, keeled; upper glume lanceolate, acuminate, ca 3 x 0.5 mm, keeled; lower lemma obovate, ca 3 x 1 mm, ciliate along margins for more than half its length, 11-nerved, awned; awn ca 7.5 mm long; sterile lemmas stalked; lower lemma obcordate, emarginate, ca 2 x 1 mm, 3-nerved, awned; awn ca 6 mm long; upper lemma obcordate, emarginate, ca 1 x 1 mm, 3-nerved, awned; awn ca 6 mm long, geniculate; palea ca 2 x 0.5 mm, membranous, 1-nerved. Anthers linear, ca 0.4 mm long. Ovary oblanceolate, ca 0.2 mm long; stigmas ca 3.5 mm long. Grains oblanceolate, ca 1.5 mm long, pale brown.

Fl. & Fr.: Almost throughout the year.

Habitat: Road sides and also on sandy soil, with common weeds like *Euphorbia hirta*, *Parthenium hysterophorus*, and *Chloris wightiana*. Sometimes with *Acrachne henrardiana* as on Nallathanni Island.

Distrib.: Tropics of SE. Asia. TN: Almost all districts. GM: Common on mainland coast and frequent on Kuruśadai and Nallathanni Islands.

Use: Good fodder when young.

Specimens examined: (Total 87) KSK 102756; PD 101126; PD & PU 103551; Ku Is. PD 10061; Nt Is. PD 101620.

2. *C. virgata* Sw., Fl. Ind. Occid. 1: 203. 1797; FBI 7: 291. 1896; HSIG t. 198. 1921; FPM 1838. 1934; GBCIP 468. 1960; FTN 3: 100. 1989.

Perennial; culms terete, erect, ca 30 cm. Leaves linear, acute, 1 - 3 x 0.2 - 0.4 cm, glabrous; sheaths ca 3 cm long. Spikes ca 5 cm long. Spikelets ca 3.5 x 0.5 mm; lower glume lanceolate, acuminate, ca 2.5 x 0.4 mm, 1-nerved; upper glume lanceolate, acuminate, ca 3.5 x 0.5 mm, 2-nerved; fertile lemma oblong, ca 3.2 x 1 mm, 3-nerved, awned; awn ca 9 mm long; sterile lemmas stalked; stalks ca 1 mm long; I sterile lemma obovate, emarginate, ca 1.2 x 0.7 mm, awned; awn ca 8.5 mm long, scabrid; II one obcordate, ca 1 x 0.5 mm, awned; awn ca 6 mm long, scabrid; III one obcordate, ca 0.5 x 0.3 mm, awned; awn ca 3.5 mm long, scabrid; palea acute, keeled, ca 2 x 0.7 mm, hyaline. Stamens 3; filaments slender; anthers oblong, ca 0.4 mm long. Ovary oblong; stigmas ca 0.6 mm long, purplish. Grains oblong, ca 1 x 0.5 mm, pale brownish.

Fl. & Fr.: Dec. - Feb.

Habitat: Wastelands.

Distrib.: Throughout tropics. TN: Coimbatore, Kanyakumari, Ramanathapuram and Salem. GM: Rare. Earlier once collected at Rameswaram.

Specimen examined: (Total 29) TAR 1462 (CAL).

3. *C. wightiana* Nees ex Steud., Syn. Pl. Glumac. 1: 206. 1854; FBI 7: 293. 1896; FPM 1838. 1934; GBCIP 468. 1960; FTN 3: 100. 1989; JETB 14: 131. 1990. (Fig. 84)

Annual (or perennial?); culms erect, ca 30 cm. Leaves linear, acuminate, 3 - 7 x 0.2 - 0.4 cm, densely villous; sheaths 3 - 5 cm long, densely pubescent. Spikes 3 - 5; digitate, 1.5 - 5 cm long, puberulous below spikes. Spikelets ovate, 3 - 3.5 x 2 - 2.2 mm; lower glume ovate, acuminate, ca 3 x 1 mm, 1-nerved; upper glume ovate, acuminate or shortly mucronate, ca 3.2 x 1.2 mm, 1-nerved; lemmas 4; I lemma fertile, other 3 sterile; I lemma broadly ovate, ca 3 x 1 mm, long-hairy on keel, awned; awn ca 9 mm long; II lemma ovate, emarginate, ca 2 x 1.7 mm, hairy ventrally, awned; awn ca 8 mm long; III lemma obovate or cordate, emarginate, ca 1.5 x 2 mm, 3-nerved, awned; awn ca 7 mm long; IV lemma obcordate, emarginate, ca 1 x 1.5 mm, awned; awn ca 5 mm long; palea shortly stalked, ovate, cleft at apex, ca 3 x 1.2 mm, scabrid on keel. Stamens 3; filaments short; anthers linear, ca 1 mm long. Ovary oblong, ca 0.7 x 0.2 mm; styles 2, free, ca 0.8 mm long; stigmas 2, ca 1.5 mm long, plumose, reddish brown. Grains oblong, ca 1.5 x 0.9 mm, creamy-pale yellowish.

Fl. & Fr.: Almost throughout the year.

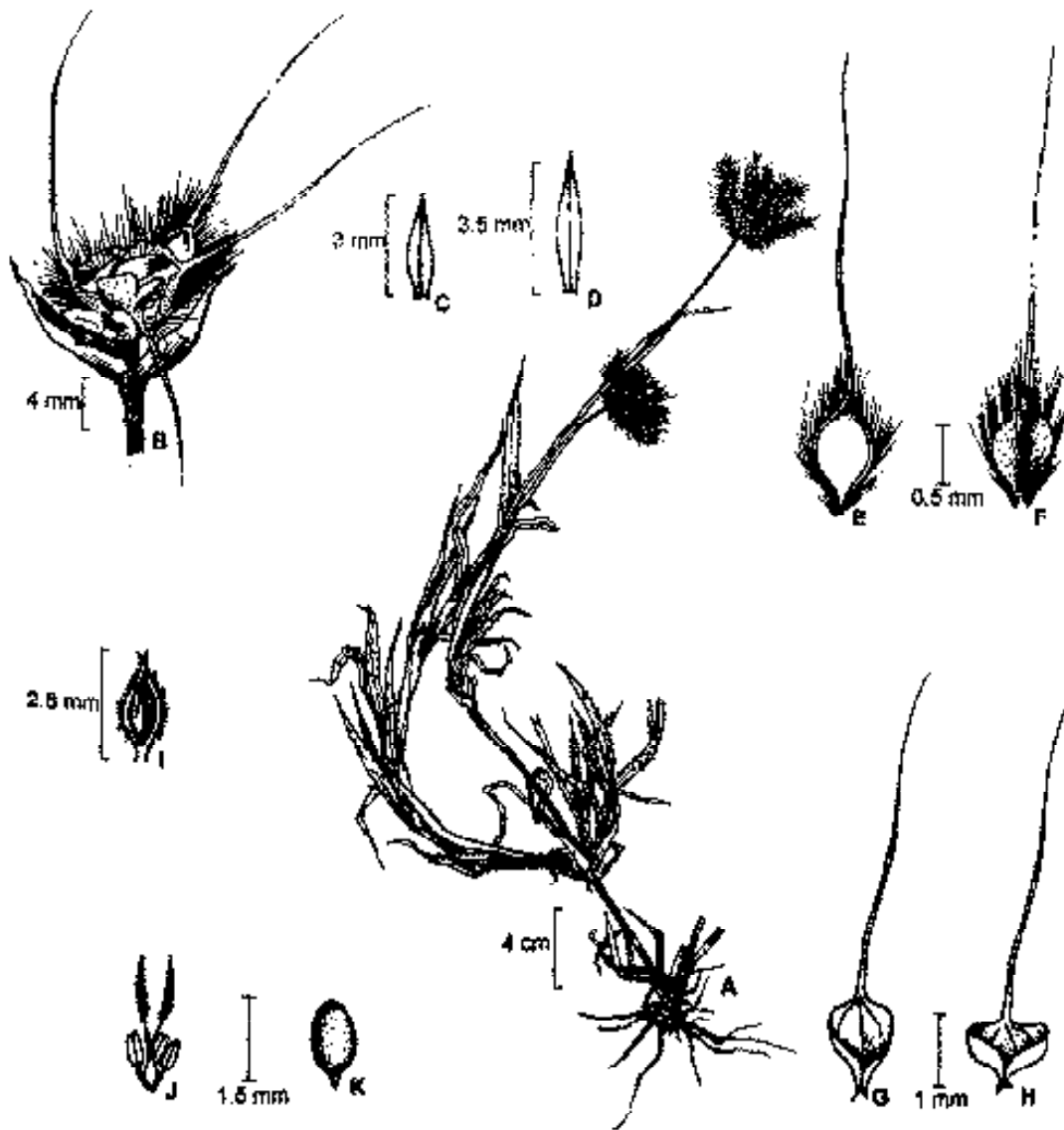


Fig. 84(A - K). *Ciliaris wightiana* Nees ex Steud.

A. Habit B. Spikelet C. Lower glume D. Upper glume E & F. Lemma dorsal & ventral views
G & H. Sterile lemmas I. Palea J. Pistil & stamens K. Grain

Habitat: Bunds of salt pans, road sides and sandy seashores, mostly with *Chloris barbata*. But it can be easily differentiated from *C. barbata* by its short and pubescent culms, villous leaves, stout and shorter spikes.

Distrib.: S. India. Endemic. TN: Ramanathapuram, Tirunelveli and Tuticorin. GM: Mainland coast, somewhat common.

Note: The information from Kew that there are no recent collections at Kew appears to have prompted Ramachandran and Balasubramaniam (1990) to draw indirect conclusion to the effect that it is rare.

Initially it was collected at Therkkumukkaiyur, a coastal village in Ramanathapuram. Later on it was collected near Veppalodai and Chippikulam, about 25 km from Tuticorin. Subsequently it was gathered near Valinokkam also in Ramanathapuram and later near Tuticorin port. More recently it was collected at the Nambiyar reservoir submergible site near Valliyur in Tirunelveli which is a little away from seashore. It appears to be an annual as the plants were found to be completely dry in most of the places. The present field observations may show that it is not an extremely rare grass.

Use: A good fodder grass.

Specimens examined: (Total 9) KSK 103421; PD 107688; PD & PU 103570, 104606, 106550, 106690, 107316, 107350.

10. *Chrysopogon* Trin. nom. cons.

Tropics especially of the Old World, 26 species, 15 in India, 8 in Tamil Nadu and one in GM.

C. fulvus (Spreng.) Chiov., Fl. Somalia 1: 327. 1929; GBCIP 116. 1960; FTC 3: 1823. 1983; FIFTC tt. 734 & 735. 1988; FTN 3: 100. 1989; RHFC 8: 119. 1994. *Pollinia fulva* Spreng., Pl. Min. Cogn. Pug. 2: 10. 1815. *Chrysopogon montanus* Trin. ex Spreng., Neue Entd. 2: 93. 1821; FPM 1739. 1934. *Andropogon monticola* Schult., Mant. 3: 665. 1827; FBI 3: 665. 1896.

Perennial; culms tufted, geniculate, to 50 cm high. Leaves linear, bluntly acute, to 15 cm long; ligule membranous with short hairs. Panicles 4 - 8 cm long; branches bearded at tip. Sessile spikelets narrowly oblong, ca 5 x 1 mm, awned; awn ca 23 mm long; lower glume elliptic or oblong, ca 4.8 x 1.2 mm, keeled, hispidulous at tip; upper glume oblong, notched, awned; lemmas 2; lower lemma ca 3 mm long, hyaline; upper lemma bidentate, awned, epaleate. Ovary oblong; styles 2; stigmas 2, ciliate. Pedicellate spikelets lanceolate, ca 7 x 1 mm, awned; callus ca 2 mm long, long-ciliate, golden brown; glumes lanceolate, acute; lower lemma lanceolate, acute, ciliate along margins. Lodicules 2. Stamens 3; anthers ca 2.5 mm long. Grains narrowly ellipsoid.

Fl. & Fr.: Jan. - May.

Habitat: Road sides and wastelands, with *Chloris barbata*, *Eragrostiella bifaria* and *Tephrosia purpurea*.

Distrib.: Asian tropics and E. Africa. TN: All districts. GM: Mainland coast, frequent.

Use: A good fodder grass.

Specimens examined: (Total 62) PD 101154; PD & PU 107215, 107367.

11. *Coelachyrum* Hochst. & Nees

Tropics and S. Africa through Arabia to Pakistan, 8 species and one in India.

C. lagopoides (Burm.f.) Senaratna, Grass. Ceylon 79. 1956; GBCIP 488. 1960; FTC 3: 1825. 1983; RHFC 8: 125. 1994. *Cynosurus lagopoides* Burm.f., Fl. Indica 29. 1768. *Dactylis brevifolia* Willd., Sp. Pl. 1: 140. 1798. *Eleusine brevifolia* (Willd.) R. Br. ex Hook. f., Fl. Brit. India 7: 294. 1896; HSIG t. 207. 1921. *E. lagopoides* (Burm.f.) Merr. in Philipp. J. Sci. 19: 339. 1921; FPM 1840. 1934. *Coelachyropsis lagopoides* (Burm.f.) Bor in Ann. Naturhist. Mus. Wien 75: 25. 1972; FTN 3: 102. 1989.

Stoloniferous annual; culms geniculate, to 20 cm high, canaliculate, glabrous. Leaves lanceolate, acute, to 7 cm long, scabrid along margins; ligule ca 0.7 mm long; sheaths keeled, sparsely pilose. Spikes head-like, ca 1.4 cm long. Spikelets elliptic, acute, 5 - 9 mm long; glumes narrowly ovate or oblong, acute with a mucro, ca 4 x 1 mm, 5 - 7-nerved; lemmas ovate, acute, mucronate, 3 - 4.5 x 1 - 1.5 mm, 3-nerved, ciliate on nerves; palea ovate, acute, ca 3 x 1 mm, keeled, ciliate on keel. Lodicules 2. Stamens 3. Ovary ca 0.7 mm long; styles 2; stigmas 2, feathery. Grains ovoid-ellipsoid, ca 1 mm long.

Fl. & Fr.: Dec. - March.

Habitat: Dry and sandy soils, with *Dactyloctenium aegyptium* and *Sporobolus tremulus*.

Distrib.: S. India and Sri Lanka. TN: Chengalpattu, Coimbatore, Kanyakumari, Tiruchirappalli, Tirunelveli and Tuticorin. GM: Mainland coast, frequent.

Specimens examined: (Total 24) DD 86673; PD & PU 103522, 103571, 106543, 106905.

12. *Cymbopogon* Spreng.

Old World tropics and subtropics, 56 species, 20 in India, 10 in Tamil Nadu and one in GM.

C. caesius (Nees ex Hook. & Arn.) Stapf in Bull. Misc. Inform. 1906: 341, 360. 1906; FPM 1757. 1934; GBCIP 125. 1960; FTC 3: 1827. 1983; FIFTC tt. 738 & 739. 1988; FTN 3: 102. 1989; RHFC 8: 129. 1994. *Andropogon caesius* Nees ex Hook. & Arn., Bot. Beechey Voy. 244. 1838. *A. schoenanthus* L. var. *caesius* (Nees ex Hook. & Arn.) Hack. in A. & C. DC., Monogr. Phan. 6: 610. 1889; FBI 7: 205. 1896. [*Kamakshipul*] (Fig. 85)

Perennial, tufted, woody at base; culms terete, ca 1.5 m high, glabrous. Leaves linear-lanceolate, acuminate, 10 - 25 x 0.3 - 0.5 cm; ligule obtuse-rounded, 0.1 - 0.3 mm long, membranous, pale brownish. Panicles linear, contracted, ca 15 cm long; racemes 1 - 1.5 cm long; callus 1.5 - 2 mm long, densely villous. Spikelets sessile and/or pedicellate, spathed; sessile spikelets lanceolate-oblong, awned, ca 4 x 0.8 mm; callus hairy; lower glume oblong-elliptic, acute or notched, keeled, 3.5 - 4 x 1 - 1.3 mm, winged in upper half; upper glume lanceolate or oblong-elliptic, acute, ca 4 x 1 mm, faintly winged, ciliolate along margins, keeled, coriaceous, hyaline, 1-nerved; lower lemma oblong, obtuse-rounded, ca 3 x 0.8 mm, hyaline, nerveless; upper lemma linear, deeply notched, ca 2.5 x 0.3 mm, awned; awn ca 10 mm long, epaleate. Lodicules 2, truncate, ca 0.7 mm long, hyaline. Stamens 3; filaments slender, ca 0.5 mm long; anthers linear, ca 1.5 x 0.2 mm. Ovary oblong, ca 0.5 mm long; styles 2, free, ca 0.7 mm long; stigmas 2, ca 1.2 mm long, feathery. Grains oblong. Pedicellate spikelet staminate, elliptic, acute, ca 4 x 0.8 mm; pedicels linear, ca 2 mm long, sericeous; lower glume oblong-elliptic, acute, keeled, ca 4 x 1.5 mm, 9 - 11-nerved; upper glume oblong-elliptic, acute, ca 4 x 1.5 mm, chartaceous, ciliolate along margins, 3-nerved; lemma oblong, rounded, ca 3.5 x 1 mm, hyaline, ciliate along margins above half, epaleate. Lodicules, stamens and pistil similar to that of sessile spikelet.

Fl. & Fr.: Dec. - March.

Habitat: Bunds of cultivated fields, open wastelands, and also on sandy soil, with *Apluda mutica* and *Eremopogon foveolatus*.

Distrib.: NE. Africa and India. TN: All districts. GM: Common on islands but rare on mainland coast. On islands like Pullivasal and Pumarichan it forms vast stretches. The insular factors that promote its thriving need further studies.

Uses: Yields an essential oil, Kachi grass oil, resembling ginger grass oil in odour and properties. Plant used for thatching. Grazed by cattle only when young.

Specimens examined: (Total 78) Ap Is. PD 101573; Ka Is. PD 102250; Ku Is. PD 100616; Nt Is. PD 101629; Pc Is. PD & PU 106591; Pu Is. PD 100557; Pv Is. PD 101402; Ut Is. PD 101643; Va Is. KSK 102702.

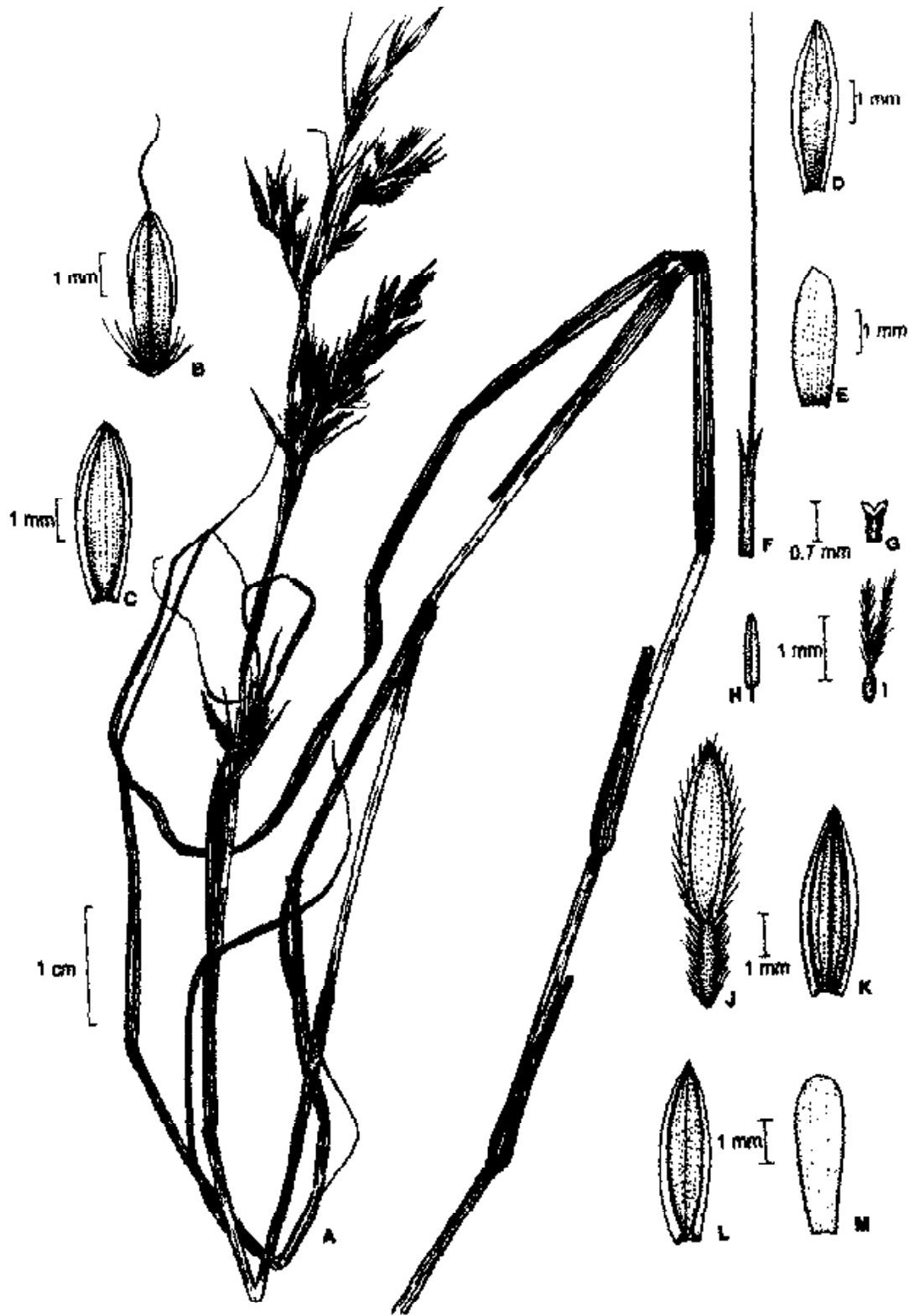


Fig. 85(A - M). *Cymbopogon caesatus* (Nees ex Hook. & Arn.) Stapf
 A. Habit B. Sessile spikelet C. Lower glume D. Upper glume E. I Lemma
 F, II Lemma G. Lodicule H. Stamen I. Pistil J. Pedicellate spikelet
 K. Lower glume L. Upper glume M. Lemma

13. *Cynodon* Rich. nom. cons.

Tropics and subtropics, ca 8 species, 4 in India and Tamil Nadu and one in GM

C. dactylon (L.) Pers., Syn. Pl. 1: 85. 1805; FBI 7: 288. 1896; HSIG tt. 190 & 191. 1921; FPM 1835. 1934; GBCIP 469, t. 52. 1960; FTC 3: 1829. 1983; FTN 3: 104. 1989; RHFC 8: 137. 1994. *Panicum dactylon* L., Sp. Pl. 58. 1753. [*Aruhampul*]

Stoloniferous perennial; culms erect, terete, to 20 cm, glabrous. Leaves distichous, linear, subacute, 1-4 x ca 0.2 cm, glabrous; ligule membranous; sheaths as long as internodes, bearded at mouth. Spikes 4, 2-4 cm long, spreading, purplish. Spikelets lanceolate or ovate, acute, ca 2 x 0.6 mm; lower glume linear or lanceolate, acute, ca 1.2 x 0.4 mm, 1-nerved, scabrid on nerve; upper glume ovate, acute, ca 1.2 x 0.5 mm, 1-nerved; lemma broadly ovate, acute or obtuse, ca 2 x 0.8 mm, ciliolate on midnerve, keeled, 3-nerved; palea oblong, 3-dentate or acute, ca 1.8 x 0.5 mm, keeled. Lodicules 2, ca 0.3 mm long. Stamens 3; filaments very short; anthers ca 1 mm long, yellowish. Ovary oblong, ca 0.4 mm long; styles 2, slender, ca 0.3 mm long; stigmas 2, ca 0.6 mm long, plumose, purplish. Grains ellipsoid, ca 1 mm long, pale brownish.

Fl. & Fr.: Throughout the year.

Habitat: Road sides and wet wastelands, with *Aerva persica*, *Euphorbia hirta* etc.

Distrib.: Cosmopolitan. TN: All districts. GM: Mainland coast, common.

Uses: A good sand binder. Used as a lawn and pasture grass. Decoction is diuretic. Rhizomes used in genito-urinary disorders. Of late the juice of this grass which enjoys a good demand is sold by small-time shopkeepers as a health drink.

Specimens examined: (Total 44) PD 100497, 102139; KSK 103386.

14. *Dactyloctenium* Willd.

Tropics, 13 species, 5 in India and 3 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|------------------------|
| 1a. Plant non-stoloniferous; rachis extending beyond spike for more than 3 mm | 2. <i>D. aristatum</i> |
| b. Plants stoloniferous; rachis extending beyond spike for less than 3 mm | 1. <i>D. aegyptium</i> |

1. *D. aegyptium* (L.) Willd., Enum. Pl. 1029. 1809; FPM 1840. 1934; GBCIP 489, t. 54. 1960; FTC 3: 1831. 1983; FTN 3: 105. 1989; RHFC 8: 147. 1994. *Cynosurus aegyptius*

L., Sp. Pl. 72. 1753. *Eleusine aegyptica* (L.) Desf., Fl. Atlant. 1: 85. 1798; FBI 7: 295. 1896; HSI 5, tt. 208 & 209. 1921. (Fig. 86)

Annual; culms rigid, glabrous, rooting at lower nodes. Leaves linear-lanceolate, acute, 5 - 20 x 0.3 - 0.5 cm, hispid on both surfaces, basally ciliate along margins and spinulose towards apex; ligule to 5 mm wide; sheaths to 5 cm long, pubescent throughout. Spikes digitate, 6 - 11, ca 2 cm long. Spikelets many, ca 3.5 x 2.8 mm, scabrid, spinulose; lower glume lanceolate-ovate, acuminate, ca 3 x 0.7 mm, 1-nerved; upper glume oblong, obtuse, ca 2 x 1.6 mm, awned; awn ca 1.7 mm long; the lower most lemma broadly ovate, cuspidate, ca 1 mm long, keeled, 1-nerved; other lemmas unequal, 1 - 3.2 mm long; lower palea ovate, ca 2.8 x 1.2 mm, minutely ciliate along margins above; upper palea ovate, ca 2.2 x 1.2 mm. Filaments ca 1 mm long; anthers oblong, ca 0.6 mm long; Ovary ovoid-oblong, ca 0.5 mm long; styles 2, free; stigmas 2, plumose. Grains ovoid-oblong, ca 1.2 mm long, verrucose, creamy yellow.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy and wet localities, with *Cyperus bulbosus*, *Trachys muricata* etc.

Distrib.: Old World tropics. TN: Almost all districts. GM: Common on mainland coast and almost all islands.

Uses: Grains used as food in times of scarcity. Plant is of medicinal value; an ingredient in the Ayurvedic preparation 'Trind skin' used in skin care (Tripathi & al., 1996).

Specimens examined: (Total 101) PD 101144; Ap Is. PD 101579; Ku Is. KSK 102311; Ma Is. PD 100694; Mp Is. PD 101445; Mu Is. PD 100646; Pu Is. PD 100549; Pc Is. KSK 102350; Th Is. PD 101514; Ut Is. PD 101673.

2. *D. aristatum* Link, Hort. Berol. 1: 59. 1827; GBCIP 489. 1960; JETB 8: 246. 1986; JETB 12: 433. 1988. *Eleusine aristata* sensu FBI 7: 296. 1896, p.p.

Annual; culms erect, 6 - 16 cm, striate. Leaves linear, ca 10 cm long, pilose on both surfaces; ligule ca 4 mm wide, membranous; sheaths 1 - 3 cm long, bearded. Spikes 2, digitate, 1 - 2 cm long. Spikelets many, ca 4 x 3 mm; rachis axil bearded; lower glume ovate, acute, 2.5 - 2.7 x 1 - 1.2 mm, 1-nerved; upper glume ovate, obtuse, 2.5 - 2.8 x 1.5 - 1.7 mm, keeled, awned; awn geniculate, ca 2 mm long; lemmas 3; lower and upper lemmas broadly ovate, cuspidate, ca 3.2 x 2.2 mm; the innermost lemma ovate, ca 2 x 1 mm; paleas 2, ovate, unequal, 1.8 - 2.5 x 0.8 - 1 mm, keeled, minutely ciliate along margins, 1-nerved. Filaments very short; anthers oblong, ca 0.5 mm long. Ovary subglobose, ca 0.3 mm long; styles 2, free; stigmas 2, plumose. Grains broadly ellipsoid-obovoid, 0.8 - 1 mm long, finely granular.

Fl. & Fr.: Nov. - Feb.

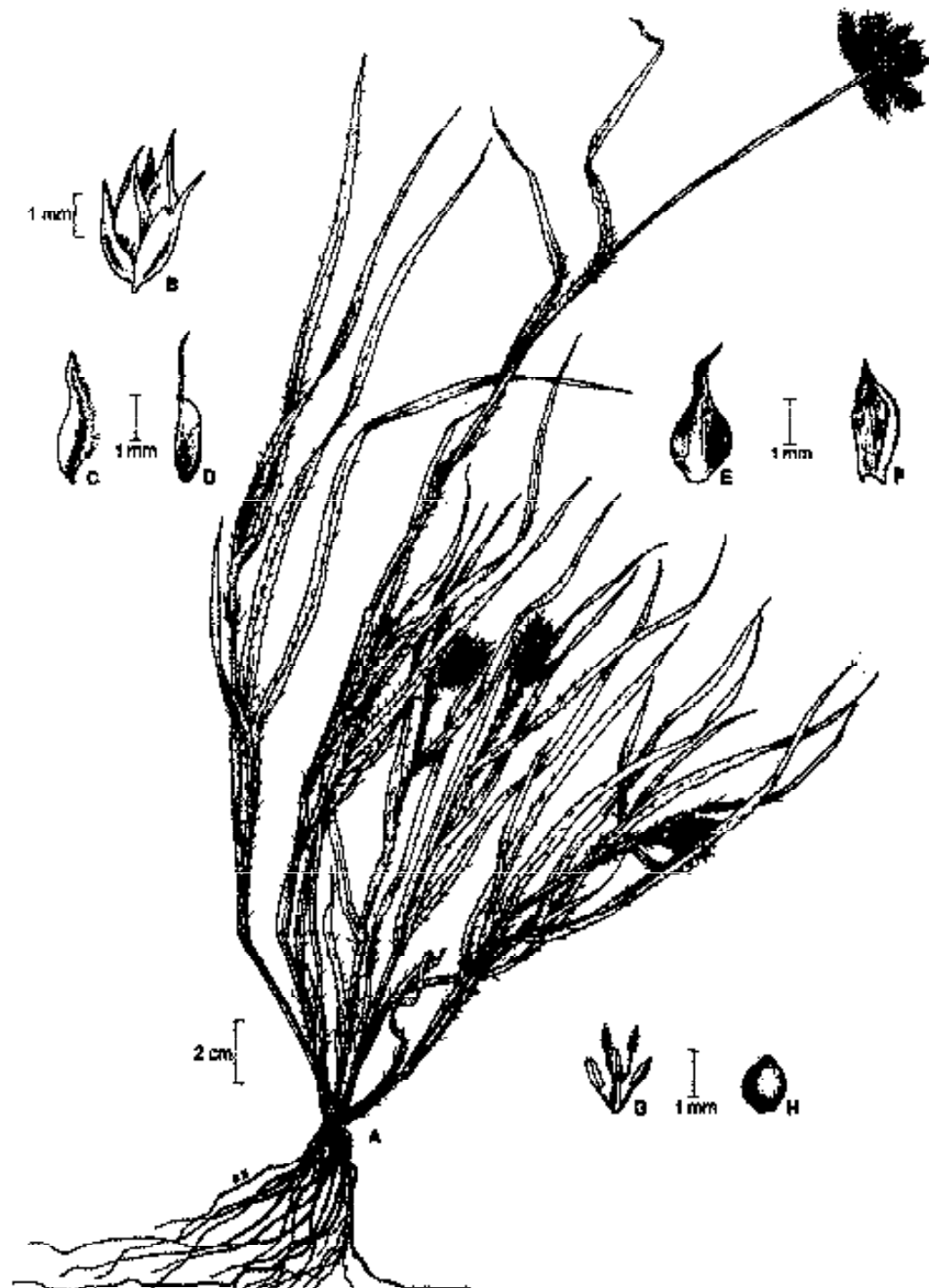


Fig. 86(A - H). *Dactyloctenium aegyptium* (L.) Willd.
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Grain

Habitat: Sandy seashores, usually with *Dactyloctenium aegyptium*.

Distrib.: NE. Africa to NW. India. TN: Ramachandran and Balasubramaniam (1986) added this to the flora of Ramanathapuram. GM: Rare on mainland coast and frequent on Kurusadai, Manoli, Pullivasal and Thalajyari Islands.

Specimens examined: (Total 6) Ku Is. PD 99794, 99800; Ma Is. PD 100694; Pu Is. PD 101198; Th Is. PD 101504.

15. *Dichanthlum Willemet*

Old World tropics, ca 20 species, 10 in India, 5 in Tamil Nadu and one in GM.

D. annulatum (Forssk.) Stapf in Prain, Fl. Trop. Africa 9: 178. 1919; FPM 1741. 1934; GBCIP 133. 1960; IFTC tt. 844 & 845. 1982; FTC 3: 1833. 1983; FTN 3: 106. 1989. *Andropogon annulatus* Forssk., Fl. Aegypt.-Arab. 173. 1775; FBI 7: 196. 1896.

Perennial; culms tufted, to 1 m high; nodes usually bearded. Leaves linear-lanceolate, acuminate, 3 - 20 x 0.3 - 0.5 cm, sparsely scabrid along margins, hairy above; ligule membranous; sheaths bearded at mouth. Racemes 2 - 6, subdigitate, 2 - 8 cm long; joints 1.5 - 2 mm long, ciliate. Sessile spikelet ovate, ca 3 x 0.8 mm, ciliate, awned; lower glume oblong, obtuse, ca 3 x 1 mm, 7 - 9-nerved; upper glume narrowly lanceolate, subacute, ca 3 x 0.8 mm; nerves 3, obscure; lower lemma lanceolate, obtuse, ca 2 x 1 mm, ciliate towards apex, hyaline; upper lemma an awn of ca 19 mm long, epaleate. Lodicules 2. Stamens 3; anthers linear, ca 1 mm long. Ovary ovoid, ca 1 mm long; styles 2, ca 1 mm long; stigmas 2, ca 1.5 mm long, feathery. Grains ellipsoid, ca 1 mm long. Pedicellate spikelet staminate, ca 3 mm long, unawned; pedicel ca 2 mm long; lower glume ovate-oblong, obtuse, ca 3 x 1 mm, ciliate along margins, keeled, 15-nerved; upper glume lanceolate, ca 3 x 1 mm, ciliate along margins, keeled, 3-nerved; lemma oblong, ca 3 x 0.5 mm; palea small. Lodicules 2. Stamens 3; anthers oblong, ca 1 mm long.

Fl. & Fr.: June - Dec.

Habitat: Road sides, usually with *Chloris barbata*.

Distrib.: India, Myanmar, Trop. and N. America. TN: All districts. GM: Frequent on mainland coast, collected at Athur and Periyathalai in Tuticorin.

Use: A good fodder grass.

Specimens examined: (Total 35) KSK 102914; PD 102284.

16. *Digitaria* Haller

Tropics and subtropics, ca 230 species, 25 in India, 13 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|-----------------------|
| 1a. Racemes usually 2; upper glume of sessile spikelet ca 2 mm long | 1. <i>D. bicornis</i> |
| b. Racemes usually more than 2; upper glume of sessile spikelet
ca 3 mm long | 2. <i>D. ciliaris</i> |

1. *D. bicornis* (Lam.) Roem. & Schult. ex Loudon, Hort. Brit. 24: n. 1578. 1830; GBCIP 299. 1960; Blumea 21: 30, f. 3c & d. 1973; IFTC tt. 846 & 847. 1982; FTC 3: 1836. 1983; FIFTC tt. 746 & 747. 1988; FTN 3: 107. 1989; RHFC 8: 162. 1994. *Paspalum bicornis* Lam., Tabl. Encycl. 1: 176. 1791. *P. heterantherum* Hook. f., Fl. Brit. India 7: 16. 1896, non Nees & Mey. 1843.

Annual; culms tufted, geniculate, to 60 cm high, glabrous, rooting at lower nodes. Leaves linear-lanceolate, to 15 cm long, puberulous; ligule membranous; sheaths glabrous or pilose near mouth. Racemes 2 (-4), 4-12 cm long; rachis winged. Spikelets paired, heteromorphous. Sessile spikelet lanceolate-ovate, ca 4 x 0.8 mm; lower glume scaly; upper glume lanceolate, acuminate, ca 2 x 0.8 mm, 5-nerved, ciliate. Lower floret sterile; lemma lanceolate-ovate, acute, ca 4 x 1 mm, 5-7-nerved, faintly ciliate, epaleate. Upper floret bisexual; lemma ovate, acuminate, ca 3 x 1 mm; palea ovate, acute, ca 3 x 0.8 mm, keeled. Lodicules 2. Stamens 3; anthers ca 1 mm long. Ovary oblong, ca 1.5 mm long; styles 2; stigmas 2, ca 1 mm long, feathery. Pedicellate spikelet lanceolate-ovate, ca 4 x 1 mm; pedicels ca 6 mm long, triquetrous; lemma pectinate; other characters similar to that of sessile spikelet. Grains oblong, ca 2.5 mm long.

Fl. & Fr.: Sept. - Feb.

Habitat: Open and sandy localities, with *Dactyloctenium aegyptium*, *Hedyotis puberula*, *Trachys muricata* etc.

Distrib.: Trop. Asia. TN: Chengalpattu, Coimbatore, Nilgiri, Ramanathapuram and Salem. GM: Occasional on mainland coast and Kurusadai Island.

Specimens examined: (Total 15) Ku Is. PD & PU 106882; VB 1457.

2. *D. ciliaris* (Retz.) Koeler, Descr. Gram. 27. 1802; Blumea 21: 32, f. 5a. 1973; FTC 3: 1837. 1983; FIFTC tt. 748 & 749. 1988; FTN 3: 107. 1989; RHFC 8: 163. 1994. *Panicum ciliare* Retz., Obs. Bot. 4: 16. 1786. *Digitaria adscendens* (Kunth) Henrard in Blumea 1: 92. 1934; GBCIP 298. 1960. *Panicum adscendens* Kunth in H.B.K., Nov. Gen. Sp. 1: 97. 1817. *Digitaria marginata* Link, Enum. Hort. Berol. Alt. 1: 102. 1821; FPM 1764. 1934, incl. var. *fimbriata* Stapf.

Annual; culms tufted, erect or decumbent, rooting at lower nodes. Leaves linear-lanceolate, acuminate, 2 - 20 x 0.3 - 1.5 cm, glabrous or sparsely hispid; ligule membranous; sheaths glabrous, or pilose. Racemes 2 - 4 (-10), digitate or subdigitate, 5 - 12 cm long; rachis winged, serrate. Spikelet solitary, pedicellate; pedicels triquetrous. Sessile spikelet lanceolate, acuminate, ca 4 x 0.8 mm; lower glume scaly; upper glume lanceolate, acuminate, ca 3 x 0.5 mm, ciliate along margins. Lower floret sterile; lemma lanceolate, acuminate, ca 3.8 x 1 mm, ciliate, 7-nerved, epaleate. Upper floret bisexual; lemma lanceolate, acuminate, ca 2.8 x 0.8 mm; palea similar to lemma. Lodicules 2. Stamens 3. Grains oblong-elliptic, ca 2 x 0.5 mm, stramineous. Pedicellate spikelet ovate, acuminate with a blunt tip, pectinate, ca 4 x 1.5 mm; pedicel triquetrous, ca 3 mm long, scabrid; upper glume triangular, ca 3 x 1.5 mm, ciliate, 3-nerved; lemma ovate or lanceolate, ca 2.8 x 0.8 mm, pectinate, 7-nerved; other characters similar to that of sessile spikelet.

Fl. & Fr.: Throughout the year.

Habitat: Wastelands and road sides.

Distrib.: Old World tropics. TN: All districts. Earlier collected at Sathirakudi in Ramanathapuram. May occur on the coast.

Use: Reportedly a good fodder grass.

Specimens examined: (Total 16) VB 2215.

17. *Dinebra* Jacq.

E. Africa to W. Indies, 3 species and one in India.

D. retroflexa (Vahl) Panz. in Denkschr. Königl. Acad. Wiss. München 270, t. 12. 1814; FPM 1841. 1934; GBCIP 491. 1960; IFTC tt. 849 & 850. 1982; FTC 3: 1843. 1983; FTN 3: 110. 1989. *Cynosurus retroflexus* Vahl, Symb. Bot. 2: 20. 1791. *Dinebra arabica* Jacq., Fragm. Bot. 77, t. 121, f. 1. 1807; FBI 7: 297. 1896; HSIG tt. 17, 210 & 211. 1921.

Annual; culms tufted, to 60 cm high, rooting at lower nodes. Leaves linear, acuminate, 5 - 30 x 0.5 - 0.8 cm; ligule with a fringe of short hairs; sheaths bearded. Panicle to 30 cm long, linear with densely crowded spikes; spikes alternate, racemose, 0.5 - 5 cm long. Spikelets ca 4.5 x 1 mm; lower glume lanceolate, ca 4 x 0.5 mm, keeled, awned, minutely scabrid; upper glume lanceolate, ca 4.5 x 0.8 mm, awned. Lower floret sessile; lemma ovate, acute, ca 2 x 1 mm, 1-nerved; palea lanceolate, acute, keeled, ca 1.5 x 0.5 mm. Stamens 3; anthers ca 0.5 mm long. Ovary minute; styles 2; stigmas 2, plumose. Upper floret pedicellate, ca 0.7 mm long. Other characters similar to that of lower floret. Grains oblong-elliptic, ca 1 x 0.4 mm, stramineous brown.

Fl. & Fr.: Jan. - June.

Habitat: Cultivated fields, with *Eragrostis japonica*, *Euphorbia hirta*, *E. indica* etc.

Distrib.: India to E. Africa. TN: Chengalpattu, Coimbatore, Dharmapuri, Ramanathapuram, S. Arcot, Salem, Thanjavur and Tiruchirapalli. GM: Common in the interior plains, rare on the coast. Collected once near Pullanthai in Ramanathapuram.

Specimens examined: (Total 28) PD & PU 106660.

18. *Diplachne* P. Beauv.

Tropics and subtropics, 18 species, 15 in India and one in Tamil Nadu.

D. malabarica (L.) Merr. in Bull. Torrey Bot. Club 60: 633. 1933; FTN 3: 110. 1989. *Poa malabarica* L., Sp. Pl. 69. 1753. *Diplachne fusca* (L.) P. Beauv., Ess. Agrostogr. 80, 163. 1812; FBI 7: 329. 1896; FPM 1829. 1934; GBCIP 492. 1960; IFTC tt. 851 & 852. 1982; FTC 3: 1844. 1893; RHFC 8: 178. 1994. *Festuca fusca* L., Syst. Nat. ed. 10, 876. 1759. *Leptochloa malabarica* (L.) Veldk. in Blumea 19: 64. 1971. [*Mandaipul*] (Fig.87)

Perennial; culms tufted, 30 - 80 cm high, glabrous. Leaves linear, acuminate, 15 - 25 x 0.3 - 0.5 cm, glabrous; ligule membranous, ca 3 mm long, hyaline; sheaths 10 - 25 cm long, glabrous. Panicles 20 - 25 cm long; branches ascending, triquetrous, to 10 cm long. Spikelets linear, 6 - 9 x 0.9 - 1 mm, 6 - 8-flowered; lower glume ovate, subacute, ca 2 x 1 mm, 1-nerved; upper glume ovate-oblong, subacute-obtuse, ca 2.8 x 1 mm, 1-nerved; lemma ovate-elliptic or oblong, shortly mucronate, ca 2.5 x 1.1 mm, 3-nerved; palea elliptic, ca 3.1 x 0.8 mm, keeled, ciliate on keel, 2-nerved. Lodicules 2. Stamens 3; filaments slender, short; anthers oblong, ca 1 mm long. Ovary obovoid, ca 0.2 mm long; styles 2, ca 0.3 mm long; stigmas 2, ca 0.5 mm long, plumose. Grains obovoid, ca 1.2 x 0.5 mm, yellowish brown.

Fl. & Fr.: Dec. - Feb.

Habitat: Wet localities, with *Ammannia baccifera*, *Dactyloctenium aegyptium* and *Eriochloa procera*.

Distrib.: Tropics and subtropics. TN: Tiruchirapalli, Tirunelveli and Tuticorin. GM: Rare on mainland coast. Collected at Thiruchendur and Tuticorin.

Note: Feinbrun-Dothan (1986) gave *Diplachne fusca* (L.) Roem. & Schult. (1817) as the correct name and excluded *Poa malabarica* L. from the synonymy.

Specimens examined: (Total 8) PD & PU 107250, 107376.

19. *Echinochloa* P. Beauv.

Tropics, ca 35 species, 7 in India, 6 in Tamil Nadu and 2 in GM.

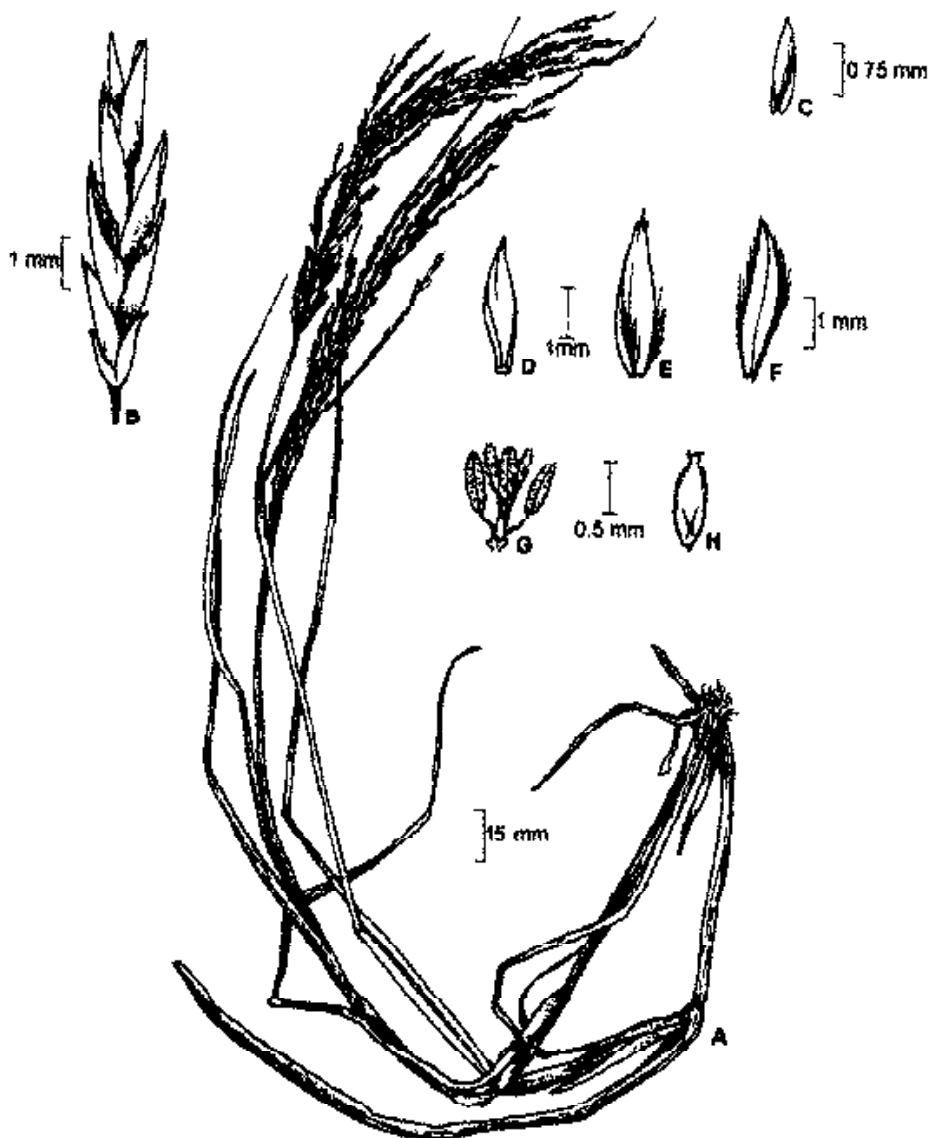


Fig. 87(A - H). *Diptachne malabarica* (L.) Merr.
 A. Habit B. Spikelet C. Lower glume D. Upper glume
 E. Lemma F. Palea G. Pistil & stamens H. Grain

Key to the species

- 1a. Plant less than 60 cm high; spikelets unawned 1. *E. colona*
 b. Plant more than 60 cm high; spikelets awned 2. *E. crus-galli*

1. *E. colona* (L.) Link, Hort. Berol. 2: 209. 1833; FPM 1776. 1934; GBCIP 308, t. 34. 1960; FTC 3: 1845. 1983; FIFTC t. 763. 1988; FTN 3: 110. 1989; RHFC 8: 181. 1994. *Panicum colonum* L., Syst. Nat. ed. 10, 870. 1759; FBI 7: 32. 1896; HSIG tt. 89 & 90. 1921. [Sawa]

Annual; culms tufted, canaliculate, to 15 cm high, rooting at lower nodes. Leaves linear, acuminate, to 25 x 0.7 cm; ligule hyaline; sheaths purplish green, glabrous. Panicles 5 - 15 x 1 - 1.5 cm; peduncles compressed, striate, glabrous or scaberulous; racemes spiciform, 1 - 2 cm long. Spikelets ovate, ca 2.5 x 1 mm; lower glume broadly ovate, acute, ca 1.2 x 1 mm, scabrous, 3-nerved, hispid on nerves; upper glume ovate, acute, or mucronate, ca 2.5 x 1.2 mm, scabrous, 5-nerved, hispid on nerves. Lower floret sterile; lemma broadly elliptic, acute-mucronate, ca 2.5 x 1.2 mm, 5 - 7-nerved; palea elliptic, ca 2 x 1 mm, keeled, ciliate on keel. Upper floret bisexual; lemma elliptic, apiculate, ca 2 x 1.5 mm, 3-nerved; palea elliptic-ovate, flat, obtuse, ca 1.8 mm long. Grains broadly ellipsoid, planoconvex, ca 1 mm long.

Fl. & Fr.: Nov. - Jan.

Habitat: Wet places and bunds of rice fields, with *Ammannia baccifera*, *Eriochloa procera*, *Fimbristylis* spp. and *Phyla nodiflora*.

Distrib.: Trop. Asia and Australia. TN: Almost all districts. GM: Mainland coast, common.

Uses: Plant used as a fodder. Grains eaten in times of scarcity.

Specimens examined: (Total 109) KSK 102888B; PD 102206.

2. *E. crus-galli* (L.) P. Beauv., Ess. Agrostogr. 53, 161. 1812; FBI 7: 31. 1896, p.p.; FPM 1771. 1934; GBCIP 310. 1960; FTN 3: 111. 1989; RHFC 8: 183. 1994. *Panicum crus-galli* L., Sp. Pl. 56.1753. *Echinochloa glabrescens* Munro ex Eggel., Annot. List Grass. Uganda 16. 1947; GBCIP 311. 1960; FTC 3: 1846. 1983.

Annual or perennial; culms tufted, 60 - 90 cm high, glabrous. Leaves linear-lanceolate, acuminate, 5 - 30 x 0.8 - 1.5 cm, glabrous; ligulate; sheaths shorter or longer than internodes, keeled. Panicles 10 - 20 cm long; racemes 5 - 15, 1 - 6 cm long. Spikelets ovate-lanceolate, 3 - 5 x 0.5 - 1 mm, acuminate or awned; lower glume ovate, cuspidate, 2 - 3 x 1.5 - 2 mm, 5-nerved; upper glume ovate-lanceolate, cuspidate, 3 - 5 x 1.5 - 2 mm, 5-nerved, scabrid on nerves. Lower floret staminate or sterile; lemma ovate, acuminate, 2 - 4 x 1.5 - 2 mm,

7-nerved; palea ovate-oblong, 1.5 - 2 x 1 - 1.2 mm, keeled, 2-nerved. Stamens 3, or absent. Upper floret bisexual; lemma ovate-elliptic, 2 - 3 x 0.8 - 1 mm, 3 - 5-nerved; palea ovate-oblong, mucronate, 1.5 - 2 x 0.8 - 1 mm, keeled, 2-nerved. Stamens 3. Ovary oblong, 3 - 5 mm long; styles 2; stigmas 2, plumose. Grains oblong-elliptic, ca 1.5 mm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet localities and rice fields, with *Eragrostis japonica*, *Fimbristylis miliacea*, *Heteropogon contortus* etc.

Distrib.: Tropics to temperate regions. TN: Chengalpattu, Coimbatore, Kanyakumari, Madurai, N. & S. Arcot, Tiruchirapalli and Tirunelveli. GM: Mainland coast, frequent.

Uses: Good fodder. Useful for reclamation of saline and alkaline soils. Also used in diseases of spleen and for checking haemorrhage.

Specimens examined: (Total 23) PD & PU 107029, 107064.

20. *Eleusine* Gaertn.

Africa and S. America, 9 species, 3 in India, 2 in Tamil Nadu and one in GM.

E. indica (L.) Gaertn., Fruct. Sem. Pl. 1: 8. 1789; FBI 7: 293. 1896; FPM 1839. 1934; GBCIP 493. 1960; IFTC tt. 855 & 856. 1982; FTC 3: 1848. 1983; FTN 3: 112. 1989. *Cynosurus indicus* L., Sp. Pl. 72. 1753. [*Tipparagi*]

Annual; culms tufted, to 60 cm high, glabrous. Leaves linear, acute, 5 - 20 x 0.3 - 0.5 cm, pilose above, glabrous beneath; ligule membranous, ca 0.3 mm wide; sheaths 3 - 10 cm long, bearded along margins above. Spikes subdigitate, 4 - 8, 5 - 15 cm long. Spikelets lanceolate, acute, 5 - 7 x 1.5 - 2 mm, 3 - 7-flowered; lower glume linear-lanceolate, 3 - 4 x 0.5 - 1 mm, 1-nerved, ciliolate on nerve and winged above; upper glume lanceolate-ovate, acute, 3.5 - 4.2 x 1 - 1.5 mm, hyaline along margins, 6-nerved; lemma ovate, acute, ca 3 x 1.5 mm, 1-nerved; palea lanceolate, keeled, winged, ca 3 x 1 mm, 2-nerved. Lodicules 2. Stamens 3; anthers linear, ca 0.7 mm long. Ovary oblong, ca 0.5 mm long; styles 2, slender, ca 0.5 mm long; stigmas 2, plumose, purplish brown. Grains 3-gonous, 1 - 1.5 mm long, brownish.

Fl. & Fr.: June - Feb.

Habitat: Wet sandy soil, usually with *Cynodon dactylon*, *Dactyloctenium aegyptium* and *Gomphrena serrata*.

Distrib.: Trop. and warm temperate regions. TN: Chengalpatu, Coimbatore, Madurai, Nilgiri and Tirunelveli. GM: Common in the interior, rare on coast. Once collected at Tuticorin port.

If dispersed by cattle (endozoochory) as pointed out by Ridley (1930), it must be common on the coast as well. Certain other agents may be involved.

Uses: Culms used for hats. Grains eaten in times of scarcity.

Specimens examined: (Total 56) PD & PU 103386.

E. coracana (L.) Gaertn., the finger millet, known as ragi or keppai locally, is sometimes cultivated.

21. *Enneapogon* Desv. ex P. Beauv.

Subtropics, ca 30 species, 4 in India and one in Tamil Nadu.

E. schimperanus (Hochst. ex A. Rich.) Renvoize in Kew Bull. 22: 400. 1968; FTC 3: 1849. 1983; FTN 3: 112. 1989. *Pappophorum schimperanum* Hochst. ex A. Rich., Tent. Fl. Abyss. 2: 403. 1851. *P. elegans* Nees ex Steud., Syn. Pl. Glumac. 1: 199. 1854; FBI 7: 301. 1896; HSIG tt. 215 & 216. 1921. *Enneapogon elegans* (Nees ex Steud.) Stapf in Bull. Misc. Inform. 1907: 224. 1907; FPM 1841. 1934; GBCIP 610. 1960.

Perennial; culms tufted, to 70 cm high, hairy below panicle, glabrous. Leaves linear, involute, ca 12 x 0.4 cm; ligule membranous; sheaths shorter than internodes. Panicle spiciform, to 10 cm long. Spikelets lanceolate or ovate, ca 7 x 0.8 mm. Lower floret bisexual; lower glume ovate, acuminate, ca 4.5 x 1.5 mm, 10-nerved; upper glume ovate, acuminate, ca 5.5 x 1 mm, 7-nerved; lemma orbicular, 9-nerved, 9-awned; awns subequal, 5 - 5.5 mm long, ciliate; palea elliptic-oblong, ca 2 x 0.8 mm, keeled, minutely ciliate on keel. Lodicules 2. Stamens 3; filaments filiform; anthers linear, ca 1.4 mm long. Ovary oblong; styles 2; stigmas 2, plumose, ca 1 mm long. Grains ovoid-oblong, ca 1 x 0.6 mm, pitted, brownish. Upper floret sterile; other characters similar to that of lower floret.

Fl. & Fr.: Aug. - March.

Habitat: Wet and sandy localities, with *Cleome angustifolia*, *Eriochloa procera* and *Physalis minima*.

Distrib.: Myanmar, S. India and Trop. NE. Africa. TN: Coimbatore, Dharmapuri, Kanyakumari, Nilgiri, Ramanathapuram, Salem and Tirunelveli. GM: Mainland coast, frequent. Earlier collected at Sayalkudi, a little interior in Ramanathapuram. Now collected on Tirunelveli and Kanyakumari coasts.

Use: A good fodder grass.

Specimens examined: (Total 40) PD & PU 106991, 107210, 107261; SAM 106304, 106400.

22. *Eragrostiella* Bor

Sri Lanka to Australia, 5 species, 5 in India, 3 in Tamil Nadu and one in GM.

E. bifaria (Vahl) Bor in Indian Forester 66: 270. 1940 & GBCIP 494. 1960; IFTC t. 863. 1982; FTC 3: 1851. 1983; FTN 3: 112. 1989. *Poa bifaria* Vahl, Symb. Bot. 2: 19. 1791. *Eragrostis bifaria* (Vahl) Wight ex Steud., Nomencl. Bot. ed. 2, 1: 562. 1840; FBI 7: 325. 1896; HSIG t. 227. 1921. *Poa coromandeliana* J. König ex Rottler in Ges. Naturf. Freunde Berlin Neue Schriften 4: 191. 1803. *Eragrostis coromandeliana* (J. König ex Rottler) Trin. in Mém. Acad. Imp. Sci. St. Pétersbourg, Sér. 6, Sci. Math. 1: 415. 1831; FBI 7: 326. 1896.

Perennial; culms tufted, to 50 cm high, glabrous. Leaves linear, acute-subobtuse, 2.5 - 15 cm long, pilose above; ligule with a fringe of hairs; sheaths bearded at mouth. Panicles ca 25 cm long; rachis smooth or scabrous. Spikelets to 75, ovate, acute, 0.5 - 2 cm long, 8 - 20-flowered; lower glume ovate, acuminate, ca 3.5 x 1.2 mm, 1-nerved; upper glume ovate, acute, ca 2 x 1 mm, thick, fleshy, 1-nerved; lemma broadly ovate, acute, ca 3 x 2 mm; palea ovate, acute, ca 2 x 1 mm, keeled, minutely ciliate on keel. Stamens 3; filaments slender, short; anthers linear, ca 1 mm long. Ovary minute; styles 2; stigmas 2, feathery. Grains ovoid, ca 0.6 mm long, stramineous brown.

Fl. & Fr.: Nov. - May.

Habitat: Coastal scrub jungles, usually on red sandy soil, with *Chrysopogon fulvus*.

Distrib.: India, Myanmar and Sri Lanka. TN: All districts. GM: Occasional on mainland coast.

Uses: A good fodder grass. Roots used for flavouring the Burmese cheroot.

The dry dyed inflorescence is used in making bouquets.

Specimens examined: (Total 97) DD 86672; PD & PU 107232.

23. *Eragrostis* P. Beauv.

Trop. and temperate regions, ca 350 species, 32 in India, 24 in Tamil Nadu and 10 in GM.

Key to the species

1a. Perennial herbs	2
b. Annual herbs	3
2a. Panicles less than 3 cm long; spikelets 6-flowered	9. <i>E. riparia</i>
b. Panicles more than 3 cm long; spikelets 8 - 12-flowered	3. <i>E. coarctata</i>
3a. Culms viscous below panicles	10. <i>E. viscosa</i>
b. Culms not viscous below panicles	4
4a. Panicles interrupted	5. <i>E. japonica</i>
b. Panicles continuous	5
5a. Culms glandular below nodes	6. <i>E. maderaspatana</i>
b. Culms eglandular below nodes	6
6a. Palea scabrid on keel	7
b. Palea ciliate on keel	8
7a. Panicles contracted; lower glume lanceolate	4. <i>E. gangetica</i>
b. Panicles effuse; lower glume ovate or oblong	9
8a. Upper glume scabrid on nerve; palea 1.2 - 1.4 mm long	2. <i>E. ciliaris</i>
b. Upper glume glabrous on nerve; palea 0.8 - 1.2 mm long	1. <i>E. amabilis</i>
9a. Lower branches of panicles whorled; lower glume ovate, acute	8. <i>E. pilosa</i>
b. Lower branches of panicles not whorled; lower glume oblong, obtuse	7. <i>E. minor</i>

1. *E. amabilis* (L.) Wight & Arn. in Hook. & Arn., Bot. Beechey Voy. 251. 1833; Munro in J. Linn. Soc., Bot. 6: 43. 1862; Merr., Interpr. Herb. Amboin. 95. 1917; Nicolson & al. in Regnum Veg. 119: 309. 1988. *Poa amabilis* L., Sp. Pl. 68. 1753. *Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult., Syst. Veg. 2: 576. 1817; GBCIP 513. 1960; Mitra & S.K. Jain in Manilal, Bot. Hist. Hort. Malab. 150. 1980. *Poa tenella* L., Sp. Pl. 69. 1753.

Annual; culms caespitose, geniculate, terete, 35 - 75 cm high, eglandular, glabrous. Leaves linear or linear-lanceolate, acuminate, 2.5 - 16 x 0.2 - 0.7 cm, glabrous; sheaths 2.5 - 5 cm long with tubercle-based hairs along margins or throughout; ligule with a fringe of hairs. Panicles effuse or contracted, linear-lanceolate or oblong, 3.5 - 16 x 1 - 2 cm; branches spreading or ascending, hairy at axil or glabrous. Spikelets lanceolate, lanceolate-oblong or ovate, 1.5 - 3.3 x 1 - 1.5 mm, 5 - 10-flowered; lower glume ovate, acute, acuminate or obtuse-acute, 0.7 - 1 x 0.2 - 0.5 mm, 1-nerved, scabrid on nerve; upper glume ovate, acute or acuminate, 1 - 1.2 x 0.4 - 0.8 mm, 1-nerved; lemmas oblong or oblong-elliptic, obtuse to subacute, or truncate, distinctly mucronate, 0.8 - 1.5 x 0.2 - 0.8 mm, 3-nerved; lateral nerves close to or almost along margins; paleas oblong, oblong-elliptic or oblong-lanceolate, obtuse, keeled, 0.8 - 1.2 x 0.2 - 0.4 mm, ciliate on keel. Anthers oblong, 0.2 - 0.3 mm long. Ovary oblong-ovoid. Grains oblong-ovoid, 0.5 - 0.7 mm long, dorsally grooved at base, stramineous brown.

Nicolson & al. (1988) pointed out that unlike the assumption of Bor (1960) that it was Stapf (1897) who found *Poa amabilis* L., *P. tenella* L. and *P. plumosa* Retz. taxonomic synonyms and chose *P. tenella* as the correct name, it was Munro (1862) who united *P. tenella* with *P. amabilis* and chose *P. amabilis* as the correct name. Hence, *Eragrostis amabilis* (L.) Wight & Arn. (1834) is the correct name of this species.

Key to the varieties

- | | |
|--|----------------------------|
| 1a. Panicles contracted, linear, with ascending branches | 1.2. var. <i>insularis</i> |
| b. Panicles effuse, oblong, with spreading branches | 1.1. var. <i>amabilis</i> |

1.1. var. *amabilis*: Nicolson & al. in *Regnum Veg.* 119: 309. 1988; *JETB* 22: 212, f. 1. 1998. *E. tenella* (L.) P. Beauv. ex Roem. & Schult., *Syst. Veg.* 2: 576. 1817, var. *tenella*: *FBI* 7: 315. 1896, incl. var. *plumosa*; *GBCIP* 513. 1960. *E. plumosa* (Retz.) Link, *Enum. Hort. Berol. Alt.* 1: 192. 1827; *FPM* 1826. 1934. *Poa plumosa* Retz., *Obs. Bot.* 4: 20. 1786. *Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult. var. *insularis* auct. non C. E. Hubb. 1939: *Hemadri, Grass. Junnar* 66. 1980; R.P. Pandey in B.V. Shetty & V. Singh, *Fl. Rajasthan* 3: 1052. 1993. (Fig. 88)

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy seashores, usually with *E. amabilis* var. *insularis*, *Hedyotis puberula*, and *Leucas aspera*.

Distrib.: Old World tropics. TN: All districts. GM: Common on mainland coast and Appa, Kurusadai, Manoliputti, Muyal, Nallathanni, Pullivasal, Shingle, Thalaiyari, Up-puthanni and Van Islands.

Uses: It has some fodder value. The grain is said to be nutritious.

Specimens examined: (Total 20) PD & PU 106466; Ap Is. PD 101574; Ku Is. PD 100606; Mp Is. PD 101456; Mu Is. PD 100633; Nt Is. PD 101625; Pv Is. PD 101406; Sh Is. PD 101436; Ut Is. PD 101655. Maharashtra, Junnar, K. Hemadri 107069 (BSI); Rajasthan, Tonk Distr., B.V. Shetty 1036; Barmer Distr., B.V. Shetty 2353 (BSJO).

1.2. var. *insularis* (C.E. Hubb.) Umamahesw. & P. Daniel in *J. Econ. Tax. Bot.* 22: 216, f. 2. 1998. *E. tenella* (L.) P. Beauv. ex Roem. & Schult. var. *insularis* C.E. Hubb. in *Bull. Misc. Inform.* 1939: 654. 1939; *GBCIP* 514. 1960; *FTC* 3: 1857. 1983; *FTN* 3: 115. 1989. (Fig. 89)

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy seashores and interior of islands, with *E. amabilis* var. *amabilis*, *Cyperus arenarius*, *Spinifex littoreus* and *Vigna trilobata*.

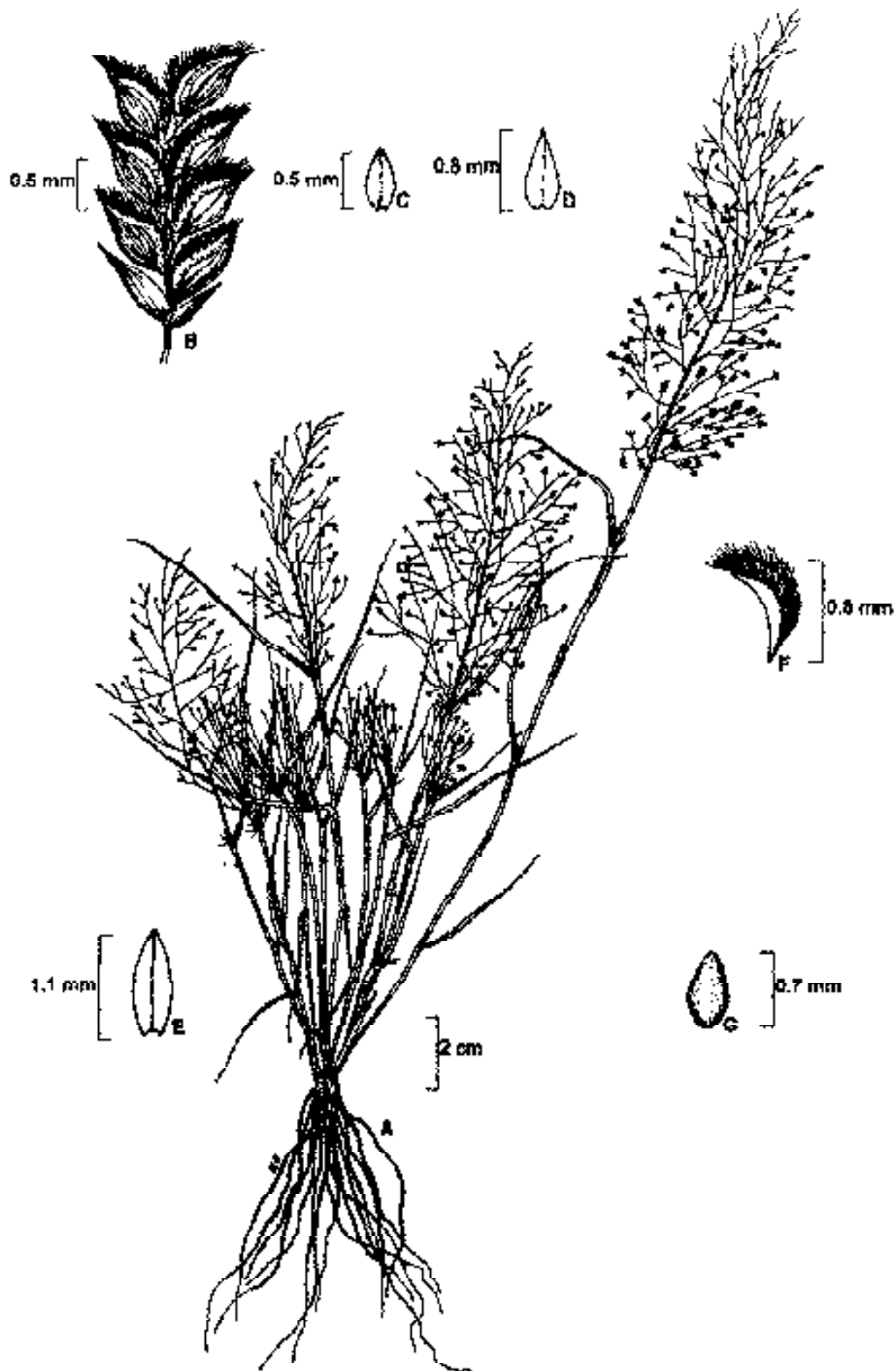


Fig. 28 (A - G). *Eragrostis amabilis* (L.) Wight & Arn. var. *amabilis*

A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma F. Palea G. Grain

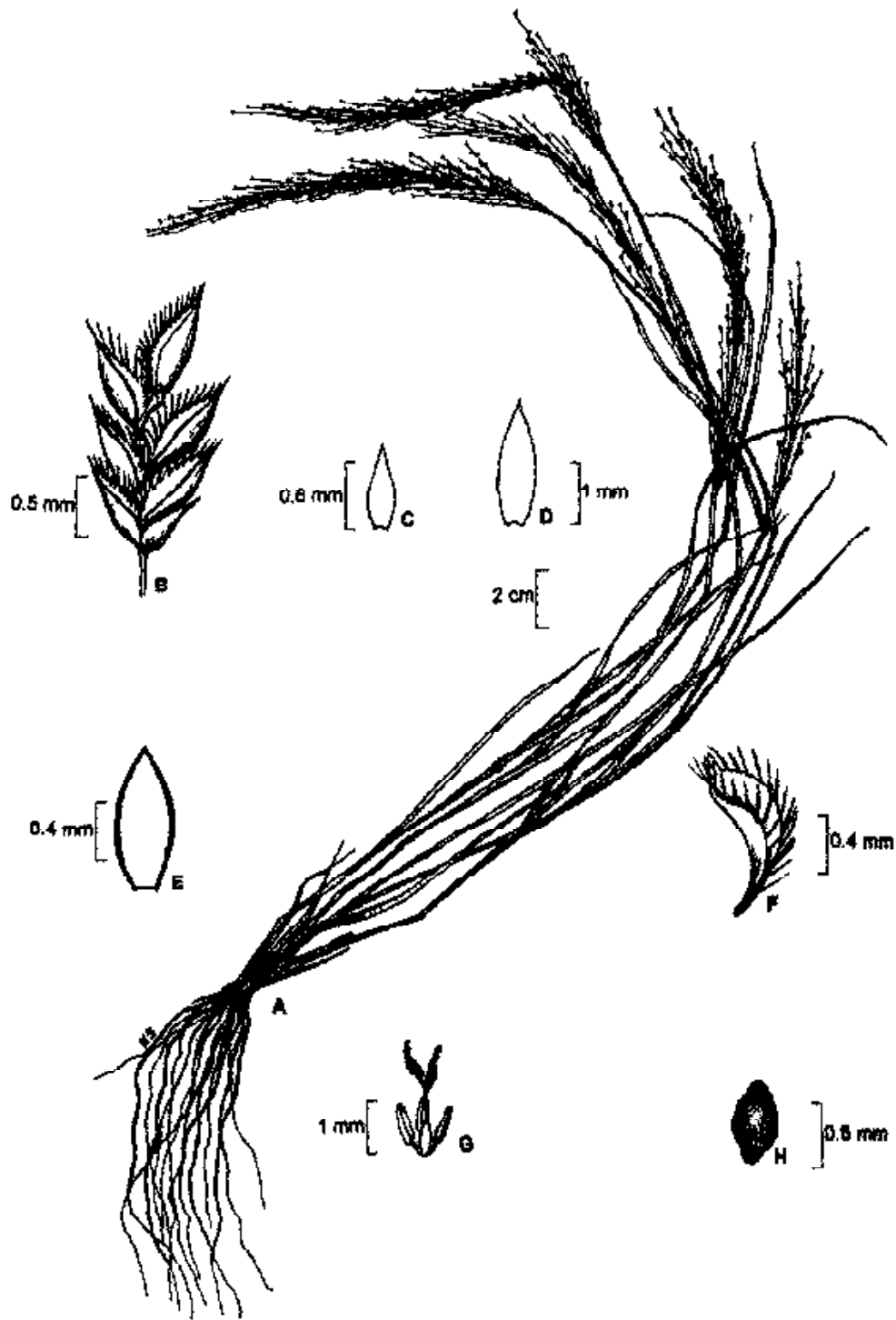


Fig. 89 (A - H). *Eragrostis amabilis* (L.) Wight & Arn. var. *insularis* (C. E. Hubb.) Umamahesw. & P. Dasiel
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma F. Palea G. Pistil & stamens H. Grain

Distrib.: Madagascar, Mascarenes, S. India and Sri Lanka. TN: "S. India". GM: Common on Appa, Karaichalli, Kaswari, Kurusadai, Muyal, Nallathanni, Puluvinichalli and Van Islands. Not so common on mainland coast particularly in the north.

Note: Bor (1960) added *E. tenella* L. var. *insularis* C.E. Hubb., originally described from Mauritius, to the S. Indian flora. He also recorded it for Sri Lanka. However, Lazarides (1994) did not include this. It was recorded for Junnar in Maharashtra (Hemadri, 1980), and Barmer and Tonk Districts in Rajasthan (Pandey, 1993) respectively. Examination of their material shows that it is only var. *tenella*. In flora of Tamil Nadu Nair (1989) based his enumeration only on that of Bor (1960).

A critical study of material at MH revealed that a number of specimens of var. *insularis* had been wrongly determined as var. *tenella* and that it occurs only on the East Coast of Tamil Nadu. The identity was confirmed with the help of protologue, types and some authentic specimens received from K on loan.

Specimens examined: (Total 20). Mauritius, cane fields near Moka, April 1939, Vaughan 1837 (K syntype; MH photo!); roadside near Quatre Bornes, Vaughan A/70 (K syntype!); without precise locality, Dec. 1864, M. Bouton G-33 (K syntype!); KSK 103370; PD & PU 103591; Ap Is. PD 101583; Kc Is. PD & PU 107509; Ku Is. PD 100608; Mu Is. PD 100652; Pc Is. PD & PU 106599; Van Is. PD & PU 107529. Sri Lanka, CP 927 (PDA!)

2. *E. ciliaris* (L.) R. Br. in Tuckey, Narr. Exped. Zaire 478. 1818; FBI 7: 314. 1896; FPM 1825. 1934; GBCIP 506. 1960; FTN 3: 113. 1989; RHFC 8: 210. 1994. *Poa ciliaris* L., Syst. Nat. ed. 10, 875. 1759.

Annual; culms ca 25 x 0.1 cm, terete, glabrous. Leaves linear, acute, 1.2 - 2.5 x 0.1 - 0.2 cm; ligule with a fringe of hairs; sheaths to 2.5 cm long, stramineous, bearded with long hairs at mouth. Panicles lanceolate, 4 - 6 x 0.3 - 0.5 cm; rachis minutely serrulate. Spikelets 2 - 8-flowered, ovate, 2 - 2.5 x 1 - 1.2 mm; lower glume ovate, subacute, ca 0.8 x 0.4 mm, 1-nerved; upper glume ovate, acute, ca 1 x 0.5 mm, 1-nerved, scabrid on nerve; lemmas oblong-elliptic, obtuse, 1.2 - 1.4 x 0.7 - 0.8 mm, 3-nerved; paleas lanceolate-elliptic, obtuse, 0.9 - 1.1 x 0.2 - 0.3 mm, keeled, ciliate on keel. Anthers oblong, purplish. Ovary oblong-obovoid, ca 0.4 x 0.1 mm. Grains obovoid, ca 0.7 x 0.3 mm, dorsally grooved at base, stramineous brown.

Fl. & Fr.: May - Nov.

Habitat: Wet sandy shores, with *Iphigenia indica* and sedges like *Cyperus bulbosus*, *Fimbristylis polytrichoides* etc.

Distrib.: Tropics and subtropics of the Old and New Worlds. TN: Chengalpattu, Coimbatore, S. Arcot and Tiruchirapalli. GM: Earlier collected once on Hare Island (now

connected to mainland) near Tuticorin. Now too collected once, at Chinnapalam near Pamban, rare.

Specimens examined: (Total 17) PD 100468; Ha Is. DD 87147.

3. *E. coarctata* Stapf in Fl. Brit. India 7: 313. 1896; FPM 1825. 1934; GBCIP 507. 1960; FTN 3: 113. 1989. (Fig. 90)

Perennial; culms caespitose, canaliculate, terete, slender, ca 40 cm high. Leaves linear-lanceolate, acute-acuminate, ca 10 x 0.5 cm; ligule with a fringe of hairs; sheaths very short, bearded at mouth, pale purplish. Panicles lanceolate, to 11 cm long; rachis with glandular patches, scabrid. Spikelets oblong, 4 - 5 x 1.8 - 2 mm, 8 - 12-flowered; lower glume lanceolate-ovate, subacute-acute, ca 1.2 x 0.6 mm, 1-nerved; upper glume lanceolate-ovate, acute, 1.2 - 1.4 x 0.5 - 0.7 mm, 1-nerved, scabrid on nerve; lemmas oblong-elliptic, obtuse, 1.4 - 1.6 x 0.8 - 1 mm, 3-nerved, ciliate along margins at base; paleas elliptic-oblong, obtuse, 1 - 1.2 x 0.4 - 0.6 mm, keeled. Anthers oblong, dark purplish. Ovary obovoid. Grains obovoid, ca 0.7 mm long, brownish.

Fl. & Fr.: Oct. - Jan.

Habitat: Roadsides and sandy shores, with *Hedyotis puberula*, *Bulbostylis barbata*, *Cyperus arenarius* etc.

Distrib.: India and Myanmar. TN: Madras. GM: Occasional on mainland coast and frequent on Appa, Nallathanni and Upputhanni Islands.

Based on Barber 4987 from Madras Bor (1960) indicated its distribution. Collected thereafter in Ramanathapuram on 9 occasions including 4 times during present explorations. Except for one all are from the Gulf of Mannar, mostly from the islands; rare.

Specimens examined: (Total 9) PD 100504; VB 1900, 1997; Ap Is. PD 101577; Nt Is. KSK 102362; Ut Is. PD 101632.

4. *E. gangetica* (Roxb.) Steud., Syn. Pl. Glumac. 1: 266. 1854; FPM 1826. 1934; GBCIP 508. 1960; FTC 3: 1854. 1983; FIFTC t. 774. 1988; FTN 3: 114. 1989; RHFC 8: 211. 1994. *Poa gangetica* Roxb., Fl. Ind. 1: 341. 1820. *Eragrostis stenophylla* Hochst. ex Miq., Anal. Bot. Ind. 3: 39. 1851; FBI 7: 318. 1896, p.p.

Annual; culms tufted, ca 30 cm high, eglandular, glabrous. Leaves linear, acute, to 12 x 0.3 cm, pilose above; ligule membranous; sheaths glabrous, bearded at mouth. Panicles ovate, to 15 x 5 cm, contracted; rachis striate, glabrous. Spikelets lanceolate, ca 3.5 x 1 mm, 9-flowered; lower glume lanceolate, acute, ca 1 x 0.3 mm, 1-nerved, purplish; upper glume ovate, acute, ca 1 x 0.5 mm, 1-nerved, purplish; lemmas broadly ovate-elliptic, obtuse-subacute, 1 - 1.5 x 0.3 - 0.5 mm, 3-nerved; paleas elliptic-oblong, obtuse, ca 1 x 0.4 mm, keeled,

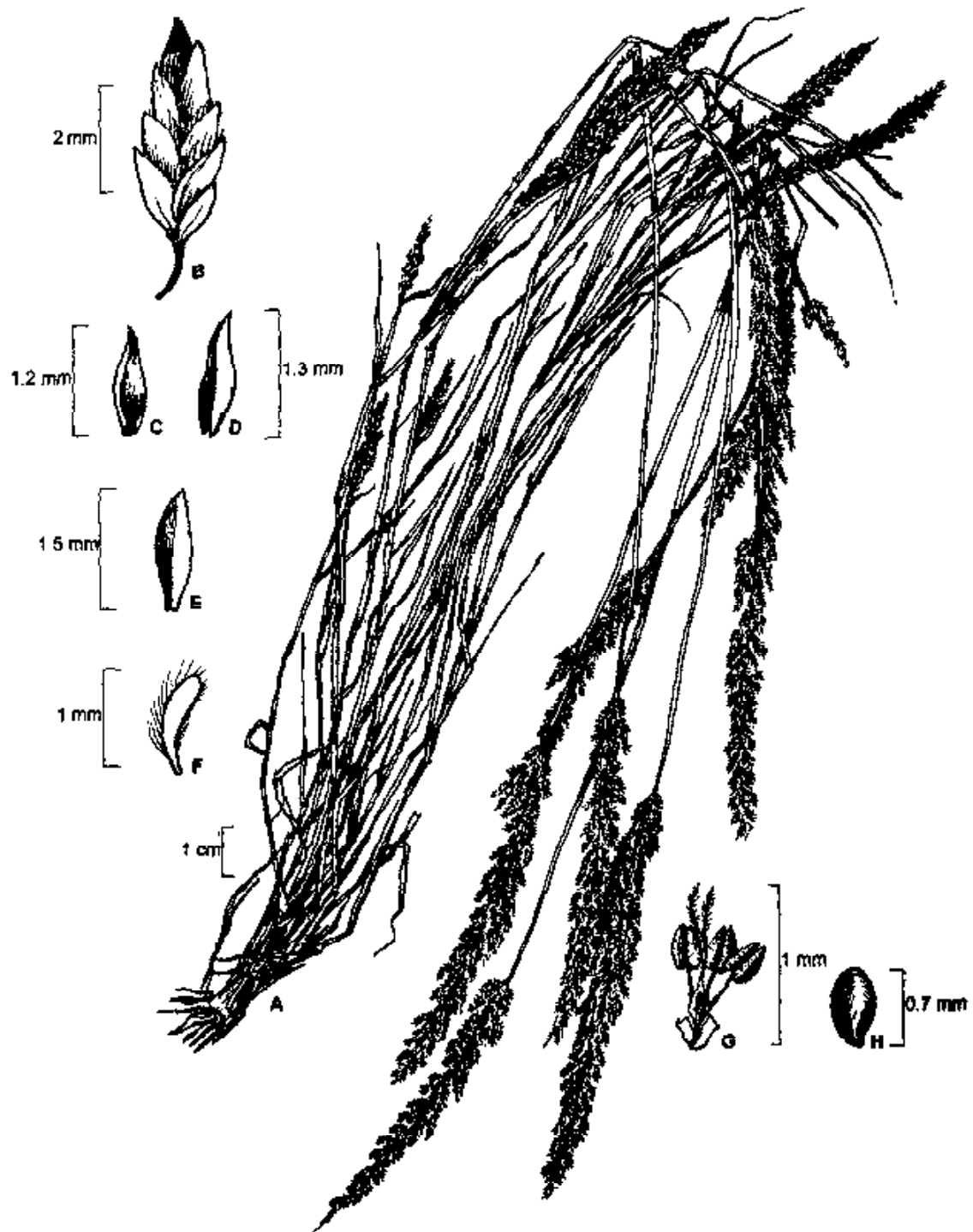


Fig. 90(A - H). *Eragrostis coarctata* Stapf
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Grain

scabrid on keel. Anthers ca 0.2 mm long, purplish. Ovary oblong. Grains oblong or ellipsoid, ca 0.5 mm long, brownish.

Fl. & Fr.: Dec. - April.

Habitat: Bunds of rice fields, with *Eragrostis japonica*, *Fimbristylis miliacea* and *Paspalidium geminatum*.

Distrib.: Trop. Africa and Asia. TN: All districts. GM: Common in the interior, appears rare on coast. Once collected near Chinnamuttom in Kanyakumari. Appears not to have been collected on the coast so far.

Specimens examined: (Total 132) PD & PU 107017.

5. *E. japonica* (Thunb.) Trin. in *Mém. Acad. Imp. Sci. St. Pétersbourg*, Sér. 6, Sci. Math. 1: 405. 1831; FPM 1826. 1934; GBCIP 509. 1960; FTC 3: 1855. 1983; FTN 3: 114. 1989; RHFC 8: 212. 1994. *Poa japonica* Thunb., Fl. Jap. 51. 1784. *Eragrostis interrupta* Lam., Tabl. Encycl. 1: 185. 1791; FBI 7: 316. 1896 incl. vars. *E. diarrhena* (Schult.) Steud., Syn. Pl. Glumac. 1: 266. 1854. *Diandrochloa diarrhena* (Schult.) A.N. Henry in Bull. Bot. Surv. India 9: 290. 1968. *D. japonica* (Thunb.) A.N. Henry in Bull. Bot. Surv. India 9: 290. 1968. [*Kanjirapul*] (Fig. 91)

Annual; culms tufted, erect, 30 - 90 cm, eglandular. Leaves linear, acuminate, to 2.5 x 0.5 cm, glabrous; ligule membranous; sheaths glabrous. Panicles to 25 cm long, 1.5 - 2 cm wide, interrupted; branches subwhorled or solitary; rachis minutely scabrid. Spikelets lanceolate, 1.2 - 2.5 x 0.8 - 1 mm, 6 - 10-flowered; lower glume ovate, acute, ca 0.7 x 0.3 mm, 1-nerved; upper glume ovate or oblong, subacute or obtuse, ca 0.8 x 0.4 mm, 1-nerved; lemmas oblong or elliptic, obtuse, ca 1 x 0.5 mm, 3-nerved; paleas lanceolate, obtuse, keeled, ca 0.8 x 0.4 mm. Ovary obovoid. Grains obovoid or elliptic, ca 0.5 mm long, brownish.

Fl. & Fr.: Nov. - Feb.

Habitat: Weed in rice fields, with *Eragrostis gangetica*, *Fimbristylis* spp., *Paspalidium geminatum* etc.

Distrib.: Trop. Asia. TN: All districts. GM: Frequent on mainland coast. Collected on mainland coast in Kanyakumari. Earlier collected once on Kurusadai Island, rare.

Specimens examined: (Total 46) PD & PU 106653, 107021, 107031; Ku Is. KR 21599.

6. *E. maderaspatana* Bor, Grasses 509. 1960; FTN 3: 114. 1989. *E. willdenowiana* Nees ex Stapf in Fl. Brit. India 7: 322. 1896, non Nees ex Hook. & Arn. 1838; HSIG tt. 223 & 224. 1921; FPM 1827. 1934.

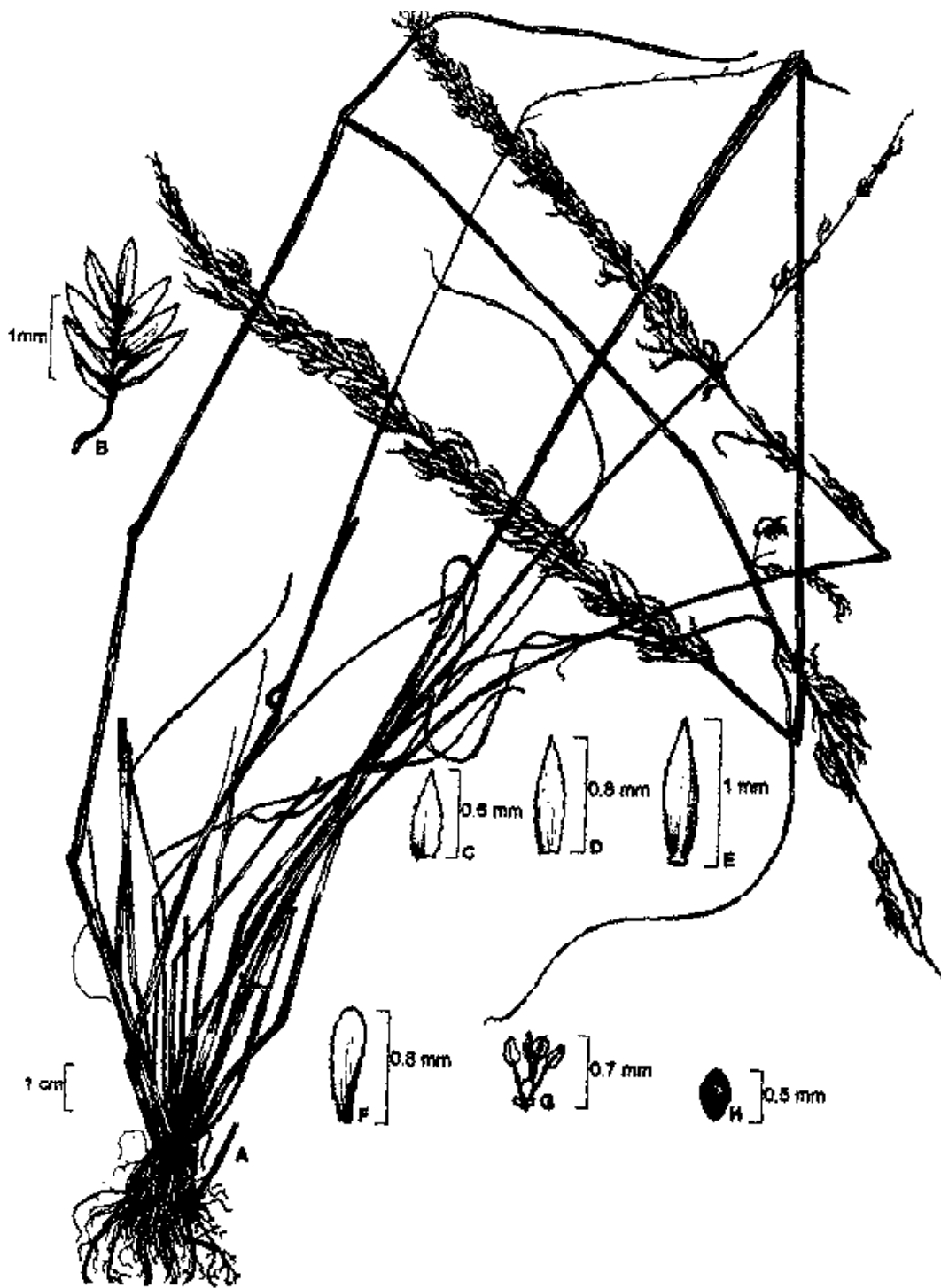


Fig. 91(A - H). *Eragrostis japonica* (Thunb.) Trin.
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Grain

Annual; culms caespitose, erect, 10 - 25 cm, glandular below nodes, glabrous. Leaves linear, acuminate, 1.5 - 5 x 0.1 - 0.2 mm; sheaths ciliate along margins, bearded at mouth; ligule membranous. Panicles effuse, 5 - 10 cm long. Spikelets ovate, 0.4 - 1.5 x 1 - 1.3 mm, 9 - 30-flowered; lower glume ovate, subacute, ca 1 x 0.3 mm, 1-nerved; upper glume broadly ovate, acute, ca 1.4 x 0.1 mm, 1-nerved; lemmas broadly ovate or elliptic, obtuse-subacute, ca 1.5 x 1.1 mm, 3-nerved; paleas lanceolate, obtuse, keeled, ca 1.8 x 0.5 mm, minutely scabrid on keel. Anthers oblong. Ovary oblong. Grains oblong or ellipsoid, ca 0.5 mm long, compressed, pale brownish.

Fl. & Fr.: Nov. - March.

Habitat: Wastelands, with *Eragrostis amabilis*, *Indigofera* spp., *Zornia diphylla* etc.

Distrib.: S. India. Bor (1960) also recorded for Sri Lanka. But Lazarides (1994) did not include it. TN: Coimbatore, Kanyakumari, Ramanathapuram, Tirunelveli and Tuticorin. GM: Collected on mainland coast twice in Kanyakumari and once at the Tuticorin port. Other collections at MH include 2 from interior in Ramanathapuram and a few from Coimbatore, an interior district. Apparently not a common grass.

Specimens examined: (Total 10) PD & PU 107083, 107381; SAM 106409.

7. *E. minor* Host, Icon. Descr. Gram. Austriac. 4: 15. 1809; FBI 7: 321. 1896; FTC 3: 1855. 1983; FIFTC t. 775. 1988; FTN 3: 114. 1989; RHFC 8: 219. 1994. *E. poaeoides* P. Beauv., Ess. Agrostogr. 162. 1812; FPM 1827. 1934; GBCIP 512. 1960.

Annual; culms tufted, erect, 20 - 30 cm, glabrous. Leaves linear, acuminate, 5 - 15 x 0.3 - 0.5 cm, pilose; ligule membranous with a fringe of hairs; sheaths bearded at mouth. Panicles effuse, 15 - 20 x 1.5 - 4 cm, branched; lower branches not whorled, to 4.5 cm long, glabrous at branch axil; rachis glabrous with a glandular ring. Spikelets 5 - 6 x 1 - 1.5 mm, 5 - 15-flowered; lower glume oblong, obtuse, ca 1 x 0.5 mm, nerveless; upper glume ovate, acute, ca 1.2 x 0.7 mm, 1-nerved; lemmas broadly ovate, subacute, ca 1.8 x 1.2 mm, 3-nerved; lateral nerves fairly close to margins; paleas lanceolate, obtuse, keeled, ca 1.7 x 0.5 mm, scabrid. Anthers linear, ca 0.4 mm long. Ovary oblong, ca 0.3 mm long. Grains oblong, obtuse, ca 0.8 x 0.3 mm, dorsally grooved.

Fl. & Fr.: Nov. - March.

Habitat: Cultivated fields.

Distrib.: India to the Mediterranean. TN: Coimbatore, Kanyakumari, Nilgiri, N. Arcot, Ramanathapuram, Salem and Tirunelveli. Earlier collected at Anjukramam in Kanyakumari, a little away from the coast, may occur on the coast.

Specimens examined: (Total 16) ANH 61563.

8. *E. pilosa* P. Beauv., Ess. Agrostogr. 71, 162, 175, 1812; FBI 7: 323. 1896; HSIG t. 225. 1921; FPM 1827. 1934; GBCIP 512. 1960; FTC 3: 1856. 1983; FIFTC t. 778. 1988; FTN 3: 115. 1989; RHFC 8: 217. 1994.

Annual; culms caespitose, erect, 10 - 45 cm, glabrous, eglandular. Leaves linear, acuminate, 3 - 12 x 0.1 - 0.3 cm, glabrous; ligule membranous with a fringe of hairs; sheaths 3 - 6 cm long, bearded at mouth. Panicles effuse, 10 - 25 cm long; branches to 10 cm long; lower branches whorled, bearded at base, scabrid towards apex. Spikelets linear, 3 - 5 x 0.8 - 1 mm, 7 - 9-flowered; lower glume ovate, subacute, ca 0.5 mm long; upper glume ovate, obtuse or subacute, ca 0.8 mm long, 1-nerved; lemmas broadly ovate, subacute, ca 1 mm long, 3-nerved; paleas oblong, obtuse, keeled, not ciliate on keel. Anthers linear, ca 0.2 mm long, purplish. Ovary oblong, ca 0.3 mm long. Grains oblong or elliptic, 0.5 - 0.8 mm long, pale brownish.

Fl. & Fr.: Sept. - Dec.

Habitat: Open wastelands, with *Chrysopogon fulvus*, *Cyperus stoloniferus* etc.

Distrib.: Old World tropics, throughout India. TN: All districts. GM: Mainland coast, rare.

Common in the interior but rare on the coast. Collected only twice in the region in Ramanathapuram and Kanyakumari.

Specimens examined: (Total 61) SAM 106438; VB 2326.

9. *E. riparia* (Willd.) Nees in Mart., Fl. Bras. Enum. Pl. 2: 512. 1829; FPM 1825. 1934; GBCIP 513. 1960; FTC 3: 1857. 1983; FIFTC t. 780. 1988; FTN 3: 115. 1989; RHFC 8: 220. 1994. *Poa riparia* Willd. in Ges. Naturf. Freunde Berlin Neue Schriften 4: 185. 1803. *Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult. var. *riparia* (Willd.) Stapf in Fl. Brit. India 7: 315. 1896. (Fig. 92)

Perennial; culms tufted, ca 20 cm high, slender, wiry, often geniculate at base, glabrous. Leaves linear, involute, acute, ca 3 x 0.4 cm, glabrous; ligule with a fringe of hairs; sheaths ca 1 cm long, bearded at mouth. Panicles spiciform, ovate, acute, ca 2 x 0.5 cm; rachis smooth. Spikelets lanceolate-ovate, ca 2 x 1 mm, 6-flowered; lower glume ovate, acuminate, ca 1.25 x 0.5 mm, 1-nerved; upper glume ovate, acute, ca 1 x 0.5 mm, 1-nerved; lemmas broadly ovate, obtuse-subacute, 3-nerved; lateral nerves not close to margin; paleas oblong, obtuse, ca 1 x 0.4 mm, keeled, shortly ciliate on keel. Anthers oblong, ca 0.2 mm long, purplish. Ovary oblong, ca 0.2 x 0.1 mm. Grains oblong-obovoid, ca 0.5 mm long, dorsally grooved, stramineous brown.

Fl. & Fr.: Almost throughout the year.

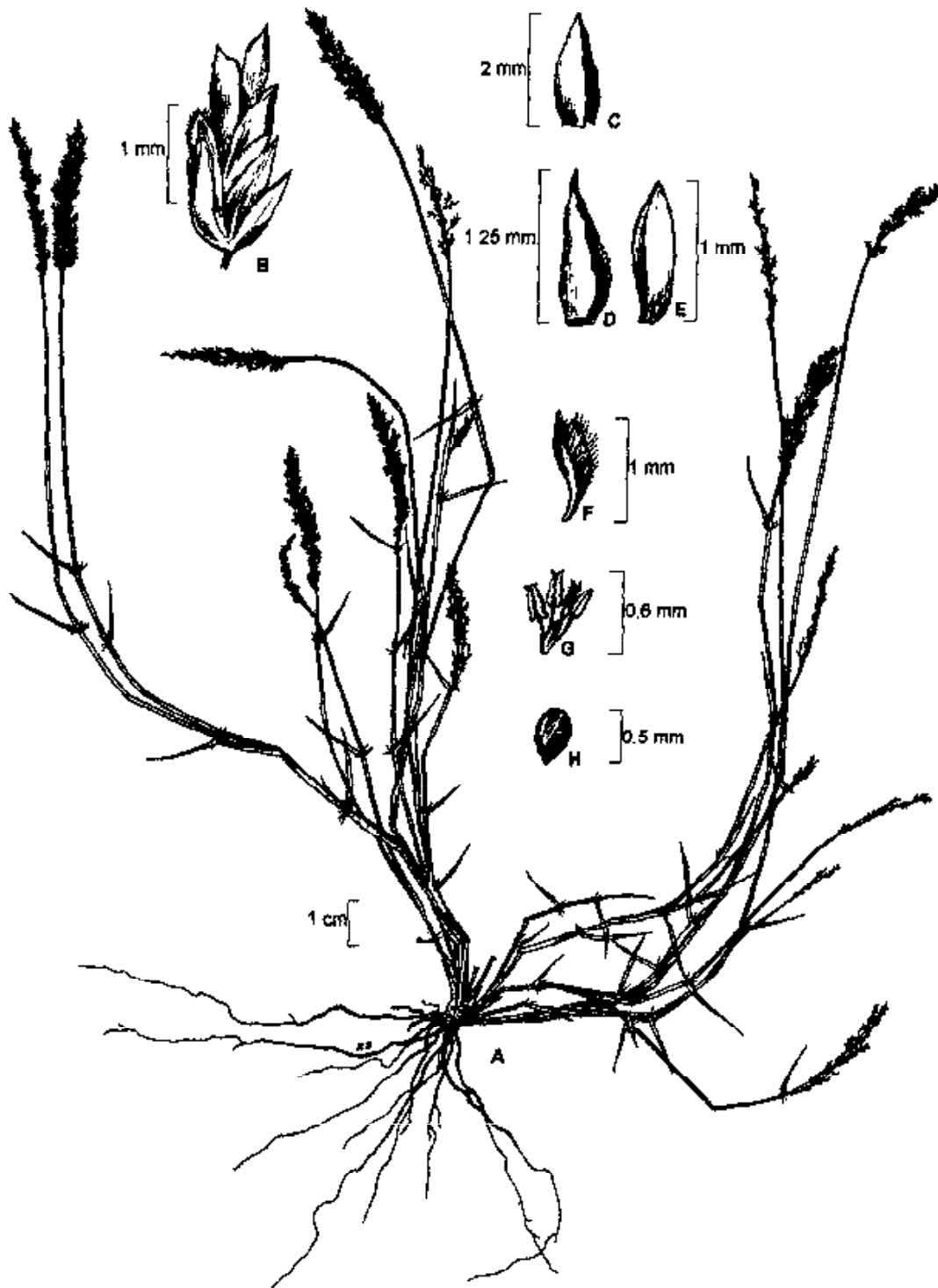


Fig. 92(A - H). *Eragrostis riparia* (Willd.) Nees
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Grain

Habitat: Sandy seashores, with *Aerva lanata*, *Hedyotis puberula* and *Vernonia cinerea*.

Distrib.: Papua New Guinea, Philippines, S. India and Sri Lanka. TN: All districts. GM: Frequent on mainland coast, but a little rare on islands. Collected on Kurusadai and Valai Islands and mainland coasts in Ramanathapuram and Kanyakumari only.

Specimens examined: (Total 21) PD 100453; VB 1009, 1150; Ku Is. DD & SRR s.n.; VB 1390; Va Is. KSK 102029.

10. *E. viscosa* (Retz.) Trin. in Mém. Acad. Imp. Sci. St. Pétersbourg, Sér. 6, Sci. Math. 1: 397, 1831; FPM 1826. 1934; GBCIP 515. 1960; FTC 3: 1859. 1983; FIFTC t. 784. 1988; FTN 3: 116. 1989; RHFC 8: 227. 1994. *Poa viscosa* Retz., Obs. Bot. 4: 20. 1786. *Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult. var. *viscosa* (Retz.) Stapf in Fl. Brit. India 7: 315. 1896. (Fig. 93)

Annual; culms caespitose, to 40 cm high, glabrous, viscous-glandular below nodes. Leaves linear, acuminate, 1.5 - 10 x 0.3 - 0.4 cm, glabrous; ligule membranous; sheaths 1.5 - 3 cm long, hairy along margins, bearded at mouth, pale purplish green. Panicles effuse, lanceolate-oblong, 2 - 12 cm long; rachis hairy at nodes, glandular. Spikelets lanceolate-ovate, 2.5 - 4 x 1.4 - 1.6 mm, 3 - 8-flowered; lower glume ovate, obtuse, subacute, 0.6 - 0.9 x 0.3 - 0.5 mm, 1-nerved; upper glume ovate, acute, ca 1 x 0.6 mm, 1-nerved, scabrid on nerve; lemmas oblong-elliptic, rounded or obtuse, ca 1.3 x 0.7 mm, 3-nerved; lateral nerves close to margins; paleas lanceolate-oblong or elliptic, obtuse, ca 1.1 x 0.4 mm, keeled, ciliate on keel. Anthers ca 0.3 mm long. Ovary oblong, ca 0.3 mm long. Grains oblong-ovoid, ca 0.5 mm long, dorsally grooved, stramineous brown.

Fl. & Fr.: Dec. - March.

Habitat: Sandy seashores and wastelands, with *Eragrostis amabilis*, *Hedyotis puberula*, *Vigna trilobata* etc.

Distrib.: India and Trop. and S. Africa. TN: Chengalpattu, Coimbatore, Pudukkottai, Ramanathapuram, S. Arcot, Tiruchirapalli and Tirumelveli. GM: Frequent on mainland coast and Nallathanni Island. Earlier collected on Kurusadai Island.

Specimens examined: (Total 46) KSK 102857; PD & PU 103586, 106480; Ku Is. DD & SRR s.n.

Use: The species of *Eragrostis* form a good fodder.

Of the 10 species that occur in the Gulf of Mannar only were 5 collected on islands. *E. amabilis* var. *amabilis* and *E. amabilis* var. *insularis* occur on most islands. *E. coarctata* occurs on 3, *E. riparia* on 2, and *E. viscosa* and *E. japonica* occur only on one island each. The small grain of *E. amabilis* (= *E. tenella*) which are free from glumes are reported to

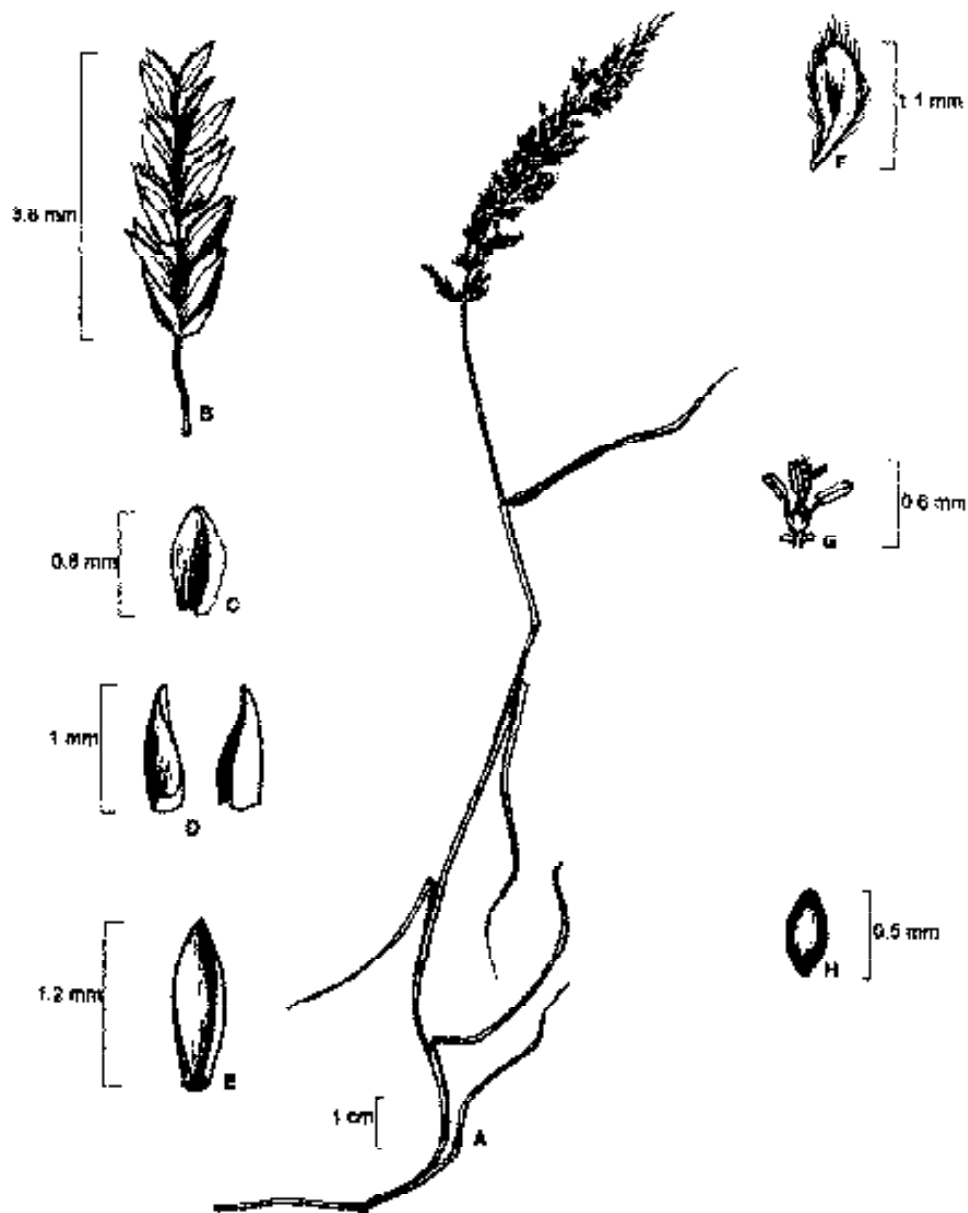


Fig. 93(A - H). *Eragrostis viscosa* (Kunt.) Trin.

A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Grain

float and get dispersed (Ridley, 1930). All species of the genus have a similar grain. As a result, the occurrence of only a few species on the islands and only 2 of them on more islands may indicate that dispersal by water appears only a matter of chance. The whole genus appears to owe its dispersal to human agency, wind as well as floating timber. Birds (endozoochory) may also be involved.

24. *Eremopogon* Stapf

Old World tropics, ca 20 species and one in India.

E. foveolatus (Delile) Stapf in Prain, Fl. Trop. Africa 9: 183. 1917; FPM 1751. 1934; GBCIP 148. 1960; FTN 3: 116. 1989. *Andropogon foveolatus* Delile, Descr. Egypt. Hist. Nat. 16, t. 8, f. 2. 1812; FBI 7: 168. 1896; HSIG tt. 148 & 149. 1921. *Dichanthium foveolatum* (Delile) Roberty in Boissiera 9: 170. 1960; FTC 3: 1834. 1983. (Fig. 94)

Perennial; culms tufted, 20 - 70 cm high, glabrous. Leaves linear, acuminate, 6 - 15 x 0.2 - 0.3 cm, scabrid; ligule with a fringe of hairs; sheaths 2 - 4 cm long. Raceme solitary, ca 5 cm long. Sessile spikelets lanceolate, ca 3 x 0.6 mm, awned; lower glume oblong, notched or bifid, ca 2.8 x 0.6 mm, pitted, ciliate towards apex, 5-nerved; upper glume obovate, shortly aristate, ca 2.8 x 0.6 mm, 3-nerved; lower lemma oblong, truncate, ca 2 x 0.5 mm; upper lemma an awn of ca 16.5 mm long, purplish brown. Lodicules 2. Stamens 3; anthers linear, ca 1 mm long; styles 2, ca 1 mm long; stigmas 2, plumose. Grains obovoid, ca 1.5 mm long, yellowish brown. Pedicellate spikelet staminate, ca 4 x 0.5 mm; pedicel ca 1 mm long, ciliate; lower glume ovate-lanceolate, acute, ca 3 x 1 mm, pitted, 5-nerved; upper glume, lanceolate, acute, keeled, ca 3 x 0.5 mm; lemma truncate, ca 2 mm long. Lodicules 2. Stamens 3; filaments very short; anthers linear, ca 1 mm long.

Fl. & Fr.: Dec. - March.

Habitat: Sandy localities and road sides, with *Chloris barbata* and *Cymbopogon caestus* on islands.

Distrib.: India and Trop. Africa. TN: Chengalpattu, Coimbatore, S. Arcot and Tirunelveli. GM: Occasional on mainland coast and Karaichalli, Kaswari, Nallathanni, Valai and Van Islands.

Use: A fodder grass.

Specimens examined: (Total 29) PD 102140; PD & PU 107226; Kc Is. PD 102088; PD & PU 107298; Ka Is. PD 102195; Nt Is. PD & PU 106631; Va Is. KSK 102031; Van Is. KSK 102171.

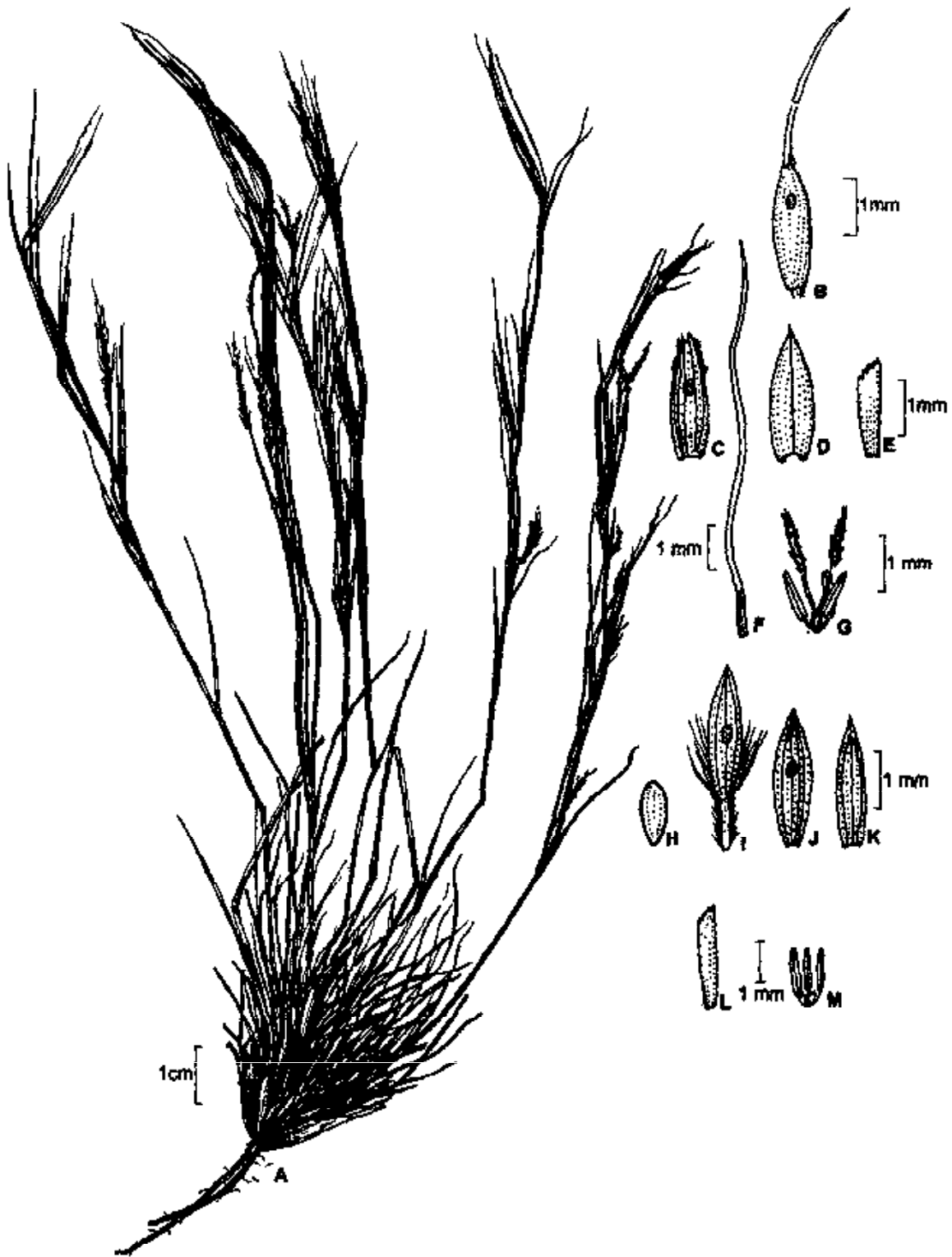


Fig. 94(A - M). *Eremopogon foveolatus* (Dahlie) Stapf

A. Habit B. Sessile spikelet C. Lower glume D. Upper glume E. Lower lemma F. Upper lemma
 G. Pistil & stamens H. Grain I. Pedicellate spikelet J. Lower glume K. Upper glume L. Lemma
 M. Stamens & lodicules

25. *Eriochloa* Kunth

Tropics and subtropics, ca 30 species, 2 in India and one in Tamil Nadu.

E. procera (Retz.) C.E. Hubb. in Bull. Misc. Inform. 1930: 256. 1930: FPM 1767 1934; GBCIP 312. 1960; IFTC tt. 868 & 869. 1982; FTC 3: 1859. 1983; FTN 3: 116. 1989; RBFC 8: 233. 1994. *Agrostis procera* Retz., Obs. Bot. 4: 19. 1786. *Eriochloa polystachya* Mart. nom Kunth 1816; FBI 7: 20. 1896; HSIG tt. 78 & 79. 1921. [*Kanganipul*]

Semiaquatic perennial; culms tufted, to 1.5 m high; nodes woody, glabrous. Leaves linear, acute-acuminate, ca 15 x 0.5 cm; ligule fringed, ca 0.5 mm long; sheaths to 20 cm long, glabrous. Panicles 15 - 25 cm long, loose; branches spreading; pedicels variable in length. Spikelets elliptic to lanceolate, ca 3.5 x 0.8 mm, softly silk-hairy, greenish purple lower glume callus-like or as a basal ring; upper glume ovate, acute or subacute, ca 3 x 1 mm, silk hairy, 5-nerved. Lower floret sterile; lemma ovate-lanceolate, acute or subacute, ca 3 x 1 mm, 5-nerved. Upper floret bisexual; lemma elliptic, mucronate, ca 2.5 x 1 mm, coriaceous, 3-nerved; nerves obscure; palea ovate-oblong, ca 2 x 0.8 mm, coriaceous. Stamens 3; anthers ca 1 mm long, violet; connectives yellow. Ovary oblong, ca 1 mm long; styles 2; stigmas 2, reddish brown. Grains oblong, dorsally compressed, ca 1.5 mm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Frequent in semiaquatic situations and wet rice fields, with *Ammannia baccifera*, *Ischaemum indicum* etc.

Distrib.: India, Myanmar, SE. Asia, Sri Lanka and Trop. Africa. TN: All districts. GM: Common on mainland coast, collected at Kuttam in Tirunelveli and Mukkani and Vembat in Tuticorin.

Use: A fodder grass.

Specimens examined: (Total 87) KSK 102888A; PD & PU 107253, 107259, 107343; SAM 104702.

26. *Hatopyrum* Stapf

Indian Ocean coasts, unispecific.

H. mucronatum (L.) Stapf in Hooker's Icon. Pl. t. 2448. 1896; FBI 7: 328. 1896; FPM 1828. 1934; GBCIP 516. 1960; FTN 3: 119. 1989; RBFC 8: 246. 1994. *Umola mucronata* L., Sp. Pl. ed. 2, 1: 104. 1762. (Fig. 95)

Stout perennial; rootstock woody, creeping, to 10 m or longer; culms tufted, erect, ca 1 - 1.5 m. Leaves linear, acute, convolute, ca 20 x 0.5 cm; ligule with a fringe of hairs. ca

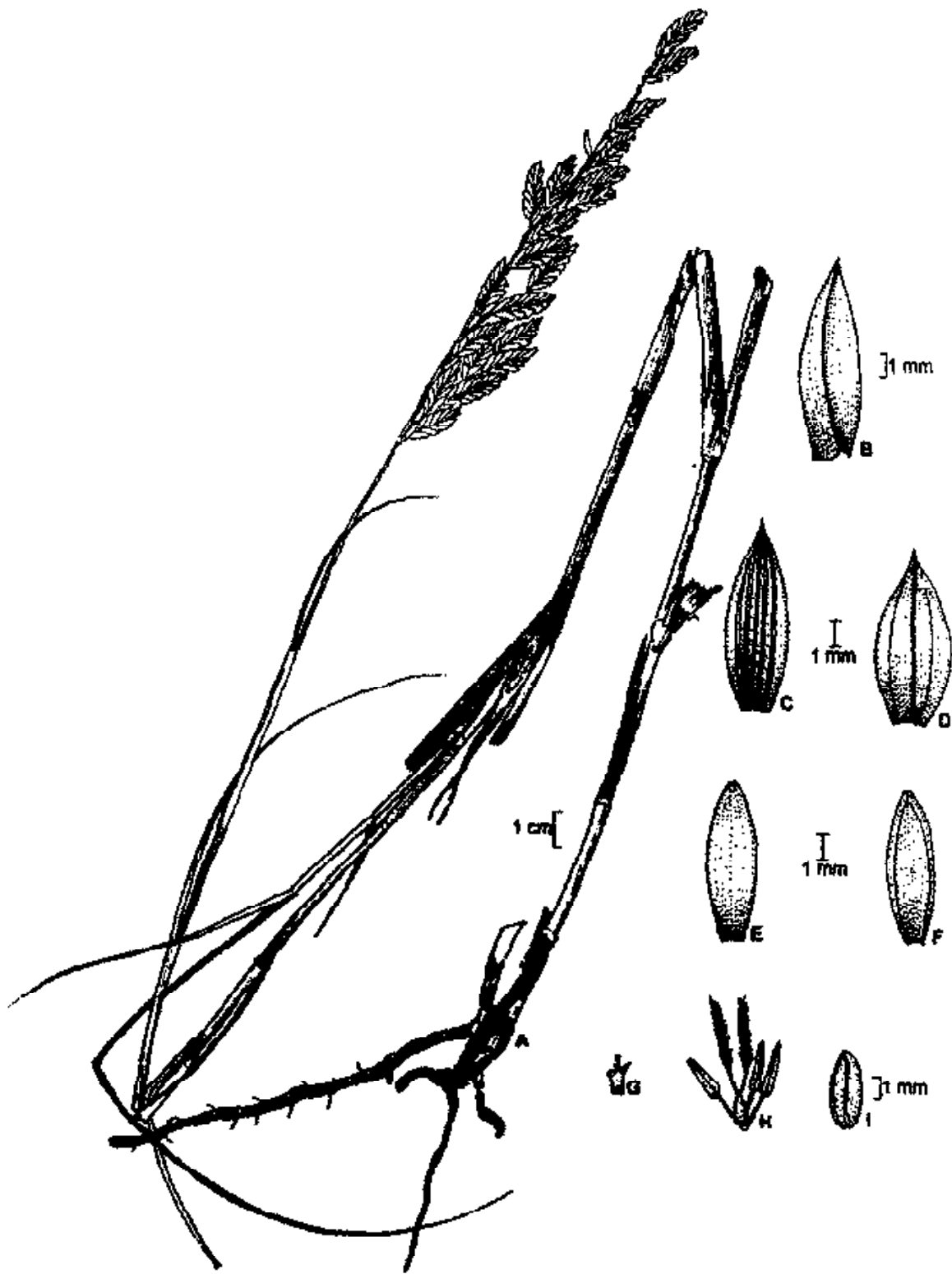


Fig. 95(A - I). *Halopyrum uncrenatum* (L.) Stapf
 A. Habit B. Lower glume C. Upper glume D. Lemma E & F. Pales
 dorsal & ventral views G. Lodicule H. Pistil & stamens I. Grain

0.6 cm wide; sheaths stramineous. Panicles linear-lanceolate, 10 - 25 cm long. Spikelets to 30-flowered, ovate, laterally compressed; acuminate, 1.5 - 3 x 0.7 - 1 cm; glumes subequal, coriaceous; lower glume lanceolate-ovate, acuminate, 6.5 - 8 x 2 - 2.3 mm, 2-nerved, stramineous green; upper glume ovate, acuminate, ca 7.8 x 2.5 mm, 5-nerved; lemmas closely distichous, broadly ovate, apiculate, ca 6.8 x 3 mm, coriaceous, 3-nerved; paleas lanceolate-ovate, obtuse, ca 6.5 x 2 mm, keeled, nerveless. Lodicules 2, truncate, ca 1.2 x 0.5 mm, membranous. Stamens 3; filaments slender, ca 2 mm long; anthers linear, ca 2 mm long. Ovary oblong, ca 1.5 mm long; styles 2, ca 1 mm long; stigmas 2, ca 2 mm long, plumose. Grains oblong-ellipsoid, compressed, deeply grooved on one side, ca 2.5 x 1 mm, pale reddish brown.

Fl. & Fr.: Throughout the year.

Habitat: Sandy seashores, with *Cyperus conglomeratus* subsp. *pachyrrhizus* and *Spinifex littoreus*.

Distrib.: TN: Kanyakumari, Ramanathapuram, Tirunelveli and Tuticorin. GM: Very common on all islands. Extremely sporadic on mainland coast. It is confined to the Gulf of Mannar in Tamil Nadu. The present explorations show that certain insular factors are certainly responsible for its very successful survival on islands. Though Ridley (1930) doubted, seawater dispersal might have enabled this species to become wide-spread. It is one of the few species not infested by the parasite, *Cassytha filiformis*.

Uses: Very good sand binder. The dry spikes may be used in indoor decorations.

Specimens examined: (Total 28) PD 102066; Ka Is. PD 102185; Kc Is. PD 102089; Ku Is. VB 2173; Mp Is. PD 101438; Mul Is. KSK 102040; Nt Is. PD 101602; Pu Is. PD 100560; Sh Is. PD 100362; Va Is. KSK 102028.

27. *Heteropogon* Pers.

Tropics, ca 6 species, 6 in India, 4 in Tamil Nadu and one in GM.

H. contortus (L.) P. Beauv. ex Roem. & Schult., Syst. Veg. 2: 836. 1817; FPM 1743. 1934; GBCIP 163, t. 6. 1960; FTC 3: 1862. 1983; FTN 3: 120. 1989; RHFC 8: 252. 1994. *Andropogon contortus* L., Sp. Pl. 1045. 1753; FBI 7: 199. 1896; HSIG tt. 162 & 163. 1921.

Perennial; culms densely tufted, 25 - 100 cm high, glabrous. Leaves linear-lanceolate, acute, 2 - 25 x 0.2 - 0.6 cm; ligule membranous, fimbriate; sheaths keeled, long-hairy towards mouth. Racemes 3 - 6 cm long. Sessile spikelet 5 - 8 mm long; lower glume lanceolate or linear-lanceolate, 5 - 8 x 1 - 1.5 mm, glabrous or tubercle-based-hairy on dorsal side, many-nerved; upper glume elliptic-lanceolate or lanceolate, 5 - 7 x 0.8 - 1 mm, hyaline along margins, ciliate, 3-nerved. Lower floret sterile; lemma lanceolate, 4 - 8 x 1 - 1.5 mm, ciliate along margins, 3-nerved. Upper floret staminate; lemma linear-lanceolate, 4 - 6 x 0.8 - 1.1

mm, ciliate along margins towards tip, 1 - 3-nerved. Stamens 3; anthers linear, ca 3 mm long. Pedicellate spikelet elliptic-lanceolate, 5 - 8 mm long; pedicel 1 - 2 mm long, glabrous; lower glume oblong-lanceolate, 5 - 8 x 1.5 - 2 mm, broadly winged on one margin, tubercle-based-long-hairy, many-nerved; upper glume elliptic-lanceolate, 5 - 7 x 0.8 - 1 mm, hyaline along margins, ciliate, 3-nerved; lemmas similar to that of sessile spikelet. Sessile spikelet linear or linear-lanceolate, awned; callus 2 - 4 mm long, hairy; lower glume oblong, rounded, 5 - 8 x 1 - 1.5 mm, pubescent above, 9 - 11-nerved; upper glume linear, subacute-acute, 5 - 8 x 1 - 1.5 mm, sparsely pubescent, 3-nerved. Lower floret sterile; lemma oblong, acute, 1 - 3 x 0.5 - 1 mm, ciliate towards apex, 1-nerved, epaleate. Upper floret bisexual; lemma awn-like, 3 - 10 cm long. Stamens 3. Ovary oblong; styles 2; stigmas 2, feathery. Grains lanceolate, ca 2.5 mm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet localities and bunds of rice fields, with *Eragrostis japonica* and *Fimbristylis millacea*.

Distrib.: Tropics and subtropics. TN: All districts. GM: Mainland coast, frequent.

Uses: A good fodder when young. Roots stimulant and diuretic. Cellulose content of the grass is sufficiently high to warrant its utilization for paper manufacture.

Specimens examined: (Total 118) PD & PU 107028; SAM 106416.

28. *Holcolemma* Stapf & C.E. Hubb.

India, E. Africa, Australia and Sri Lanka, 4 species and one in India.

H. canaliculatum (Nees ex Steud.) Stapf & C.E. Hubb. in Bull. Misc. Inform. 1929: 246. 1929; FPM 1779. 1934; GBCIP 313. 1960; BOBSI 24: 241. 1982; FTN 3: 121. 1989; Karth. & al., Fl. Ind. Enum. Monocot. 227. 1989; JETB 14: 495. 1990. *Panicum canaliculatum* Nees ex Steud., Syn. Pl. Glumac. 1: 155. 1854; FBI 7: 43. 1896. *P. stenostachyum* Thwaites, Enum. Pl. Zeyl. 436. 1864. *Hemigymnia canaliculata* (Nees ex Steud.) Alston in Trimen, Handb. Fl. Ceylon 6 (Suppl.): 324. 1931. (Fig. 96)

Annual; culms tufted, slender, arising from bulb-like light brownish rootstocks, ca 45 cm high, glabrous, rooting at lower nodes. Leaves linear, acuminate, 4 - 15 x 0.3 - 0.5 cm, glabrous; ligule conical, ca 3 mm wide, membranous with a fringe of hairs; sheaths shorter than internodes, to 7 cm long. Panicles to 12 cm long; rachis glabrous; spikes 0.5 - 1 cm long. Spikelets 7 - 12, lanceolate, 2.5 - 3 x 1.2 - 1.5 mm; lower glume ovate, acute, ca 1.1 x 1 mm, 3-nerved, pale greenish; upper glume ovate or elliptic, acute, ca 1.5 x 1 mm, 5-nerved; nerves prominent, greenish. Lower floret staminate; lemma ovate, acute, ca 2.7 x 1.5 mm, 7-nerved; palea oblong or elliptic, acute, ca 1.8 x 1 mm, folded along margins, 2-nerved. Lodicules 2, ca 0.3 mm long. Stamens 3; filaments ca 0.6 mm long; anthers ca

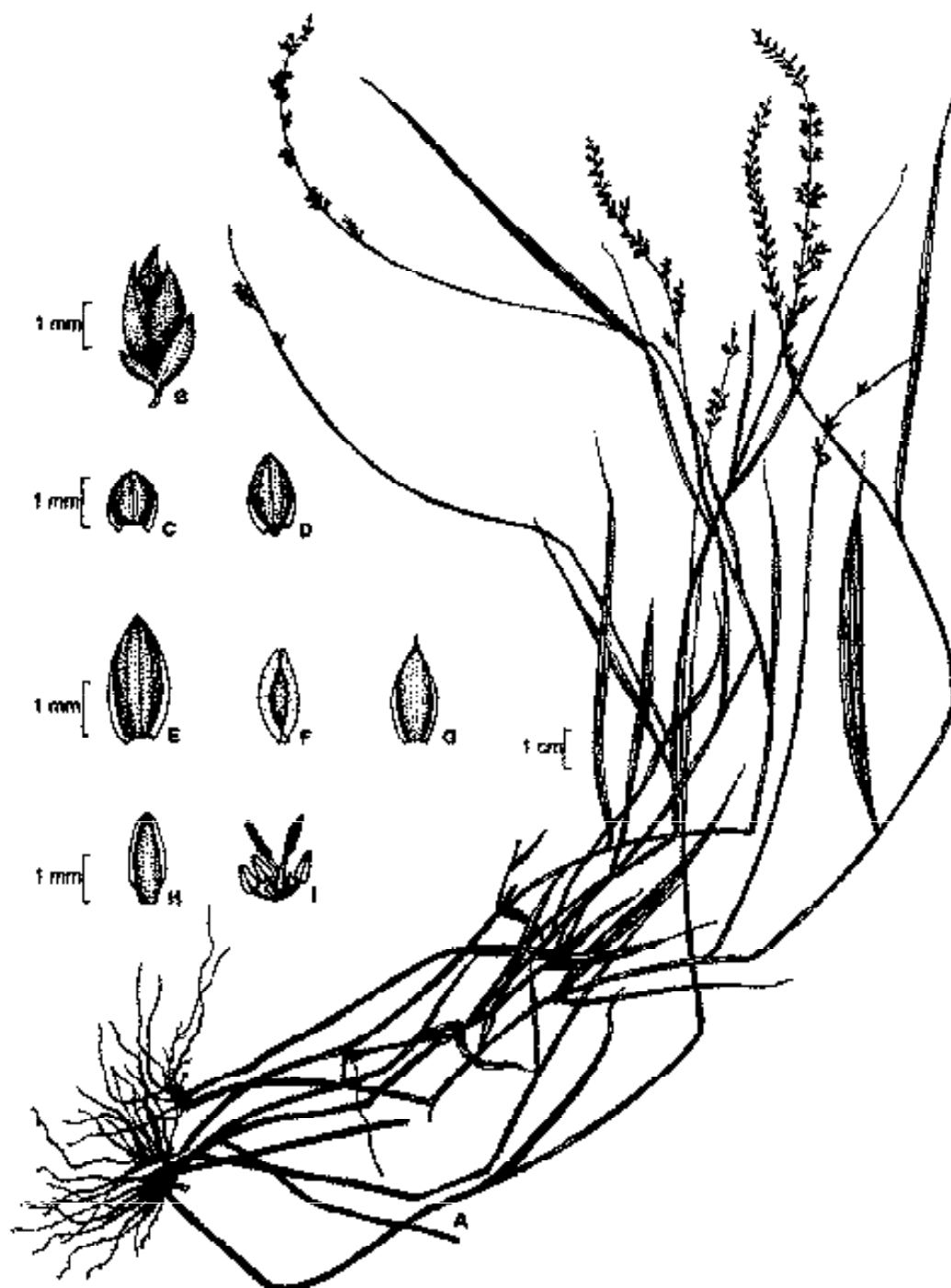


Fig. 96(A - I). *Holcolemma canaliculatum* (Nees ex Steud.) Stapf & C.E. Hubb.
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma of lower floret F. Palea of lower floret
 G. Lemma of upper floret H. Palea of upper floret I. Pistil & stamens

1.4 mm long, yellowish. Upper floret pistillate, ovate, ca 2.5 x 0.8 mm; lemma ovate, mucronate, ca 2.5 x 0.8 mm, transversely rugose; palea ovate, acute, ca 2.2 x 0.7 mm. Ovary oblong, ca 0.5 mm long; styles 2, ca 0.3 mm long; stigmas 2, ca 0.7 mm long, plumose, purplish-pink. Grains oblong, ca 1.2 x 0.5 mm, cream-coloured.

Fl. & Fr.: Aug. - Oct.

Habitat: Rice fields and on wet clayey/sandy soils, with grasses like *Brachiaria ramosa*, *Dactyloctenium aegyptium*, and *Digera muricata*.

Distrib.: S. India and Sri Lanka. Though many authors include Kenya as well under distribution, Clayton (1978), and Gould (1994) excluded Kenya. TN: Kanyakumari, Ramanathapuram and Tuticorin. GM: Once collected at Mukkani near Tambraparani estuary. Very rare.

Note: The type was collected by Wight in Peninsular India; precise locality not known. There were no specimen in any Indian herbarium earlier. It was collected by Srinivasan in 1980 in the vicinity of the foothills of the W. Ghats near Srivilliputhur. Thereafter it was collected by Balasubramaniam twice in the vicinity of Paramakudi in the plains of Ramanathapuram. This time around it was collected at Mukkani near the estuary of the Tambraparani river in Tuticorin. Not many plants were seen on the spot. It was recently collected at Nagarcoil in Kanyakumari which is a little away from seacoast. It was found to occur in the well-protected campus of a government office. Its existence may be due to the protection from grazing animals. From its distribution, particularly in the neighbouring Sri Lanka (Gould in RHFC 8: 254. 1994), it looks that it is a coastal species. However, it may also occur a little interior as indicated by some of the recent collections. But no collector has ever stated that it is a common grass. Present observations in the study area also corroborate that it is a rare species.

Specimens examined: JA 40; PD 107533; SAM 104695. Other specimens: SRS 63643; VB 1854, 2252.

29. *Imperata* Cirillo

Tropics and subtropics, 8 species and one in India.

I. cylindrica (L.) Raesch. var. *major* (Nees) C.E. Hubb. ex C.E. Hubb. & Vaughan, Grass. Maur. 96. 1940; GBCIP 170. 1960; FTC 3: 1864. 1983; FTN 3: 121. 1989. *I. königii* (Retz.) P. Beauv. var. *major* Nees, Fl. Afr. Austral. 90. 1841. *I. cylindrica* (L.) Raesch. var. *königii* (Retz.) T. Durand & Schinz., Consp. Fl. Afric. 5: 694. 1894; HSIG t. 128. 1921; FPM 1707. 1934. *Saccharum königii* Retz., Obs. Bot. 5: 16. 1798. *Imperata arundinacea* Cirillo, Pl. Rar. Neapol. 2: 26. 1792, p.p.; FBI 7: 106. 1896. *I. cylindrica* (L.) Raesch., Nomencl. Bot. ed. 3, 10. 1797; RHFC 8: 263. 1994. [Dharbaipul]

Perennial; culms tufted, 20 - 120 cm high, glabrous. Leaves lanceolate or linear-lanceolate, acuminate, 5 - 60 x 0.4 - 1.4 cm, glabrous, ciliate along margins towards base; ligule membranous, short-ciliate; sheaths 1.5 - 6 cm long, glabrous or pubescent, fibrous below. Panicles spiciform, cylindrical, 5 - 25 cm long, white-silky-hairy. Spikelets pedicellate, lanceolate or elliptic, 2.5 - 4.5 mm long, awnless; pedicels 1 - 3 mm long; lower glume lanceolate, 2.5 - 3 x 1 - 1.5 mm, silky-hairy towards base, 5-nerved; upper glume similar to lower glume. Lower floret sterile; lemma oblong-lanceolate, 1.5 - 2 x 0.8 - 1 mm, ciliate at apex; palea hyaline, similar to lemma. Upper floret bisexual; lemma elliptic-lanceolate, 1 - 1.5 x 0.8 - 1 mm, ciliate along margins at apex; palea obovate, 0.5 - 1 x 0.2 - 0.3 mm, hyaline. Stamens 2; anthers 2.5 - 3.5 mm long, orange-yellow. Ovary oblong; styles 2; stigmas 2. Grains oblong, 0.9 - 1 x 0.3 - 0.4 mm.

Fl. & Fr.: Almost throughout the year.

Habitat: Wet places, with *Bacopa monnieri*, *Eleocharis geniculata* and *Kyllinga monocephala*.

Distrib.: Warm and temperate parts of Asia, extending to Australia and E. and S. Africa. TN: All districts. GM: Mainland coast, occasional.

Specimens examined: (Total 36) PD & PU 107004.

30. *Isachne* R. Br.

Tropics and subtropics, ca 100 species, 25 in India, 10 in Tamil Nadu and one in GM.

I. globosa (Thunb.) Kuntze, Revis. Gen. Pl. 778. 1891; GBCIP 580. 1960; FTC 3: 1866. 1983; FIFTC t. 787. 1988; FTN 3: 122. 1989; RHFC 8: 265. 1994. *Miltum globosum* Thunb., Fl. Jap. 49. 1784. *Isachne australis* R. Br., Prodr. 196. 1810; FBI 7: 24. 1896. *I. dispar* auct. non Trin. 1828: FBI 7: 26. 1896, p.p.; FPM 1797. 1934; GBCIP 580. 1960, p.p.

Erect or decumbent, herb; culms glabrous, rooting at lower nodes. Leaves lanceolate, acuminate, 2 - 8 x 0.4 - 1.4 cm, pubescent; ligule with a fringe of hairs; sheaths glabrous, ciliate along one margin. Panicles 3 - 12 cm long; branches ascending. Spikelets subglobose, ca 1.5 mm long; lower glume obovate, acute, 1.5 - 2 x 1 - 1.2 mm, setose or scabrid, 7 - 9-nerved; upper glume orbicular, concave, ca 1.5 mm, 9-nerved. Lower floret staminate, oblong-elliptic, ca 2 x 1 mm; lemma elliptic-oblong, obtuse, ca 1.8 x 1 mm; palea similar to lemma, keeled. Lodicules 2. Stamens 3; anthers linear, ca 1 mm long. Upper floret bisexual, broadly elliptic, planoconvex, ca 1.8 x 1.2 mm; lemma broadly ovate, or orbicular, ca 1.5 x 1 mm, ciliate along margins, 5-nerved; palea broadly ovate or elliptic, ca 1.2 x 1 mm, incurved along margins. Lodicules 2. Stamens 3. Ovary oblong; styles 2, ca 0.5 mm long; stigmas 2, plumose, ca 0.4 mm long. Grains subglobose, planoconvex, ca 1 mm long, dark reddish brown.

Fl. & Fr.: Dec. - Feb.

Habitat: Wet localities and bunds of rice fields, with *Ammannia baccifera*, *Eclipta prostrata* and *Fimbristylis miliacea*.

Distrib.: Australia, India, Japan and Sri Lanka. TN: All districts. GM: Mainland coast, common.

Uses: A fodder grass, also used as a green manure.

Specimens examined: (Total 46) DD 86691; PD & PU 107029, 107036.

31. *Ischaemum* L.

Tropics and subtropics, ca 60 species, 43 in India, 13 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|---|----------------------|
| 1a. Ligule ca 0.5 mm long; racemes less than 3 cm long; spikelets less than 6 mm long | 1. <i>I. indicum</i> |
| b. Ligule ca 2.5 mm long; racemes more than 3 cm long; spikelets more than 6 mm long | 2. <i>I. rugosum</i> |

1. *I. indicum* (Houtt.) Merr. in *J. Arnold Arbor.* 19: 320. 1938; *GBCIP* 180. 1960; *FTC* 3: 1869. 1983; *FIFTC* tt. 790 & 791. 1988; *FTN* 3: 123. 1989; *RHFC* 8: 279. 1994. *Phleum indicum* Houtt., *Nat. Hist.* 13: 198, t. 90, f. 2. 1782. *Ischaemum ciliare* Retz., *Obs. Bot.* 6: 36. 1791; *FBI* 7: 133. 1896; *HSIG* tt. 135 & 136. 1921. *I. aristatum* sensu C.E.C. Fisch. in *FPM* 1721. 1934, non L. 1753. (Fig. 97)

Annual; culms tufted, terete, prostrate, geniculate or decumbent, glabrous, pubescent at nodes. Leaves linear, acute, 1.5 - 10 x 0.3 - 0.5 cm, hispid; sheaths glabrous. Racemes 2, linear, 1 - 3 cm long, appressed or spreading; rachis glabrous. Spikelets sessile and pedicellate. Sessile spikelet lanceolate, 5 - 6 x 1 - 1.3 mm, with ca 11 mm long awn; lower glume ovate, emarginate, basally inflexed, distinctly winged above, ca 4.2 x 2 mm, 11 - 13-nerved, yellowish green; upper glume lanceolate, acuminate, ca 5 x 1.5 mm, keeled towards apex, winged, 5-nerved, awned; awn ca 2.5 mm long, pale yellowish green. Lower floret staminate; lemma lanceolate, ca 3.5 x 1 mm, 1 - 3-nerved; palea lanceolate, keeled, ca 3.5 x 1 mm, hyaline. Anthers linear, ca 2 mm long. Upper floret bisexual; lemma linear, ca 3.5 x 0.7 mm, awned; awn ca 14 mm long; palea linear, obtuse, ca 3.8 x 0.7 mm, membranous. Anthers linear, ca 2 mm long. Ovary linear, ca 1 mm long. Pedicellate spikelet ovate, ca 5 x 1.2 mm, awned; awn ca 7 mm long; pedicel ca 4 mm long; lower glume boat-shaped, ca 4.8 x 1.5 mm, winged, awned, 11 - 13-nerved; upper glume cymbiform, ca 5.5 x 1.2 mm, keeled, awned, 5-nerved; lemma lanceolate or ovate, ca 3.5 x 1 mm; palea lanceolate, acute, keeled, ca 3.2 x 1 mm, membranous, hyaline. Stamens 3, ca 1.5 mm long.

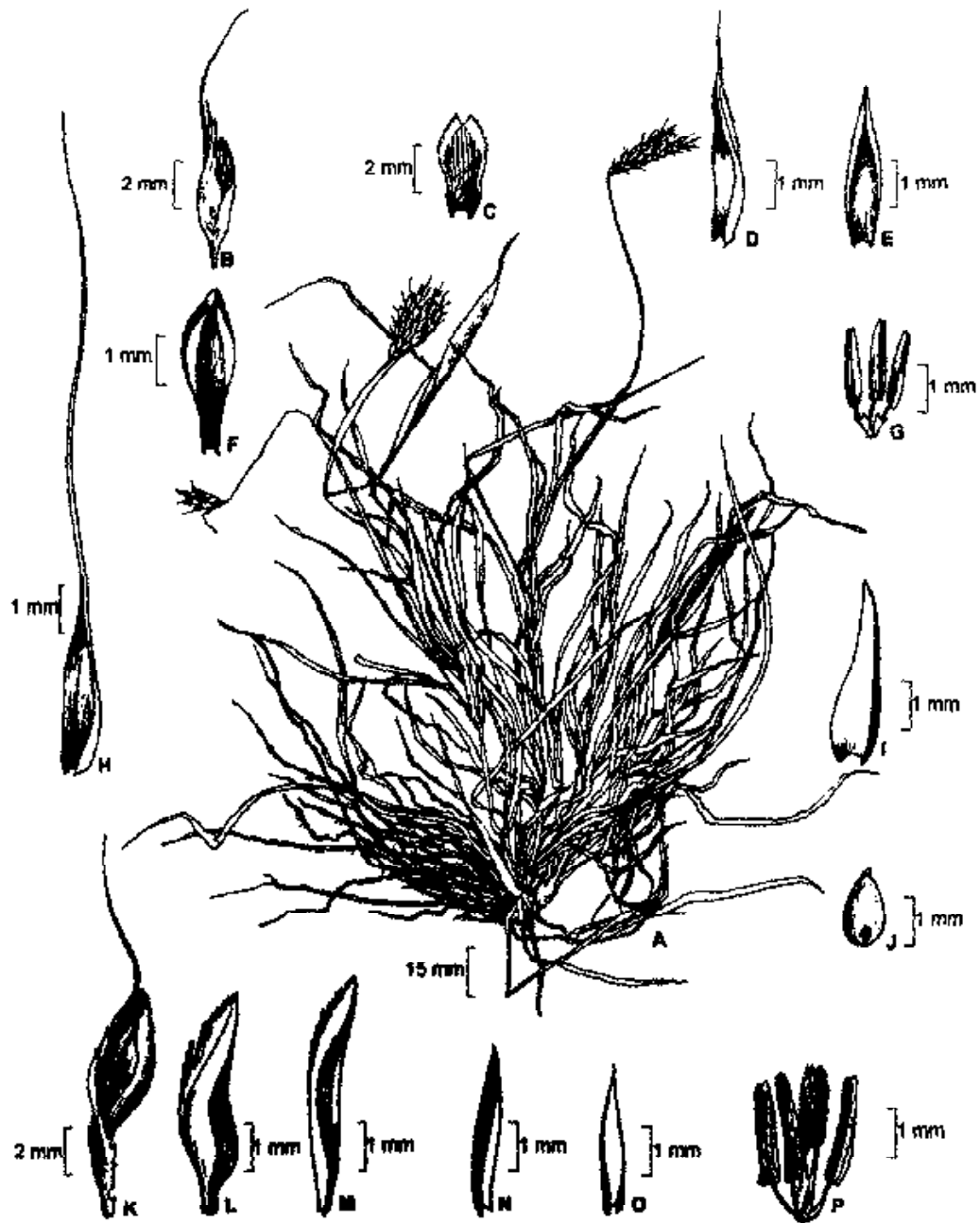


Fig. 97(A - F). *Ischaemum indicum* (Hort.) Merr.

A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma F. Palea G. Stamens & lodicules
 H. Lemma of upper flower I. Palea of upper flower J. Grain K. Podicellate spikelet
 L. Lower glume M. Upper glume N. Lemma O. Palea P. Pistil & stamens

Upper floret bisexual; lemma oblong, notched, ca 3.2 x 1 mm, chartaceous, awned; awn ca 11 mm long, hyaline; palea ovate, acute, ca 3 x 1 mm, chartaceous, hyaline. Anthers linear, ca 2.5 mm long. Ovary linear or oblong, ca 0.6 mm long. Grains oblong, ca 1.5 mm long, stramineous yellow.

Fl. & Fr.: Oct. - May.

Habitat: Wet places, with weeds like *Ammannia baccifera*, *Euphorbia indica* and *Fimbristylis miliacea*.

Distrib.: S. India and SE. Asia. TN: Chengalpattu, Coimbatore, Madurai, Nilgiri, Ramanathapuram, Salem, Thanjavur and Tirunelveli. GM: Collected only on mainland coast in Ramanathapuram.

Use: Used as a fodder.

Note: Present material is referable to *I. indicum* var. *indicum* (Davidse in RHFC 8: 279, 1994).

Specimens examined: (Total 77) KSK 103471; PD 101680.

2. *I. rugosum* Salisb., Icon. Stirp. Rar. 1, t. 1, 1791; FBI 7: 127, 1896; HSIG t. 132, 1921; FPM 1722, 1934; GBCIP 184, 1960; FTC 3: 1869, 1983; FIFTC tt. 792 & 793, 1988; FTN 3: 124, 1989; RHFC 8: 288, 1994. [*Kadukkanpul*]

Annual; culms erect or decumbent, terete, ca 40 cm, glabrous, rooting at lower nodes. Leaves linear, acuminate, ca 15 x 1 cm, sparsely pubescent; sheaths shorter than internodes, glabrous. Racemes 2, linear, 4 - 10 x 0.5 - 0.7 cm, appressed; callus of raceme ca 4 x 1.5 mm, pubescent; spathes foliaceous, acute, 2.5 - 7 cm long, glabrous. Sessile spikelet oblong, subacute, ca 6.5 x 2 mm; lower glume oblong, acute, ca 6.5 x 2 mm, faintly winged along margins, coriaceous, rugose for 3/4, 4 - 7-ridged; upper glume ovate, acute, ca 5 x 1.5 mm, 3-nerved with prominent midnerve and faint lateral nerves. Lower floret staminate; lemma ovate or lanceolate, acute, ca 5 x 1.5 mm; nerves not prominent; palea lanceolate or oblong, subacute or obtuse, keeled, ca 4.2 x 1 mm, chartaceous, 2-nerved. Anthers linear, ca 1.2 mm long. Upper floret bisexual; lemma oblong, ca 3.5 x 0.5 mm, 2-lobed; lobes acute, ca 2.5 mm long, awned; awn ca 14 mm long; palea oblong, subacute, ca 3.5 x 0.8 mm, thin, coriaceous, hyaline. Anthers linear, ca 2 mm long. Grains (immature) ellipsoid, ca 2 x 0.5 mm, yellowish brown. Pedicellate spikelet boat-shaped, subacute, ca 6 x 2 mm; lower glume ovate, subacute, ca 5.5 x 1 mm, winged on one margin; wing ca 1 mm broad, serrulate, rugose, 3-ridged, 9 - 13-nerved; upper glume lanceolate, acute, ca 6 x 1.5 mm, 5-nerved; nerves faint. Lower floret staminate; lemma oblong, acute, ca 4.1 x 1.2 mm, hyaline; palea oblong, acute, ca 4 x 1 mm, hyaline. Anthers linear, ca 1.5 mm long. Upper floret bisexual; lemma oblong, subacute, ca 4 x 1 mm, hyaline; palea linear, subacute, ca 3.5 x 0.6 mm, membranous, hyaline. Anthers linear, ca 1.3 mm long. Ovary oblong, ca 0.6 mm long.

Fl. & Fr.: Dec. - Feb.

Habitat: Bunds of rice fields and marshy localities.

Distrib.: India, Malaya, Myanmar to China. TN: Chengalpattu, Coimbatore, Ramanathapuram and S. Arcot. GM: Rare. Earlier collected at Pullanthai on mainland coast in Ramanathapuram.

Uses: A good fodder and also used as hay. Grains consumed by the poor.

Specimens examined: (Total 24) VB 2320.

32. *Isellema* Anderson

Southeast Asia to Australia, ca 20 species, 6 in India, 3 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|-----------------------|
| 1a. Involucral spikelets ca 4.5 mm long; pedicellate spikelets
ca 6 mm long | 2. <i>I. laxum</i> |
| b. Involucral spikelets ca 3 mm long; pedicellate spikelets
ca 3.5 mm long | 1. <i>I. jainiana</i> |

1. *I. jainiana* Umamahesw. & P. Daniel in J. Bombay Nat. Hist. Soc. (in edit).

(Fig. 98)

Annual; culms tufted, erect, ca 60 cm, glabrous. Leaves linear, acuminate, 3 - 15 x 0.2 - 0.4 cm, glabrous, glandular or scabrid towards base; ligule with a fringe of hairs, ca 0.4 cm wide; sheaths 2 - 6 cm long, glabrous, purplish near node. Panicles to 15 cm long; spathe boat-shaped, 0.8 - 2 cm long. Involucral spikelets 4, whorled, staminate, lanceolate, acute, ca 3 x 1 mm; pedicels terete, ca 1 mm long, ciliate at base; lower glume oblong, obtuse, ca 3 x 1 mm, keeled, bearded on keel, 5-7-nerved; nerves , prominent; upper glume oblong or elliptic, obtuse or subacute, ca 3.2 x 1 mm, 3-nerved; lemma linear-oblong, toothed, as long as upper glume, membranous, hyaline, epaleate. Lodicules 2, truncate. Stamens 3; anthers ca 1.7 mm long. Pedicellate spikelets 2, staminate, elliptic, acute, ca 3.5 x 0.9 mm; pedicels ca 1.5 mm long, glabrous; lower glume oblong or elliptic, obtuse, ca 3.5 x 1 mm; nerves 9, prominent, ridge-like beneath; upper glume oblong, abruptly acuminate, ca 3 x 1 mm, 3-nerved; lemma linear, as long as upper glume, membranous, hyaline. Stamens 3; anthers 2 - 2.5 mm long. Sessile spikelet lanceolate-ovate, ca 3 x 0.5 mm, awned; lower glume lanceolate-ovate, bifid, ca 2.8 x 1 mm, keeled, minutely ciliolate, 2-nerved; nerves faint; upper glume ovate, shortly mucronate, ca 3 x 0.8 mm, 1-nerved; lemma awn-like, ca 11 mm long, hyaline for ca 1.5 mm at base, geniculate, purplish brown for ca 4.5 mm, stramineous for ca 5 mm; palea oblong, obtuse, ca 2 x 0.6 mm, hyaline. Ovary ellipsoid or oblong, ca

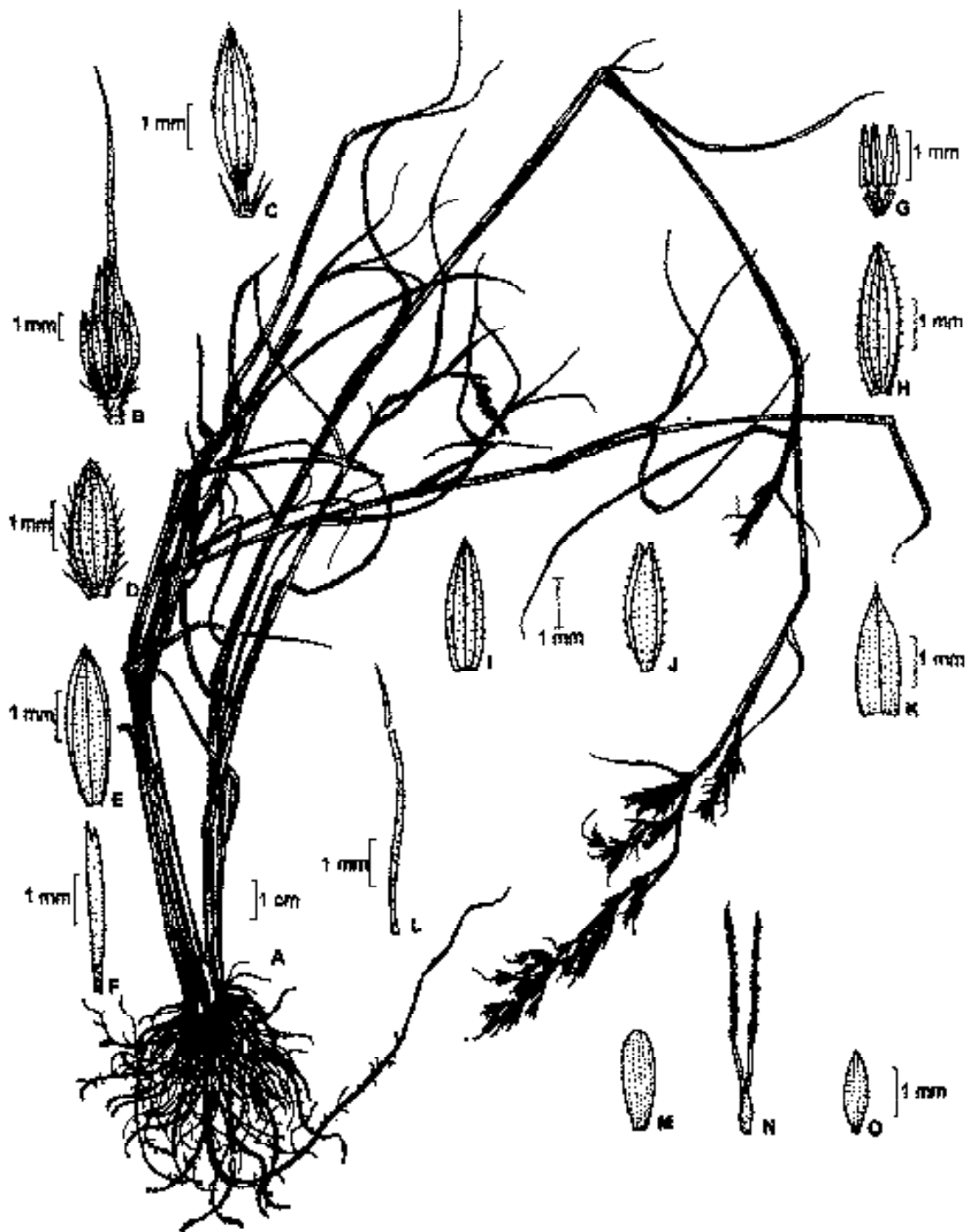


Fig. 98 (A-O). *Ischaemum jalainum* Urmersbach & P. Dierl

A. Habit B. Spikelet C. Involucre spikelet D. Lower glume E. Upper glume
 F. Lemma G. Stamens & lodicules H. Lower glume of pedicellate spikelet
 I. Upper glume J. Lower glume of sessile spikelet K. Upper glume L. Lemma
 M. Palea N. Pistil O. Grain

0.8 mm long; style single, ca 1.2 mm long; stigmas 2, ca 3.5 mm long, plumose, brownish. Grains ellipsoid, cuneate at base, ca 1.5 x 0.5 mm, yellowish.

Fl. & Fr.: Dec. - Jan.

Habitat: Open dry coastal plains, on red soil, rare.

Distrib.: India: Tamil Nadu, Gulf of Mannar Coast.

Specimens examined: PD & PU 107240 (CAL holotype; MH isotype).

2. *I. laxum* Hack. in A. & C. DC., Monogr. Phan. 6: 682. 1889; FBI 7: 218. 1896; HSIg tt. 166, 167 & 168. 1921; FPM 1748. 1934; GBCIP 188. 1960; FTC 3: 1871. 1983; FIFTC tt. 794 & 795. 1988; FTN 3: 125. 1989; RHFC 8: 292. 1994. [*Thengainaripul*]

Annual; culms terete, decumbently erect, ca 40 x 0.5 cm, glabrous. Leaves linear, acute, 2.5 - 7 x 0.3 - 0.6 cm, glabrous; ligule with a fringe of short hairs, ca 0.2 mm wide; sheaths keeled, glabrous, much shorter than internodes, ca 4.5 cm long. Panicles 10 - 20 cm long; spathe boat-shaped, ca 1 cm long. Involucral spikelets 4, staminate, lanceolate, acute, ca 4.5 x 1 mm; pedicel ca 1 mm long; lower glume ovate, acute, ca 4.2 x 1 mm, long-ciliate along margins, often ribbed, 7 - 9-nerved; upper glume lanceolate or ovate, acute, ca 4 x 0.4 mm, winged or keeled, 3-nerved; lemma linear-oblong, ca 3 x 0.8 mm, toothed, epaleate. Lodicules 2, membranous, ca 0.3 mm long, hyaline. Stamens 3; filaments slender, ca 0.5 mm long; anthers ca 1.5 mm long, purplish. Pedicellate spikelets 2, lanceolate, acute, ca 6 x 0.6 mm; pedicel ca 2.5 mm long, ciliate; lower glume ovate, acute, ca 3.5 x 1 mm, 7 - 9-nerved; upper glume lanceolate, acute, ca 3 x 0.8 mm, hyaline, 3-nerved. Lodicules 2, ca 0.3 mm long. Sessile spikelet lanceolate, ca 5 x 1 mm, awned; awn ca 13 mm long; lower glume ovate, bidentate, ca 5 x 1 mm, cartilaginous, 5-nerved; upper glume lanceolate or ovate, bidentate, ca 4.5 x 0.8 mm, 3-nerved; lemma awn-like, ca 15 mm long, hyaline for ca 1 mm at base, purplish brown for ca 7 mm, stramineous for ca 7 mm; palea oblong, acute, ca 2 x 0.8 mm, delicate, hyaline. Ovary ca 0.5 mm long; styles 2, free, flat, ca 1 mm long; stigmas 2, free, ca 3.5 mm long, ciliate, brownish. Grains oblong or ellipsoid, ca 2 x 0.7 mm, stalked or cuneate at base, yellowish.

Fl. & Fr.: Nov. - Feb.

Habitat: Rice fields, with *Paspalum geminatum*, *Sauropus bacciformis* etc.

Distrib.: S. India and Sri Lanka. TN: Chengalpattu, Coimbatore, Ramanathapuram, Salem, S. Arcot and Tiruchirapalli. GM: Earlier collected a little away from the coast in Ramanathapuram. Now collected near Valinokkam, also in Ramanathapuram, not common.

Specimens examined: (Total 17) PD & PU 106587; I'B 1691.

33. *Leptochloa* P. Beauv.

Tropics and subtropics, ca 20 species, 5 in India and Tamil Nadu and 2 in GM.

Key to the species

- 1a. Ligule lacerate; spikelets 6 - 8-flowered 1. *L. chinensis*
 b. Ligule not lacerate; spikelets 1-flowered 2. *L. neesii*

1. *L. chinensis* (L.) Nees in Syll. Pl. Nov. 1: 4. 1824; FBI 7: 299. 1896; HSIG t. 212. 1921; FPM 1820. 1934; GBCIP 516. 1960; FTC 3: 1872. 1983; FTN 3: 125. 1989; RHFC 8: 296. 1994. *Poa chinensis* L., Sp. Pl. 69. 1753. (Fig. 99)

Annual; culms terete, erect or ascending, 30 - 80 cm high, glabrous, rooting at lower nodes. Leaves linear-lanceolate, acuminate, 5 - 15 x 0.3 - 0.5 cm; ligule membranous, 1 - 1.5 mm long; sheaths subequal to or longer than internodes, glabrous. Panicles 15 - 30 cm long; rachis triquetrous, scabrid; racemes spiciform, 3.5 - 7 cm long. Spikelets oblong-lanceolate or lanceolate, 2.5 - 3.5 mm long; lower glume lanceolate, acute, ca 1.8 x 0.4 mm, 1-nerved, spinulose on nerve; upper glume ovate, acute, ca 2 x 0.6 mm, 1-nerved, spinulose on nerve; lemma ovate, acute, ca 1.8 x 0.6 mm, 3-nerved, ciliate on lateral nerves; palea narrowly elliptic-oblong, obtuse, ca 1.8 x 0.4 mm, keeled, ciliate on keel, 2-nerved. Lodicules 2. Stamens 3; filaments slender, short; anthers oblong, ca 0.5 mm long. Ovary obovoid; styles 2; stigmas 2, plumose. Grains obovoid, dorsally compressed, ca 0.7 mm long, stramineous brown.

Fl. & Fr.: Almost throughout the year.

Habitat: Bunds of rice fields and wet localities, with *Echinochloa colona*, *Eragrostis japonica* etc.

Distrib.: Asia and Africa. TN: Chengalpattu, Coimbatore, N. & S. Arcot, Tiruchirapalli and Tuticorin. GM: Mainland coast, occasional.

Specimens examined: (Total 30) PD 102284.

2. *L. neesii* (Thwaites) Benth. in J. Linn. Soc., Bot. 19: 108. 1881; GBCIP 517. 1960; FTC 3: 1873. 1983; FIFTC t. 796. 1988; FTN 3: 125. 1989; RHFC 8: 299. 1994. *Cynodon neesii* Thwaites, Enum. Pl. Zeyl. 371. 1864. *Leptochloa polystachya* Benth., Fl. Austral. 7: 617. 1878, non Kunth 1829; FBI 7: 298. 1896; FPM 1820. 1934.

Annual; culms tufted, terete, 60 - 100 cm high, glabrous. Leaves linear-lanceolate, acuminate, to 20 cm long, glabrous; ligule membranous, 2 - 4 mm long; sheaths longer than internodes, glabrous. Panicle to 30 cm long; rachis triquetrous, scabrid; racemes to 5 cm long. Spikelets lanceolate, ca 1.5 x 0.5 mm; lower glume ovate, subacute, ca 1.5 x 0.5 mm,

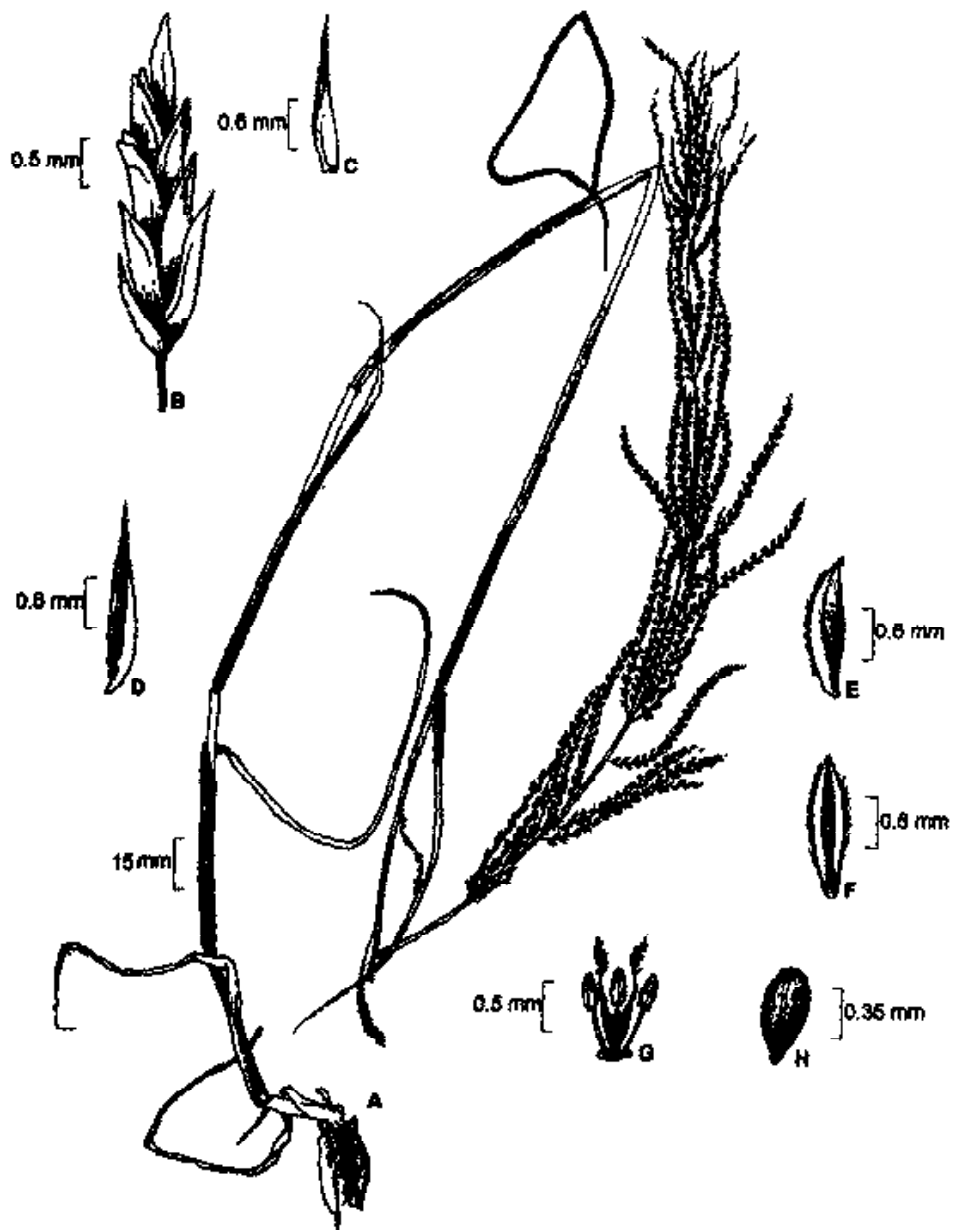


Fig. 99(A - H). *Lepochloa chinensis* (L.) Nees
 A. Habit B. Spikelet C. Lower glume D. Upper glume
 E. Lemma F. Palea G. Pistil & stamens H. Grain

1-nerved; upper glume ovate, subacute, ca 1.5 x 0.5 mm, 1-nerved; lemma ovate, subacute, ca 1.2 x 0.7 mm, 3-nerved; lateral nerves faint, ciliate; palea ovate-oblong, subacute-obtuse, ca 1.2 x 0.5 mm, hyaline, grooved in middle, keeled, pubescent on keel. Lodicules 2. Stamens 3; filaments slender, short; anthers oblong, ca 0.5 mm long. Ovary oblong; styles 2; stigmas 2. Grains narrowly oblong-ellipsoid, trigonous, ca 1 mm long, reddish brown.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet localities, with *Cyperus iria*, *Murdannia spirata* etc.

Distrib.: Australia, India, Indonesia and Sri Lanka. TN: Chengalpattu, Madurai, Ramanathapuram, S. Arcot, Tiruchirapalli and Tirunelveli. GM: Mainland coast, occasional.

Specimens examined: (Total 15) PD & PU 106529.

34. *Lopholepis* Decne.

South India and Sri Lanka, unispecific.

L. ornithocephala (Hook.) Steud., Syn. Pl. Glumac. 1: 112. 1854; FBI 7: 98. 1896; FPM 1814. 1934; GBCIP 682, t. 80. 1960; FTN 3: 126. 1989; RHFC 8: 311. 1994. *Holboellia ornithocephala* Hook., Bot. Misc. 2: 144, t. 76. 1831. (Fig. 100)

Annual; culms tufted, terete, to 45 cm high, glabrous. Leaves lanceolate, acuminate, 2 - 4 x 0.5 - 0.7 cm, scabrid along margins, glabrous; ligule membranous, rounded at apex; sheaths shorter than internodes. Panicles linear, to 10 x 0.6 cm; rachis angled, glabrous. Spikelets ca 2 x 1.2 mm; pedicels 1.5 - 2 mm long, ciliate; lower glume boat-shaped, acute, ca 2 x 1 mm, winged, coriaceous, ridged, ciliate on ridge; cilia spinose; upper glume ovate, acuminate, ca 1.5 x 0.5 mm, coriaceous, ciliate on nerve; lemma ovate, acute, ca 1 x 0.5 mm, hyaline; palea ovate, acute, ca 0.8 x 0.3 mm, hyaline. Stamens 3; filaments slender, ca 0.2 mm long; anthers oblong, ca 0.3 mm long. Ovary oblong, ca 0.3 mm long; styles 2, free, slender, ca 0.3 mm long; stigmas 2, ca 0.3 mm long, plumose. Grains pyriform, ca 1 x 0.5 mm, gibbous below, narrow above.

Fl. & Fr.: Sept. - Jan.

Habitat: Sandy localities under palmyra palms, with *Eragrostis amabilis*, *Perotis indica*, *Trachys muricata* etc.

Distrib.: TN: Kanyakumari, Madurai, Nilgiri, Ramanathapuram, Tiruchirapalli, Tirunelveli and Tuticorin. GM: Mainland coast, frequent.

Specimens examined: (Total 23) ANH 53306; KMS 13614; KR 21611; KSK 103419; PD & PU 106546; SAM 106452; VB 1805.

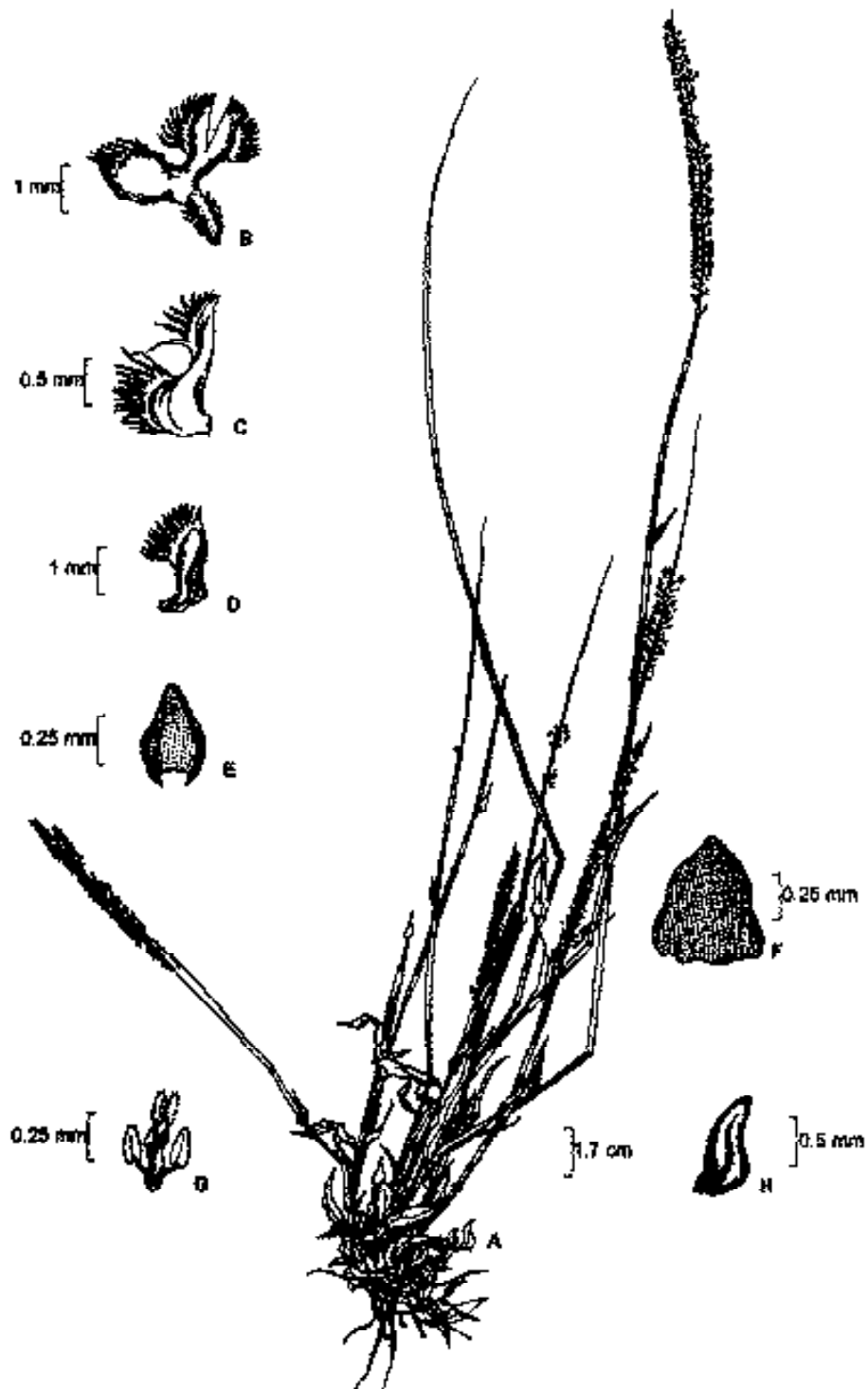


Fig. 168 (A - H). *Lopholipia ovaliscephala* (Hook.) Steud.
 A. Habit B. Spikelet C. Lower glume D. Upper glume
 E. Lemma F. Palea G. Pistil & stamens H. Grain

35. *Manisuris* L.

Old World tropics, 3 species and one in India.

M. myuros L., Mant. Pl. 300. 1771; FPM 1760. 1934; GBCIP 192, t. 10, f. 5. 1960; FTN 3: 126. 1989. *Rottboellia myurus* (L.) Benth. in J. Linn. Soc., Bot. 19: 68. 1881; FBI 7: 154. 1896; HSIG t. 144. 1921. [*Waritsiriapuf*] (Fig. 101)

Perennial; culms tufted, to 30 cm high, glabrous. Leaves linear, acuminate, ca 8 x 0.2 cm, glabrous, scabrid or spinulose towards base; ligule membranous; sheaths white-hairy on one margin. Racemes to 6 cm long; spathes boat-shaped, ca 3 cm long. Sessile spikelet bisexual: lower glume ovate, ca 2.8 x 1.5 mm, winged; upper glume oblong-elliptic, keeled towards apex, ca 2.5 x 1 mm, 1-nerved; lemma oblong, obtuse, ca 1.8 x 1 mm, membranous, keeled, 2-nerved; palea similar to lemma but nerveless and not keeled. Lodicules 2. Stamens 3; filaments slender; anthers oblong, ca 1 mm long. Ovary oblong; styles 2, free; stigmas 2, ca 1 mm long, plumose. Pedicel in pedicellate spikelet ca 3 mm long; lower glume ovate, obtuse, ca 4 x 1.5 mm, winged on one margin, 7-nerved; upper glume oblong, or boat-shaped, ca 4 x 1.5 mm, winged at tip. Lower floret staminate; lemma oblong, obtuse or truncate, ca 3 x 1.5 mm; palea similar to lemma. Lodicules 2. Stamens 3; anthers oblong, 1.2 - 1.5 mm long, subequal. Upper floret similar to lower one but epaleate.

Fl. & Fr.: Almost throughout the year.

Habitat: Dry localities, also on red soil, with *Allmania nodiflora*, *Dichanthium annulatum*, *Zornia diphylla* etc.

Distrib.: S. India. Endemic. TN: Chengalpattu, Coimbatore, Madurai, Pudukkottai, N. & S. Arcot, Ramanathapuram, Tirunelveli and Tuticorin. GM: Mainland coast, frequent.

Specimens examined: (Total 47) PD & PU 107100, 107336; SAM 106394, 106448.

36. *Mnesithea* Kunth

Indomalaysia, 29 species, 2 in India and Tamil Nadu and one in GM.

M. granularis (L.) de Koning & Sosef in Blumea 31: 295. 1986; Karth. & al., Fl. Ind. Enum. Monocot. 238. 1989. *Cenchrus granularis* L., Mant. Pl. 575. 1771. *Hackelochloa granularis* (L.) Kuntze, Revis. Gen. Pl. 2: 776. 1891; FPM 1758. 1934; GBCIP 159. 1960; IFTC tt. 874, 875. 1982; FTC 3: 1862. 1983; FTN 3: 119. 1989; RHFC 8: 245. 1994. *Manisuris granularis* (L.) Naezen, Nov. Gram. Gen. 40. 1779; FBI 7: 159. 1896; HSIG t. 147. 1921.

Annual; culms tufted, terete, erect, 15 - 45 x 0.2 - 0.5 cm, villous at nodes, leafy throughout. Leaves linear or oblong, acute with blunt ends, 2.5 - 10 x 0.5 - 1 cm, hispid;

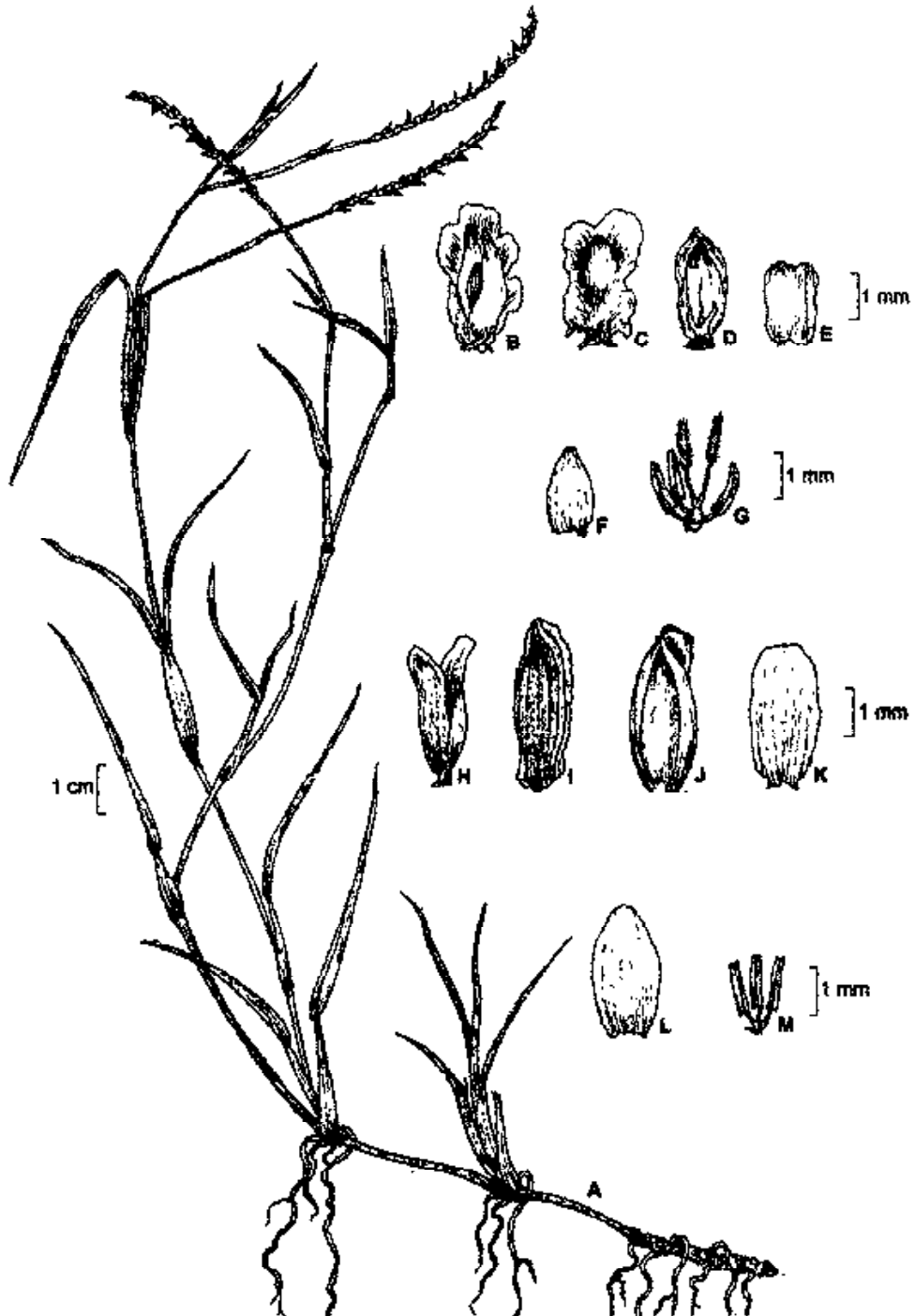


Fig. 161 (A - M). *Manisuris styruos* L.

A. Habit B. Sessile spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Pedicellate spikelet I. Lower glume
 J. Upper glume K. Lemma L. Palea M. Stamens & lodicules

ligule membranous; sheaths keeled, pilose with tubercle-based hairs. Racemes solitary, 2, or more, linear, 0.5 - 2 cm long, spathed. Spikelets globose, 1 - 2 mm, awnless; lower glume subglobose, 1 - 2 x 0.8 - 1.5 mm, crustaceous, pitted, 7 - 9-nerved; nerves faint; upper glume oblong, obtuse, 1 - 1.5 x 0.8 - 1 mm, chartaceous, 3-nerved; nerves faint. Lower floret sterile; upper floret bisexual; lower lemma broadly ovate, subacute, 1 - 1.5 x 1 - 1.3 mm, delicate, hyaline; upper lemma ovate, subacute, ca 1 x 0.7 mm, delicate, hyaline; palea similar to upper lemma. Stamens 3; filaments short; anthers linear, ca 0.3 mm long. Ovary oblong, ca 0.2 mm long; styles 2, ca 0.5 mm long, free; stigmas 2, ca 0.5 mm long. Pedicellate spikelet broadly ovate, acute, 1.5 - 2.5 x 1 - 1.2 mm; pedicels 1 - 1.5 mm long; lower glume broadly ovate, acute, 1.5 - 2.5 x 1 - 1.2 mm, chartaceous, 5 - 7-nerved, keeled; keel winged on one side; upper glume boat-shaped, 2 - 2.5 x 1 - 1.5 mm, chartaceous, 5 - 7-nerved, keeled; keel winged; lower floret sterile; upper floret staminate or sterile; lower lemma broadly ovate, acute, ca 2 x 1 mm, delicate, hyaline; upper lemma ovate, acute, ca 1.5 x 1 mm, delicate, hyaline; palea similar to upper lemma. Lodicules 2, tubular, ca 0.5 mm long, hyaline. Stamens 3; filaments short; anthers linear, ca 1.1 mm long, purplish.

Fl. & Fr.: Nov. - Jan.

Habitat: Dry localities.

Distrib.: Tropics. TN: All districts. GM: Rare. Earlier collected at Kayal in Tuticorin.

Note: Following the merger of *Hackelochloa* Kuntze (1891) in *Mnesithea* Kunth (1829) by Veldkamp & al. (1986), this species is treated under the latter.

Næezén is the author of the dissertation (*Nova Graminum Genera*) and Linnaeus fil. was only a promoter and not an author (Stafleu & Cowan, 1981: 686). Hence, the combination *Manisuris granularis* is attributed to Næezén unlike the earlier workers.

Specimens examined: (Total 48) DD s.n.; VB 2074.

37. *Oropetium* Trin.

Old World tropics, 6 species, 3 in India, 2 in Tamil Nadu and one in GM.

O. thomaeum (L.f.) Trin., Fund. Agrost. 98, t. 3. 1820; FBI 7: 366. 1896; FPM 1830. 1934; GBCIP 474. 1960; IFTC t. 903. 1982; FTC 3: 1878. 1983; FTN 3: 129. 1989; RHFC 8: 325. 1994. *Nardus thomaea* L. f., Suppl. Pl. 105. 1782. [*Kuravanthodupu*]

Annual; culms densely tufted, to 10 cm high, glabrous, completely covered by leaf sheaths. Leaves narrowly lanceolate, acute, 1 - 2.5 cm long, pilose, spinulose along margins; ligule membranous, long-hairy; sheaths tight, glabrous. Spikes to 3 cm long; rachis compressed, angular, glabrous. Spikelets biseriate, partly sunk in the hollow rachis, 1-flowered; lower glume broadly triangular, obtuse, ca 0.5 mm long; upper glume linear, acute, ca 2 x

0.5 mm, spinulose along margins, 2-nerved; lemma boat-shaped, emarginate, ca 1 mm long; palea oblong-elliptic, obtuse, ca 1 mm long, 2-nerved. Stamens 3; filaments slender; anthers ca 0.5 mm long. Ovary obovoid, ca 0.5 mm long; styles 2; stigmas 2, plumose. Grains obovoid, ca 1 mm long, brownish.

Fl. & Fr.: Sept. - Jan.

Habitat: Open sandy localities.

Distrib.: India, Myanmar, Sri Lanka, Trop. Africa and Vietnam. TN: All districts. GM: Mainland coast, frequent.

Specimens examined: (Total 41) KMS 13615; PD & PU 107329.

38. *Panicum* L.

Tropics to warm temperate regions, ca 470 species, 34 in India, 13 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|-------------------------|
| 1a. Leaves glabrous; panicle branches subwhorled; lower glume spinulose on midnerve | 1. <i>P. antidotale</i> |
| b. Leaves pilose above; panicle branches alternate; lower glume glabrous on midnerve | 2. <i>P. repens</i> |

1. *P. antidotale* Retz., Obs. Bot. 4: 17. 1789; FBI 7: 52. 1896; FPM 1783. 1934; GBCIP 322. 1960; FTN 3: 130. 1989; RHFC 8: 332. 1994.

Rhizomatous perennial; culms terete, erect, 50 - 150 cm high, glabrous. Leaves linear or lanceolate, acuminate with a blunt end, ca 20 x 1 cm; ligule membranous, ciliate; sheaths as long as internodes, glabrous. Panicles ca 25 cm long; branches subwhorled, ascending, slender, scabrid, hairy at axil; pedicels angular, 1 - 1.5 mm long, scaberulous. Spikelets ovate, acute, turgid, 2.5 - 3 x 0.8 - 1 mm; lower glume ovate, acute, ca 2 x 0.8 mm, 3-nerved; upper glume ovate, acute, ca 2.7 x 1.2 mm, 7-nerved, hyaline along margins. Lower floret staminate or sterile; lemma broadly ovate, acute, ca 2.7 x 1.5 mm, 9-nerved; palea oblong, acute, keeled, ca 2.2 x 1 mm, 2-nerved. Upper floret bisexual; lemma ovate, acute, ca 1.8 x 1 mm, nerveless; palea ovate, acute, keeled, ca 2 x 0.7 mm, basally winged. Anthers linear, ca 1.8 mm long. Ovary oblong, ca 0.3 mm long. Grains oblong-ellipsoid.

Fl. & Fr.: May - Dec.

Habitat: Sandy seashores.

Distrib.: Afghanistan, Madras, NE. India and Persia westward. TN: Coimbatore Nilgiri, Salem, Tirunelveli and Tuticorin. GM: Rare. Earlier once collected at Tuticorin. Not collected this time.

Use: It is an excellent sand binder.

Specimens examined: (Total 5) DD 87141.

2. *P. repens* L., Sp. Pl. ed. 2, 2: 87. 1763; FBI 7: 49. 1896; HSIG tt. 102 & 103. 192 FPM 1783. 1934; GBCIP 330. 1960; FIFTC tt. 805 & 806. 1988; FTC 3: 1882. 1983; FT 3: 131. 1989; RHFC 8: 343. 1994.

Rhizomatous perennial; culms terete, erect, ca 45 cm, glabrous, completely clothed with sheaths. Leaves lanceolate, 3 - 10 x 0.3 - 0.6 cm; ligule membranous, ciliate; sheath canalliculate, ciliate along margins. Panicles oblong, to 10 cm long; branches alternate ascending, lax, slender; pedicels angular, dilated at apex, 2 - 3 mm long, scabrid. Spikelet lanceolate, acute, ca 3.2 x 0.8 mm, greenish; lower glume broadly ovate, obtuse, ca 1.2 x mm, 3-nerved; upper glume as long as spikelet, ovate, acute, ca 3.2 x 1.2 mm, 7 - 9-nerved. Lower floret staminate; lemma ovate, acute, ca 3 x 1.5 mm, 9-nerved; palea oblong, obtuse keeled, ca 2.8 x 1 mm, 2-nerved. Stamens 3, linear, ca 1.8 mm long, purplish. Upper floret bisexual; lemma ovate, acute, incurved, ca 2.1 x 1 mm, coriaceous, nerveless; palea oblong or ovate, acute, keeled, ca 2 x 0.8 mm, hyaline along margins. Anthers linear, ca 1.5 mm long. Ovary linear or oblong, ca 0.5 mm long. Grains oblong-ovoid, ca 2.5 mm long.

Fl. & Fr.: Throughout the year.

Habitat: Bunds of rice fields and loamy sandy soil, with *Eragrostis japonica*, *Euphorbia* spp., *Fimbristylis* spp. etc.

Distrib.: Tropics and subtropics. TN: All districts. GM: Rare. Collected at Vattakottai and near Vijayanaranapuram in Kanyakumari. A common grass of the interior plains.

Uses: Used as a good fodder. A good grass for turfs and lawns, and very useful in soil conservation.

Specimens examined: (Total 83) KSK 102767; PD & PU 107042.

39. *Paspalidium* Stapf

Tropics, ca 40 species, 3 in India and Tamil Nadu and one in GM.

P. geminatum (Forssk.) Stapf in Prain, Fl. Trop. Africa 9: 583. 1919; FPM 1774. 1934; GBCIP 333. 1960; FTC 3: 1884. 1983; FIFTC t. 809 & 810. 1988; FTN 3: 132. 1989; RHFC 8: 350. 1994. *Panicum geminatum* Forssk., Fl. Aegypt.-Arab. 18. 1775. *P. paspaloides* Pers.,

Syn. Pl. 1: 81. 1805; FBI 7: 30. 1896. *P. fluitans* Retz., Obs. Bot. 3: 8. 1783; HSIG tt. 84, 85. 1921.

Perennial; culms tufted, 30 - 60 cm high, creeping, glabrous, rooting at lower nodes. Leaves lanceolate, acuminate, 2.5 - 15 x 0.3 - 0.6 cm, glabrous; ligule with a fringe of hairs, ca 5 mm wide; sheaths longer than lower internodes, to 12 cm long, glabrous. Panicles ca 25 cm long; rachis faintly winged, triquetrous, spinulose along margins, interspace between two spikelets ca 1.5 mm long; spikes 5 - 15, alternate, linear, 1.5 - 4 cm long. Spikelets 15 - 30, lanceolate, acute, 2.5 - 2.8 x 1 - 1.2 mm, glabrous; lower glume orbicular, ca 1 x 1 mm, nerveless; upper glume ovate, acute, ca 2.2 x 1.5 mm, 5-nerved, greenish. Lower floret sterile; lemma broadly ovate, acute, ca 2.8 x 1.8 mm, 5-nerved; palea oblong or elliptic, shortly acuminate, ca 2.5 x 1.2 mm. Upper floret bisexual; lemma ovate, incurved, mucronate, keeled, ca 2.2 x 1.5 mm, 2-nerved; palea oblong, mucronulate, basally incurved, keeled, ca 2 x 1.2 mm. Lodicules 2, truncate, ca 0.5 x 0.2 mm. Stamens 3, yellowish; filaments slender, ca 0.5 mm long; anthers linear, ca 1 mm long. Ovary oblong, ca 0.5 mm long; styles 2, free, slender, ca 1 mm long; stigmas 2, ca 1.5 mm long, plumose, long-hairy, purplish. Grains (immature) oblong, dorsiventrally flattened, ca 1.2 x 0.8 mm, creamy yellow.

Fl. & Fr.: June - March.

Habitat: Weed on bunds in rice fields, water-logged, wet and open wastelands, with *Eragrostis gangetica*, *Schoenoplectus articulatus* etc.

Distrib.: Asia and Africa. TN: Chengalpattu, Coimbatore, Kanyakumari, N. & S. Arcot, Ramanathapuram, Thanjavur and Tiruchirapalli. GM: Mainland coast, frequent. Collected at Chinnamuttam in Kanyakumari.

Use: Used as a fodder.

Specimens examined: (Total 43) PD & PU 107016, 107248, 107339.

40. *Paspalum* L.

Tropics and subtropics, ca 330 species, 11 in India, 7 in Tamil Nadu and 2 in GM.

Key to the species

- | | |
|--|----------------------------|
| 1a. Leaves lanceolate, sparsely pubescent above; spikelets pedicellate, ca 2 mm long | 1. <i>P. scrobiculatum</i> |
| b. Leaves linear, glabrous; spikelets sessile, ca 3 mm long | 2. <i>P. vaginatum</i> |

1. *P. scrobiculatum* L., Mant. Pl. 29. 1767; FBI 7: 10. 1896; FPM 1772. 1934, incl. var. *commersonii* (Lam.) Stapf; KB 30: 101. 1975; GBCIP 340. 1960; FIFTC t. 813. 1988;

FTN 3: 133. 1989; RHFC 8: 356. 1994. *P. commersonii* Lam. Tabl. Encycl. 1: t. 43, f. 1. 1791; GBCIP 335, t. 38. 1960. *P. orbiculare* G. Forst., Fl. Ins. Austr. 7. 1786; FPM 1772. 1934.

Perennial; culms tufted, decumbent, to 15 cm high, rooting at lower nodes, glabrous. Leaves lanceolate, acute, 2 - 5 x 0.3 - 0.5 cm, scabrous along margins; ligule with a fringe of hairs, ca 3 mm wide; sheaths 1.5 - 3 cm long, glabrous. Racemes 2, linear, 1 - 3 cm long; rachis flattened. Spikelets with ca 1 mm long pedicels, obovate or broadly elliptic, obtuse or apiculate, ca 2 x 1 mm, glabrous; lower glume absent; upper glume elliptic, obtuse, ca 2.5 x 1.5 mm, 5-nerved, greenish; lower lemma sterile, oblong or elliptic, obtuse, ca 2.5 x 1.7 mm, 5-nerved, pale greenish; upper lemma fertile, oblong or elliptic, obtuse, ca 2 x 1.5 mm; palea broadly ovate, keeled, ca 2 x 1.5 mm. Filaments slender, ca 0.3 mm long; anthers linear, ca 0.7 mm long, yellowish. Ovary obovoid or oblong, ca 0.3 mm long. Grains obovoid or oblong, ca 1.6 x 1 mm, pale brownish.

Fl. & Fr.: Aug. - Jan.

Habitat: Road sides and moist localities.

Distrib.: Old World tropics. TN: All districts. GM: Mainland coast, frequent. Collected at Samytoppu and Thonithurai in Ramanathapuram.

Specimens examined: (Total 74) KSK 102020; PD 100511.

2. *P. vaginatum* Sw., Prodr. 21. 1788; FPM 1772. 1934; GBCIP 341. 1960; FTN 3: 133. 1989; RHFC 8: 360. 1994.

Rhizomatous, stoloniferous perennial; culms ca 10 cm high, glabrous. Leaves linear, acute, 2 - 2.5 x 0.1 - 0.3 cm, glabrous; ligule ca 2 mm wide; sheaths keeled, glabrous. Racemes 2, 1.5 - 3 cm long; rachis flattened. Spikelets sessile, lanceolate, acute, ca 3 x 1.2 mm, glabrous; lower glume absent; upper glume lanceolate or ovate, acute, ca 3 x 1.2 mm, 3 - 5-nerved; lower lemma ovate, acute, ca 3 x 1.5 mm, 5-nerved; upper lemma elliptic or oblong, acute, ca 2.5 x 1 mm, 3-nerved; palea oblong, acute, ca 2.3 x 1 mm, winged, 2-nerved. Lodicules 2, ca 0.3 mm long, thin, hyaline. Filaments short; anthers linear, ca 1.5 mm long, purplish. Ovary oblong, ca 0.5 mm long. Grains oblong, ca 1.5 x 1 mm, pale brownish.

Fl. & Fr.: Sept. - April.

Habitat: Open lands, sandy seashores and marshy localities, with *Chloris barbata*, *Echinochloa colona* etc.

Distrib.: Tropics and subtropics. TN: Chengalpattu, Ramanathapuram, S. Arcot and Tirunelveli. GM: Occasional on mainland coast and rare on islands. Earlier once collected on Kurusadai Island.

Specimens examined: (Total 74) DD 87167; NCN 53076; PD 102205; VB 1146, 1992; Ku Is. DD & SRR s.n.

41. *Perotis* Aiton

Old World tropics, ca 10 species, 2 in India and one in Tamil Nadu.

P. indica (L.) Kuntze, Revis. Gen. Pl. 787. 1891; FPM 1814. 1934; GBCIP 611, t. 72. 1960; FTC 3: 1889, 1983; FTN 3: 134. 1989; RHFC 8: 370. 1994. *Anthoxanthum indicum* L., Sp. Pl. 28. 1753. *Perotis latifolia* Aiton, Hort. Kew. 1: 85. 1789; FBI 7: 98. 1896; HSIQ tt. 124 & 125. 1921. [*Narival*, *Kudraivalpul*]

Annual herb; culms loosely tufted, 10 - 45 cm high, glabrous. Leaves lanceolate-ovate, undulate, acute-acuminate, 2 - 3.5 x 0.2 - 0.6 cm, scabrid along margins; ligule membranous; sheaths longer than internodes, glabrous. Spike single, to 15 cm long; rachis angled, canaliculate, pubescent. Spikelets spiral, lanceolate-ovate, 1.8 - 2 x 0.3 - 0.5 mm; pedicel 1 - 1.1 mm long, pubescent; lower glume ovate-elliptic, acute, 1.8 - 2 x 0.3 - 0.5 mm, awned; awn 3 - 13 mm long, scabrid, or ciliate; upper glume ovate-elliptic, 1.5 - 1.8 x 0.3 - 0.5 mm, 1-nerved, awned; awn 1.5 - 11 mm long, scabrid, or ciliate; lemma linear-lanceolate, or ovate, subacute, 0.8 - 1 x 0.2 - 0.4 mm; palea linear-lanceolate, or ovate, acute, 0.6 - 0.9 x 0.2 - 0.3 mm. Lodicules 2, truncate, ca 0.2 mm long. Stamens 3; filaments ca 0.3 mm long; anthers oblong, ca 0.4 mm long. Ovary linear, ca 0.3 mm long; styles 2, ca 0.3 mm long; stigmas 2, ca 0.5 mm long, plumose. Grains linear, or narrowly elliptic, ca 1.2 x 0.3 mm, stramineous.

Key to the varieties

- | | |
|---|-----------------------------------|
| 1a. Glumes distinctly ciliate on nerve; awns 1.5 - 3 mm long | 1. 2. var. <i>keelakaralensis</i> |
| b. Glumes not distinctly ciliate on nerve; awns 11 - 13 mm long | 1. 1. var. <i>indica</i> |

1. 1. var. *indica*

(Fig. 102 A - H)

Fl. & Fr.: Nov. - May.

Habitat: Sandy dry localities, with *Lopholepis ornithocephala*, *Eragrostis* spp. etc.

Distrib.: India, Myanmar, SE. Asia and Sri Lanka. TN: All districts. GM: Mainland coast, frequent.

Specimens examined: (Total 109) KSK 102808; PD & PU 106545.

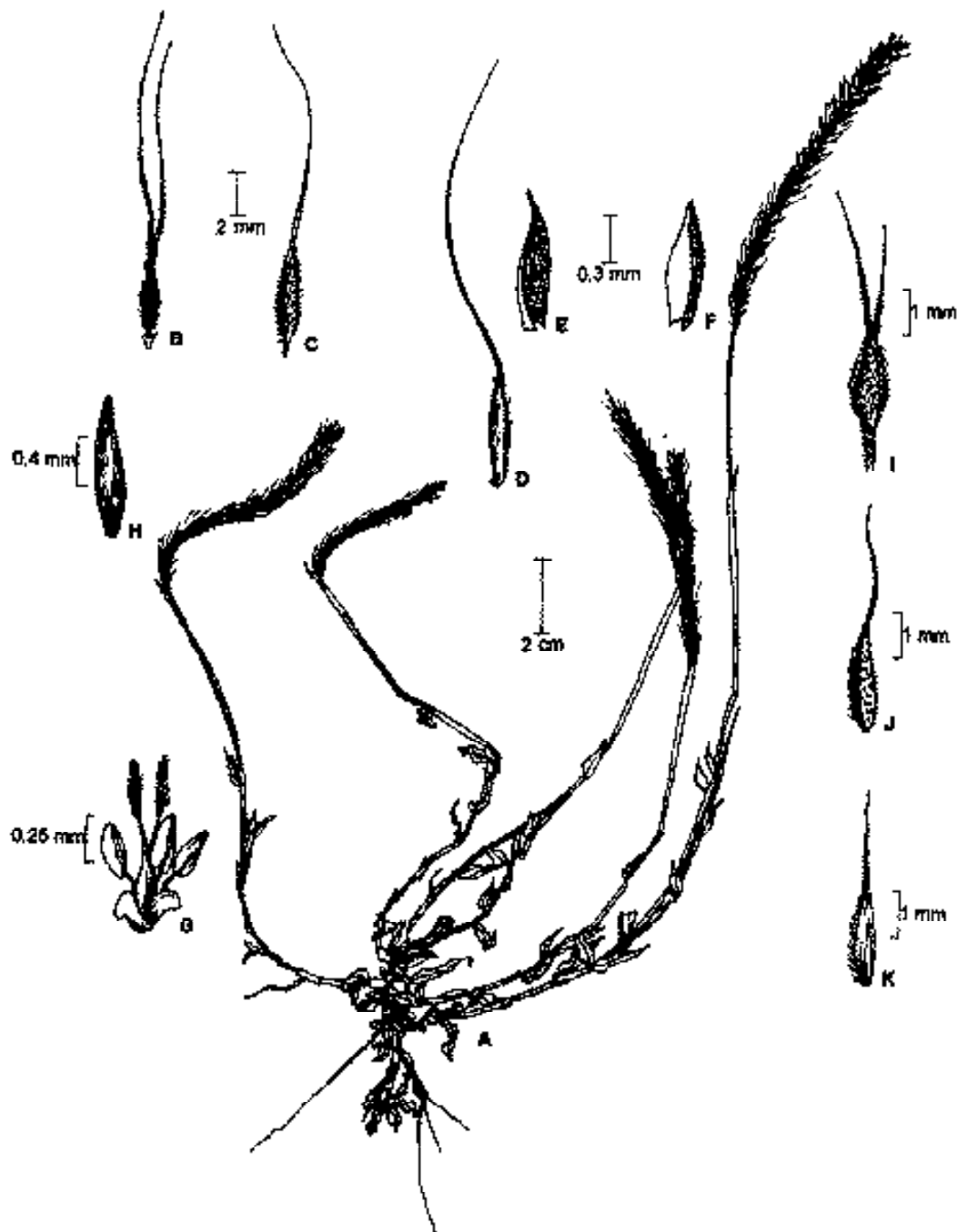


Fig. 102(A - H), *Persea indica* (L.) Kuntze var. *indica*
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma F. Palea
 G. Pistil & stamens H. Grain
 (I - K), var. *boothoensis* Unmaharw & P. Daniel
 I. Spikelet J. Lower glume K. Upper glume

I.2. var. keelakaraiensis Umamahesw. & P. Daniel in J. Econ. Tax. Bot. 23: 691, f. I -K. 1999. (Fig. 102 I - K)

Fl. & Fr.: Dec. - Jan.

Habitat: Sandy soil, with *Dactyloctenium aegyptium*, *Lopholepis ornithocephala* and *Perotis indica* var. *indica*.

Distrib.: Tamil Nadu (Ramanathapuram).

Specimens examined: PD & PU 106547 (CAL holotype; MH isotypes) .

42. *Saccharum* L.

Tropics and subtropics, ca 30 species, 15 in India, 4 in Tamil Nadu and one in GM.

S. spontaneum L., Mant. Pl. 183. 1771; FBI 7: 118. 1896; HSIG t. 129. 1921; FPM 1709. 1934; GBCIP 214. 1960; FTC 3: 1895. 1983; FTN 3: 137. 1989. [*Nanal*]

Rhizomatous perennial; culms tufted, 1 - 3 m high, glabrous or pubescent. Leaves linear-lanceolate, serrulate along margins, acuminate, 30 - 150 x 0.5 - 1.5 cm, glabrous; ligule ovate, 3 - 6 mm long, acute with a few cilia; sheaths densely silky-hairy. Panicles 40 - 70 cm long; racemes verticillate, ascending to spreading, 4 - 17 cm long. Spikelets paired. Sessile spikelet lanceolate or oblanceolate, 3 - 4 mm long, awnless, reddish brown; callus densely long-villous; lower glume ovate-lanceolate, acuminate, faintly keeled, 3 - 4 x 1 - 1.2 mm, ciliate along margins, 2 - 3-nerved; upper glume ovate-lanceolate, acuminate, 3 - 4 x 1 - 1.5 mm, dorsally keeled, ciliate along margins, 1-nerved. Lower floret sterile; lemma ovate-elliptic, acute, 2 - 2.5 x 1 - 1.5 mm, ciliate along margins, 2 - 3-nerved, epaleate. Lodicules 2. Upper floret bisexual; lemma linear-lanceolate, 2 - 2.5 x 0.1 - 0.2 mm; palea minute, hyaline. Lodicules 2. Stamens 3. Ovary oblong-elliptic; styles 2, 0.5 - 1.5 mm long; stigmas 2, 0.5 - 1 mm long. Grains oblong-elliptic, ca 1 mm long. Pedicellate spikelet similar to sessile spikelet; pedicels turbinate, dilated at apex, 0.5 - 1 mm long, densely villous.

Fl. & Fr.: Nov. - Feb.

Habitat: Wet localities and stream banks, with *Colocasia esculenta*, *Cyperus pangorei* etc.

Distrib.: Old World tropics. TN: All districts. GM: Mainland coast, occasional.

Uses: Used as fodder only in times of scarcity. Good sand binder. Pulp suitable for paper manufacture. Also used for thatching. A valuable species for hybridization.

Specimens examined: (Total 50) PD & PU 107061.

43. *Setaria* P. Beauv. nom. cons.

Tropics and subtropics, ca 100 species, 15 in India, 10 in Tamil Nadu and 2 in GM.

Key to the species

- 1a. Spikelets more than 2 mm long, subtended by antrorsely
barbed or scabrid bristles 1. *S. pumila*
b. Spikelets less than 2 mm long, subtended by retrorsely barbed bristles 2. *S. verticillata*

1. *S. pumila* (Poir.) Roem. & Schult., Syst. Veg. 2: 891. 1817; Clayton in Tutin & al., Fl. Europ. 5: 263. 1980; FTC 3: 1901. 1983; FIFTC t. 823. 1988; FTN 3: 139. 1989; RHFC 8: 411. 1994. *Panicum pumilum* Poir. in Lam., Encycl. Suppl. 4: 273. 1816. *Setaria pallidefusca* (Schum.) Stapf & C.E. Hubb. in Bull. Misc. Inform. 1930: 259. 1930; FPM 1789. 1934; GBCIP 363. 1960. *Panicum pallidefuscum* Schum., Beskr. Guin. Pl. 58. 1827. *Setaria glauca* sensu FBI 7: 78. 1896, non P. Beauv. 1812.

Annual; culms tufted, erect, ca 45 cm, glabrous. Leaves linear, acuminate, to 10 x 0.3 cm; ligule with a fringe of hairs; sheaths keeled, as long as internodes, glabrous. Panicles 1 - 3 x 0.5 - 0.8 cm; rachis 2.5 - 4 mm long. Spikelets elliptic, acute, ca 2.1 x 1 mm, glabrous; bristles 7 - 9; lower glume broadly ovate, acute, ca 1.1 x 1 mm, 3-nerved; upper glume broadly ovate, acute, ca 1.3 x 1.1 mm, 5-nerved. Lower floret sterile; lemma ovate, acute or mucronate, ca 2.1 x 1 mm, 5-nerved; nerves greenish; palea ovate, acute, ca 2.1 x 0.8 mm. Upper floret fertile, elliptic, acute, ca 2 x 0.8 mm; lemma elliptic, acute, ca 2 x 1 mm, transversely rugulose; palea ovate, acute with a mucro, ca 1.7 x 0.8 mm, keeled, minutely and transversely rugulose. Lodicules 2, tubular, ca 0.5 mm long, thin. Stamens 3; filaments slender, ca 0.3 mm long; anthers linear, ca 1.2 mm long, yellow. Ovary oblong, ca 0.6 mm long; styles 2, free, slender, ca 1 mm long; stigmas 2, ca 1.5 mm long, plumose, purplish. Grains elliptic, obtuse, dorsally flattened, ca 1.2 x 0.8 mm, brownish yellow.

Habitat: Open lands.

Distrib.: Old World tropics. TN: Almost all districts. GM: Mainland coast, frequent. Appears to be a grass of the interior.

Specimens examined: (Total 145) VB 1216.

Note: A noxious weed of cultivation; may be controlled by pre-emergence treatment with diuron.

2. *S. verticillata* (L.) P. Beauv., Ess. Agrostogr. 51, 178. 1812; FBI 7: 80. 1896; HSI 111 & 112. 1921; FPM 1789. 1934; GBCIP 365. 1960; FTC 3: 1902. 1983; FIFTC t. 824. 1988; FTN 3: 139. 1989; RHFC 8: 413. 1994. *Panicum verticillatum* L., Sp. Pl. ed. 2, 1: 82. 1762.

Annual; culms terete, to 75 cm high, glabrous. Leaves linear, acuminate, ca 20 x 1 cm, pubescent, scabrid along margins; ligule membranous, ca 1.5 mm long; sheaths 3/4 or as long as internodes, keeled, glabrous, shortly ciliolate near nodes. Panicles cylindrical, ca 10 x 1 cm. Spikelets ovate or elliptic, obtuse, 1.2 - 1.5 x 0.8 - 1 mm; bristles 5 - 7, 4 - 6 mm long; lower glume broadly ovate, acute, ca 0.8 x 0.6 mm, 1-nerved; upper glume ovate, acute, ca 1.3 x 0.7 mm, 5-nerved, hyaline. Lower floret sterile; lemma ovate, acute, ca 3.7 x 0.8 mm, 5-nerved, hyaline or pale creamy yellow, epaleate. Upper floret fertile; lemma ovate, subacute, indurate, ca 2.3 x 1 mm, 3-nerved; palea oblong or elliptic, obtuse, keeled, ca 2.1 x 1.2 mm, transversely lined in centre. Lodicules 2, tubular, hyaline. Stamens 3; filaments ca 0.3 mm long; anthers linear, ca 0.7 mm long, yellow. Ovary oblong, ca 3 mm long; styles 2, free, slender, ca 0.4 mm long; stigmas 2, ca 0.3 mm long, plumose. Grains ovoid, ca 1 x 0.6 mm, smooth, white.

Fl. & Fr.: Dec. - March.

Habitat: Wet localities, with *Dactyloctenium aegyptium*, *Eragrostis amabilis* and *Spheranthes indicus*.

Distrib.: Tropics and temperate regions of the Old World. TN: Almost all districts. GM: Common on mainland coast. Rare on islands. Collected once on Nallathanni Island.

Uses: Relished by cattle when young. Mature spikes may be used to cover granaries as a protection against rats.

Specimens examined: (Total 65) KSK 102889; PD & PU 107332; Nt Is. PD 101626.

44. *Spinifex* L.

Indomalaysia to E. Australia and Pacific, 4 species and one in India.

S. littoreus (Burm.f.) Merr. in Philipp. J. Sci. 7: 229. 1912; FPM 1706. 1934; GBCIP 366. 1960; FTC 3: 1903. 1983; FTN 3: 141. 1989; RHFC 8: 418. 1994. *Stipa littorea* Burm.f., Fl. Indica 29. 1768. *Spinifex squarrosus* L., Mant. Pl. 300. 1771; FBI 7: 63. 1896; HSIG tt. 105 & 106. 1921. [*Ravanan meesai*] (Figs. 103 & 104)

Dioecious perennial; stem woody, much branched, to 60 cm high, glabrous, glaucous green. Leaves acicular, convolute, spinescent, to 15 cm long, glabrous; ligule with a fringe of hairs, ca 0.4 mm wide; sheaths striate, to 3 cm long, greenish, glabrous. Male inflorescence a head, flabelliform; spikes to 5 cm long. Spikelets 5 - 10, lanceolate, ca 1.1 cm long; lower glume ovate, subacute-acute, ca 5 x 3 mm, 7 - 9-nerved; upper glume ovate, acute, ca 7 x 3 mm, 7 - 9-nerved. Lower floret: lemma ovate, acute-acuminate, 9 - 10 x 3 - 3.5 mm, 8-nerved; palea ovate, acute, ca 9 x 1.5 mm, keeled, minutely serrulate on keel, 2-nerved; lodicules 2, tubular, ca 1.5 mm long; stamens 3; filaments ca 1 mm long; anthers linear, ca 6 mm long. Upper floret: lemma ovate, acuminate, 1 - 1.1 x 0.3 - 0.4 mm, 5-nerved;

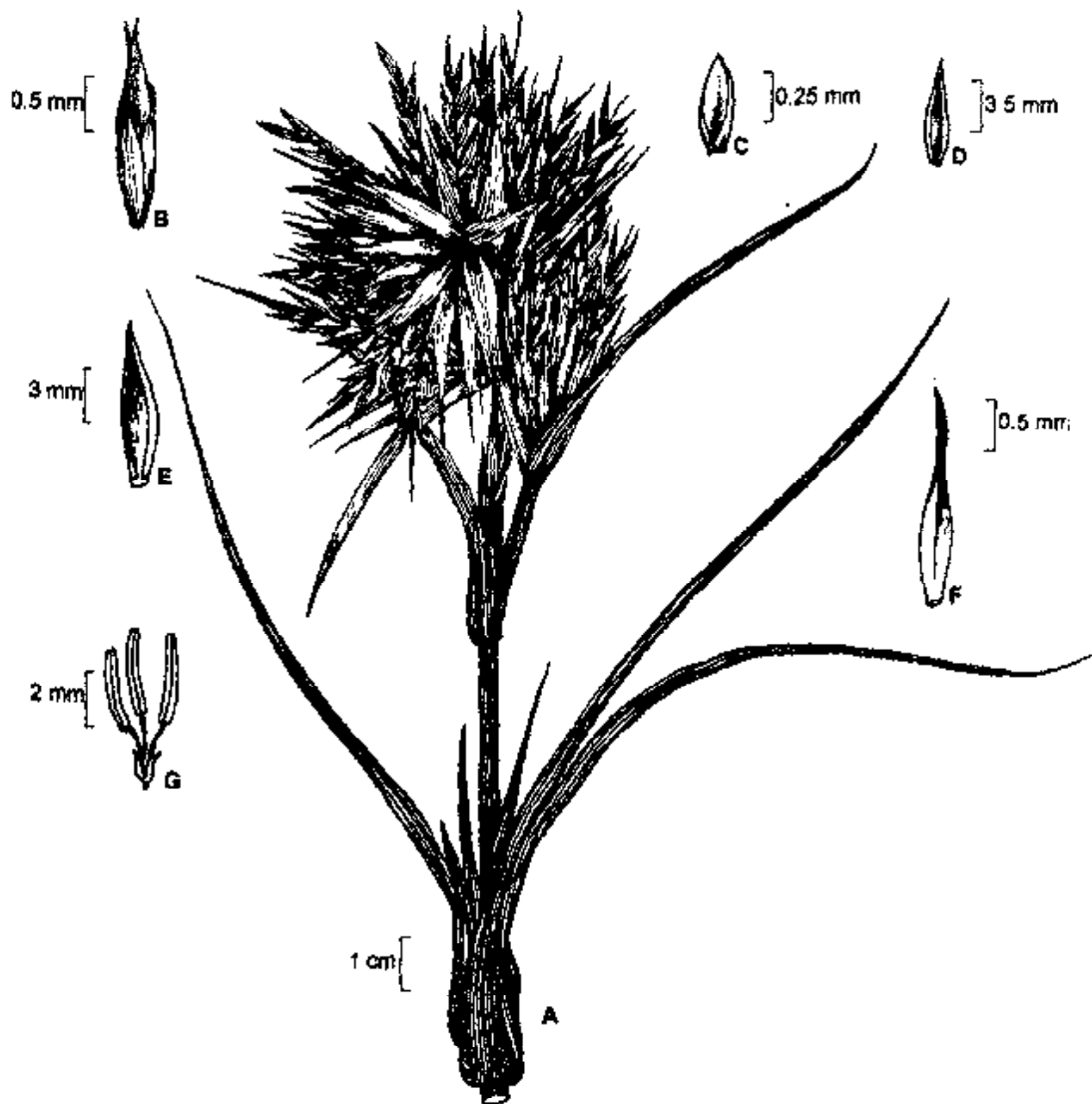


Fig. 103(A - G). *Spizifex littoreus* (Burm.f) Merr.

A. Habit with male inflorescence B. Spikelet C. Lower glume D. Upper glume
E. Lemma F. Palea G. Stamens & lodicules

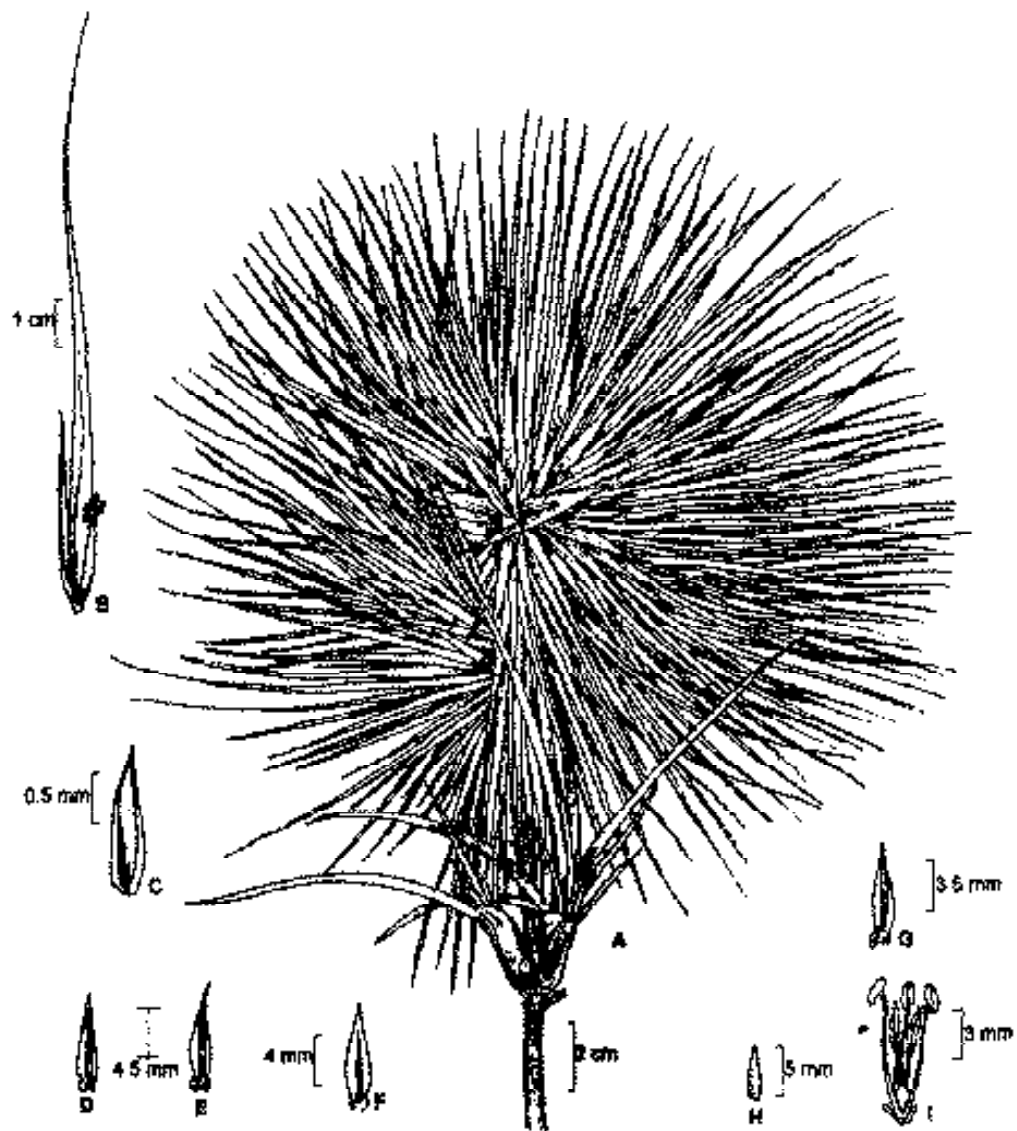


Fig. 104(A - I). *Spizella monticola* (Barn. f.) Merr.

A. Habit with female inflorescence B. Spiculet C. Lower glume D. Upper glume
 E. Lemma of lower floret F. Palea of lower floret G. Lemma of upper floret
 H. Palea of upper floret I. Pistil with sessile anthers

palea lanceolate, acuminate, ca 10 x 1.5 mm, keeled, 2-nerved. Lodicules and stamens similar to that of lower floret. Female inflorescence globose; bracts spinescent, to 15 cm long, scabrid; spathes ovate-lanceolate, acuminate, 2 - 3 cm long. Spikelets lanceolate, 1.2 x 0.1 - 0.2 cm; lower glume ovate-lanceolate, acute, 1.1 - 1.2 x 0.2 - 0.3 cm, 9-nerved; upper glume ovate, acute, ca 1 x 0.3 cm, 7-nerved. Lower floret sterile; lemma ovate, acute, ca 9 x 3 mm, 7-nerved; palea broadly ovate, acute, incurved along margins, ca 8.5 x 2.5 mm. Upper floret pistillate; lemma ovate, acuminate, incurved along margins, ca 7.5 x 2.5 mm, 2-nerved; palea ovate-elliptic, acute, ca 5.5 x 1.5 mm, membranous; lodicules 2, tubular, ca 2 mm long; stamens 3, sterile; filaments ca 8 mm long; anthers ca 1.5 mm long; ovary oblong, ca 2 mm long; styles 2, ca 4 mm long; stigmas 2, ca 1 cm long, plumose.

Fl. & Fr.: Nov. - Feb.

Habitat: Sandy seashores, usually as pure patches, sometimes with other foreshore species like *Cyperus conglomeratus* ssp. *pachyrrhizus* and *Halopyrum mucronatum*.

Distrib.: India, Myanmar and Sri Lanka. TN: Throughout. GM: Common on mainland coast and islands.

Uses: Excellent sand binder. Dried grass used as a fuel by fishermen. Dry female inflorescence can be used for interior decoration.

Specimens examined: (Total 35) KSK 102900; PD 100459; PD & PU 106498; Ap Is. PD 101566; Mp Is. PD 101458; Mu Is. PD 100671; Nt Is. PD 101600; Sh Is. PD & PU 106864; Th Is. PD 101518.

45. *Sporobolus* R. Br.

Africa, America, Asia and Europe, ca 150 species, 16 in India, 10 in Tamil Nadu and 6 in GM.

Key to species

- | | | |
|-----|--|------------------------------|
| 1a. | Annual, prostrate or erect, nonstoloniferous herbs..... | 2 |
| b. | Perennial, stoloniferous herbs | 3 |
| 2a. | Panicles pyramidal; branches whorled throughout; spikelets less than 1.3 mm long | 1. <i>S. coromandelianus</i> |
| b. | Panicles linear; basal most branches only whorled; spikelets more than 1.3 mm long | 2. <i>S. hajrae</i> |
| 3a. | Lower glume more than 1.3 mm long | 6. <i>S. virgaticus</i> |
| b. | Lower glume less than 1.3 mm long | 4 |
| 4a. | Spikelets contracted, spicate, sessile | 4. <i>S. spicatus</i> |
| b. | Spikelets lax, not spicate, pedicellate | 5 |
| 5a. | Leaves 0.5 - 2.5 cm long, glabrous, smooth along margins; | |

- panicle branches not spreading 5. *S. tremulus*
 b. Leaves 4.5 - 18 cm long, sparsely hairy beneath, spinulose
 along margins; panicle branches spreading 3. *S. maderaspatanus*

1. *S. coromandelianus* (Retz.) Kunth, Revis. Gramin. 1: 68. 1829; FBI 7: 252. 1896; FPM 1817. 1934; GBCIP 627. 1960; FTC 3: 1904. 1983; FIFTC t. 825. 1988; FTN 3: 141. 1989; RHFC 8:421.1994. *Agrostis coromandeliana* Retz., Obs. Bot. 4: 19. 1786. *Sporobolus commutatus* (Trin.) Kunth, Enum. Pl. 1: 214. 1833. *Vilfa commutata* Trin., Gram. Unifl. Sesquifl. 156. 1824. (Fig. 105)

Culms spreading, tufted, to 25 cm high, glabrous. Leaves lanceolate, acuminate, 3 - 7 x 0.5 - 0.7 cm, spinulose along margins, glabrous; ligule with a fringe of hairs; sheaths glabrous. Panicles effuse, spreading, pyramidal, ca 5 cm long; lower branches truly whorled; rachis slender, glabrous. Spikelets pedicellate, ca 1.25 x 0.3 mm, greenish; lower glume broadly ovate-suborbicular, ca 0.3 mm long; upper glume lanceolate-ovate, subacute, 1.2 - 1.5 x 0.3 - 0.5 mm; lemma lanceolate-ovate, subacute, ca 1.2 x 0.5 mm; palea lanceolate-ovate, ca 1 x 0.5 mm. Filaments slender; anthers oblong, ca 0.5 mm long. Ovary ca 0.3 mm long. Grains obovoid, 0.7 - 0.8 x 0.4 - 0.5 mm, creamy.

Fl. & Fr.: Oct.-March.

Habitat: Cultivated fields, wastelands and road sides, with *Chloris barbata*, *Eremopogon foveolatus* etc.

Distrib.: India, S. Africa, Myanmar and Sri Lanka. TN: Chengalpattu, Coimbatore, Madurai, N. Arcot, Ramanathapuram, Tirunelveli and Tuticorin. GM: Frequent on mainland coast, collected near Athur, Veppalodai and Chippikulam, all in Tuticorin.

Uses: A good fodder grass.

Specimens examined: (Total 16) PD 102294; PD & PU 103558, 103600; SAM 104716.

3. *S. hajrae* Umamahesw. & P. Daniel in Nord. J. Bot. 18: 577, f. 1. 1999.

(Fig. 106)

Annual herb; culms tufted, terete, ca 30 cm high, glabrous. Leaves linear, acute, 1.5 - 7 x 0.2 - 0.5 cm, pectinate along margins towards base, glabrous; ligule with a fringe of hairs; sheaths 3.5 - 6 cm long, glabrous, rarely ciliate just below ligule. Panicles linear, 10 - 15 cm long; branches whorled, ca 7 per whorl, longer than internodes, only that of the lower most whorl spreading, others ascending; internodes 0.5 - 1 cm long. Spikelets ovate; sessile or pedicellate, 1.8 - 2 x 0.3 - 0.4 mm; pedicels slender, ca 1 mm long; lower glume oblong or narrowly ovate, subacute-acute, 0.5 - 0.8 x 0.2 - 0.3 mm, nerveless; upper glume ovate-oblong, acute, 1.3 - 1.5 x 0.3 - 0.5 mm, 1-nerved, scabrid on nerve; lemma ovate, acute, 1.5 - 1.8 x 0.5 - 0.7 mm, 1-nerved; palea oblong or narrowly ovate, 2-lobed

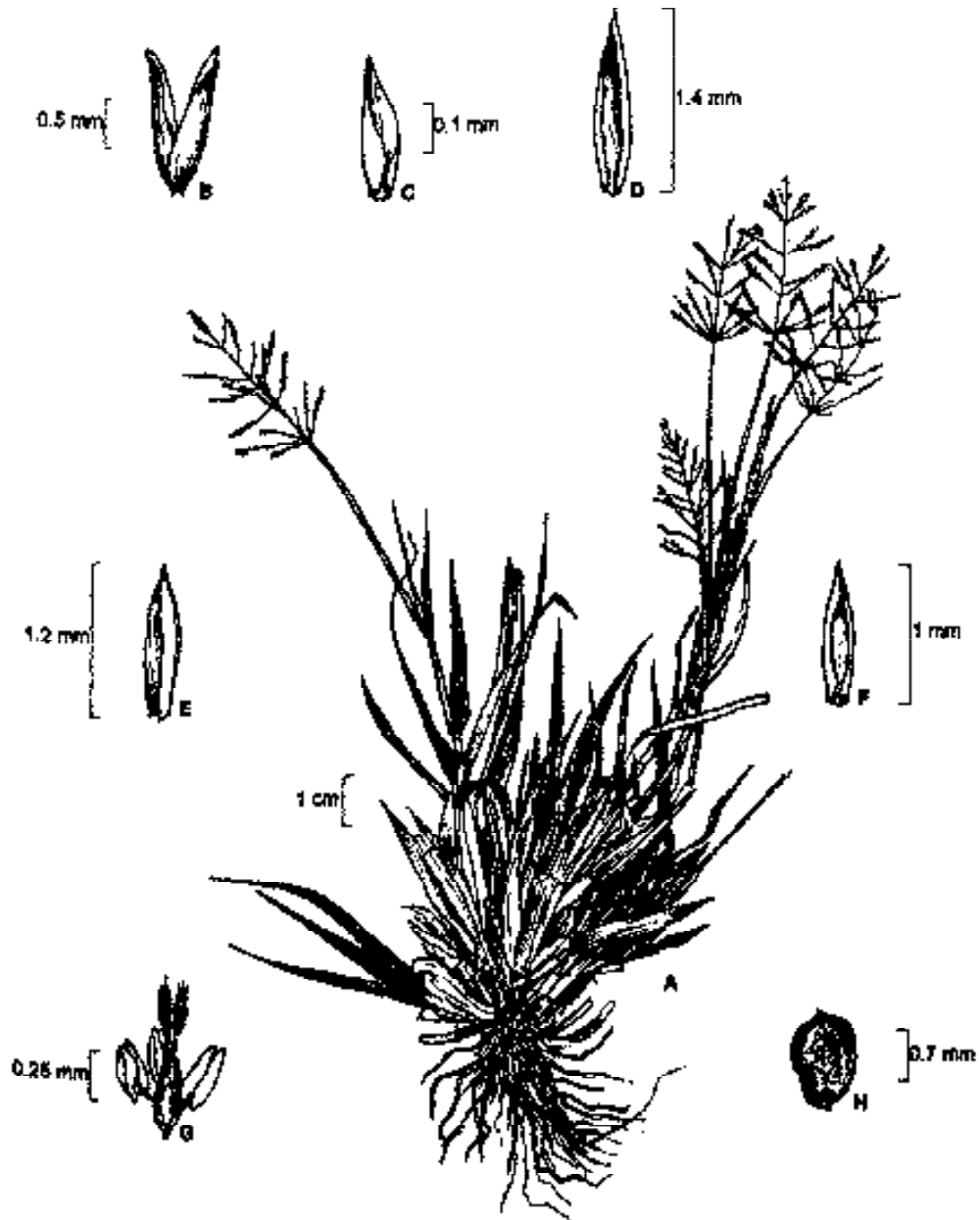


Fig. 105 (A - H). *Eporabohu ceraszoides* (Retz.) Kunth
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Grain

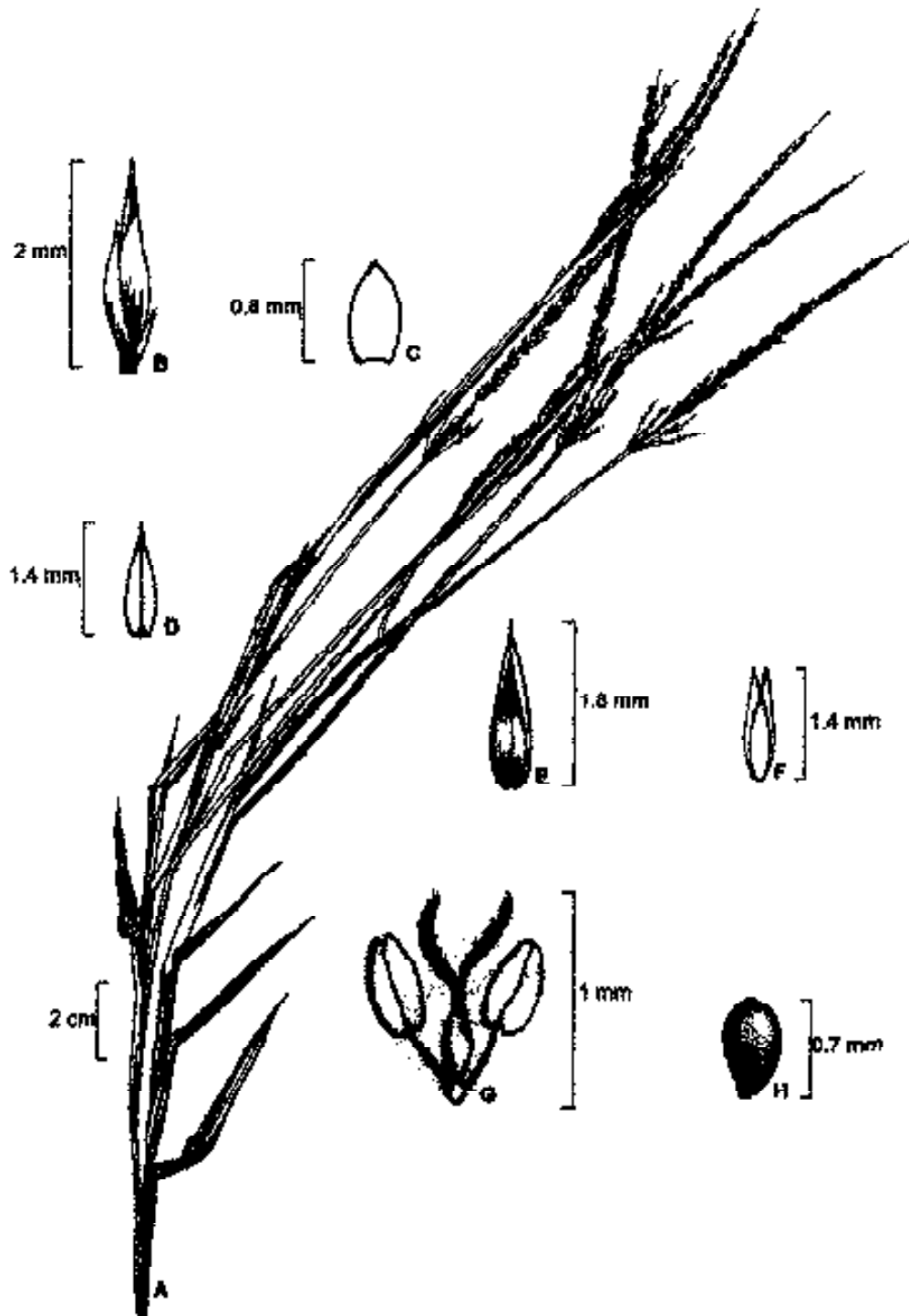


Fig. 106(A - H). *Sporobolus bajras* Uttamshetti & P. Dattil
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Fertile & sterile lemmas H. Grain

retuse, very shortly mucronate, ca 1.5 x 0.5 mm. Stamens 2; filaments very slender, ca 0.5 mm long; anthers oblong, ca 0.5 mm long. Ovary obovoid, ca 0.5 mm long; styles 2; stigmas 2, ca 0.7 mm long, plumose. Grains obovoid, 0.7 - 0.8 mm long, stramineous brown.

Fl. & Fr.: July.

Habitat: Sandy open places, usually in pure patches.

Specimens examined: PD & PU 103594; PD & PU 106544.

3. *S. maderaspatanus* Bor in Kew Bull. 12: 234. 1957 & GBCIP 632. 1960; FTC 3: 1905. 1983; FTN 3: 142. 1989; RHFC 8: 425. 1994. *S. orientalis* auct. non (Nees) Kunth 1833; FBI 7: 251. 1896; FPM 1817. 1934. (Fig. 107)

Culms tufted, stoloniferous, arising from a woody rootstock, to 40 cm high. Leaves linear, acute, involute, distinctly spinulose along margins, 4.5 - 18 x 0.3 - 0.4 cm, sparsely long-hairy beneath; ligule with a fringe of long hairs; sheaths to 4 cm long. Panicles 5 - 7.5 cm long, branched; lower branches subwhorled; pedicels spinulose. Spikelets lax, 1.9 - 2 x 0.4 - 0.6 mm; lower glume ovate, subacute, 0.5 - 1 x 0.3 - 0.5 mm, nerveless; upper glume ovate, obtuse, 1.3 - 2 x 0.5 - 0.8 mm, 1-nerved; lemma ovate or oblong, obtuse, 1.7 - 2 x 0.8 - 1 mm; palea oblong or elliptic, plicate in centre, ca 2 x 1 mm. Anthers linear, ca 1.5 mm long. Ovary linear, ca 0.5 mm long. Grains obovoid, ca 1 x 0.6 mm, stramineous yellow.

Fl. & Fr.: Throughout the year.

Habitat: Sandy soil with other grasses.

Distrib.: India and Sri Lanka. TN: Chengalpattu, Kanyakumari, Ramanathapuram and Tuticorin. GM: Rare on mainland coast in north but common on islands; towards south from Keelakarai common on mainland coast and abundant on islands, especially on the Tuticorin group of islands as well as the mainland coast.

Note: Bor (1960) gave the distribution of *S. maderaspatanus* as western India and Ceylon. In India it is reported to occur in peninsular India (Karthikeyan & al., 1989); Godavari, Kistna and Guntur (Andhra Pradesh) and Chengalpattu and Tirunelveli (Fischer in FPM 1817. 1934); Kanyakumari, Ramanathapuram and Tirunelveli in Tamil Nadu (Nair in FTN 3:142. 1989). Though excluded in the flora of Chengalpattu by Livingstone and Narasimhan (1991) and flora of Madras by Livingstone and Henry (1994) it does occur thereabout as may be evident from recent collections (*vide Specimens examined*). The coastal part of Tirunelveli where it was collected earlier (Nair *l.c.*) is now in Tuticorin. Based on earlier collections of others Ramachandran and Balasubramaniam (1991) included it in the flora of Ramanathapuram, the coastal area of which lies in the Gulf of Mannar.

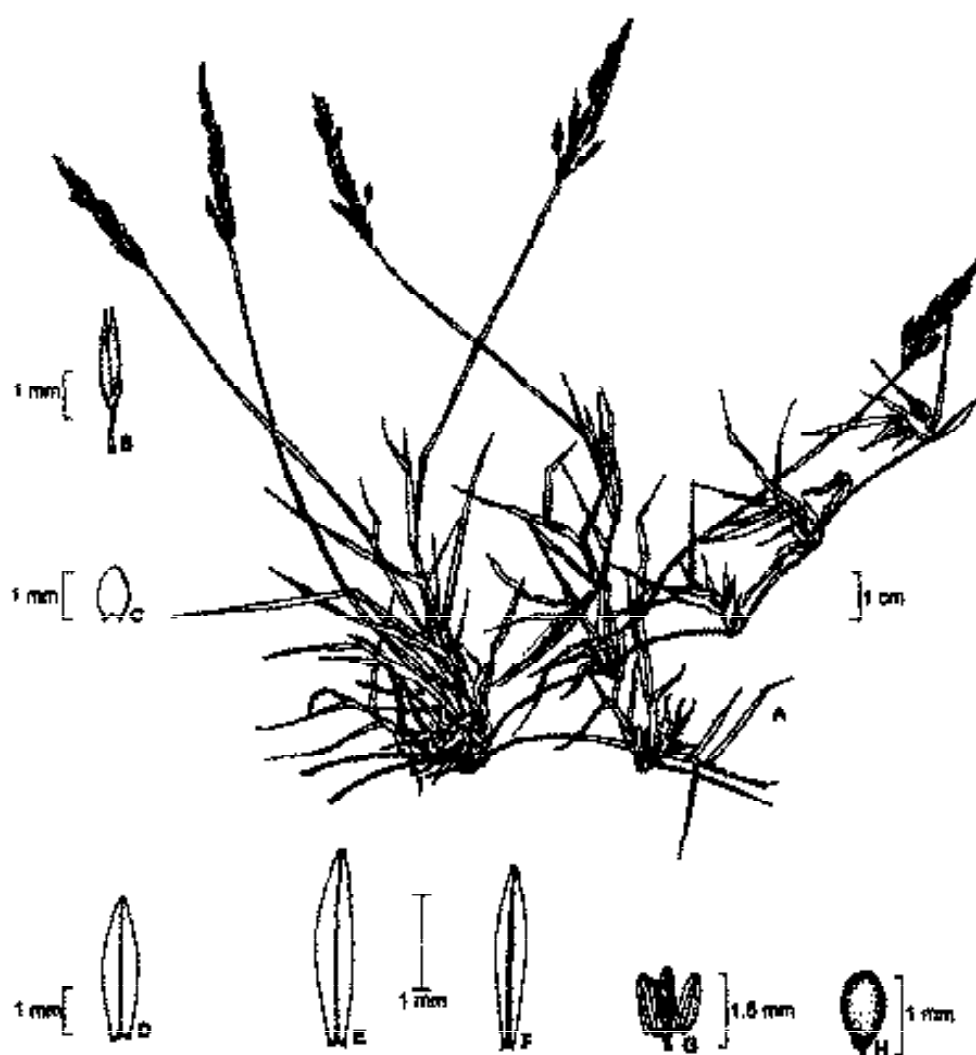


Fig. 167(A - H). *Sporobolus madagascariensis* Bor
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Grain

It was recorded for Anantapur, an interior district in Andhra Pradesh, by Pulliah and Yesoda (1989) based on *Gamble* 20845 (MH).

From western India it was reported to occur in Gujarat by Cooke (1908) under the earlier misapplied name *S. orientalis* based on Woodrow's collection made in Umrat. Following Cooke, it was enumerated by a number of later workers (Blatter & McCann, 1935; Patel, 1965; Santapau, 1967; Shah, 1978; Bole & Pathak, 1988). It was reported to occur in a number of states including Gujarat, Karnataka, Maharashtra, Punjab, Rajasthan and Uttar Pradesh (Anon., 1976).

A study of literature and copious material collected now as well as earlier ones in herbaria shows that *S. maderaspatanus* occurs only on the East Coast in peninsular India, a little interior in Tamilnadu Carnatic (Britto & Matthew in FTC 3: 1905. 1983), and Sri Lanka. Earlier reports from elsewhere are based on misidentification of material of either *S. spicatus* (Pulliah & Yesoda, 1989), or *S. ioclados* (Cooke, 1908; Santapau, 1967) which, as pointed out by Cope (1982: 141), like *S. maderaspatanus* belongs to the same cluster of allied species. *S. maderaspatanus* sensu Bole & Pathak (1988) is only *S. piliferus* Kunth (cf. descr. in Cooke, 1908).

Uses: It is reputed to be of moderate value as a fodder grass (Lazarides in RHFC 8: 425. 1994.). Goats were seen to relish this grass. A good sand binder.

Specimens examined: (Total 40) Madras, *S. Krishnan & al.* 249 (Madras Christian College Herbarium); S. Arcot, *K.M. Matthew* RHT 24982 (K!, RHT!); PD 102193; Ap Is. PD 101575; Ma Is. PD 101105; Mp Is. PD 101466; Mu Is. PD 100329; Na Is. PD 101624.

4. *S. spicatus* (Vahl) Kunth, Révis. Gramin. 1: 67. 1829; FBI 7: 250. 1896; FPM 1817. 1934; GBCIP 632. 1960; FTC 3: 1906. 1983; FIFTC t. 828. 1988; FTN 3: 142. 1989. *Agrostis spicata* Vahl, Symb. Bot. 1: 9. 1790. (Fig. 108)

Perennial; culms rooting at lower nodes, geniculate, glabrous; internodes to 10 cm long. Leaves linear, acute, pungent, 1 - 6 x 0.2 - 0.3 cm, scabrid, spinulose along margins; sheaths bearded at mouth. Racemes cylindrical, 2.5 - 5 cm long. Spikelets compact, sessile, 1.8 - 2 x 0.5 - 0.8 mm; lower glume truncate, ca 0.5 x 0.3 mm, nerveless; upper glume lanceolate, mucronate, 1.1 - 1.7 x 0.2 - 0.4 mm, nerveless; lemma ovate or elliptic, obtuse, 1.7 - 1.9 x 0.5 - 0.7 mm, 1-nerved; palea oblong, tridentate, 1.3 - 1.7 x 0.5 - 0.8 mm. Filaments slender; anthers linear, ca 1 mm long. Ovary oblong, ca 0.5 mm long. Grains obovoid, ca 0.8 x 0.3 mm, yellowish with a permanent style base.

Fl. & Fr.: Throughout the year.

Habitat: Sandy seacoast and bunds of salt pans, with *Cenchrus ciliaris*, *Sporobolus maderaspatanus* etc.

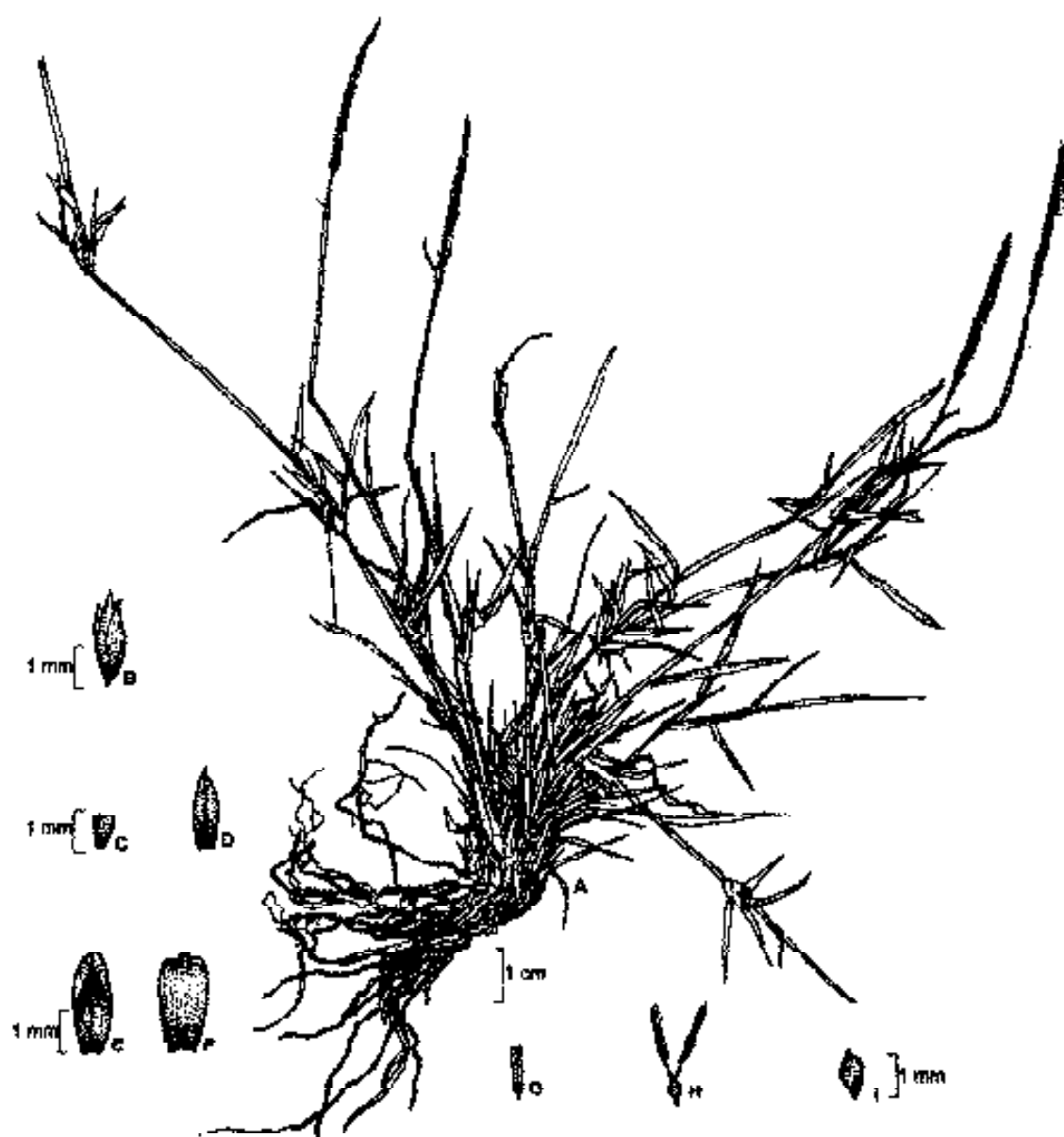


Fig. 508 (A - I). *Sporobolus spicatus* (Vahl) Karth
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Stamen H. Pistil I. Grain

Distrib.: Arabia and Trop. Africa, S. & W. India. TN: Coimbatore, Ramanathapuram, S. Arcot and Tuticorin. GM: Frequent throughout mainland coast and very rare on islands. Collected only on Nallathanni Island.

Uses: A fodder grass.

Specimens examined: (Total 18) DD 86678; KCJ 20160; NP & KR 85321; PD 100488, 102218; PD & PU 107394; SAM 104672; Nt Is. PD 101624.

5. *S. tremulus* (Willd.) Kunth, Révis. Gramin. 1: 67. 1829; FBI 7: 250. 1896; FPM 1817. 1934; GBCIP 633. 1960; FTC 3: 1906. 1983; FIFTC t. 829. 1988; FTN 3: 142. 1989; RHFC 8: 426. 1994. *Agrostis tremula* Willd., Sp. Pl. 1: 372. 1798. [*Uppurutnampul*]

(Fig. 109)

Perennial; culms caespitose, to 40 cm long, covered by greyish black sheaths; flowering culms erect, to 30 cm high. Leaves linear-lanceolate, acute, 0.5 - 2 x 0.1 - 0.2 cm, glabrous; sheaths 1 - 2 cm long, bearded at mouth. Panicles 0.6 - 4.6 cm long; rachis minutely spinulose. Spikelets lax, shortly pedicellate, 1.8 - 2 x 0.4 - 0.6 mm; lower glume lanceolate-ovate, acute, ca 1.3 x 0.4 mm; upper glume lanceolate-ovate, acute, ca 1.9 x 0.7 mm; lemma similar to upper glume; palea broadly ovate, obtuse, ca 1.8 x 1 mm, plicate in centre. Filaments slender, short; anthers oblong, ca 1.2 mm long. Ovary oblong, ca 0.4 x 0.1 mm.

Fl. & Fr.: Sept. - Dec.

Habitat: Usually in marshy localities, also in sandy areas; usually with other grasses like *Aeluropus lagopoides*, *Sporobolus maderaspatanus*, and *Suaeda maritima*.

Distrib.: India and SE. Asia. TN: Chengalpattu, Coimbatore, Ramanathapuram, S. Arcot, Thanjavur, Tiruchirapalli and Tuticorin. GM: Frequent on mainland coast and islands.

On Kurusadai, Manoliputti, Moyal and Upputhanni Islands it occurs in marshy places whereas on Nallathanni, Pullivasal, Puluvinichalli and Van Islands in sandy places.

Uses: A good sand binder and a fodder grass.

Specimens examined: (Total 48) KSK 102708; PD 100483, 102108; Mu Is. PD 100323, 100328; Na Is. PD & PU 106643.

6. *S. virginicus* (L.) Kunth, Révis. Gramin. 1: 67. 1829; FBI 7: 249. 1896; FPM 1818. 1934; GBCIP 634. 1960; FTC 3: 1907. 1983; FIFTC t. 830. 1988; FTN 3: 143. 1989; RHFC 8: 427. 1994. *Agrostis virginica* L., Sp. Pl. 63. 1753. (Fig. 110)

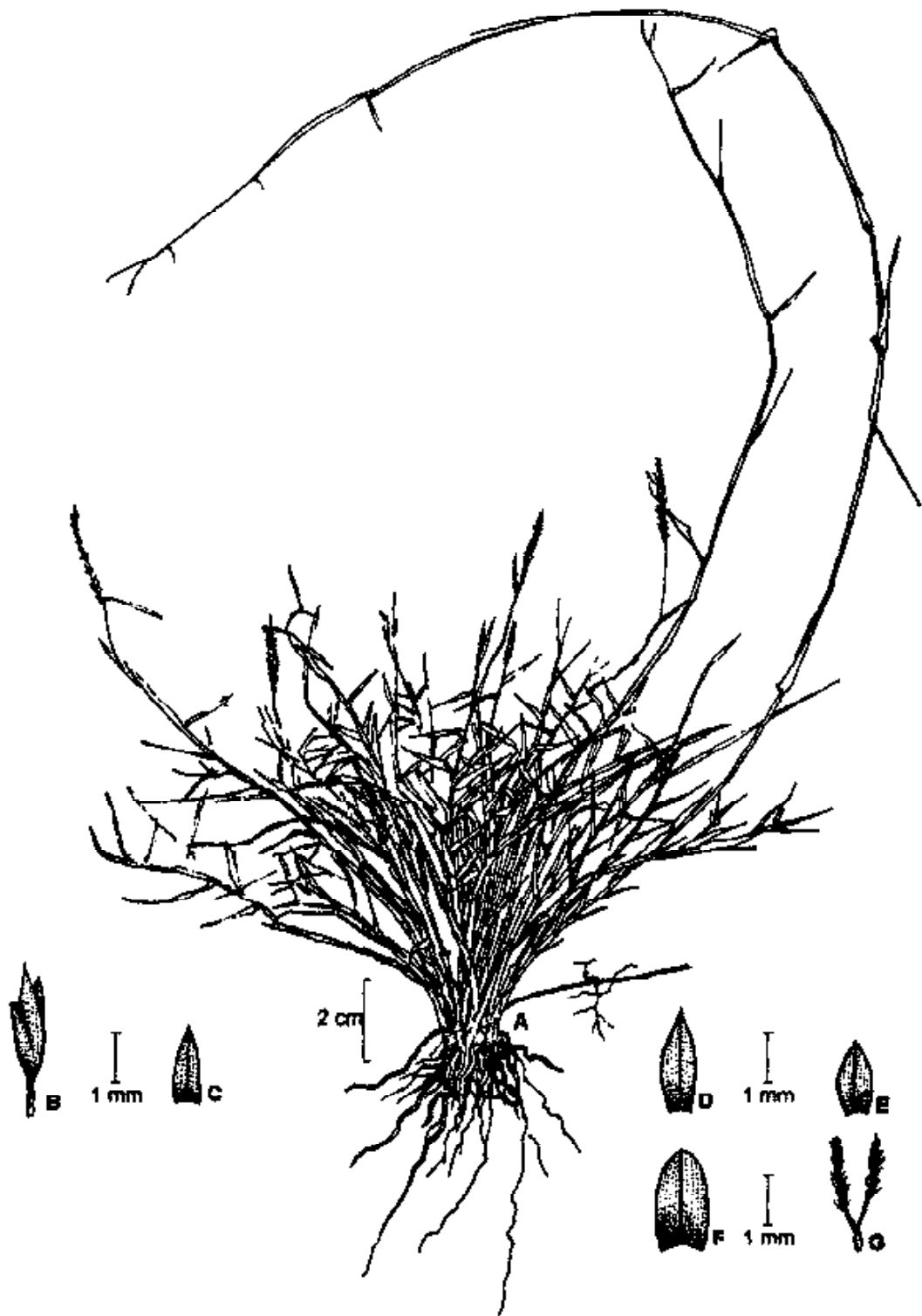


Fig. 109(A - G). *Sporobolus tremulus* (Willd.) Kunth
A. Habit B. Spikelet C. Lower glume D. Upper glume
E. Lemma F. Palea G. Pistil

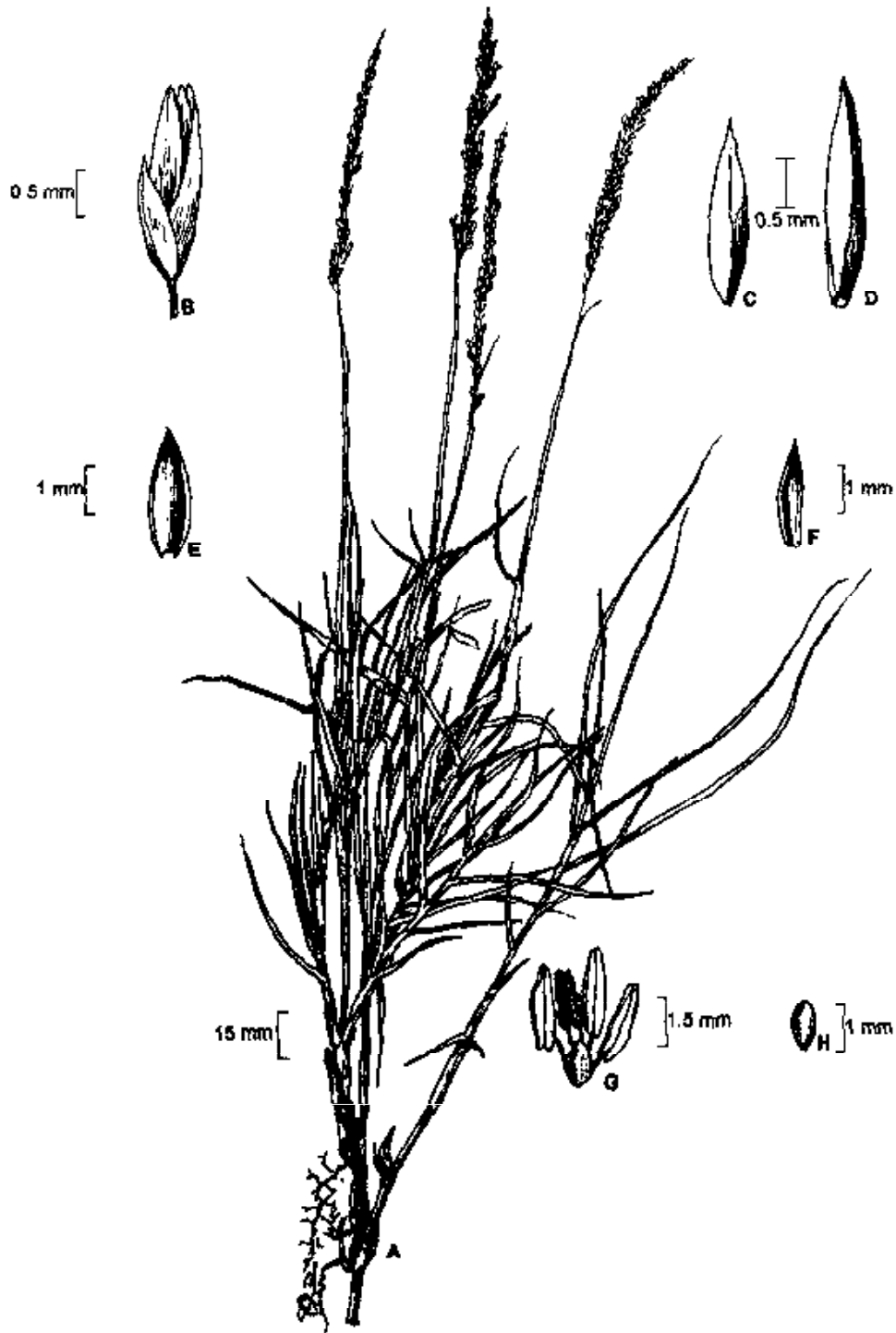


Fig. 110(A - H). *Sporobolus virginicus* (L.) Kunth
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Grain

Culms to 40 cm high, glabrous. Leaves linear, acute, 2 - 10 x 0.2 - 0.3 cm, involute, smooth along margins; sheaths as long as internodes with a fringe of hairs at mouth. Panicles subspiciform, linear-lanceolate, 5 - 9 cm long; rachis spinulose, faintly winged. Spikelets pedicellate, 2.2 - 3 x 0.5 - 0.7 mm; lower glume lanceolate, acute, ca 2 x 0.5 mm; upper glume lanceolate-ovate, acute, ca 2.5 x 0.8 mm; lemma ovate, acute, ca 2.5 x 1 mm; palea oblong-elliptic, obtuse, ca 2.1 x 1.2 mm, plicate in centre, 2-nerved. Anthers linear, ca 1 mm long. Ovary oblong, ca 0.5 x 0.2 mm. Grains ellipsoid-obovoid, ca 1 x 0.5 mm, brownish.

Fl. & Fr.: Sept.-Jan.

Habitat: Sandy shores, with *Sporobolus maderaspatanus*, *Hedyotis puberula*, *Vigna trilobata* and *Vernonia cinerea*.

Distrib.: Africa, America, Australia, India and Sri Lanka. TN: Chengalpattu, Ramanathapuram and Tuticorin. GM: Less frequent on mainland coast, collected at Tuticorin and Punnakayal in Tuticorin. Occasional on Kaswari, Kurusadai, Manoliputti, Puluvinichalli, Pumarichan and Van Islands.

Use: Excellent sand binder.

Specimens examined: (Total 18) PD 102245; Ku Is. VB 1460; Ka Is. PD & PU 107504; Mp Is. PD 101449; Pc Is. KSK 102357; PD & PU 106597; Pu Is. PD & PU 106839; Van Is. PD & PU 107518.

Of the 6 species of *Sporobolus* all except *S. coromandelianus* and *S. hajrae* were collected on various islands. They inhabit marshy or sandy habitats on islands. The observations of Ridley (1930) that the grains may be carried on the feet of birds appears convincing in the case of those found in marshy habitats. Fruits/seeds are also said to get attached to feathers (Carlquist, 1974). Perhaps drifting is also involved. However, *S. maderaspatanus* is so abundant on islands that certain insular factors seem to be at work. What is intriguing is that *S. coromandelianus* which is not rare particularly on the Tuticorin coast has not reached any island so far.

46. *Trachys* Pers.

South India to Myanmar and Sri Lanka, unispecific.

T. muricata (L.) Pers. ex Trin. in Mém. Acad. Imp. Sci. St.-Petersbourg, Sér. 6, Sci. Math. 3: 189. 1834; FPM 1813. 1934; GBCIP 369, t. 42. 1960; FTC 3: 1910. 1983; FTN 3: 144. 1989; RHFC 8: 441. 1994. *Cenchrus muricatus* L., Mant. Pl. 302. 1771. *Trachys mucronata* Pers., Syn. Pl. 1: 85. 1805; FBI 7: 96. 1896; HSIG t. 121. 1921. [*Vennaithiratipul*]
(Fig. 111)

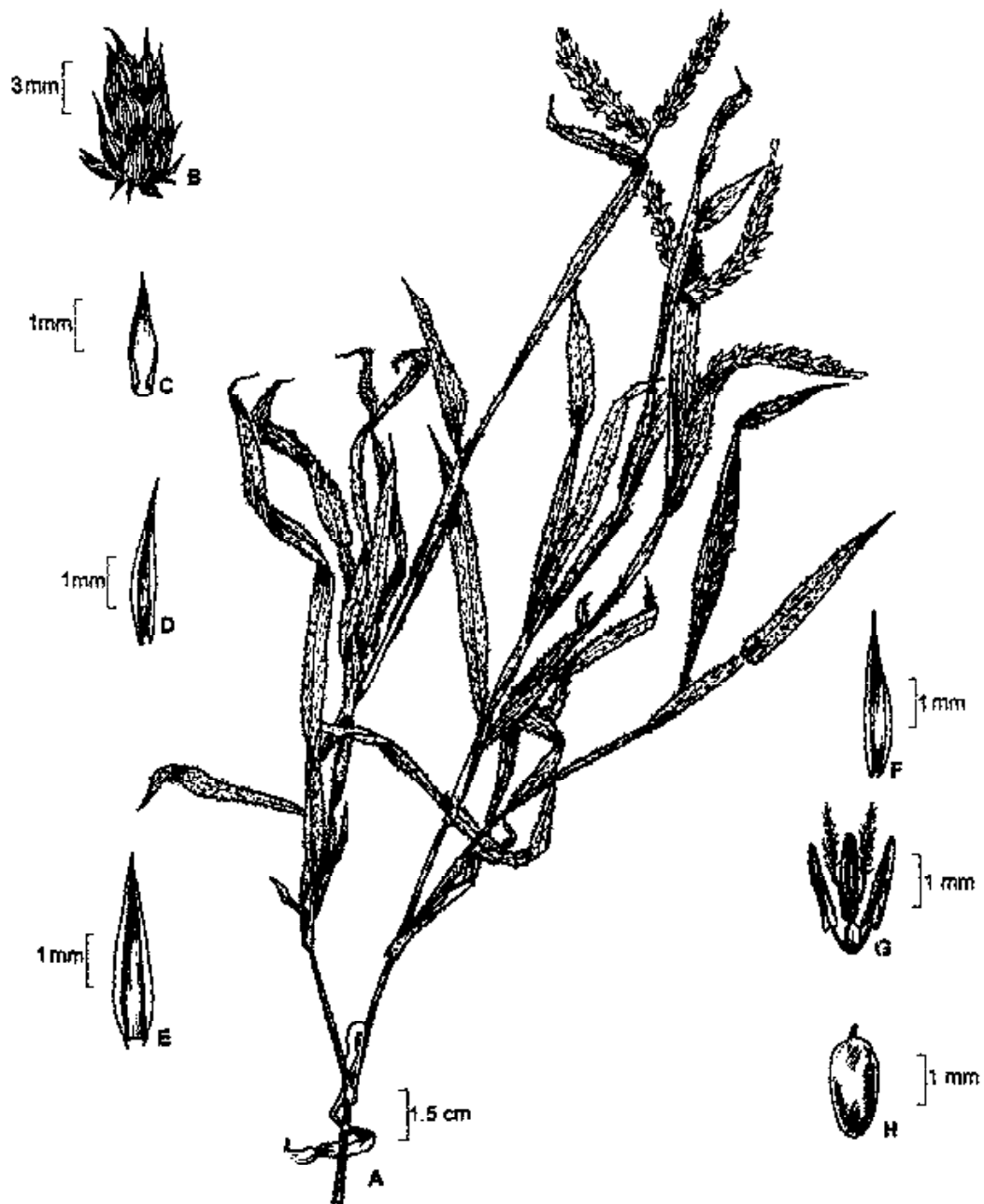


Fig. 111(A - H). *Trachys muricata* (L.) Pers. ex Trin.
 A. Habit B. Spikelet C. Lower glume D. Upper glume E. Lemma
 F. Palea G. Pistil & stamens H. Grain

Annual; culms decumbent, 20 - 60 cm high, glabrous; bearded at nodes. Leaves lanceolate or linear-lanceolate, acuminate, 2.5 - 15 x 0.5 - 1.2 cm, hispid; ligule membranous, truncate; sheaths villous. Racemes 1 or 2, to 6 cm long. Spikelets 5 - 6 mm long, clustered on a flat rachis; lower glume lanceolate, 2 - 3 x 0.2 - 0.5 mm, 1-nerved; upper glume lanceolate, 2 - 4 x 0.5 - 0.7 mm, chartaceous, 1 - 3-nerved. Lower floret sterile; lemma broadly elliptic, acute or acuminate, 5 - 6 x 2 - 3 mm, chartaceous, 11-nerved, epaleate. Upper floret bisexual; lemma elliptic-lanceolate or lanceolate, 3 - 5 x 1 - 2 mm, coriaceous, 3 - 5-nerved; palea elliptic-lanceolate or lanceolate, 3 - 5 x 1 - 1.5 mm, hyaline, 2-nerved; stamens 3; filaments short; anthers oblong, ca 1.5 mm long; ovary oblong; styles 2; stigmas 2, plumose. Grains obovoid, ca 2 mm long.

Fl. & Fr.: Almost throughout the year.

Habitat: Sandy localities, with *Dactyloctenium aegyptium*, *Eragrostis* spp. etc.

Distrib.: TN: All districts. GM: Common on mainland coast and Appa, Kurusadai, Manoli, Muyal, Nallathanni, Pumarichan, Pullivasal, Puluvinichalli and Upputhanni Islands.

Specimens examined: (Total 65) KSK 102812; Ap Is. PD 101585; Ku Is. PD 99792; Ma Is. PD 101118; Mu Is. PD 100644; Nt Is. KSK 102364; Pu Is. PD 100548; Pv Is. PD 100562; Ut Is. PD 101663.

47. *Tragus* Haller nom. cons.

Old World tropics, ca 7 species and one in India.

T. roxburghii Panigrahi in Kew Bull. 29: 495. 1974; IFTC tt. 949 & 950. 1982; FTC 3: 1910. 1983; FTN 3: 144. 1989. *T. biflorus* Schult., Mant. 2: 205. 1824, quoad descr. excl. basionym *Lappago biflora* Roxb. 1820; FPM 1813. 1934; GBCIP 682. 1960. *T. racemosus* sensu FBI 7: 97. 1896, non Scop. 1777. (Fig. 112)

Annual or perennial, decumbent or erect; culms terete, to 10 cm high, glabrous, rooting at lower nodes. Leaves lanceolate, flat, acute, 0.5 - 1.5 x 0.2 - 0.3 cm, spinulose along margins, glabrous; ligule with a fringe of short hairs; sheaths very short. Raceme solitary, terminal, 1 - 4 cm long; rachis ribbed, angular, pubescent, greenish purple. Spikelets many, lanceolate, ca 4.5 x 3 mm including spines; lower glume reduced to scale; upper glume lanceolate-ovate, acuminate, ca 4 x 1.2 mm, 5-ribbed, spinose, purplish green; lemma lanceolate-ovate, acute, ca 2.5 x 1 mm, thin, chartaceous, hyaline, 1-nerved; palea elliptic-oblong, obtuse, ca 2 x 0.8 mm. Lodicules 2, truncate, ca 0.3 mm long, thin, delicate, hyaline. Stamens 3; filaments slender, ca 0.4 mm long; anthers oblong, ca 0.8 mm long, purplish. Ovary oblong, ca 0.5 mm long; styles 2, free, ca 1 mm long; stigmas 2, free, ca 1 mm long, plumose. Grains linear-oblong, 1.8 - 2 x 0.4 - 0.6 mm, smooth, shiny.

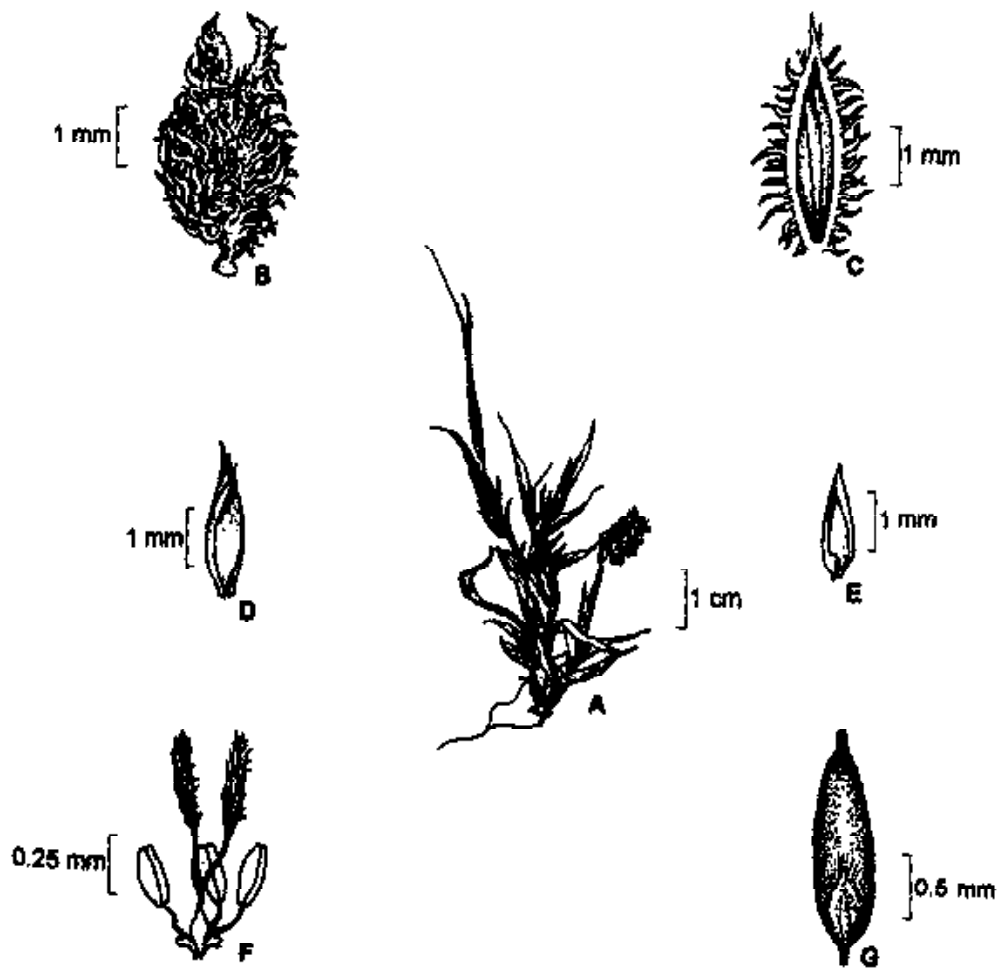


Fig. 112 (A - G). *Tragus reaxburghii* Panigrahi

A. Habit B. Spikelet C. Upper glume D. Lemma E. Palea F. Pistil & stamens G. Grain

Fl. & Fr.: Throughout the year.

Habitat: Often in dry and sandy localities, with *Chloris barbata*, *Coelachyrum lagopoides* etc.

Distrib.: E. Africa, India and SE. Asia. TN: Almost all districts. GM: Mainland coast, occasional.

The spinose glumes of the spikelets easily stick to animals and clothes of human beings resulting in quick dispersal of seeds. However, it has failed to establish on any island so far.

Uses: The grass is much grazed during the rains and is said to be nutritious, but as a fodder it is not of much value because of its small size and harshness of the prickly inflorescence. It is useful as a sand binder.

Specimens examined: (Total 49) PD 101134.

48. *Urochloa* P. Beauv.

Old World tropics, 11 species, 6 in India, 2 in Tamil Nadu and one in GM.

U. panicoides P. Beauv., Ess. Agrostogr. 53, t. 11, f. 1. 1812; FPM 1775. 1934; GBCIP 372. 1960, incl. var. *pubescens* (Kunth) Bor & var. *velutina* (Henrard) Bor; IFTC tt. 953 & 954. 1982; FTC 3: 1912. 1983; FTN 3: 145. 1989; RHFC 8: 447. 1994. *Panicum javanicum* Poir. in Lam., Encycl. Suppl. 4: 274. 1816.

Annual; culms tufted, creeping, canaliculate, pubescent. Leaves lanceolate, cordate, slightly undulate along margins, acuminate, 2 - 6 x 0.7 - 1 cm, pubescent; ligule with a fringe of hairs, ca 0.5 mm wide; sheaths keeled, 2 - 4 cm long, tuberculate, pubescent on tubercles. Racemes 3 - 5, 1 - 3 cm long; rachis flat, or narrowly winged. Spikelets biseriate, solitary, lanceolate, acute or mucronate, ca 3 x 1.5 mm, pubescent; pedicels ca 0.5 mm long; lower glume ovate, acute, ca 1.5 x 1 mm, 5-nerved; upper glume ovate, acute, ca 3.5 x 2 mm, dorsally pubescent, 7 - 9-nerved. Lower floret sterile; lemma broadly ovate, acute, ca 3.2 x 2 mm, 5-nerved, pubescent; palea elliptic-ovate, subacute, ca 3.5 x 1.5 mm, keeled, 2-nerved. Upper floret bisexual; lemma oblong-elliptic, mucronate, ca 3.1 x 1.5 mm, transversely rugose; palea elliptic, obtuse, ca 2.5 x 1.5 mm, keeled, rugose; stamens 3; filaments slender; anthers ca 1.2 mm long; ovary oblong, ca 1 mm long; styles 2, ca 1 mm long; stigmas 2, ca 1 mm long, plumose, purplish. Grains ellipsoid, ca 2 mm long.

Fl. & Fr.: Oct. - May.

Habitat: Wet sandy localities, with *Cleome angustifolia*, *Eragrostis viscosa* and *Zornia diphylla*.

Distrib.: Africa, Australia India and Sri Lanka. TN: Chengalpattu, Coimbatore, Nilgiri, N. & S. Arcot, Salem and Tuticorin. GM: Rare. Once collected on mainland coast at Veppalodai in Tuticorin.

Specimens examined: Total (33) PD 107342; VB 1784.

49. *Vetiveria* Bory

Old World tropics, ca 10 species, 2 in India and Tamil Nadu and one in GM.

V. zizanioides (L.) Nash in Small, Fl. S.E. U.S. 67. 1903; EPM 1773. 1934; GBCIP 258. 1960; IFTC tt. 955 & 956. 1982; FTC.3: 1913. 1983; FTN 3: 145. 1989; RHFC 8: 448. 1994. *Phalaris zizanioides* L., Mant. Pl. 183. 1771. *Andropogon squarrosus* sensu FBI 7: 186. 1896, non L.f. 1782. [*Vetiver*]

Perennial; culms tufted, woody, terete, erect, ca 1 m, ca 5 mm thick, glabrous. Leaves linear, acuminate, 20 - 80 x 0.2 - 1 cm, puberulent above, glabrous beneath, scabrid along margins; ligule membranous, short; sheaths longer than internodes, glabrous. Panicles to 45 x 2 cm; lower branches verticillate; pedicels glabrous. Sessile spikelet lanceolate, acute, 4.5 x 0.9 - 1.1 mm; lower glume linear, acute, ca 5 x 1 mm, muricate, 3-nerved; upper glume lanceolate, acute, ca 4.5 x 1 mm, 1-nerved, spiculate on nerves; lower lemma ovate or lanceolate, subacute, ca 4 x 1 mm, hyaline; upper lemma linear, aristate, ca 4 x 0.5 mm, hyaline, 3-nerved; palea oblong, ca 2 x 0.4 mm, hyaline. Lodicules 2, truncate, ca 1 x 0.2 mm, hyaline. Stamens 3; filaments slender, ca 0.5 mm long; anthers linear, ca 1.6 mm long, purplish. Ovary oblong, ca 0.5 mm long; styles 2, free, slender, ca 0.8 mm long; stigmas 2, ca 2 mm long, plumose. Pedicellate spikelet staminate, lanceolate, acute, 3.5 - 4 x 0.8 - 1 mm, spinulose; pedicel ca 3.5 mm long; lower glume ovate, acute, 3 - 4 x 0.8 - 1 mm, spinulose, 3-nerved; upper glume lanceolate or ovate, acute, ca 3.5 x 1 mm, winged, faintly ciliate along margins, hyaline, 3-nerved; lower lemma lanceolate, acuminate, ca 3 x 1 mm, hyaline; upper lemma oblong, acute, ca 3 x 1 mm, hyaline; palea linear, subacute, ca 2 x 0.5 mm, hyaline; lodicules 2, truncate, ca 0.5 mm long; stamens 3; filaments slender, ca 0.5 mm long; anthers linear, ca 1.5 mm long, purplish.

Fl. & Fr. : Oct. - Jan.

Habitat: Wet localities, also in road side ditches.

Distrib.: India, SE. Asia to Trop. Africa; widely introduced elsewhere. TN: Chengalpattu, Coimbatore, N. & S. Arcot and Tirunelveli, also cultivated. GM: Rare. Earlier collected at Mohamathiapuram and Sathirakudi on mainland coast in Ramanathapuram.

Uses: Roots aromatic and source of vetiver oil, an ingredient in perfumes. Also woven into fragrant mats, rugs and fans. It is employed medicinally and is also often planted to control soil erosion on step banks.

Specimens examined: (Total 23) VB 1924, 2114.

50. Zoysia Willd. nom. cons.

Southeast Asia, ca 10 species, 2 in India and one in Tamil Nadu.

Z. matrella (L.) Merr. in Philipp. J. Sci. 7: 230. 1912; FPM 1815. 1934; GBCIP 684. 1960; IFTC tt. 959 & 960. 1982; FTC 3: 1914. 1983; FTN 3: 146. 1989. *Agrostis matrella* L., Mant. Pl. 185. 1771. *Zoysia pungens* Willd. in Ges. Naturf. Freunde Berlin Neue Schriften 3: 441. 1801; FBI 7: 99. 1896. (Fig. 113)

Perennial; culms stoloniferous, tufted, rigid, ca 15 cm high, leafy throughout; nodes glabrous. Leaves linear, acicular, convolute, 0.7 - 2.5 x 0.1 - 0.2 cm; ligule membranous, fimbriate; sheaths short, pale purplish green. Racemes spiciform, linear, ca 3 cm long. Spikelets appressed to rachis, pedicellate, lanceolate-oblong, 3 - 3.5 x 0.7 - 1 mm, 1-flowered; glume oblong-lanceolate, faintly curved or falcate, 3 - 3.5 x 0.5 - 1 mm, coriaceous; lemma lanceolate, subacute, 2.5 - 2.8 x 0.5 - 0.7 mm, chartaceous, hyaline, 1-nerved. Stamens 3; filaments ca 0.5 mm long; anthers linear, ca 1.5 mm long, yellowish. Ovary oblong, ca 0.4 x 0.1 mm; styles 2, free but basally connate, ca 1 mm long; stigmas 2, free, plumose, ca 1.8 mm long. Grains oblong-elliptic, ca 1.5 x 0.6 mm, brownish.

Fl. & Fr.: Nov. - Jan.

Habitat: Sandy seashores, with *Sporobolus maderaspatanus* and *S. tremulus*.

Distrib.: India, Malacca and Sri Lanka. TN: Chengalpattu, Ramanathapuram and Thanjavur. GM: Rare. Once collected at Dhanushkodi. Earlier collected at Pamban.

Uses: Useful lawn grass and good sand binder.

Specimens examined: (Total 12) DD & JSR 93543; PD 100471; TAR 1411.

Oryza sativa L. [rice] is commonly cultivated. *Pennisetum typhoides* (Burm. f.) Stapf & C.E. Hubb. [pearl millet] and *Sorghum bicolor* (L.) Moench [great millet] may sometimes be cultivated.

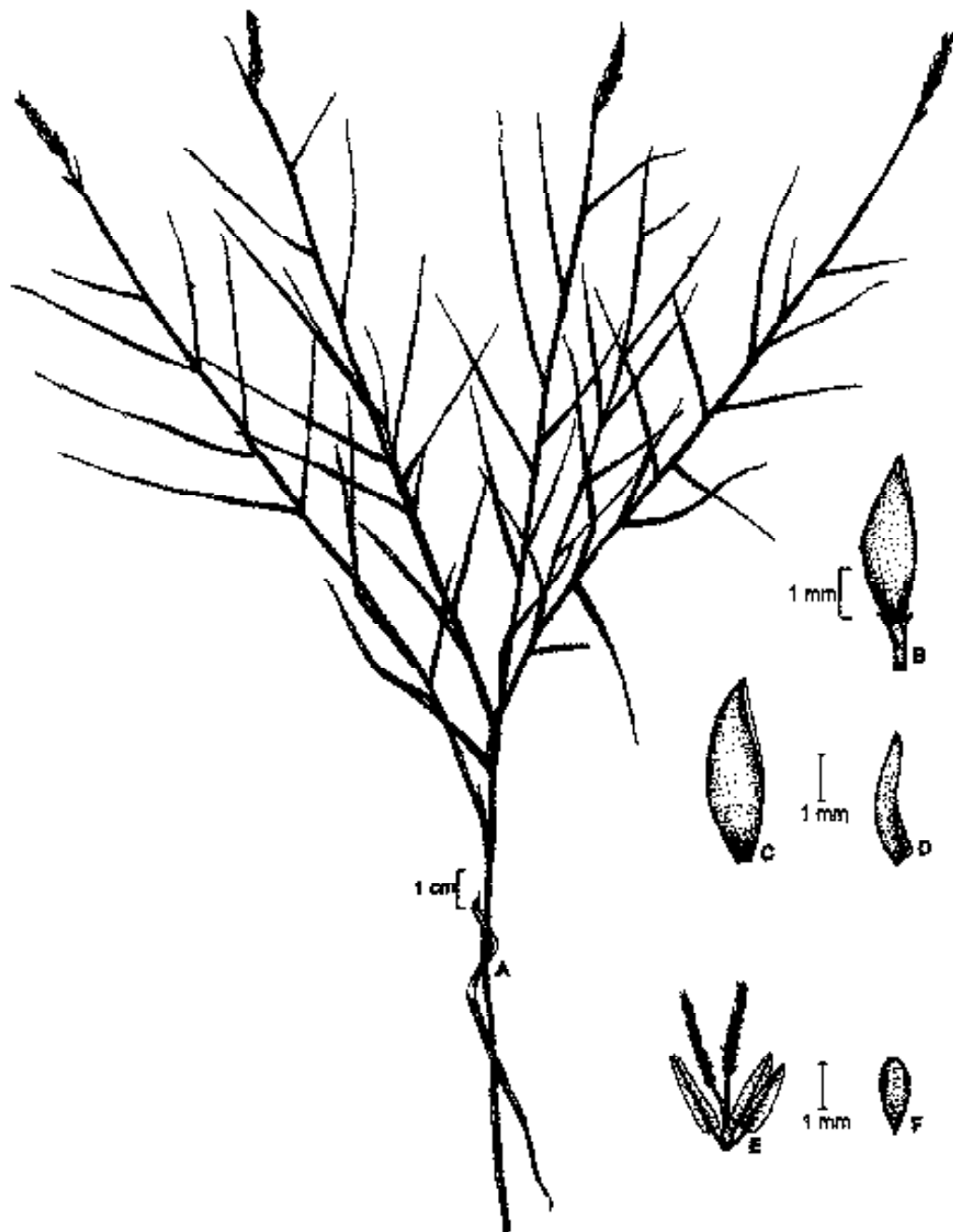


Fig. 113 (A-F). *Zizania australis* (L.) Merr.
 A. Habit B. Spikelet C. Glume D. Lemma E. Panicle & stamens F. Grain

THREATS TO BIODIVERSITY

The biodiversity on the islands and the mainland coast is affected by a number of direct as well as indirect factors mostly human interference, and natural calamities such as gales, cyclones, storms and consequent floods. These have been discussed at length (Anon., 1998; Daniel, 1998; Dhandapani, 1998; Kumaraguru & Jayakumar, 1998; Subramaniam, 1998).

There are villages and towns throughout the Gulf of Mannar Coast. As per 1981 census there were 200 fishing villages with 40,000 households and 150 fish-landing centres. Maximum number of villages were located on the Ramanathapuram coast. Most of the lands are either under cultivation particularly of coconut trees or other crop plants including rice. Hence, the villagers appear to resort to felling trees on the islands particularly mangroves for firewood (Photos 21 & 22). The magnitude of destruction may indicate that extraction of wood has been going on for quite sometime and it is difficult to predict the time needed for restoration. Almost invariably one finds fisher folks on all the islands. Some of them stay in improvised huts almost permanently. All their firewood requirements are met from plants on the islands.

Interference in the form of island based drift-net, stake-net, and wall-net fishing operations throughout the year affect seagrasses all around the islands as well as other organisms. Use of dynamite for fishing which involves cutting of shrubs from the islands, immersing them with a make-shift anchor to decompose which attracts microvertebrates and schools of fish and then killing them with dynamite explosion which disturbs the ecosystems beyond recognition has been pointed out by Dhandapani (1998). Although quarrying of corals has been legally banned, there is still illegal quarrying as may be evident from such material stored on shores (Photo 23). At its peak 250 m³ of reef were removed daily and the reefs on some of the islands have been exploited beyond recognition (Anon., 1998). They act as breakers and their removal will alter water currents along shorelines. This can affect not only the seagrasses but everything associated with the corals. As most of the islands are surrounded by corals, this can lead to soil erosion on islands (Photo 25) as well as on the mainland coast (Photo 26). Seaweeds such as species of *Gelidium*, *Gracilaria*, *Sargassum* etc. are collected on large scale which is likely to affect other interdependent organisms/ecosystems (Photo 24).

Industries all along the coast particularly around Tuticorin have been a source of pollution of the sea affecting the marine ecosystems. The discharge of effluents from chemical industries is reported to have led to fish mortality, increased mercury level, drastic reduction in pH, discoloration of soil and water in some places. The existing 2055 mw thermal power station with its 5 units requires 17 - 18,000 tonnes of coal per day. Out of the 5 - 6,000 tonnes of fly ash generated only are 300 - 400 tonnes sold to traders. The present dyke to dispose of the fly ash is already overflowing and getting discharged into the sea. It is reported that turbidity due to suspended ash has already silted the nearby seabeds. The suspended ash particles can damage a variety of marine organisms including oysters, corals, gorgonids, seaweeds and seagrasses.

There are salt pans all along the coast particularly in and around Tuticorin. And it is a fast-expanding industry which supplies salt to the salt-based industries around the place apart from supplying of edible salt. Consequently the natural vegetation left here and there is fast-disappearing. Much of the mangroves around Tuticorin town has already disappeared.

Sand quarrying in some parts of the mainland coast has resulted in geomorphological changes only to the disadvantage of the people around here. Occasionally this results in seawater entering the coast to spoil fresh water aquifers of the coastal belt (Dhandapani, 1998). This has become a social problem leading to clash between communities on the Tirunelveli coast where there is sand mining for quartz.

The two most common trees on the coast viz., *Borassus flabellifer* and *Acacia planifrons* have been targetted for felling, the former for firewood in brick kilns and the latter for pulp-making in paper industries.

Aquaculture, until recently a fast-expanding industry on the coast, is another threat to the coastal vegetation and environment.

SUGGESTIONS FOR CONSERVATION

The biosphere reserve is located in an underdeveloped and economically backward region (Deshmukh & Venkataramani, 1994). The conservation of the existing biodiversity involves protection of different habitats and ecological niches not only on the islands but along the entire mainland coast as well. Shingle Island of the Mandapam group is remarkable in that it now harbours a large number of plants of *Suriana maritima* of which Iyengar (1927) observed only 3 or 4 in 1922. It also has *Excoecaria agallocha* and *Scaevola taccada*. All these species are rare in the biosphere reserve. This indicates that the islands may have more vegetation, species and number of plants if left undisturbed. Another important habitat is Pamban where along the backwaters at Kundhukal a reasonably large swamp of about 10 ha with five species of mangroves exists. *Avicennia marina* attains large size here giving a majestic appearance. The mangroves need to be conserved with due consideration for flora and fauna.

There is an urgent need to protect the ecosystems of the biosphere reserve which are getting threatened due to pollution from industries and conversion of coastal lands for aquaculture ponds and salt pans. There are many chemical and other industries particularly around Tuticorin that pollute the sea and environment. The Southern Petrochemical Industries Corporation Ltd. (SPIC), Tuticorin Alkali Chemicals & Fertilizers Ltd. (TAC), Dhara-gadhra Chemical Works (DCW), Heavy Water Project, Thermal Power Station, Sterlite Copper Smelting Plant, Coats Vyella mills are the major ones. There is a proposal to establish an oil refinery costing Rs. 1,500 crores in the region. And the establishment of 2000 mw Atomic Power Station at Koodankulam on the Tirunelveli coast is already on the anvil. Pollution of the sea and air by these industries are to be quantified and necessary counter measures taken. It is reported that the hot water effluents from the Koodankulam Atomic Power Station when discharged into the sea will shoot up the already elevated salinity and temperature further causing severe damage to larval resources not only at the point of origin but throughout the Gulf of Mannar Coast (Subramaniam, 1998).

As pointed out elsewhere there is a fast-expansion of salt pans. A recent press report has that a ship-breaking industry has commenced work at Valinokkam at a cost of Rs. 75 crores. The Tamil Nadu Government has permitted a Bombay-based company to establish 50 units in an area of 220 acres which is expected to provide jobs for 10,000 people. The Tamil Nadu Salt Corporation expects to increase its salt production at Valinokkam to 3 lakh tonnes by 2002 with a turnover of Rs. 50 crores. All future industries should be subjected to strict EIA studies. Subjecting the existing industries to periodic EIA studies will also be in order.

Replanting of mangrove species in suitable places after studying the factors governing their optimal development should be given due consideration. Many organisms of economic importance and potentially useful species are interdependent. Hence, immediate steps need to be taken to check human interference such as illicit firewood collecting, seaweed collecting, coral mining and different types of fishing operations around the islands. The

existing islands off Tuticorin are likely to face the serious problem of submergence if these causal factors continue to operate unabated.

As pointed out earlier, *Borassus flabellifer* and *Acacia planifrons* trees are felled for industrial uses. However, there is no replanting at all. Unless replanting is done all along the coast in earnest without losing time these species are likely to be wiped out earlier than the predicted time of a few decades.

Biotechnological approaches through *in vitro* clonal propagation and crop preservation methods can be undertaken for conserving rare and threatened plants of the biosphere reserve. Standardising agronomic practices for domestication of wild food, fodder, fuel and medicinal plants would protect the genetic diversity and also improve the economy of the local people. Remote sensing technology may be employed to monitor the changes in the vegetational and geographical pattern in the biosphere reserve.

It should be convincingly highlighted among the local people that all ecosystems and biogeochemical cycles are interlinked and should be protected and exploited judiciously. In other words, educate the people on the importance of conserving the natural resources and protecting the environment so that they willingly participate in conservation. Unless this is achieved the confrontation and hostility between the local people and the biosphere reserve management is going to be never-ending and the much talked about conservation would remain an unattainable goal. And it is an uphill task as illiteracy is high in many places on the coast. As the whole region is rich in medicinal plants enterprising governmental and non-governmental agencies can seriously think about engaging a reasonably good percentage of the people in cultivating medicinal plants and marketing them to provide a livelihood so that the damage to the flora, fauna and ecosystems is minimal.

POINTS FOR FURTHER RESEARCH

It is absolutely necessary to monitor the flora of the biosphere reserve periodically, at least once in two decades, for changes in species composition, number of individuals in extremely rare cases, shrinkage/expansion of area inhabited particularly by mangroves etc. Sundararaj and Nagarajan (1964) who began exploring Van (Church) Island off Tuticorin from 1940s reported 54 species. Of these 23 have not been collected now. Some of them may be due to mistaken identity. And their identity cannot be confirmed because of absence of voucher specimens. But then, tree species like *Acacia planifrons*, *A. horrida* (= *A. latrorum*), *Dichrostachys cinerea*, *Ziziphus mauritiana* etc. and herbs like *Cassia auriculata*, *Corchorus aestuans*, *Crotalaria verrucosa*, *Ruppia maritima*, *Salicornia brachiata*, *Striga asiatica* etc. are unlikely to be misidentified. The trees might have been felled for firewood. Herbs and shrubs might have disappeared due to prolonged drought or other ecological factors. However, we have now collected 22 species which include *Prosopis chilensis* not collected by them may certainly indicate the changes over the years.

Kurusadai is the only island which has been collected intensively. Species such as *Morinda citrifolia*, *Polycarpaea spicata*, *Tarenna asiatica* and *Tournefortia argentea* earlier reported by Sundararaj and Nagarajan (1966), *Acanthus ilicifolius*, *Excoecaria agallocha* and *Ziziphus xylopyrus* by Chacko & al. (1955) and *Acanthus ilicifolius*, *Carissa curandas* and *Polycarpaea spicata* by Rao & al. (1963b) have not been collected recently. But *Canavalia rosea* and *Typha angustata*, two interesting species, have now been collected here. All these may justify the demand for periodical monitoring of the flora with particular reference to endemic and threatened species.

Similarly, a number of species earlier collected on the mainland coast have not been collected recently may indicate that they have either become rare or disappeared. For instance, *Polycarpaea diffusa* and *P. spicata* were collected at Tuticorin (type locality) by Wight in the 1830s but have never been re-collected here, so also *Bonamia evolvuloides* and *Derris trifoliata*. Hence, the mainland coastal flora also needs future monitoring.

The distribution pattern of certain species deserves further studies. For instance, *Suriana maritima* occurs on Shingle, Kurusadai, Pumarichan and Pullivasal Islands of the Mandapam group only. *Scaevola taccada* occurs only on Shingle and Kurusadai Islands in limited numbers whereas *S. plumieri* occurs in large numbers on almost all islands. *Cordia subcordata* occurs on all islands of the Mandapam group except Manoli and Manoliputti. On Moyal and Shingle Islands it is represented by very few individuals only. On Kurusadai, Pumarichan and Pullivasal Islands, on the other hand, it is frequent. The factors that govern the distribution of such species need investigations. *Lablab purpureus*, which is sometimes cultivated on the mainland coast, grows luxuriantly and flowers and fruits prolifically on most islands. Though no plant was seen as an escape anywhere on the mainland coast, it has adapted to the salinity and other insular factors so successfully.

Hill species such as *Atalantia racemosa* and *Erythroxylum monogynum* have managed to establish on Upputhanni, Nallathanni and Pumarichan Islands respectively. How best they adapt to the new ecological situation and spread further need monitoring.

A number of species that have not been collected on the mainland coast are common on islands. *Ipomoea violacea*, *Manilkara hexandra*, *Pleurostyliia opposita* etc. have not been collected on the coast. The dispersal of these plants to islands and between islands need further studies.

Many plants of the interior mainland with known medicinal uses occur on islands. They may be studied for differences in the chemical composition and efficacy.

There are rabbits and peafowls on Nallathanni and Muyal Islands. They seem to have been introduced at the turn of this century. The bulbs of *Cyperus bulbosus* are reportedly a staple food of the peafowls. The interaction of these animals with the plant species needs to be investigated.

APPENDIX - I

SPECIES ON DIFFERENT ISLANDS

Shingle Island

Asparagus racemosus
Atriplex repens
Avicennia marina
Blumea obliqua
Boerhavia diffusa
Bulbostylis barbata subsp. *barbata*
Calotropis gigantea
Cassipoua filiformis
Clerodendrum inerme
Cordia subcordata
Cymbopogon caesius
Cyperus bulbosus
C. conglomeratus subsp. *pachyrrhizus*
Eragrostis amabilis var. *amabilis*
Euphorbia indica
Excoecaria agallocha
Ficus bengalensis
Fimbristylis cymosa subsp. *spathacea*
Halodule uninervis
Halophila ovalis
Halopyrum mucronatum
Ipomoea pes-caprae
I. violacea
Labiab purpureus
Launaea sarmentosa
Lumnitzera racemosa
Mukia maderaspatana
Pandanus fascicularis
Pemphis acidula
Phoenix pusilla
Phyllanthus maderaspatensis
Premna serratifolia
Salvadora persica
Scaevola plumieri
S. taccada
Sesuvium portulacastrum
Spinifex littoreus
Sporobolus maderaspatanus
S. tremulus
Suaeda maritima
S. nudiflora
Surtiana maritima
Syringodium isoetifolium
Tamarindus indica
Thespesia populnea
Vernonia cinerea
Vigna trilobata
Ziziphus mauritianum var. *mauritianus*

Kurusadal Island

Acacia planifrons
Acatypha indica

Aegiceras corniculatum
Aeluropus lagopoides
Aerva lanata
A. persica
Aloe vera
Ammannia baccifera
Andropogon pumilus
Asparagus racemosus
Atriplex repens
Avicennia marina
Azima tetraantha
Borassus flabellifer
Breynia vitis-idaea
Brugulera cylindrica
Bulbostylis barbata subsp. *barbata*
B. barbata subsp. *pulchella*
Caesalpinia bonduc
Calotropis gigantea
Canavalia rosea
Cassipoua filiformis
Centranthera tranquebarica
Ceriops tagal
Chloris barbata
Clitoria ternatea
Coccinia grandis
Coccoloba hirsuta
Commelina benghalensis
C. paleata
Corchorus aestuans
Cordia subcordata
Crinum latifolium
Crotalaria retusa
Cucumis melo
Cyanotis cristata
Cymbopogon caesius
Cymodocea rotundata
C. serrulata
Cyperus arenarius
C. bulbosus
C. compressus
C. conglomeratus subsp. *pachyrrhizus*
C. pumilus
Dactyloctenium aegyptium
D. aristatum
Dichrostachys cinerea
D. muelleri
Digitaria bicornis
Dodonaea viscosa
Eclipta prostrata
Ehretia laevis
E. ovalifolia
Enhalus acoroides
Enticostema axillare
Eragrostis amabilis var. *amabilis*
E. amabilis var. *insularis*
E. riparia
Euphorbia indica

E. thymifolia
Evolvulus alsinoides
Ficus benghalensis
Fimbristylis cymosa subsp. *spathacea*
F. ferruginea
F. polytrichoides
F. triflora
Gloriosa superba
Halodule pinifolia
H. uninervis
Halophila ovalis
Halopyrum mucronatum
Halosarcia indica
Hedyotis puberula
Indigofera oblongifolia
Indigofera trita var. *trita*
Iphigenia indica
Ipomoea alba
I. pes-caprae
I. violacea
Jatropha gossypifolia
Lablab purpureus
Lannea coromandelica
Lauanea intybacea
L. sarmentosa
Leucas aspera
L. diffusa
Lumnitzera racemosa
Manilkara hexandra
Mariscus squarrosus
Momordica dioica
Morinda citrifolia
Pandanus fascicularis
Pavetta indica
Pedaliium murex
Pemphis acedula
Pentstemon capensis
Pergularia daemia
Phoenix pusilla
Phyllanthus amarus
P. maderaspatensis
P. rotundifolius
Pleurostylia opposita
Premna serratifolia
Prosopis chilensis
Pupalia lappacea var. *orbiculata*
Pycreus pumilus
Rhizophora mucronata
Rikhtella squarrosa
Salicornia brachiata
Salvadora persica
Saururus bacciformis
Scaevola plumieri
S. taccada
Securinega leucopyras
Sesuvium portulacastrum
Solanum pubescens
S. trilobatum
S. virginianum
Sopubia delphinifolia
Spermacoce ocymoides
Spinifex littoreus

Sporobolus maderaspatanus
S. tremulus
S. virginicus
Striga asiatica
Suaeda maritima
S. nudiflora
Suriana maritima
Syringodium isoetifolium
Syzygium cumini
Tephrosia purpurea
Thalassia hemprichii
Thespesia populnea
Tinospora cordifolia
Trachys muricata
Trichosanthes cucumerina
Typha angustata
Vigna trilobata

Pumarichan Island

Acalypha indica
Achyranthes aspera var. *aspera*
Aerva lanata
Albizia amara
Apluda mutica
Asparagus racemosus
Asystasia gangetica
Atriplex repens
Avicennia marina
Azima tetraantha
Brachiaria remota var. *remota*
Bruguiera cylindrica
Bulbostylis barbata subsp. *pulchella*
Caesalpinia bonduc
Capparis septaria
Cassia fistula
Cassytha filiformis
Cerisops tagal
Cissus quadrangularis
Clerodendrum inerme
Cltoria ternatea
Coccoloba grandis
Cocculus hirsutus
Corchorus aestuans
Cordia obliqua
C. subcordata
Crotalaria retusa
Cucumis melo
Cymbopogon caesius
Cyperus arenarius
C. bulbosus
C. conglomeratus subsp. *pachyrrhizus*
Dactyloctenium aegyptium
Dichrostachys cinerea
D. muelleri
Dodonaea viscosa
Ehretia canarensis
Enhalus acoroides
Entolasia axillare
Erythroxylum monogynum
Euphorbia indica

E. rosea
Excoecaria agallocha
Fimbristylis cymosa subsp. *spathacea*
Gloriosa superba
Grewia rhamnifolia
Halodule pinifolia
H. uninervis
Halophila ovalis
Halopyrum mucronatum
Hedyotis puberula
Hibiscus micranthus
Indigofera oblongifolia
I. tinctoria
I. trita var. *trita*
Ipomoea nil
I. violacea
Labiab purpureus
Lanea coromandelica
Launaea intybacea
L. sarmentosa
Leucas aspera
Lumnitzera racemosa
Manilkara hexandra
Mariscus squarrosus
Momordica dioica
Pemphis acidula
Pentatropis capensis
Pergularia daemia
Phoenix pusilla
Phyllanthus maderaspatensis
Physalis minima
Pleurostylia opposita
Premna serratifolia
Pupalia lappacea var. *orbiculata*
Rhizophora mucronata
Rikhtella squarrosa
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Spermacoce ocymoides
Sporobolus maderaspatanus
S. tremulus
S. virginicus
Suaeda maritima
S. monoica
Suriana maritima
Syringodium isoetifolium
Thespesia populnea
Trachys muricata
Vernonia cinerea
Vicoa indica
Vigna trilobata
Ziziphus xylopyrus

Pullivasal Island

Abrus precatorius
Achyranthes aspera var. *aspera*
Acluropus lagopoides
Aerva persica
Aloe vera

Apludu mutica
Asparagus racemosus
Asystasia gangetica
Atriplex repens
Avicennia marina
Azima tetraantha
Blumea obliqua
Brachiaria remota var. *remota*
Breynia vitis-idaea
Bruguiera cylindrica
Bulbostylis barbata subsp. *pulchella*
Caesalpinia bonduc
Cassia auriculata
Cassytha filiformis
Cerriops tagal
Cissus quadrangularis
Cleome viscosa
Clitoria ternatea
Coccinia grandis
Colubrina asiatica
Cordia subcordata
Crotalaria retusa
Cucumis melo
Cymbopogon caesius
Cymodocea rotundata
C. serrulata
Cyperus bulbosus
C. conglomeratus subsp. *pachyrrhizus*
Dactyloctenium aegyptium
D. aristatum
Dichrostachys cinerea
Dodonaea viscosa
Enhalus acoroides
Encostema axillare
Eragrostis amabilis var. *amabilis*
Euphorbia indica
Excoecaria agallocha
Fimbristylis cymosa subsp. *spathacea*
Gloriosa superba
Halodule pinifolia
H. uninervis
Halophila ovalis
H. ovata
Halopyrum mucronatum
Hedyotis puberula
Heterostemma tanjorensis
Indigofera oblongifolia
I. trita var. *trita*
Ipomoea nil
I. violacea
Labiab purpureus
Lanea coromandelica
Launaea intybacea
L. sarmentosa
Lumnitzera racemosa
Manilkara hexandra
Momordica dioica
Pemphis acidula
Pergularia daemia
Phoenix pusilla
Phyllanthus maderaspatensis
Physalis minima

Pleurostylia opposita
Premna serratifolia
Pupalia lappacea var. *orbiculata*
Rhizophora mucronata
Salvadora persica
Sauropus bacciformis
Scaevola plumieri
Securium portulacastrum
Spermacoce ocyroides
Spinifex littoreus
Sporobolus tremulus
Suaeda maritima
Suriana maritima
Syringodium isoetifolium
Tamarindus indica
Tarenna asiatica
Thalassia hemprichii
Thespesia populnea
Trachys muricata
Vernonia cinerea
Vicoa indica
Vigna trilobata
Wedelia biflora
Ziziphus xylopyrus

Manolputti Island

Aeluropus lagopoides
Apluda mutica
Atriplex repens
Avicennia marina
Bulbostylis barbata subsp. *pulchella*
Cassytha filiformis
Ceriops tagal
Citrullus colocynthis
Cleome viscosa
Clerodendrum inerme
Commelina benghalensis
Crotalaria retusa
Cucumis melo
Cymbopogon caesius
Cyperus bulbosus
C. conglomeratus subsp. *pachyrrhizus*
Dactyloctenium aegyptium
Enhalus acoroides
Enicostema axillare
Eragrostis amabilis var. *amabilis*
Euphorbia indica
Excoecaria agallocha
Fimbristylis cymosa subsp. *spathacea*
F. polytrichoides
Halopyrum mucronatum
Hedyotis corymbosa
H. pumila
Ipomoea pes-caprae
I. violacea
Labiab purpureus
Launaea sarmentosa
Lumnitzera racemosa
Pemphis acidula
Pentatropis capensis

Pergularia daemia
Premna serratifolia
Rhizophora mucronata
Rikiella squarrosa
Salicornia brachiata
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Spinifex littoreus
Sporobolus maderaspatanus
S. tremulus
S. virginicus
Suaeda maritima
Thespesia populnea
Trachys muricata
Vernonia cinerea
Vigna trilobata

Manoli Island

Achyranthes aspera var. *aspera*
Aeluropus lagopoides
Aerva persica
Ammannia baccifera
Apluda mutica
Arthrocnemum glaucum
Asparagus racemosus
Atriplex repens
Avicennia marina
Blumea obliqua
Bruguiera cylindrica
Bulbostylis barbata subsp. *barbata*
B. barbata subsp. *pulchella*
Cassytha filiformis
Ceriops tagal
Cissus quadrangularis
Clerodendrum inerme
Coccinia grandis
Commelina benghalensis
Corchorus aestuans
Cressa cretica
Cucumis melo
Cymbopogon caesius
Cymodocea rotundata
C. serrulata
Cyperus arenarius
C. bulbosus
C. conglomeratus subsp. *pachyrrhizus*
Dactyloctenium aegyptium
D. aristatum
Eclipta prostrata
Enhalus acoroides
Enicostema axillare
Euphorbia indica
Excoecaria agallocha
Ficus religiosa
Fimbristylis cymosa subsp. *spathacea*
F. ferruginea
F. polytrichoides
Halodule uninervis
H. wrightii

Halophila ovalis
H. ovata
Halopyrum mucronatum
Hedyotis herbacea
H. puberula
Ipomoea pes-caprae
I. violacea
Lablab purpureus
Launaea sarmentosa
Lumnitzera racemosa
Mariscus squarrosus
Nesaea prostrata
Pemphis acidula
Peplidium maritimum
Phyllanthus maderaspatensis
P. rotundifolius
Premna serratifolia
Pupalia lappacea var. *orbiculata*
Pycneis pumilus
Rhizophora mucronata
Salicornia brachiata
Salvadora persica
Sauropus bacciformis
Sesuvium portulacastrum
Sopubia delphinifolia
Spinifex littoreus
Sporobolus maderaspatanus
Striga asiatica
Suaeda maritima
S. monoica
Thalassia hemprichii
Thespesia populnea
Trachys muricata
Vernonia cinerea
Vigna trilobata

Muyal Island

Acacia planifrons
Acalypha indica
Achyranthes aspera var. *aspera*
Aeluropus lagopoides
Aerva lanata
A. persica
Aloe vera
Amaranthus tricolor
Ammannia baccifera
Asparagus racemosus
Atriplex repens
Avicennia marina
Azadirachta indica
Blumea obliqua
Boerhavia diffusa
Borassus flabellifer
Bulbostylis barbata subsp. *barbata*
Caesalpinia bonduc
Calotropis gigantea
Capparis zeylanica
Cassia senna
Cassytha filiformis
Cissus quadrangularis

Clerodendrum inerme
Coccinia grandis
Cocos nucifera
Commelina benghalensis
Corchorus aestuans
Cordia obliqua
C. subcordata
Cucumis melo
Cyanotis cristata
Cymbopogon caesius
Cymodocea rotundata
C. serrulata
Cyperus arenarius
C. bulbosus
C. conglomeratus subsp. *pachyrrhizus*
C. stoloniferus
Dactyloctenium aegyptium
D. aristatum
Eclipta prostrata
Enhalus acoroides
Enicostema axillare
Epaltes divaricata
Eragrostis amabilis var. *insularis*
Euphorbia heyneana subsp. *heyneana*
E. indica
E. rosea
E. thymifolia
Excoecaria agallocha
Ficus benghalensis
Fimbristylis cymosa subsp. *spathacea*
F. ferruginea
F. polytrichoides
Gloriosa superba
Halodule plinifolia
H. uninervis
Halophila ovalis
H. ovata
Halopyrum mucronatum
Hedyotis corymbosa
H. herbacea
H. puberula
Hibiscus tiliaceus
Indigofera oblongifolia
Iphigenia indica
Ipomoea pes-caprae
I. violacea
Lablab purpureus
Lannea coromandelica
Launaea inybacea
L. sarmentosa
Leucas diffusa
Lindernia crustacea
Lumnitzera racemosa
Mariscus squarrosus
Opuntia dillenii
Pedaliium murex
Pemphis acidula
Peplidium maritimum
Phyllanthus maderaspatensis
P. rotundifolius
Pleurostylia opposita
Premna serratifolia

Pupalia lappacea var. *orbiculata*
Pycreus pumilus
Rikitiella squarrosa
Salicornia brachiata
Salvadora persica
Saururus bacciformis
Scaevola plumieri
Scutia myrtina var. *emarginata*
Securinega leucopyros
Sesuvium portulacastrum
Sopubia delphiniifolia
Spermacoce hispida
Spinifex littoreus
Sporobolus maderaspatanus
S. tremulus
Striga asiatica
Suaeda monoica
Syringodium isoetifolium
Tamarindus indica
Thalassia hemprichii
Thespesia populnea
Trachys muricata
Tridax procumbens
Tylophora indica
Vernonia cinerea
Vicoa indica
Vigna trilobata
Vitex trifolia
Wattakaka volubilis
Ziziphus xylopyrus

Mullai Island

Acacia planifrons
Acalypha indica
Atriplex repens
Bulbostylis barbata subsp. *barbata*
Cassia auriculata
Clerodendrum inerme
Crotalaria retusa
Cyperus bulbosus
C. conglomeratus subsp. *pachyrrhizus*
Dichrostachys cinerea
Enhalus acoroides
Enicostema axillare
Halopyrum mucronatum
Hedyotis puberula
Indigofera oblongifolia
Labiab purpureus
Launaea intybacea
L. sarmentosa
Pemphis acidula
Pentatropis capensis
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Sporobolus maderaspatanus
Thespesia populnea
Trachys muricata
Vernonia cinerea
Vicoa indica

Vigna trilobata

Valai Island

Abrus precatorius
Acacia planifrons
Achyranthes aspera var. *aspera*
Aerva lanata
Apluda mutica
Atriplex repens
Avicennia marina
Boerhavia diffusa
Caesalpinia bonduc
Clerodendrum inerme
Crotalaria retusa
Cymbopogon caesiis
Cyperus conglomeratus subsp. *pachyrrhizus*
Dactyloctenium aegyptium
Dichrostachys cinerea
Enhalus acoroides
Enicostema axillare
Eragrostis riparia
Eremopogon foveolatus
Fimbristylis cymosa subsp. *spathacea*
Halopyrum mucronatum
Hedyotis puberula
Indigofera oblongifolia
Labiab purpureus
Pemphis acidula
Pentatropis capensis
Prosopis chilensis
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Spinifex littoreus
Sporobolus maderaspatanus
Thespesia populnea
Vernonia cinerea
Vicoa indica
Vigna trilobata

Thalaiyari Island

Acacia planifrons
Acalypha indica
Achyranthes aspera var. *aspera*
Aerva lanata
A. persica
Amaranthus polygamus
A. ruxburghianus
Ammannia baccifera
Apluda mutica
Asparagus racemosus
Atriplex repens
Avicennia marina
Blumea obliqua
Boerhavia diffusa
Bulbostylis barbata subsp. *pulchella*
Caesalpinia bonduc
Calotrophis gigantea

Cassytha filiformis
Cissus quadrangularis
Citrullus colocynthis
Cleome viscosa
Clerodendrum inerme
Coccoloba grandis
Commelina benghalensis
Corchorus fascicularis
Crotalaria retusa
Croton bonplandianus
Cymbopogon caesius
Cyperus arenarius
C. bulbosus
C. iria
C. squarrosus
Dactyloctenium aegyptium
D. aristatum
Datura metel
Dichrostachys cinerea
Elleipta prostrata
Enhalus acoroides
Enicostema axillare
Epilates divaricata
Eragrostis amabilis var. *amabilis*
Eremopogon foveolatus
Euphorbia indica
Fimbristylis cymosa subsp. *spathacea*
Gloriosa superba
Halopyrum mucronatum
Hedyotis corymbosa
H. herbacea
H. puberula
H. pumila
Heliotropium curassavicum
H. subulatum
Indigofera tinctoria
I. oblongifolia
Ipomoea coptica
I. dissecta
I. nil
I. pes-caprae
Kyllinga hyalina
Labiata purpureus
Lamnaea litybacea
L. sarmentosa
Lindernia minima
L. parviflora
Ludwigia perennis
Lumnitzera racemosa
Mariscus squarrosus
Micrococca mercurialis
Pedaliium murex
Pemphis acidula
Pentstemon capensis
Peplidium maritimum
Pergularia daemia
Phyllanthus maderaspatensis
Physalis minima
Polycarpha spicata
Prosopis chilensis
Pycnos punctatus

Riklilla squarrosa
Salicornia brachiata
Salvadora persica
Sauropus bacciformis
Scaevola plumieri
Sopubia delphinifolia
Spermacoce ocymoides
Spinifex littoreus
Sporobolus maderaspatanus
Stemodia viscosa
Striga asiatica
Suaeda maritima
S. monoica
Thespesia populnea
Tribulus lanuginosus var. *orientalis*
T. terrestris
Vernonia cinerea
Vigna trilobata

Appa Island

Acacia planifrons
Acalypha indica
Achyranthes aspera var. *aspera*
Aerva lanata
A. persica
Aloe vera
Alysicarpus monilifer
A. rugosus var. *styracifolius*
Apluda mutica
Boerhavia diffusa
Bulbostylis barbata subsp. *pulchella*
Calotropis gigantea
Cassytha filiformis
Cayratia trifolia
Cenchrus setigerus
Cissus quadrangularis
Citrullus colocynthis
Coccoloba grandis
Commelina benghalensis
Corchorus aestuans
Crinum defixum
C. latifolium
Crotalaria retusa
Cucumis melo
Cymbopogon caesius
Cymodocea serrulata
Cyperus arenarius
C. bulbosus
C. conglomeratus subsp. *pachyrrhizus*
C. stoloniferus
Dactyloctenium aegyptium
Enhalus acoroides
Eragrostis amabilis var. *amabilis*
E. amabilis var. *insularis*
E. coarctata
Euphorbia indica
E. rosea
E. thymifolia
Fimbristylis ferruginea
Gisekia pharnaceoides

Gloriosa superba
Halophila ovalis
Halopyrum mucronatum
Hedyotis puberula
Indigofera colutea
Ipomoea pes-caprae
Launaea intybacea
L. sarmentosa
Mariscus squarrosus
Moringa pterygosperma
Opuntia dillenii
Pedaliium murex
Polycarpaea spicata
Prosopis chilensis
Pupalia lappacea var. *orbiculata*
Rikiliella squarrosa
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Spinifex littoreus
Sporobolus maderaspatanus
Siriga asiatica
Suaeda monoica
Syringodium isoetifolium
Tephrosia maxima
Thespesia populnea
Trachys muricata
Tribulus lanuginosus var. *orientalis*
Vernonia cinerea
Vigna trilobata

Valimunai Island

Acacia planifrons
Acalypha indica
Aerva lanata
A. persica
Aloe vera
Boerhavia diffusa
B. erecta
Bulbostylis barbata
Cassia auriculata
Cassytha filiformis
Cissus quadrangularis
Coccinia grandis
Crotalaria retusa
Cymbopogon caesius
Cyperus arenarius
C. bulbosus
C. conglomeratus subsp. *pachyrrhizus*
Dactyloctenium aegyptium
Enhalus acoroides
Euphorbia indica
Halopyrum mucronatum
Hedyotis puberula
Indigofera oblongifolia
Ipomoea pes-caprae
Lablab purpureus
Lannea coromandelica
Pemphis acidula
Phyllanthus maderaspatensis

Prosopis chilensis
Pupalia lappacea var. *orbiculata*
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Spinifex littoreus
Sporobolus maderaspatanus
Thespesia populnea
Vernonia cinerea
Vigna trilobata
Wattakaka volubilis

Anaiapar Island

Acacia planifrons
Aerva lanata
A. persica
Aloe vera
Asystasia gangetica
Atriplex repens
Boerhavia diffusa
B. erecta
Bulbostylis barbata subsp. *barbata*
Cardiospermum canescens
Cassytha filiformis
Cleome viscosa
Clerodendrum inerme
Coccinia grandis
Commelina benghalensis
Cymbopogon caesius
Cyperus arenarius
C. bulbosus
C. conglomeratus subsp. *pachyrrhizus*
Dactyloctenium aegyptium
Dichrostachys cinerea
Enhalus acoroides
Euphorbia indica
Halopyrum mucronatum
Hedyotis puberula
Ipomoea nil
I. pes-caprae
I. pes-tigridis
I. violacea
Lablab purpureus
Lannea coromandelica
Pemphis acidula
Pergularia daemia
Phyllanthus rotundifolius
Prosopis chilensis
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Sporobolus maderaspatanus
Vernonia cinerea
Vigna trilobata

Nallathanni Island

Acacia planifrons
Achyranthes aspera var. *aspera*
Acrachne henrardiana

- Aerva lanata*
A. persica
Ammannia baccifera
Atalantia racemosa
Atriplex repens
Avicennia marina
Azadirachta indica
Boerhavia diffusa
Borassus flabellifer
Brachiaria ramosa
Bulbostylis barbata subsp. *barbata*
B. barbata subsp. *puberula*
Calotropis gigantea
Cassytha filiformis
Cenchrus ciliaris
Chloris barbata
Cissus quadrangularis
Citrullus colocynthis
Cleome viscosa
Clerodendrum inerme
Coccinia grandis
Cocculus hirsutus
Cocos nucifera
Corchorus aestuans
Crotalaria retusa
Cucumis melo
Cymbopogon caesius
Cymodocea serrulata
Cyperus arenarius
C. bulbosus
C. conglomeratus subsp. *pachyrrhizus*
C. pumilus
C. rotundus subsp. *rotundus*
C. stoloniferus
Dactyloctenium aegyptium
Delonix elata
Echinochloa colona
Eclipta prostrata
Ehretia canariensis
E. ovalifolia
Enhalus acoroides
Epiltes divaricata
Eragrostis amabilis var. *amabilis*
E. amabilis var. *insularis*
E. coarctata
E. viscosa
Eremopogon foveolatus
Euphorbia rosea
Evolvulus alsinoides
Ficus benghalensis
Fimbristylis cymosa subsp. *spathacea*
F. ferruginea
F. polytrichoides
F. triflora
Gisekia pharnaceoides
Halopyrum mucronatum
Hedyotis graminifolia var. *graminifolia*
Hedyotis puberula
Hydrophyllax maritima
Indigofera colutea
Iphigenia indica
Ipomoea pes-caprae
Jatropha glandulifera
Lannea coromandelica
Launaea intybacea
L. sarmentosa
Leucas aspera
Merremia tridentata
Moringa pterygosperma
Pedaliium murex
Pemphis acidula
Phyllanthus amarus
P. maderaspatensis
P. rotundifolius
Physalis minima
Pithecellobium dulce
Polycarpha spicata
Polygala eriopora
P. rosmarinifolia
Pongamia pinnata
Portulaca wightiana
Prosopis chilensis
Pycreus pumilus
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Setaria verticillata
Sida cordifolia
Solanum pubescens
S. virginianum
Spermacoce hispida
Spinifex littoreus
Sporobolus maderaspatanus
S. spicatus
S. tremulus
Suaeda maritima
S. monoica
Tamarindus indica
Thespesia populnea
Trachys muricata
Typha angustata
Vernonia cinerea
Vigna trilobata
Waltheria indica
Wattakaka volubilis
Ziziphus mauritiana var. *mauritiana*

Pulvinichalli Island

- Acacia planifrons*
Aerva persica
Aloe vera
Asparagus racemosus
Asystasia gangetica
Atriplex repens
Avicennia marina
Azadirachta indica
Boerhavia diffusa
Bulbostylis barbata subsp. *barbata*
Cardiospermum canescens
Cassia occidentalis
Cassytha filiformis
Cenchrus ciliaris

Cissus quadrangularis
Clerodendrum inerme
Coccinia grandis
Cymbopogon caesius
Cyperus arenarius
C. bulbosus
C. conglomeratus subsp. *pachyrrhizus*
C. rotundus subsp. *rotundus*
Dactyloctenium aegyptium
Enhalus acoroides
Eragrostis amabilis var. *insularis*
Halopyrum mucronatum
Hedyotis puberula
Ipomoea pes-caprae
Labiab purpureus
Launaea sarmentosa
Pentatropis capensis
Phyllanthus maderaspatensis
Prosopis chilensis
Pupalia lappacea var. *orbiculata*
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Spermacoce hispida
Sporobolus maderaspatanus
S. spicatus
S. tremulus
S. virginicus
Suaeda nudiflora
Tamarindus indica
Thespesia populnea
Trachys muricata
Vernonia cinerea

Upputhanni Island

Achyranthes aspera var. *aspera*
Aerva persica
Aloe vera
Arthrocnemon glaucum
Asystasia gangetica
Atalantia racemosa
Atriplex repens
Avicennia marina
Azadirachta indica
Boerhavia diffusa
Bulbostylis barbata subsp. *barbata*
B. barbata subsp. *pulchella*
Calotropis gigantea
Cardiospermum canescens
Cassytha filiformis
Cenchrus ciliaris
Clerodendrum inerme
Coccinia grandis
Corchorus aestuans
Crotalaria medicaginea var. *herniarioides*
C. retusa
Cymbopogon caesius
Cymodocea serrulata
Cyperus arenarius
C. bulbosus

C. conglomeratus subsp. *pachyrrhizus*
Dactyloctenium aegyptium
Ehretia ovalifolia
Enicostema axillare
Eragrostis amabilis var. *amabilis*
E. coarctata
Euphorbia indica
E. rosea
Gisekia pharnaceoides
Halopyrum mucronatum
Hedyotis graminifolia var. *graminifolia*
H. puberula
Hydrophylax maritima
Indigofera tinnaei
I. oblongifolia
Iphigenia indica
Ipomoea pes-caprae
Launaea sarmentosa
Leptadenia reticulata
Leucas anandaraoana
L. mollisma
Pedatum murex
Pergularia daemia
Phyllanthus maderaspatensis
P. rotundifolius
Polygala rosmarinifolia
Prosopis chilensis
Pupalia lappacea var. *orbiculata*
Rhynchosia velutina
Salvadora persica
Sapindus emarginatus
Sarcostemma acidum
Scaevola plumieri
Sesuvium portulacastrum
Spermacoce hispida
S. ocymoides
Sporobolus maderaspatanus
S. tremulus
Suaeda maritima
Syringodium isoetifolium
Tamarindus indica
Thespesia populnea
Trachys muricata
Tribulus lanuginosus var. *orientalis*
T. terrestris
Vernonia cinerea

Kaswari Island

Acalypha indica
Aerva persica
Arthrocnemon glaucum
Asystasia gangetica
Atriplex repens
Avicennia marina
Blumea obliqua
Boerhavia diffusa
Bulbostylis barbata subsp. *barbata*
B. barbata subsp. *pulchella*
Cadaba fruticosa
Calotropis gigantea

Capparis sepriaria
Caralluma adscendens var. *adscendens*
Cardiospermum canescens
Cissus quadrangularis
Cleome gynandra
C. viscosa
Clerodendrum inerme
Cordia diffusa
Crinum latifolium
Crotalaria retusa
Croton bonplandianus
Cucumis melo
Cyanotis cristata
Cymbopogon caesius
Cyperus arenarius
C. conglomeratus subsp. *pachyrrhizus*
C. stoloniferus
Dipcadi montanum var. *madrasicum*
Enicostema axillare
Eragrostis amabilis var. *amabilis*
E. amabilis var. *insularis*
Eremopogon foveolatus
Euphorbia rosea
Fimbristylis ferruginea
Halodule pinifolia
H. utinervis
Halophila ovata
H. stipulacea
Halopyrum mucronatum
Hedyotis puberula
Indigofera oblongifolia
Ipomoea pes-caprae
Jatropha glandulifera
Launaea sarmentosa
Melhania cannabina
Opuntia dillenii
Pedaliium murex
Pemphis acidula
Pentatropis capensis
Phyllanthus maderaspatensis
Prosopis chilensis
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Spermococe hispida
S. ocymoides
Sporobolus maderaspatanus
S. virgintus
Spinifex littoreus
Suaeda maritima
S. monoica
Syringodium isoetifolium
Trianthema triquetra
Tribulus lanuginosus var. *orientalis*
Vernonia albicans
V. cinerea
Vicoa indica
Vigna trilobata
Ziziphus mauritiana var. *mauritiana*

Karaichalli Island

Aerva persica
Aloe vera
Arihrocneumon glaucum
Asystasia gangetica
Atriplex repens
Avicennia marina
Boerhavia diffusa
Blumea obliqua
Bulbostylis barbata subsp. *barbata*
B. barbata subsp. *pulchella*
Cadaba fruticosa
Calotropis gigantea
Capparis sepriaria
Caralluma adscendens
Cardiospermum canescens
Cassia italica
Cissus quadrangularis
Cleome gynandra
C. viscosa
Clerodendrum inerme
Cordia diffusa
Crinum latifolium
Crotalaria retusa
Croton bonplandianus
Cucumis melo
Cyanotis cristata
Cymbopogon caesius
Cymodocea serrulata
Cyperus arenarius
C. conglomeratus subsp. *pachyrrhizus*
Dipcadi montanum var. *madrasicum*
Enicostema axillare
Eragrostis amabilis var. *insularis*
Eremopogon foveolatus
Euphorbia rosea
Halodule pinifolia
Halophila ovalis
H. stipulacea
Halopyrum mucronatum
Hedyotis puberula
Indigofera oblongifolia
Ipomoea pes-caprae
Jatropha glandulifera
Launaea sarmentosa
Melhania cannabina
Opuntia dillenii
Pedaliium murex
Pemphis acidula
Phyllanthus maderaspatensis
Prosopis chilensis
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Spermococe hispida
Spinifex littoreus
Sporobolus maderaspatanus
S. tremulus

S. virginicus
Suaeda maritima
S. monoica
Syringodium isoetifolium
Trianthema triquetra
Tribulus lanuginosus var. *orientalis*
Vernonia albicans
V. cinerea
Vigna trilobata
Zizyphus mauritiana var. *mauritiana*

Suaeda maritima
S. monoica
S. nudiflora
Syringodium isoetifolium
Tephrosia purpurea
Tribulus lanuginosus var. *orientalis*
T. terrestris
Vernonia cinerea
Vigna trilobata

Van Island

Aerva lanata
Aerva persica
Aloe vera
Arthrocnemon glaucum
Atriplex repens
Blumea obliqua
Bulbostylis barbata subsp. *barbata*
B. barbata subsp. *pulchella*
Cenchrus ciliaris
Chloris barbata
Cissus quadrangularis
Citrullus colocynthis
Clerodendrum inerme
Cressa cretica
Crotalaria retusa
Cymbopogon caesius
Cymodocea serrulata
Cyperus arenarius
C. bulbosus
C. conglomeratus subsp. *pachyrrhizus*
Dactyloctenium aegyptium
Enicostema axillare
Eragrostis amabilis var. *amabilis*
E. amabilis var. *insularis*
Eremopogon foveolatus
Fimbristylis cymosa subsp. *spathacea*
Gomphrena globosa
Halodule uninervis
Halophila ovalis
H. ovata
Halopyrum mucronatum
Hedyotis puberula
Indigofera oblongifolia
Ipomoea pes-caprae
Launaea sarmentosa
Opuntia dillenii
Pentstemon capensis
Phyllanthus maderaspatensis
Prasopis chilensis
Salvadora persica
Scaevola plumieri
Sesuvium portulacastrum
Spermacoce hispida
S. ocymoides
Spinifex littoreus
Sporobolus maderaspatanus
S. tremulus
S. virginicus

BIBLIOGRAPHY

- Ahmedullah, M. & Nayar, M. P. 1987. *Endemic plants of the Indian region. Peninsular India*. Calcutta.
- Airy Shaw, H. K. 1981. A partial synopsis of the Euphorbiaceae - Platylobeae of Australia (excluding *Phyllanthus*, *Euphorbia* and *Calycopeplus*). *Kew Bull.* 35: 577 - 700.
- Aiton, W. 1789. *Hortus Kewensis*. 3 Vols. London.
- Aiton, W. T. 1810 - 1813. *Hortus Kewensis*. ed. 2. 5 Vols. London.
- Ali, S. I. 1958. *Indigofera linnaei*. *Bot. Not.* 111: 549.
- Ali, S. I. 1967. The genus *Goniogyna* DC. *Taxon* 16: 463 - 464.
- Almeida, M. R. & Almeida, S. M. 1987. Identity of 'Bahe! Schulli' of Hortus Malabaricus. *J. Bombay Nat. Hist. Soc.* 83 (Suppl.): 221 - 222.
- Allioni, C. 1785. *Flora Pedemontana*. 3 Vols. Torino.
- Alston, A. H. G. 1931. *A hand-book to the flora of Ceylon*. Vol. 6. Suppl. London.
- Ambasta, S. P. 1992. *The useful plants of India*. New Delhi.
- Andrews, F. W. 1956. *The flowering plants of the Anglo-Egyptian Sudan*. 3 Vols. Scotland.
- Anonymous, 1917. *Tamil Nadu district gazetteers - Tirunelveli district*. Madras.
- Anonymous, 1948 - 1976. *The wealth of India*. 11 Vols. New Delhi.
- Anonymous, 1972. *Tamil Nadu district gazetteers Ramanathapuram district*. Madras. (repr. ed.)
- Anonymous, 1987. *The Gulf of Mannar Biosphere Reserve*. MoEF Project Doc. No.5. New Delhi.
- Anonymous, 1996a. Industrial report: description of herbal products manufactured in India. *J. Med. Arom. Pl. Sci.* 18: 107 - 123.
- Anonymous, 1996b. Market trends in production, price, export, import etc. *J. Med. Arom. Pl. Sci.* 18: 76 - 84.
- Anonymous, 1998. Gulf of Mannar Biosphere Reserve. In: Maikhuri, R. K., Rao, K. S. & Rai, R. K. (ed.), *Biosphere reserves and management in India*. 43 - 50. Almora.
- Ansari, M. Y. 1984. Asclepiadaceae. *Fasc. Fl. India* 16: 1 - 34.
- Arnott, G. A. W. 1838. *Bruguiera malabarica*. *Ann. Nat. Hist.* 1: 369.
- Arnott, G. A. W. 1838. *Ceriops candolleana*. *Ann. Nat. Hist.* 1: 364.
- Arnott, G. A. W. 1839. *Balsamodendron berryi*. *Ann. Nat. Hist.* 3: 86.

- Arnott, G. A. W. 1839. *Polycarpaea diffusa*. *Ann. Nat. Hist.* 3: 91.
- Arnott, G. A. W. 1839. *Polycarpaea spicata*. *Ann. Nat. Hist.* 3: 91.
- Arnott, G. A. W. 1841. *Aechmandra epigaea*. *J. Bot. (Hooker)* 3: 274.
- Arnott, G. A. W. 1841. *Mukia scabrella*. *J. Bot. (Hooker)* 3: 276.
- Arora, J. K., Jeerath, N. & Handa, S. M. 1996. Conservation of animal diversity. In: Kohli, R.K. Jeerath, N. & Batish, D. (ed.), *Some facets of biodiversity*. 71 - 82 . Chandigarh.
- Ascherson, P. F. A. 1867. *Cymodocea isoetifolia*. *Sitzungsber Ges. Naturf. Freunde Berlin* 1867: 3.
- Ascherson, P. F. A. 1867. *Peplidium maritimum*. *Bot. Zeitung (Berlin)* 25: 95.
- Ascherson, P. F. A. 1868. *Halodule wrightii*. *Sitzungsber Ges. Naturf. Freunde Berlin* 1868: 24.
- Ascherson, P. F. A. 1871. *Cymodocea rotundata*. *Sitzungsber Ges. Naturf. Freunde Berlin* 1870: 84.
- Ascherson, P. F. A. 1871. *Cymodocea serrulata*. *Sitzungsber Ges. Naturf. Freunde Berlin* 1870: 84.
- Ascherson, P. F. A. 1871. *Thalassia hemprichii*. *Petermanns Geogr. Mitt.* 70: 242.
- Ascherson, P. F. A. 1871. *Plantae phanerogamae marinae in Archipelago Indico et in Mari Rubro*. *Nouvo Giorn. Bot. Ital.* 3: 299 - 302.
- Austin, D. F. 1977. *Ipomoea carnea* Jacq. vs *Ipomoea fistulosa* Mart. ex Choisy. *Taxon* 26: 235 - 238.
- Ayyangar, R., Ramarethinum, S. & Dhanamjayamoorthy, V. 1967. *Oldenlandia maheshwarli* Sant. & Merch.: A new record for Annamalainagar, Madras state. *J. Bombay Nat. Hist. Soc.* 64: 390 - 391.
- Babu, C. R. 1969. *Thecagonum* Babu - a new generic name in Rubiaceae *Bull. Bot. Surv. India* 11: 213 - 214.
- Bailey, L. H. 1948. *Manual of cultivated plants*. New York.
- Baillon, H. E. 1858. *Étude générale du groupe des Euphorbiacées*. Paris.
- Baillon, H. E. 1984. *Croton bonplandianus*. *Adansonia* 4: 339.
- Bakhuizen, R. C. 1933. *Diospyros ferrea*. *Gard. Bull. Straits Settlem.* 7: 162.
- Bakhuizen, R. C. 1936. *Diospyros ferrea* var. *buxifolia*. *Bull. Jard. Bot. Buitenzorg* Ser. 3, 15: 57.
- Balasubramanian, P. 1996. Interactions between fruit-eating birds and bird-dispersed plants in the tropical dry evergreen forest of Point Calimere, south India. *J. Bombay Nat. Hist. Soc.* 93: 428 - 441.

- Balasubramaniam, V. & Ramachandran, V. S. 1990. Notes on the occurrence of some endemic species from Tamil Nadu. *J. Econ. Tax. Bot.* 14: 493 - 497.
- Balasubramaniam, P., Prasad, S. N. & Kandavel, K. 1998. *Role of birds in seed dispersal and natural regeneration of forest plants in Tamil Nadu*. SACON Tech. Report No. 7. Coimbatore.
- Banerjee, S. P. 1962. Identity of *Trichodesma amplexicaule* DC. non Roth (Boraginaceae). *Bull. Bot. Soc. Bengal* 16: 9 - 11.
- Barnes, E. & Fischer, C. E. C. 1940. New or little known plants from southern India: XIII. *Bull. Misc. Inform.* 1940: 300 - 302.
- Basak, R. K. 1980. Simaroubaceae & Balanitaceae. In: Jain, S.K. & al. (ed.), *Fasc. Fl. India* 4: 16 - 17.
- Battandier, J. A. & Trabut, L. C. 1888 - 1897. *Flore de l'Algérie*. 3 Vols. Alger.
- Beauverd, G. 1910. *Launaea intybacea*. *Bull. Soc. Bot. Genève* 2: 114.
- Beauvois, A. M. F. J. Palisot de 1804 - 1807. *Flore d'Oware*. Paris.
- Beauvois, A. M. F. J. Palisot de 1812. *Essai d'une nouvelle Agrostographie*. Paris.
- Beck, G. 1892. *Flora von Nieder-Österreich*. Wien.
- Beddome, R. H. 1868 - 1874. *Icones plantarum Indiae Orientalis*. 15 Parts. Madras.
- Beddome, R. H. 1869 - 1874. *The flora sylvatica for southern India*. 2 Vols. Madras.
- Bennett, J.J. 1938 - 1852. *Plantae Javanicae rariores*. London.
- Bennet, S. S. R. 1969. Nomenclature of two Indian plants. *Indian Forester* 95: 692.
- Bennet, S. S. R. 1970. The taxonomic status of the section *Fissendocarpa* (Haines) Raven of the Onagraceous genus *Ludwigia* L. *J. Bombay Nat. Hist. Soc.* 67: 125 - 126.
- Bennet, S. S. R. 1971. The taxonomic status of the genus *Pongamia* Vent. (Papilionaceae). *J. Bombay Nat. Hist. Soc.* 68: 302 - 304.
- Bennet, S. S. R. 1987. *Name changes in flowering plants of India and adjacent regions*. Dehra Dun.
- Benson, L. 1969. *Opuntia stricta* var. *dillenii*. *Cact. Succ. J. (Los Angeles)* 41: 126.
- Bentham, G. 1830. *Geniosporum prostratum*. *Edward's Bot. Reg.* 15: sub t. 1300.
- Bentham, G. 1832 - 1836. *Labiatarum genera et species*. London.
- Bentham, G. 1835. *Scrophularineae Indicae*. London.
- Bentham, G. 1842. *Acacia arabica* var. *indica*. *London J. Bot.* 1: 500.
- Bentham, G. 1844. Notes on Mimoseae. *London J. Bot.* 3: 195 - 226.

- Bentham, G. 1863 - 1878. *Flora Australiensis*. 7 Vols. London.
- Bentham, G. 1881. *Leptochloa neesii*. *J. Linn. Soc., Bot.* 19: 108.
- Bentham, G. 1881. *Rottboellia myurus*. *J. Linn. Soc., Bot.* 19: 68.
- Bentham, G. & Hooker, J. D. 1862 - 1883. *Genera plantarum*. 3 Vols. London.
- Bhandari, M. M. 1990. *Flora of the Indian desert*. ed. 2. Jodhpur.
- Bhandari, M.M. & Bhansal, A. K. 1990. Rharnaceae. In: Nayar, M. P., Thothathri, K. & Sanjappa, M. (ed.), *Fasc. Fl. India* 20: 26 - 114.
- Blanco, F. M. 1837. *Flora de Filipinas*. Manila.
- Blatter, E. & Hallberg, F. 1918. A revision of the Indian species of *Rotala* and *Ammannia*. *J. Bombay Nat. Hist. Soc.* 25: 701 - 722.
- Blatter, E. & McCann, C. 1935. *The Bombay grasses*. Delhi.
- Blume, C. L. 1826. *Bijdragen tot de flora van Nederlandsch Indië*. Batavia.
- Blume, C. L. 1827 - 1828. *Enumeratio plantarum Javae*. 2 Fasc. Leiden.
- Blume, C. L. 1849 - 1857. *Museum botanicum Lugduno-Batavum*. 2 Vols. Leiden.
- Boeckler, J. O. 1868. Die Cyperaceen des königlichen herbariums zu Berlin. *Linnaea* 35: 513 - 612.
- Bogner, J. 1968. A new combination in *Theriophorum* Bl. (Araceae). *Bull. Bot. Surv. India* 10: 244.
- Boissier, P. E. 1860. *Centuria Euphorbiarum*. Paris.
- Boissier, P. E. 1867 - 1888. *Flora Orientalis*. 6 Vols. Genève.
- Bojer, W. 1837. *Hortus Mauritianus*. Mauritius.
- Bole, P. V. & Pathak, J. M. 1988. *Flora of Saurashtra*. 3 Parts. Calcutta.
- Bor, N. L. 1940. Three new genera of Indian grasses. *Indian Forester* 66: 267 - 272.
- Bor, N. L. 1946. A new species of *Dactyloctenium* from India: (*Dactyloctenium henrardianum*. Bor sp. nov. from Pamban, Ramnad district, Madras State). *Blumea* 3 (Suppl.): 44.
- Bor, N. L. 1957. Notes on Asiatic grasses. XXVII. A new name in *Sporobolus*. *Kew Bull.* 1957: 233 - 235.
- Bor, N. L. 1960. *The grasses of Burma, Ceylon, India and Pakistan*. London.

- Bor, N. L. 1972. *Coelachyropsis lagopoides*. *Ann. Naturhist. Mus. Wien.* 75: 25.
- Bor, N. L. & Raizada, M. B. 1954. *Some beautiful Indian climbers and shrubs*. Bombay.
- Boraih, G. & Fatima, T. K. 1970. Cytotaxonomy of *Urginea govindappae* sp. nov. *Bull. Bot. Surv. India* 12: 128 - 131.
- Borssum Waalkes, J. van 1966. Malesian Malvaceae reviscd. *Blumea* 14: 1 - 213.
- Bory, S. J. B. G. M. de & Chaubard, L. A. 1832-1833. *Expédition scientifique de Morée*. Tome III - 2e partie. *Botanique*. Paris.
- Brandis, D. 1874. *The forest flora of north-west and central India*. London.
- Bremekamp, C. E. B. 1952. The African species of *Oldenlandia*. *Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Tweede Sect. Ser. 2*, 48 (2): 28.
- Brenan, J. P. M. 1955. Notes on Mimosoideae. I. *Kew Bull.* 10: 161 - 192.
- Brenan, J. P. M. 1957. Notes on Mimosoideae: II. *Kew Bull.* 12: 75 - 96.
- Bridson, D. M. 1975. A revision of the family *Vahliaceae*. *Kew Bull.* 30: 163 - 182.
- Brown, N. E. 1880. On some new Aroideae with observations on other known forms. *J. Linn. Soc., Bot.* 18: 242 - 263.
- Brown, R. 1810. *Prodromus florae novae Hollandiae*. London.
- Brown, R. 1811. On the Asclepiadaceae. *Mem. Wern. Nat. Hist. Soc.* 1: 12 - 78.
- Brown, R. 1820. *Cryptostegia grandiflora*. *Edward's Bot. Reg.* 5: sub t. 453.
- Brown, R. L. 1862. *A handbook of trees, shrubs and herbaceous plants growing in the Madras Agri-Horticultural Society's garden, Madras and neighbourhood of Madras*. ed. 2. Madras.
- Brummit, R.K. 1983. *Dyschoriste mutica* (Acanthaceae) in tropical Africa. *Kew Bull.* 38: 134.
- Brummit, R. K. & Powell, C. E. 1992 (ed.). *Authors of plant names*. Kew.
- Bubani, P. 1850. *Dodecanthea*. Bologna.
- Buchanan-Hamilton, F. 1822. *Morinda coreia*. *Trans. Linn. Soc. London, Bot.* 13: 537.
- Buchanan-Hamilton, F. 1822. *Tephrosia hirta*. *Trans. Linn. Soc. London, Bot.* 13: 546.
- Buchanan-Hamilton, F. 1825. *Bahel schulli*. *Trans. Linn. Soc. London, Bot.* 14: 289.
- Buchanan-Hamilton, F. 1826. *Ficus tsiela*. *Trans. Linn. Soc. London, Bot.* 15: 149.
- Bull, W. 1901. *Glinus oppositifolius*. *Bull. Herb. Boisser Ser. 2*, 1: 552.
- Bullock, A. A. 1955. Notes on African Asclepiadaceae - VI. *Kew Bull.* 10: 265 - 292.

- Bullock, A. A. 1966. *Bistella dichotoma*. *Acta Bot. Neerl.* 15: 85.
- Burkill, I. H. 1965. *Chapters on the history of botany in India*. Delhi.
- Burman, N. L. 1768. *Flora Indica*. Amsterdam.
- Butzin, F. 1978. Neue namen und kombinationen bei den Gramineae. *Taxon* 27: 300 - 301.
- Calder, C. C., Narayanaswami, V. & Ramaswami, M. S. 1926. List of species of genera of Indian phanerogams not included in Sir J. D. Hooker's Flora of British India. *Rec. Bot. Surv. India* 11(1): 1 - 157.
- Camus, A. 1930. Note sur le genre *Bothrichloa*. *Ann. Soc. Linn. Lyon* 76: 162 - 165.
- Candolle, A. L. P. P. de & Candolle, A. C. P. de 1878 - 1896. *Monographiae phanerogamarum*. 9 Vols. Paris.
- Candolle, A. L. P. P. de 1901. *Glinus oppositifolius*. *Bull. Herb. Boissier Ser. 2*, 1: 552.
- Candolle, A. P. de 1813. *Catalogus plantarum horti botanici Monspeliensis*. Paris.
- Candolle, A. P. de 1817. *Regni vegetabilis systema naturale*. 2 Vols. Paris.
- Candolle, A. P. de & Candolle, A. L. P. P. de 1824 - 1873. *Prodromus systematis naturalis regni vegetabilis*. 17 Vols. Paris.
- Carlquist, S. 1974. *Island biology*. New York.
- Cassini, A. H. G. 1818. *Epaltes divaricata*. *Bull. Sci. Soc. Philom. Paris* 1818: 139.
- Cassini, A. H. G. 1829. *Vicoa auriculata*. *Ann. Sci. Nat. (Paris)*. Ser. 1, 17: 418.
- Cassini, A. H. G. 1831. *Launaea pinnatifida*. *Ann. Sci. Nat. (Paris)*. Ser. 1, 23: 85.
- Chacko, P. I., Mahadevan, S. & Ganesan, R. 1955. A guide to the field study of the fauna and flora of Kurusadai Island, Gulf of Mannar. *Contrib. Mar. Biol. Stat., Krusadai Isl.* 3: 1 -20.
- Chakravarthy, H. L. 1982. Cucurbitaceae. *Fasc. Fl. India* 11: 1 - 136.
- Chandrabose, M. & Nair, N. C. 1981. The genus *Polygala* L. (Polygalaceae) in Andhra Pradesh, Kerala and Tamil Nadu (South India). *Proc. Indian Acad. Sci.* 90B: 107 - 127.
- Chatterjee, D. 1939. Studies on the endemic flora of India and Burma. *J. Roy. Asiat. Soc. Bengal* 5: 19 - 67.
- Chiovenda, E. 1916. *Pergularia daemia*. *Result. Sci. Miss. Stefan Paoli. Somal. Ital.* 1: 115.
- Chiovenda, E. 1919. *Becium filamentosum*. *Nuovo Giorn. Bot. Ital.* 26: 162.
- Chiovenda, E. 1929 - 1936. *Flora Somala*. 3 Vols. Rome.

- Chodat R. H. 1893. *Polygala erioptera* DC. var. *vahliana* (DC.) Chodat. *Mém. Soc. Phys. Genève* 31: 281.
- Choisy, J. D. 1834. *Convolvulaceae Orientales*. Genève.
- Choisy, J. D. 1834. *Ipomoea rumicifolia*. *Mem. Soc. Phys. Genève* 6: 446.
- Choisy, J. D. 1834. *Rivea hypocrateriformis*. *Mem. Soc. Phys. Genève* 6: 408.
- Chopra, R. N., Chopra, I. C., Handa, H. L. & Kapur, L. D. 1958. *Indigenous drugs of India*. ed. 2. Calcutta.
- Cirillo, D. M. L. 1788 - 1792. *Plantarum rariorum regni Neapolitani*. 2 Fasc. Napoli.
- Clarke, C. B. 1874. *Commelynaceae et Cyrtandraceae Bengalenses*. Calcutta.
- Clarke, C. B. 1876. *Compositae Indica*. London.
- Clayton, W. D. 1975. The *Paspalum scrobiculatum* complex in tropical Africa. *Kew Bull.* 30: 101-105.
- Clayton, W. D. 1978. The genus *Holcolemma* (Gramineae). *Kew Bull.* 32: 773 - 774.
- Colladon, L. T. F. 1816. *Histoire naturelle et médicale des Casses*. Montpellier.
- Colsman, J. 1793. *Prodromus descriptionis Gratiolae*. Copenhagen.
- Cook, C. D. K. 1979. A revision of the genus *Rotala* (Lythraceae). *Boissiera* 29: 1 - 156.
- Cooke, T. 1901 - 1908. *The flora of the Presidency of Bombay*. 2 Vols. London.
- Cope, T. A. 1982. Poaceae. In: Nasir, E. & Ali, S. I. (ed.), *Flora of Pakistan* 143: 1 - 678.
- Correa da Serra, J. F. 1800. *Aegle marmelos*. *Trans. Linn. Soc. London, Bot.* 5: 223.
- Correa da Serra, J. F. 1807. *Thespesia populnea*. *Ann. Mus. Natl. Hist. Nat.* 9: 290.
- Croizat, L. 1939. Notes on Indian Euphorbiaceae: *Croton bonplandianum* (C. *sparsiflorum*) and *Euphorbia perbracteata*. *J. Bombay Nat. Hist. Soc.* 41: 573 - 576.
- Curvier, G. F. F. 1816 - 1845. *Dictionnaire des sciences naturelles dans lequel on traite méthodiquement des différents êtres de la nature*. ed. 2. 61 Vols. Paris.
- Dalla Torre, C. G. & Harms, H. 1904. *Genera siphonogamarum ad systema Englerianum conscripta*. Leipzig.
- Dalzell, N. A. 1850. *Chlorophytum parviflorum*. *Hooker's J. Bot. Kew Gard. Misc.* 2: 141.
- Dalzell, N. A. 1850. *Limnanthemum aurantiacum*. *Hooker's J. Bot. Kew Gard. Misc.* 2: 136.
- Dandy, J. E. 1938. *Caesalpinia bonduc*. *J. Bot.* 76: 115.
- Dandy, J. E. 1939. On the identity of *Syringodium* Kützing. *J. Bot.* 77: 114 - 116.

- Daniel, P. 1980. The fast-vanishing umbrella thorn tree (*Acacia planifrons* Wight & Arn.). *Indian J. Forest.* 3: 369 - 372.
- Daniel, P. 1998. Inventorisation of the angiosperms of the Gulf of Mannar Biosphere Reserve. In: Maikhuri, R. K., Rao, K. S. & Rai, R. K. (ed.), *Biosphere reserves and management in India.* 195 - 201. Almora.
- Daniel, P. & Umamaheswari, P. 1998. *Bonamia evolvuloides* (Choisy) Raiz. ex Raiz. (Convolvulaceae) - An overlooked endemic that is threatened. *Indian J. Forest.* 21: 63 - 67.
- Daniel, P. & Umamaheswari, P. 1999. Did Willdenow validly publish the name *Trianthema triquetra* (Aizoaceae)? *Indian J. Forest.* 22: 409 - 410.
- Daniel, P. Umamaheswari, P. & Sampath Kumar, K. 1999. *Cassine balae* Kosterm. (Celastraceae) - An addition to the flora of India. *J. Bombay Nat. Hist. Soc.* 96: 493 - 496.
- Daniel, P., Venu, P., Muthukumar, S. A., Thiyagaraj, G. J. & Malathi, C. P. 2000. A taxonomic reassessment of the genus *Polycarphaea* Lam. (Caryophyllaceae) in India. *J. Swamy Bot. Club* 17: 3 - 12.
- Danser, B.H. 1933. *Helicanthes elastica*. *Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Tweede Sect.* 2, 2a (6): 55.
- Dassanayake, M. D. 1980 - 1994 (ed.). *A revised hand-book to the flora of Ceylon.* 8 Vols. New Delhi.
- Davis, T. A. & Johnson, D. V. 1987. Current utilization and further development of the palmyra palm (*Borassus flabellifer* L., Arecaceae) in Tamil Nadu State, India. *Econ. Bot.* 41: 247 - 266.
- Deb, D. B. & Dasgupta, S. 1974. Revision of the genus *Urginea* Steinheil (Liliaceae) in India. *Bull. Bot. Surv. India* 16: 116 - 124.
- Deb, D. B. & Dasgupta, S. 1975. Revision of the genus *Scilla* L. in India (Liliaceae). *Bull. Bot. Surv. India* 17: 41 - 50.
- Deb, D. B. & Dasgupta, S. 1978. Revision of the genus *Dipcadi* Medik. (Liliaceae) in India and adjoining regions. *J. Bombay Nat. Hist. Soc.* 75: 50 - 70.
- Deb, D. B. & Dutta, R. 1983. Nomenclatural changes in *Hedyotis* L. (Rubiaceae) of South Asia. *Taxon* 32: 284.
- Deb, D. B. & Dutta, R. 1984. On the identity of 2 species on *Oldenlandia* L. *J. Bombay Nat. Hist. Soc.* 81: 232.
- Dehgan, B. & Webster, G. L. 1979. Morphology and infrageneric relationships of the genus *Jatropha* (Euphorbiaceae). *Univ. California Publ.* 74: 1 - 73.
- Delile, A. R. 1812. *Description de l'Égypte, histoire naturelle.* Paris.
- Dennstedt, A. W. 1818. *Schlüssel zum hortus Indicus Malabaricus.* Weimar.

- Deshmukh, S. V. & Venkataramani, G. 1994. Gulf of Mannar Marine Biosphere Reserve: Strategies for conservation and management. Report submitted to Rajiv Gandhi Foundation, New Delhi. (unpublished)
- Desfontaines, R. L. 1798 - 1799. *Flora Atlantica*. 2 Vols. Paris.
- De Wit, H. C. D. 1961. Typification and correct names of *Acacia villosa* Willd. and *Leucaena glauca* (L.) Benth. *Taxon* 10: 50 - 54.
- Dhandapani, P. 1998. The effect of human activities in the Gulf of Mannar Biosphere Reserve and the needed remedial measures: A case study. In: Maikhuri, R. K., Rao, K. S. & Rai, R. K. (ed.), *Biosphere reserves and management in India*. 237 - 243. Almora.
- Dillwyn, L. W. 1839. *A review of the references to the hortus Malabaricus of Henry van Rheedee van Draakenstein*. Swansea.
- Domin, K. 1914 - 1930. *Bibliotheca botanica*. Stuttgart.
- Don, D. 1825. *Prodromus florae Nepalensis*. London.
- Don, G. 1831 - 1838. *A general system of gardening and botany*. 4 Vols. London.
- Druce, G. C. 1914. Notes on nomenclature. Report for 1913. *Bot. Exch. Club Soc. Brit. Isles* 3: 405 - 426.
- Druce, G. C. 1917. *Blumea obliqua*. *Bot. Soc. Exch. Club Brit. Isles* 4: 609.
- Druce, G. C. 1917. *Priva cordifolia*. *Bot. Soc. Exch. Club Brit. Isles* 4: 641.
- Dubard, M. 1915. *Manilkara hexandra*. *Ann. Inst. Bot.-Géol. Colon. Marseille* 23: 9.
- Dumortier, B. C. J. 1827. *Florula Belgica*. Tournay.
- Durand, T. A. & Schinz, H. 1895 - 1898. *Conspectus florae Africae*. 2 Vols. Bruxelles.
- Dyer, W. T. T. 1902 - 1917 (ed.). *Flora of tropical Africa*. London.
- Dyer, W. T. T. 1908. *Flora Capensis*. Vol. 4. London.
- Edgeworth, M. P. 1848. Description of a new genus of Lentibulariae with remarks on some Indian species of *Utricularia*. *Proc. Linn. Soc. London* 1: 351 - 353.
- Edgeworth, M. P. 1853. Catalogue of plants found in Banda district. *J. Asiat. Soc. Bengal* 21: 151 - 184.
- Ehrenberg, C. G. 1834. *Schizotheca hemprichii*. *Abh. Königl. Akad. Wiss. Berlin* 1832(1): 429.
- Ellis, J. L. & Swaminathan, M. S. 1969. Notes on some interesting plants from south India 1. *J. Bombay Nat. Hist. Soc.* 66: 233 - 234.
- Endlicher, S. L. 1842 - 1843. *Catalogus horti academici Vindobonensis*. 2 Vols. Wien.
- Engler, H. G. A. 1894. *Fimbristylis triflora*. *Abh. Königl. Acad. Wiss. Berlin*, 14.

- Engler, H. G. A. 1910. *Das pflanzenreich*. Heft 4. Leipzig.
- Engler, H. G. A. 1953 - 1968. *Das pflanzenreich*. Heft 107. Leipzig.
- Engler, H. G. A. & Prantl, K. A. E. 1889 - 1915. *Die natürlichen pflanzenfamilien*. Teile 4. Leipzig.
- Engler, H. G. A. & Prantl, K. A. E. 1924 - 1959. *Die natürlichen pflanzenfamilien*. ed. 2. 26 Vols. Leipzig.
- Exell, A.W. 1957. *Ludwigia hyssopifolia*. *Garcia de Orta* 5: 471.
- Farr, E. R., Leussink, J. A. & Stafleu, F. A. 1979 (ed.). *Index nominum genericorum*. 3 Vols. *Regnum Veg.* Vols. 100 - 102.
- Featherly, H. I. 1973. *Taxonomic terminology of the higher plants*. Ames.
- Feinburn - Dothen, N. 1986. *Flora Palestina*. Part 4. Jerusalem.
- Fischer, C. E. C. 1921. A survey of the flora of the Anaimalai hills in the Coimbatore district, Madras presidency. *Rec. Bot. Surv. India* 9: 1 - 218.
- Fischer, C. E. C. 1928. Decades Kewenses. Plantarum novarum in herbaria hortii regii conservatarum. Decas CXXXI. *Bull. Misc. Inform.* 1928: 272 - 277.
- Fischer, C. E. C. 1932. The König collection in the Lund herbarium. *Bull. Misc. Inform.* 1932: 49 - 76.
- Fleming, J. 1810. A catalogue of Indian medicinal plants and drugs with their names in the Hindustani and Sanskrit languages. *Asiat. Res.* 11: 153 - 196.
- Forman, L. L. 1968. The Menispermaceae of Malesia: V. Tribe Cocculeae Hook. f. & Thoms. *Kew Bull.* 22: 349 - 374.
- Forsskål, P. 1775. *Flora Aegyptiaco-Arabica*. Copenhagen.
- Forster, J. G. A. 1786. *Florulae insularum Australium prodromus*. Göttingen.
- Forster, J. R. 1775. (ed 2). *Characteres generum plantarum*. London.
- Fosberg, F. R. 1964. The correct name of the chicle. *Taxon* 13: 254 - 255.
- Fosberg, F. R. & Sachet, M. H. 1965. Manual for tropical herbaria. *Regnum Veg.* Vol. 39.
- Fyson, P. F. 1932. *The flora of the south Indian hill stations*. 2 Vols. Madras.
- Gaertner, J. 1788 - 1791. *De fructibus et seminibus plantarum*. 2 Vols. Stuttgart.
- Gamble, J. S. 1915 - 1936. *Flora of the presidency of Madras*. 11 Parts. (Parts 1 - 7 by Gamble & 8 - 11 by C.E.C. Fischer). London.
- Gardner, C. A. & Hubbard, C. E. 1938. *Brachiaria reptans* Gard. et Hubb. *Hooker's Icon. Pl.* t. 3363.

- Gasparrini, G. 1844. *Nova genera, quae super nonnullis Fici speciebus struebat*. Napoli.
- Gaudichaud-Beaupré, C. 1826 - 1830. *Voyage autour du monde, entrepris par ordre du roi, exécuté sur les corvettes de S.M. l'Uranie et la Physicienne*. Paris.
- Geesink, R. 1969. An account of the genus *Portulaca* in Indo-Australia and the Pacific (Portulacaceae). *Blumea* 17: 294.
- Geiseler, E. F. 1807. *Crotonis monographiam*. Halle.
- Gillis, W. T. & Stearn, W. T. 1974. Typification of the names of the species of *Leucaena* and *Lysiloma* in the Bahamas. *Taxon* 23: 190 - 191.
- Gloxin, B. P. 1785. *Observationes botanicae*. Strasbourg.
- Gmelin, J. F. 1791 - 1792. *Systema naturae*. 3 Tomes. 7 Vols. Leipzig.
- Gomez, M. 1896. *Persicaria glabra*. *Ann. Inst. Segunda Enseñ. Habana* 2: 278.
- Gravely, F. H. & Mayuranathan, P. V. 1931. The Indian species of genus *Caralluma* (Asclepiadaceae). *Bull. Madras Gov. Mus.* 4: 1 - 28.
- Greene, E. 1899. *Phyla nodiflora*. *Pittonia* 4: 46.
- Grisebach, A. H. R. 1839. *Genera et species Gentianearum*. Stuttgart.
- Groombridge, B. 1992 (ed.). *Global biodiversity: Status of the earth's living resources*. London.
- Guillemin, J. B. A. & Perrottet, G. S. 1830 - 1833. *Florae Senegambiae tentamen*. London.
- Gusev, Yu D. 1972. *Amaranthus graecizans* subsp. *thellungianus*. *Bot. Zurn (Moscow & Leningrad)* 57: 462.
- Haines, H. H. 1921 - 1925. *The botany of Bihar and Orissa*. 6 Parts. London.
- Hajra, P. K., Rao, R. R., Singh, D. K. & Uniyal, B. P. 1995 (ed.). *Flora of India*. Vols. 12 & 13. Calcutta.
- Hajra, P. K., Nair, V. J. & Daniel, P. 1997 (ed.). *Flora of India*. Vol. 4. Calcutta.
- Hallier, H. 1893. *Merremia dissecta*. *Bot. Jahrb. Syst.* 16: 552.
- Hallier, H. 1893. *Merremia hastata*. *Bot. Jahrb. Syst.* 16: 552.
- Hallier, H. 1893. *Merremia tridentata*. *Bot. Jahrb. Syst.* 16: 552.
- Hallier, H. 1894. *Merremia hederacea*. *Bot. Jahrb. Syst.* 16: 552.
- Hara, H. 1953. *Ludwigia* versus *Jussiaea*. *J. Jap. Bot.* 23: 289 - 294
- Hara, H. 1974. *Vallisneria natans*. *J. Jap. Bot.* 49: 136.

- Hara, H., Stearn, W. T. & Williams, L. H. J. 1978 - 1982. *An enumeration of flowering plants of Nepal*. 3 Vols. London.
- Hartog, C. den 1964. An approach to the taxonomy of the genus *Halodule* Endlicher (Potamogetonaceae). *Blumea* 12: 289 - 312.
- Hartog, C. den 1970. *The seagrasses of the world*. Amsterdam.
- Hartog, C. den & Zong-Dai, Y. 1988. Occurrence of the seagrass *Halodule pinifolia* (Miki) den Hartog in the Indian Ocean. *Curr. Sci.* 57: 1172 - 1174.
- Hasskarl, J. C. 1848. *Plantae Javanicae rariores*. Berlin.
- Haworth, A. H. 1812. *Synopsis plantarum succulentarum*. London.
- Haworth, A. H. 1819. *Supplementum plantarum succulentarum*. London.
- Heine, H. 1962. Tropical African plants. XXVI. Some west African Acanthaceae. *Kew Bull.* 16: 161 - 183.
- Hemadri, K. 1980. *Grasses of Junnar*. Dehra Dun.
- Henrard, J. T. 1934. Notes on the genus *Digitaria*. *Blumea* 1: 90 - 114.
- Henry, A. N. 1968. Nomenclatural changes in Indian plants. *Bull. Bot. Surv. India* 9: 290.
- Henry, A. N., Chithra, V. & Balakrishnan, N. P. 1989 (ed.). *Flora of Tamil Nadu, India*. Vol. 3. Coimbatore.
- Henry, A. N., Kumari, G. R. & Chithra, V. 1987 (ed.). *Flora of Tamil Nadu, India*. Vol. 2. Coimbatore.
- Henry, A. N. & Swaminathan, M.S. 1981. Observations on the vegetation of Kanyakumari district, Tamil Nadu. *Bull. Bot. Surv. India* 23: 135 - 139.
- Henry, A. N., Vivekananthan, K. & Nair, N. C. 1979. Rare and threatened flowering plants of south India. *J. Bombay Nat. Hist. Soc.* 75: 684 - 697.
- Heyne, K. 1927. *De nuttige planten van Nederlandsch-Indie*. ed. 2. 3 Vols. Batavia.
- Holmgren, P. K., Holmgren, N. H. & Barnett, L. C. 1990. Index herbariorum. ed. 8. *Regnum Veg.* Vol. 120.
- Hooker, J. D. 1855 - 1859. *Flora Tasmaniae*. 2 Parts. London.
- Hooker, J. D. 1872 - 1897. *The flora of British India*. 7 Vols. London.
- Hooker, J. D. & Thomson, T. 1855. *Flora Indica*. London.
- Hooker, W. J. 1829 - 1833. *Botanical miscellany*. 3 Vols. London.
- Hooker, W. J. 1837. *Capparis sepiaria* L. *Icon. Pl. t.* 123.
- Hooker, W. J. 1849. *Niger flora*. London.

- Hooker, W. J. & Arnott, W. G. A. 1830 - 1841. *The botany of Captain Beechey's voyage*. London.
- Host, N. T. 1801 - 1809. *Icones et descriptiones graminum Austriacorum*. 4 Vols. Wien.
- Houttuyn, M. 1773 - 1783. *Natuurlijke historie*. 14 Parts. Amsterdam.
- Hubbard, C. E. 1930. A supplement to the grasses of the Fiji Islands. *Bull. Misc. Inform.* 1930: 252 - 265.
- Hubbard, C. E. 1939. Notes on African grasses: XXII. *Bull. Misc. Inform.* 1939: 643 - 655.
- Hubbard, C.E. & Vaughan, R.E. 1940. *The grasses of Mauritius and Rodriguez*. London.
- Hutchinson, J. 1964. *The genera of flowering plants: Dicotyledons*. Vol. 1. London.
- Hutchinson, J. 1973. *The families of flowering plants*. ed. 3. Oxford.
- Hutchinson, J. & Dalziel, J.M. 1927 - 1936. *Flora of west tropical Africa*. 2 Vols. London.
- Iyengar, M. O. P. 1927. Kurusadai Island flora. *Bull. Madras Gov. Mus.* 1: 185 - 188.
- Jacob, K. C. 1944. A new species of *Cordia*. *J. Bombay Nat. Hist. Soc.* 45: 78 - 79.
- Jacobs, M. 1963. The genus *Crataeva* (Capparaceae). *Blumea* 12: 177 - 208.
- Jacquin, N. J. von 1760. *Enumeratio systematica plantarum Caribaeis*. Leiden.
- Jacquin, N. J. von 1770 - 1776. *Hortus botanicus Vindobonensis*. 3 Parts. Wien.
- Jacquin, N. J. von 1778 - 1782. *Miscellanea Austriaca*. 2 Vols. Wien.
- Jacquin, N. J. von 1781 - 1795. *Icones plantarum rariorum*. 3 Vols. Wien.
- Jacquin, N. J. von 1788 - 1796. *Collectanea*. 5 Vols. Wien.
- Jacquin, N. J. von 1797 - 1804. *Plantarum rariorum horti caesarei schoenbrunnensis*. 4 Vols. Wien.
- Jacquin, N. J. von 1800 - 1809. *Fragmenta botanica*. Wien.
- Jain, S.K. 1986. The grass flora of India: A synoptic account of uses and phytogeography. *Bull. Bot. Surv. India* 28: 229 - 240.
- Jain, S. K. & Rao, R. R. 1983 (ed.). *An assessment of threatened plants of India*. Howrah.
- Jain, S. K. & Sastry, A. R. K. 1983. *Materials for a catalogue of threatened plants of India*. Howrah.
- Janarthanam, M. K. & Henry, A. N. 1992. *Bladderworts of India*. Coimbatore.
- Jeffrey, C. 1980. On the nomenclature of the strand *Scaevola* species (Goodeniaceae). *Kew Bull.* 34: 537 - 545.

- Jeffrey, C. 1983. Notes on Cucurbitaceae, including a proposed new classification of the family. *Kew Bull.* 15: 337 - 371.
- Jussieu, A. H. L. de 1824. *De Euphorbiacearum generibus*. Paris.
- Jussieu, A. L. de 1789. *Genera plantarum*. Paris.
- Jussieu, A. L. de 1803. *Pupalia lappacea*. *Ann. Mus. Natl. Hist. Nat.* 2: 132.
- Jussieu, A. L. de 1804. *Maba buxifolia*. *Ann. Mus. Natl. Hist. Nat.* 5: 418.
- Jussieu, A. L. de 1806. *Priva leptostachya*. *Ann. Mus. Natl. Hist. Nat.* 7: 70.
- Jussieu, A. L. de 1832. *Azadirachta indica*. *Mém. Mus. Natl. Hist. Nat.* 19: 221.
- Karthikeyan, S. 1983. Endemic grasses of India with an emphasis on rare, indeterminate and extinct species. In: Jain, S. K. & Rao, R. R. (ed.), *An assessment of threatened plants of India*. 240 - 250. Howrah.
- Karthikeyan, S., Jain, S. K., Nayar, M. P. & Sanjappa, M. 1989. *Florae Indicae enumeratio: monocotyledonae*. Calcutta.
- Karthikeyan, S., Nayar, M. P. & Raghavan, R. S. 1981. *An annotated bibliography of taxonomic botany of peninsular India 1959 - 1978*. Howrah.
- Karthikeyan, S. & Sharma, B. D. 1983. A catalogue of species added to Gamble's flora of the presidency of Madras. *J. Bombay Nat. Hist. Soc.* 80: 63 - 79.
- Kazmi, S. M. A. 1970. A revision of the Boraginaceae of West Pakistan and Kashmir. *J. Arnold Arbor.* 51: 133 - 184.
- Kazmi, S. M. A. 1971. A revision of the Boraginaceae of West Pakistan and Kashmir. *J. Arnold Arbor.* 52: 486 - 522.
- Ker Gawler, J. B. 1818. *Opuntia dillenii*. *Bot. Reg.* 3: t. 255.
- King, G. 1888. The species of *Ficus* of the Indo-Malayan and Chinese countries. *Ann. Roy. Bot. Gard (Calcutta)* 1: 1 - 185.
- King, G. 1898. *Enterolobium saman*. *J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist.* 66: 252.
- Kirtikar, K. R. & Basu, B. D. 1918. *Indian medicinal plants*. 3 Vols. Allahabad.
- Koehne, B. A. E. 1880. Lythraceae monographie discribunter. *Bot. Jahrb. Syst.* 1: 242 - 266
- Koehne, B. A. E. 1882. Lythraceae monographie discribunter. *Bot. Jahrb. Syst.* 3: 325.
- Koeler, G. L. 1802. *Descriptio graminum*. Frankfurt.
- Kostermans, A. J. G. H. 1987. Notes on Asiatic *Cassine* L. (Celastraceae). *Gard. Bull Singapore* 39: 177 - 191.
- Koyama, T. 1964. *Fimbristylis cymosa* subsp. *spathacea*. *Micronesica* 1: 83.

- Koyama, T. 1980. Further notes on the Cyperaceae of Ceylon. *Bot. Mag. (Tokyo)* 93: 341-354.
- Koyama, T. 1988. Taxonomic study of the genus *Scirpus* Linn. *J. Fac. Sci., Univ. Tokyo, Sect. 3, Bot.* 7: 271 - 366.
- Kumaraguru, A. K. & Jayakumar, K. 1998. Underwater ecology of coral reefs and their associated fauna in the Gulf of Mannar. In: Maikhuri, R. K., Rao, K. S. & Rai, R. K. (ed.), *Biosphere reserves and management in India*. 221 - 226. Almora.
- Kunth, C.S. 1815 - 1825. *Nova genera et species plantarum*. In: Humboldt, F. H. A. von, Bonpland, A. J. A. & Kunth, C. S. *Voyages aux régions aequinoctiales*. 7 Vols. Part 6, *Botanique*. Sect. 3. Paris.
- Kunth, C. S. 1829. *Révision des Graminées*. Paris.
- Kunth, C. S. 1833 - 1850. *Enumeratio plantarum*. 5 Vols. Stuttgart.
- Kuntze, C. E. O. 1891 - 1898. *Revisio generum plantarum*. 3 Vols. Leipzig.
- Kurz, W. S. 1871. *Ecbolium linneanum*. *J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist.* 40: 75.
- Kurz, W. S. 1875. *Scutia myrtina*. *J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist.* 44: 168.
- Lakshmanan, K. K., Poornima, S. & Rajeswari, M. 1988. *Halophila decipiens* Ostent. - A new record from the eastern coast of India. *Curr. Sci.* 57: 199 - 200.
- Lakshmanan, K. K. & Rajeswari, M. 1982. The new record of *Thalassia hemprichii* (Ehrenb.) Aschers. from the main coast of India. *Curr. Sci.* 51: 373 - 374.
- Lakshmanan, K. K., Rajeswari, M. & Diwakar, K. M. 1984. Mangrove forest of Kurusadai Island, S.E. India and its management. *Environ. Conserv.* 11: 174 - 176.
- Lamarck, J. B. A. P. M. de 1783 - 1817. *Encyclopédie méthodique Botanique*. 13 Vols. incl. 5 Suppl. Paris.
- Lamarck, J. B. A. P. M. de 1791 - 1823. *Tableau encyclopédique et méthodique botanique*. 3 Tomes. 6 Vols. Paris.
- Lawrence, C. A. 1960. The vegetation of Kanyakumari district (Cape Comorin). *J. Bombay Nat. Hist. Soc.* 57: 184 - 195.
- Lawrence, G. H. M. 1951. *Taxonomy of vascular plants*. New York.
- Lawrence, G. H. M., Buchheim, A. F. G., Daniels, G. S. & Dolezal, H. 1968. *Botanico-Periodicum-Huntianum*. Pittsburgh.
- Lecomte, P. H. 1911. *Cayratia carnosa*. *Notul. Syst. (Paris)* 1: 344.
- Lehman, J. G. C. 1818. *Plantae e familiae Asperifoliarum nuciferae*. 2 Parts. Berolini.
- Lessing, C. F. 1829. De synantheis herbarii regii Berolinensis dissertatio prima Vernoniae. *Linnaea* 4: 240 - 356.

- Link, J. H. F. 1820. *Justicia dentata*. *Jahrb. Gewachsk.* 1: 48.
- Link, J. H. F. 1821 - 1822. *Enumeratio plantarum horti regii Berolinensis altera*. 2 Parts. Berlin.
- Link, J. H. F. 1827 - 1833. *Hortus regius botanicus Berolinensis*. 2 Vols. Berlin.
- Linnaeus, C. 1749 - 1769. *Amoenitates academicae*. 7 Vols. Leipzig.
- Linnaeus, C. 1753. *Species plantarum*. 2 Vols. Stockholm.
- Linnaeus, C. 1754. *Herbarium amboinense*. Uppsala.
- Linnaeus, C. 1754. *Genera plantarum*. ed. 5. Stockholm.
- Linnaeus, C. 1756. *Centuria II: plantarum* E. Torner. Uppsala.
- Linnaeus, C. 1758 - 1759. *Systema naturae*. ed. 10. Vol. 2. Stockholm.
- Linnaeus, C. 1762 - 1763. *Species plantarum*. ed. 2. 2 Vols. Stockholm.
- Linnaeus, C. 1764. *Genera plantarum*. ed. 6. Stockholm.
- Linnaeus, C. 1766 - 1768. *Systema naturae*. ed. 12. Stockholm.
- Linnaeus, C. 1767 - 1771. *Mantissa plantarum*. Stockholm.
- Linnaeus, C. filius 1782. *Supplementum plantarum*. Braunschweig.
- Lippold, H. 1980. *Cascabela thevetia*. *Feddes Repert.* 91: 52.
- Livingstone, C. & Narasimhan, D. 1991. Flora of Chengalpattu district, Tamil Nadu, India. Report submitted to BSI, Coimbatore. (unpublished)
- Livingstone, C. & Henry, A. N. 1994. *The flowering plants of Madras city and its immediate neighbourhood*. Madras.
- Lorch, J. W. 1960. *Arthrochloa* - a new genus of grasses from India. *J. Indian Bot. Soc.* 39: 490 - 495.
- Loudon, J. C. 1830. *Hortus Britannicus*. London.
- Loureiro, J. de 1790. *Flora Cochinchinensis*. 2 Vols. Lisboa.
- Lye, K. A. 1971. *Schoenoplectus maritimus*. *Blyttia* 29: 145.
- Lye, K. A. 1971. *Schoenoplectus lateriflorus*. *Bot. Not.* 124: 290.
- Mabberly, D. J. 1977. Francis Hamilton's commentaries with particular reference of Meliaceae. *Taxon* 26 : 523 - 540.
- Mabberly, D. J. 1980. A re-examination of Indian catalogues with particular reference to Hortus Malabaricus. In: Manilal, K. S. (ed.), *Botany and history of Hortus Malabaricus*. 80 - 110. New Delhi.

- Mabberley, D. J. 1997. *The plant-book*. London.
- Macbride, J. F. 1918. *Madhuca longifolia*. *Contr. Gray Herb.* 53: 17.
- Macbride, J. F. 1918. *Scilla hyacinthina*. *Contr. Gray Herb.* 56: 14.
- Maikhuri, R. K., Rao, K. S., Palani, L. M. S. & Rai, R. K. 1998. Biosphere reserve programme in India. In: Maikhuri, R. K., Rao, K. S. & Rai, R. K. (ed.), *Biosphere reserves and management in India*. 1 - 7. Almora.
- Majumdar, R. B. 1971. Notes on Rajasthan flora. III. *Bull. Bot. Soc. Bengal* 25: 75 - 76.
- Manilal K. S. 1980 (ed.). *Botany and history of hortus Malabaricus*. New Delhi.
- Martius, C. F. P. von 1823 - 1832. *Nova genera et species plantarum*. 3 Vols. München.
- Martius, C. F. P. von 1825. *Beitrag zur kenntnis der natürlichen familie der Amarantaceen*. Bonn.
- Martius, C. F. P. von 1829 - 1833. *Flora Brasiliensis seu enumeratio plantarum*. 2 Vols. Stuttgart.
- Martius, C. F. P. von 1840 - 1906 (ed.) *Flora Brasiliensis*. 15 Vols. München.
- Masamune, G. 1940. *Carmona retusa*. *Trans. Nat. Hist. Soc. Taiwan* 30: 61.
- Mattei, G.E. 1917. Prosposta di un nuovo genere di Malvaceae. *Boll. Reale Orto Bot. Giardino Colon. Palermo Ser. 2, 2*: 71.
- Matthew, K. M. 1982. *Illustrations on the flora of the Tamilnadu Carnatic*. Vol. 2. Tiruchirapalli.
- Matthew, K. M. 1983. *The flora of the Tamilnadu Carnatic*. Vol. 3. (Parts 1 & 2). Tiruchirapalli.
- Matthew, K. M. 1988. *Further illustrations on the flora of the Tamilnadu Carnatic*. Vol. 4. Tiruchirapalli.
- Mayuranathan, P. V. 1929. The flowering plants of Madras city and its immediate neighbourhood. *Bull. Madras Gov. Mus.* 2: 1 - 345.
- Mears, J. A. 1980. The Linnacan species of *Gomphrena* L. (Amaranthaceae). *Taxon* 29: 85 - 95.
- Medikus, F. C. 1790. *Adhatoda zeylanica*. *Hist. & Commentat. Acad. Elect. Sci. Theod. Palat.* 6: 393.
- Melville, R. 1958. Notes on *Alternanthera*. *Kew Bull.* 13: 171 - 175.
- Merrill, E. D. 1812. *Sesbania sesban*. *Philipp. J. Sci.* 7: 235.
- Merrill, E. D. 1912. *Spinifex littoreus*. *Philipp. J. Sci.* 7: 229.
- Merrill, E. D. 1912. *Zoysia matrella*. *Philipp. J. Sci.* 7: 230.

- Merrill, E. D. 1916. *Samanea saman*. *J. Wash. Acad. Sci.* 6: 47.
- Merrill, E. D. 1917. *An interpretation of Rumphius's Herbarium Amboinense*. Manila.
- Merrill, E. D. 1917. *Lindernia pusilla*. *Philipp. J. Sci.* 11: 312.
- Merrill, E. D. 1921. *Indigofera colutea*. *Philipp. J. Sci.* 19: 355.
- Merrill, E. D. 1921. *Geniosporum tenuiflorum*. *Philipp. J. Sci.* 19: 379.
- Merrill, E. D. 1921. *Tylophora indica*. *Philipp. J. Sci.* 19: 373.
- Merrill, E. D. 1921. A review of new species of plants proposed by N. L. Burman in his flora Indica. *Philipp. J. Sci.* 19: 329 - 342.
- Merrill, E. D. 1928. *Aerva persica*. *Phillip. J. Sci.* 19: 348.
- Merrill, E. D. 1933. *Dinebra malabarica*. *Bull. Torrey Bot. Club* 60: 633.
- Merrill, E. D. 1938. *Ischaemum indicum*. *J. Arnold Arbor.* 19: 320.
- Merrill, E. D. 1938. *Lanea coromandelica*. *J. Arnold Arbor.* 19: 353.
- Merrill, E. D. 1942. *Centranthera tranquebarica*. *Ann. Roy. Bot. Gard. (Calcutta)* 50: 57.
- Merrill, E. D. & Walker, E. H. 1938. *A bibliography of eastern Asiatic botany*. Harvard.
- Meyer, C. A. von 1831. *Verzeichniss der pflanzen*. St.- Petersburg.
- Michaux, A. 1803. *Flora Boreali-Americana*. 2 Vols. Paris.
- Midya, S. & Brahmachary, R. L. 1991. The effect of bird upon germination of banyan (*Ficus benghalensis*) seeds. *Trop. Ecol.* 7: 537 - 538.
- Miki, S. 1932. *Diplanthera pinifolia*. *Bot. Mag. (Tokyo)* 46: 787.
- Miles, D. H., Chittawong, V., Hedin, P. A. & Kokpol, U. 1993. Potential agrochemicals from leaves of *Wedelia biflora*. *Phytochemistry* 32: 1427 - 1431.
- Milne-Redhead, E. & Polhill, R. M. 1952. *Flora of tropical east Africa*. (issued as parts by family name). London.
- Miller, P. 1768. *The gardeners dictionary*. ed. 8. London.
- Mitchell, T. L. 1848. *Journal of an expedition into the interior of tropical Australia*. London.
- Mitra, D. 1993. Annonaceae. In: Sharma, B. D., Balakrishnan, N. P., Rao, R. R. & Hajra, P. K. (ed.), *Flora of India*. 1: 202 - 307. Calcutta.
- Mitra, R. L. 1971. *Euphorbia serpens* H. B. K. (Euphorbiaceae): A hitherto unrecognised species in India. *J. Bombay Nat. Hist. Soc.* 68: 852 - 856.
- Miquel, F. A. W. 1850 - 1852. *Analecta botanica Indica*. 3 Parts. Amsterdam.

- Miquel, F. A. W. 1851 - 1857. *Plantae Junghuhnianae*. Leiden.
- Miquel, F. A. W. 1855 - 1859. *Flora van Nederlandsch Indië*. 3 Vols. Amsterdam.
- Moench, C. 1802. *Supplementum ad methodum plantas a staminum situ describendi*. Marburg.
- Mohr, C. 1901. *Flaveria trinervia*. *Contr. U.S. Natl. Herb.* 6: 810.
- Moldenke, H. N. 1934. *Lantana camara* L. var. *aculeata*. *Torreyia* 34: 9.
- Molina, G. I. 1782. *Saggio sulla storia naturale del Chili*. Bologna.
- Moquin-Tandon, C. H. B. A. 1831. *Suaeda indica*. *Ann. Sci. Nat. (Paris)* 23: 316.
- Moquin-Tandon, C. H. B. A. 1831. *Suaeda nudiflora*. *Ann. Sci. Nat. (Paris)* 23: 316.
- Moquin-Tandon, C. H. B. A. 1840. *Chenopodearum monographica enumeratio*. Paris.
- Morong, T. 1893. *Croton sparsiflorus*. *Ann. New York Acad. Sci.* 7: 221.
- Müller, A. J. 1863. Euphorbiaceae: Vorläufige mittheilungen aus dem für De Candolle's Prodrömus bestimmten manuscript über diese familie. *Linnaea* 32: 1 - 126.
- Müller, A. J. 1865. *Acalypha fallax*. *Linnaea* 34: 43.
- Mueller, F. von 1876 - 1877. *Fragmenta phytographiae Australiae*. Vol. 10. Melbourne.
- Mueller, F. von 1882. *Systematic census of Australian plants*. Melbourne.
- Mukherjee, S. K. 1940. A revision of the Labiatae of the Indian empire. *Rec. Bot. Surv. India* 14: 1 - 228.
- Mukherjee, S. K. 1945. A revision of the Indo-Burmese species of *Lindernia* Allioni. *J. Indian Bot. Soc.* 24: 127 - 134
- Munro, W. 1862. *Eragrostis amabilis*. *J. Linn. Soc., Bot.* 6: 43.
- Murbeck, S. S. 1922 - 1923. *Contributions à la connaissance de la flore du Maroc*. 2 Vols. Leipzig.
- Murray, J. A. 1772. *Heuchera dichotoma*. *Novi Comment. Soc. Regiae Sci. Gott.* 3: 64.
- Murray, J. A. 1774. *Systema vegetabilium*. ed. 13. Göttingen.
- Murray, J. A. 1786. On *Euphorbia cyathophora*. *Commentat. Soc. Regiae Sci. Gott.* 7: 81.
- Naczén, D. E. 1779. *Nova graminum genera*. Uppsala.
- Nair, N. C. 1967. A note on the nomenclature of *Amaranthus polygamus* of Hooker's flora of British India. *Bull. Bot. Surv. India* 8: 88 - 89.
- Nair, N. C. 1976. Identity of *Amaranthus polygamus* of Hooker's flora of British India and related taxa. *J. Bombay Nat. Hist. Soc.* 73: 59 - 62.

- Nair, N. C. & Henry, A. N. 1983 (ed.). *Flora of Tamil Nadu, India*. Vol. 1. Coimbatore.
- Nair, N. C. & Vivekananthan, K. 1983. Introduction. In: Nair, N.C. & Henry, A.N. (ed.), *Flora of Tamil Nadu 1: I - XXI*. Coimbatore.
- Naithani, H. B. 1990. *Flowering plants of India, Nepal & Bhutan (not recorded in Sir J.D. Hooker's flora of British India)*. Dehra Dun.
- Narayanaswami, V. 1961 & 1965. *A bibliography of Indology (Botany)*. Parts 1 & 2. Calcutta.
- Naudin, C. V. 1859. *Bryonopsis laciniosa*. *Ann. Sci. Nat. Bot. Sér.* 4, 12: 141.
- Naudin, C. V. 1862. *Rhynchoscarpa epigaeus* var. *gracilipes*. *Ann. Sci. Nat. Bot. Sér.* 4, 16: 179.
- Naudin, C. V. 1866. *Cephalandra indica*. *Ann. Sci. Nat. Bot. Sér.* 5, 5: 16.
- Nayar, M. P. 1959. The vegetation of Kanyakumari, Kanyakumari district. *Bull. Bot. Surv. India* 1: 122 - 126.
- Nayar, M. P. 1996. *Hot spots of endemic plants of India, Nepal and Bhutan*. Thiruvananthapuram.
- Nayar, M. P., Ahmedullah, M. & Raju, D. C. S. 1984. Endemic and rare plants of Eastern Ghats. *Indian J. Forest.* 7: 35 - 42.
- Nayar, M. P. & Giri, G. S. 1982. A synopsis of the genus *Tribulus* Linn. (Zygophyllaceae) in India. *Bull. Bot. Surv. India* 24: 160 - 164.
- Nayar, M. P. & Ramamurthy, K. 1973. Third list of species and genera of Indian phanerogams not included in J.D. Hooker's flora of British India (excluding Bangladesh, Burma, Ceylon, Malayan Peninsula and Pakistan). *Bull. Bot. Surv. India* 15: 204 - 234.
- Nayar, M. P. & Sastry, A. R. K. 1987 (ed.). *Red data book of Indian plants*. Vol. 1. Calcutta.
- Nayar, M. P. & Sastry, A. R. K. 1988 (ed.). *Red data book of Indian plants*. Vol. 2. Calcutta.
- Nayar, M. P. & Sastry, A. R. K. 1990 (ed.). *Red data book of Indian plants*. Vol. 3. Calcutta.
- Neelakantan, K. S. 1994. Management plan for the Gulf of Mannar Marine Biosphere Reserve, from 1993 - 1994 to 1997 - 1998. (unpublished)
- Nees, E. C. G. D. von 1824. *Leptochloa chinensis*. *Syll. Pl. Nov.* 1: 4.
- Nees, E. C. G. D. von 1835. *Pycnus pumila*. *Linnaea.* 9: 283.
- Nees, E. C. G. D. von 1837. *Datura alba*. *Trans. Linn. Soc. London, Bot.* 17: 13. 1837.
- Nees, E. C. G. D. von 1841. *Florae Africae australioris illustrationes monographicae*. Glogau.
- Nees, E. C. G. D. von 1843. *Pycnus nitens*. *Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur.* 19(1): 53.

- Nevski, S. A. 1937. *Amaranthus roxburghianus*. *Trudy Bot. Inst. Akad. Nauk. SSSR*, Ser. 1, *Fl. Sist. Vysš. Rast.* 4: 311.
- Nicolson, D. H., Suresh, C. R. & Manilal, K. S. 1988. An interpretation of Rheede's hortus Malabaricus. *Regnum Veg.* Vol. 119.
- Oliver, D. 1859. *Utricularia polygaloides*. *J. Proc. Linn. Soc., Bot.* 3: 180.
- Oliver, D. 1871. *Flora of tropical Africa*. Vol. 2. London.
- Oommachan, M. & Srivastava, J. L. 1987. *Spigelia anthelmia* L. - A new record for India. *J. Bombay Nat. Hist. Soc.* 84: 730 - 732.
- Ortega, C. G. 1797 - 1800. *Novarum aut rariorum plantarum*. Madrid.
- Ostenfeld, C. H. 1902. Hydrocharitaceae, Lemnaceae, Pontederiaceae, Potamogetonaceae, Gentianaceae (*Limnanthemum*) and Nymphaeaceae. *Bot. Tidsskr.* 24: 260 - 263.
- Palla, E. 1888. Zur kenntnis der gattung "Scirpus". *Bot. Jahrb. Syst.* 10: 293 - 301.
- Palla, E. 1889. *Schoenoplectus articulatus*. *Bot. Jahrb. Syst.* 10: 229.
- Pandey, R. P. 1993. Poaceae. In: Shetty, B.V. & Singh, V. (ed.), *Flora of Rajasthan*. 3: 952 - 1140.
- Panigrahi, G. 1974. *Tragus roxburghii* sp. nov. proposed for *T. biflorus* auctt. (Gramineae). *Kew Bull.* 29: 495 - 496.
- Panigrahi, G. 1984. *Lindernia caespitosa* comb. nov. proposed to replace *Lindernia pusilla* auct. non Boldingh (Scrophulariaceae). *Taxon* 33: 319 - 321.
- Panzer, G. W. F. 1814. *Dinebra retroflexa*. *Denkschr. Königl. Acad. Wiss. München* 270.
- Parkinson, C. E. 1923. *The forest flora of the Andaman Islands*. Simla.
- Parthasarathy, N., Ramamurthy, K. & Ravikumar, K. 1987. Two interesting taxa of plants from Coromandel coast of south India. *J. Econ. Tax. Bot.* 11: 207 - 209.
- Parthasarathy, N., Ravikumar, K. & Ramamurthy, K. 1988. *Halophila decipiens* Ostenf. in southern India. *Aquat. Bot.* 32: 179 - 185.
- Patel, R.I. 1965. Grasses of Gujarat state. *Indian Forester* 91: 309 - 340.
- Paul, T. K. & Nayar, M. P. 1988. Malvaceae. In: Nayar, M. P., Thothathri, K. & Sanjappa, M. (ed.), *Fasc. Fl. India*. 19: 64 - 233.
- Pennell, F. W. 1946. *Bacopa monnieri*. *Proc. Acad. Nat. Sci. Philadelphia* 98: 94.
- Perrottet, G. S. 1824. *Rhizophora tagal*. *Mém. Soc. Linn. Paris.* 3: 138.
- Persoon, C. H. 1805 - 1807. *Synopsis plantarum*. 2 Vols. Paris.

- Phillips, R. C. & McRoy, C. P. 1980 (ed.). *Handbook of seagrass biology: An ecosystem perspective*. New York.
- Phillips, S. M. 1982. A numerical analysis of the Eragrostideae. *Kew Bull.* 37: 133 - 162.
- Philipson, W. R. 1950. *Blainvillea acmella*. *Blumea* 6: 350.
- Pierre, J. B. L. 1880 - 1907. *Flore forestière de la Cochinchine*. 4 Vols. Paris.
- Planchon, J. E. 1849. *Nechamandra roxburghii*. *Ann. Sci. Nat. Bot.* 11: 78.
- Poiret, J. L. M. 1806. *Hyptis suaveolens*. *Ann. Mus. Natl. Hist. Nat.* 7: 2.
- Prain, D. 1898. *Alysicarpus rugosus* (Willd.) DC. var. *ptlifer*. *J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist.* 66: 384.
- Prain, D. 1919. *Flora of tropical Africa*. Vol. 9. London.
- Presl, C. B. 1825 - 1835. *Reliquiae Haenkeanae*. 2 Vols. Praha.
- Pulliah, T. & Yesoda, N. 1989. *Flora of Anantapur district (Andhra Pradesh, India)*. Dehra Dun.
- Rafinesque [-Schmaltz], C. S. 1837 - 1838. *Flora Telluriana*. 4 Vols. Philadelphia.
- Raizada, M. B. 1967. Validating some new combinations relevant to the flora of India. *Indian Forester* 93: 754 - 755.
- Raizada, M. B. 1968. Some name changes in the flora of India. *Indian Forester* 94: 432 - 462.
- Rajendran, A. & Daniel, P. 1992. The identity of *Stachytarpheta indica* auct. non (L.) Vahl (Verbenaceae). *Bull. Bot. Surv. India* 34: 165 - 173.
- Rajeswari, M. & Lakshmanan, K. K. 1983. Studies on the seagrasses of Kurusadai Island, Gulf of Mannar, India. I. External Morphology. *Bull. Bot. Surv. India* 23: 110 - 113.
- Raju, V. S. & Rao, P. N. 1979. *Euphorbia indica* Lam.: Hitherto little-known name of a much common Indian weed. *Indian J. Bot.* 2: 202 - 208.
- Raju, R. R. V., Prasanna, P. V. & Pullaiah, P. 1986. *Dactyloctenium aristatum* Link - a little known grass from south India. *J. Econ. Tax. Bot.* 8: 246 - 248.
- Ramachandran, V. S. & Balasubramaniam, V. B. 1988. Notes on the occurrence of two grasses from Tamil Nadu. *J. Econ. Tax. Bot.* 12: 433 - 44.
- Ramachandran, V. S. & Balasubramaniam, V. B. 1990. Notes on the occurrence of two interesting grasses from south India. *J. Econ. Tax. Bot.* 14: 131 - 134.
- Ramachandran, V. S. & Balasubramaniam, V. B. 1990. On the occurrence of *Euphorbia deccanensis* Raju (Euphorbiaceae) and *Bulbostylis puberula* (Poir.) Kunth (Cyperaceae) in Tamil Nadu. *Sci. & Cult.* 56: 209 - 210.

- Ramachandran, V. S. & Balasubramaniam, V. B. 1991. Flora of Ramanathapuram district, Tamil Nadu. Report submitted to BSI, Coimbatore. (unpublished)
- Ramamurthy, K. 1967. A new variety of *Jatropha villosa* from Madras state. *Bull. Bot. Surv. India* 9: 278 - 279.
- Ramamurthy, K., Balakrishnan, N. P., Ravikumar, K. & Ganesan, R. 1992. *Seagrasses of Coromandel coast, India*. Coimbatore.
- Ramamurthy, K. & Sebastine, K. M. 1964. A new variety of *Geniosporum prostratum* from Madras State. *Bull. Bot. Surv. India* 6: 325 - 326.
- Ramamurthy, K. & Sebastine, K. M. 1966. A new genus of Araceae from Madras state, India. *Bull. Bot. Surv. India* 8: 348 - 351.
- Randeria, A. J. 1960. The Compositae genus *Blumea*, a taxonomic revision. *Blumea* 10: 176 - 317.
- Rangachariar, K. & Mudaliar, C. T. 1921. *A handbook of some south Indian grasses*. Madras.
- Rao, R. S. 1966. Indian species of Commelinaceae: Miscellaneous Notes II. *Blumea* 14: 345 - 354.
- Rao, R.S. & Hemadri, K. 1973. The genus *Hedyotis* L. in Maharashtra state. *Indian Forester* 99: 372 - 379.
- Rao, T. A., 1974. Distributional resume of the maritime strand flora of India. *Bull. Bot. Surv. India* 13: 192 - 202.
- Rao, T. A., Agarwal, K. R. & Mukherjee, A. K. 1963a. Ecological studies of the soil and vegetation of Kurusadai group of islands in the Gulf of Mannar. *Bull. Bot. Surv. India* 2: 114 - 148.
- Rao, T. A., Agarwal, K. R. & Mukherjee, A. K. 1963b. An ecological account of vegetation of Rameswaram Island. *Bull. Bot. Surv. India* 2: 301 - 323.
- Rao, T. A. & Sastry, A. R. K. 1972. An ecological approach towards classification of coastal vegetation of India. - I. Strand vegetaion. *Indian Forester* 98: 594 - 607.
- Rao, T. A. & Sastry, A. R. K. 1974. An ecological approach-towards classification of coastal vegetation of India. - II. Estuarine vegetaion. *Indian Forester* 100: 438 - 452.
- Rao, T. A., Sastry, A. R. K., Basu, P. & Mandal, N. R. 1975. A contribution to the coastal flora and vegetation of Tamil Nadu (India). *Indian Forester* 101: 460 - 475.
- Raeschel, E. A. 1797. *Nomenclator botanicus*. ed. 3. Leipzig.
- Ravikumar, K., Ganesan, R. & Ramamurthy, K. 1989. *Melhania balakrishnanii* (Sterculiaceae) - a new species from Tamil Nadu, India. *Bull. Bot. Surv. India* 31: 172 - 174.

- Ravikumar, K., Ganesan, R. & Ramamurthy, K. 1990. First report of seagrass, *Halodule wrightii* Asch. (Potamogetonaceae) from India. *J. Econ. Tax. Bot.* 14: 711 - 714.
- Raynal, J. 1969. *Enicostema axillare*. *Adansonia* 9: 75.
- Raynal, J. 1973. *Rikliella squarrosa*. *Adansonia* 13: 154.
- Rees, A. 1802 - 1820. *The cyclopaedia*. 39 Vols. London.
- Reichenbach, H. G. L. 1823 - 1832. *Iconographia botanica seu plantae criticae*. 10 Vols. Leipzig.
- Reichenbach, H. G. L. 1828. *Conspectus regni vegetabilis*. Leipzig.
- Reichenbach, H. G. L. 1830-1832. *Flora Germanica excursoria*. Leipzig.
- Renvoize, S.A. 1968. The Afro-Asian species of *Enneapogon* P. Beauv. (Gramineae). *Kew Bull.* 22: 393 - 401.
- Retzius, A. J. 1775. *Dianthera biculculata*. *Kongl. Vetensk. Acad. Handl.* 1775: 297.
- Retzius, A. J. 1779-1791. *Observationes botanicae*. 6 Fasc. Leipzig.
- Rheede, D. H. A. van, 1678 - 1703. *Hortus Indicus Malabaricus*. 12 Vols. Amsterdam.
- Richard, A. 1834. *Stylocareya webra*. *Mém. Soc. Hist. Nat. Paris* 5: 248.
- Richard, A. 1847 - 1851. *Tentamen florum Abyssinicae*. 2 Vols. Paris.
- Richard, L. C. M. 1812. *Enhalus königii*. *Mem. Cl. Sci. Math. Inst. Natl. France.* 12: 64, 78, 1812.
- Ridley, H. N. 1930. *The dispersal of plants throughout the world*. London.
- Robinson. C. B. 1908. *Ceriops tagal*. *Philipp. J. Sci.* 3: 306.
- Roberty, G. E. 1960. *Dichathium foveolatum*. *Boissiera* 9: 170.
- Roemer, J. J. 1800. *Archiv für die Botanik*. Vol 2. Leipzig.
- Roemer, J. J. & Schultes, J.A. 1817 - 1830. *Systema vegetabilium*. ed. 15. 7 Vols. Stuttgart.
- Roemer, M. J. 1846 - 1847. *Familiarum naturalium regni vegetabilis synopsis monographicae*. 4 Vols. Weimar.
- Roth, A. W. 1797 - 1806. *Catalecta botanica*. 3 Parts. Leipzig.
- Roth, A. W. 1821. *Novae plantarum species*. Halberstadii.
- Rottboell, C. F. 1772. *Descriptiones plantarum rariorum*. Copenhagen.
- Rottboell, C. F. 1773. *Descriptionum et iconum rariores plantas*. Copenhagen.
- Rottboell, C. F. 1783. *Mangifera glauca*. *Nye Saml. Köngel. Danske Vidensk. Selsk. Skr.* 2: 534.

- Rottboell, C. F. 1783. *Pisonia buxifolia*. *Nye Saml. Köngel. Danske Vidensk. Selsk. Skr.* 2: 536.
- Rottler, J. P. 1803. Botanische bemerkungen auf der hin-und Rückreise von Trankenbar nach Madras vom Herrn Missionair Rottler zu Trankenbar mit anmerkungen von Herrn Professor C.L. Willdenow. *Ges. Naturf. Freunde Berlin Neue Schriften* 4: 180 - 214.
- Roxburgh, W. 1795 - 1820. *Plants of the coast of Coromandel*. 3 Vols. London.
- Roxburgh, W. 1814. *Hortus Bengalensis*. Serampore.
- Roxburgh, W. 1820 - 1824. *Flora Indica*. 2 Vols. Serampore.
- Roxburgh, W. 1832. *Flora Indica*. 3 Vols. Serampore.
- Royen, P. V. 1953. Revision of the Sapotaceae of the Malaysian area in a wider sense. *Blumea* 7: 401 - 412.
- Royle, J. F. 1833 - 1840. *Illustrations of the botanyof the Himalayan mountains*. 2 Vols. London.
- Safford, W. E. 1921. *Datura metel*. *J. Wash. Acad. Sci.* 11: 178.
- Saha, J. C. & Krishnamurthy, K. H. 1962. *Boerhavia punarnava*. *J. Sci. Industr. Res., C, Biol. Sci.* 21: 254.
- Saint-Hilaire, J. H. J. 1824 - 1833. *Flora Brasiliae meridionalis*. 2 Vols. Paris.
- Saldanha, C. J. & Nicolson, D. H. 1976 (ed.). *Flora of Hassan district, Karnataka, India*. New Delhi.
- Salisbury, R. A. 1791. *Icones stirpium rariorum*. London.
- Sanjappa, M. 1982. *Indigofera tirunelvelica* - a new species from Tamil Nadu, south India. *J. Bombay Nat. Hist. Soc.* 79: 647 - 649.
- Sanjappa, M. 1992. *Legumes of India*. Dehradun.
- Sanjappa, M. 1995. Leguminosae Papilionoideae: Tribe - Indigofereae. *Fasc. Fl. India*. 21: 1 - 160.
- Santapau, H. 1957. *Eclipta prostrata*, *E. erecta* or *E. alba*: which is the correct name? *J. Bombay Nat. Hist. Soc.* 54: 475 - 476.
- Santapau, H. 1958. *History of botanical researches in India, Burma and Ceylon*. Part II. *Systematic botany of angiosperms*. Bangalore.
- Santapau, H. 1967. The flora of Khandala on the Western Ghats of India. *Rec. Bot. Surv. India* 16: 1 - 291.
- Santapau, H. & Henry, A. N. 1973. *A dictionary of the flowering plants in India*. New Delhi.
- Santapau, H. & Jain, S. K. 1966. Some new combinations relevant to the flora of India. *Indian Forester* 92: 643.

- Saunders, W. W. 1868 - 1879. *Refugium botanicum*. 5 Vols. London.
- Schlechtendal, D. F. L. von 1831. *Convolvus tuba*. *Linnaea* 6: 735.
- Schott, H. W. & Endlicher, S. L. 1832. *Meletemata botanica*. Wien.
- Schrader, H. A. 1806. *Flora Germanica*. Göttingen.
- Schrader, H. A. & Wendland, J. C. 1795. *Sertum Hannoveranum*. Göttingen.
- Schrader, H. A. 1838. *Citrullus colocynthis*. *Linnaea* 12: 414.
- Schreber, J. C. D. von 1770. *Phaseolus trilobatus*. *Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur.* 4: 132.
- Schultes, J. A. 1808. *Aerva lanata*. *Ann. Mus. Natl. Hist. Nat.* 11: 131.
- Schultes, J. A. 1822 - 1827. *Mantissa*. 3 Vols. Stuttgart.
- Schumacher, H. C. F. 1827. *Beskrivelse af Guineiske planter*. Copenhagen.
- Schumacher, H. C. F. & Thonning, H. 1829. *Phyllanthus amarus*. *Kongel. Danske Vidensk.-Selsk. Skr.* 4: 195.
- Schumann, K. 1902. *Tarenna asiatica*. *Bot. Tidsskr.* 24: 332.
- Schweinfurth, G. A. 1867. *Beitrag zur flora Aethiopiens*. Berlin.
- Sebastine, K. M. 1962. Some additions to flora of the presidency of Madras. *Bull. Bot. Surv. India* 4: 219 - 225.
- Sebastine, K. M. & Ramamurthy, K. 1961. A new species of *Dichrostachys* from south India. *Bull. Bot. Surv. India* 3: 359 - 360.
- Sebastine, K. M. & Ramamurthy, K. 1966. Some additions to the flora of presidency of Madras - II. *Bull. Bot. Surv. India* 8: 80 - 81.
- Seemann, B. C. 1862. *Tecomella undulata*. *Ann. Mag. Nat. Hist. Ser. 3*, 10: 30.
- Senaratna, J. E. 1956. *The grasses of Ceylon*. Colombo.
- Shah, G. L. 1978. *Flora of Gujarat state*. 2 Parts. Vallabh Vidyanagar.
- Shankararayan, K. A. 1960. The vegetation of Tirunelveli district. *J. Indian Bot. Soc.* 39: 474 - 479.
- Sharma, B. D. & Balakrishnan, N. P. 1993 (ed.). *Flora of India*. Vol. 2. Calcutta
- Sharma, B. D. & Balakrishnan, N. P., Rao, R. R. & Hajra, P. K. 1993 (ed.). *Flora of India*. Vol. 1. Calcutta.
- Sharma, B. D. & Sanjappa, M. 1993 (ed.). *Flora of India*. Vol. 3. Calcutta.

- Shetty, B. V. & Singh, P. 1988. The Vitaceae in Rheede's hortus Malabaricus. *Taxon* 37: 169 - 174.
- Sims, J. 1818. *Passiflora edulis*. Curtis, *Bot. Mag.* 45. t. 1989.
- Sims, J. 1819. *Anisomeles malabarica*. Curtis, *Bot. Mag.* t. 2071.
- Sims, J. 1823. *Ocimum canum*. Curtis, *Bot. Mag.* t. 2452.
- Sims, J. 1829. *Delonix regia*. Curtis, *Bot. Mag.* t. 2884.
- Singh, P. & Singh, V. 1990. Zygophyllaceae. In: Nayar, M. P., Thothathri, K. & Sanjappa, M. (ed.), *Fasc. Fl. India* 20: 176 - 194.
- Sivarajan, V. V. & Pradeep, A. K. 1996. *Malvaceae of southern peninsular India: A taxonomic monograph*. Delhi.
- Skeels, H. C. 1912. *Syzigium cumini*. U.S.D.A. *Bur. Pl. Industr. Bull.* 248: 25.
- Sleesen, C. H. L. 1959. *Orthosiphon thymiflorus*. *Reinwardtia* 5: 42.
- Small, J. K. 1903. *Flora of the southeastern United States*. New York.
- Smith, A. R. 1983. Notes on African Euphorbiaceae: XIII. *Tragia*, *Tragiella* & cc. *Kew Bull.* 37: 683 - 691.
- Smith, J. E. 1790. *Plantarum icones hactenus ineditae*. Vol. 2. London.
- Smith, J. E. 1795. *A specimen of the botany of New Holland* Vol. 1. London.
- Solereder, H. 1913. *Halophila balfourii*. *Beih. Bot. Centralbl.* 30: 47.
- Sonnerat, P. 1782. *Voyage aux Indes Orientales*. 2 Vols. Paris.
- Spanoghe, J. B. 1841. *Zornia gibbosa*. *Linnaea* 15: 192.
- Spanoghe, J. B. 1841. *Pisonia grandis*. *Linnaea* 15: 342.
- Sprengel, K. 1800. *Der botanische garten der universität Zu Halle*. Halle.
- Sprengel, K. 1807. *Mantissa prima florum Halensis*. Halle.
- Sprengel, K. P. J. 1813 - 1815. *Plantarum minus cognitarum pugillus*. 2 Parts. Halle.
- Sprengel, K. P. J. 1820 - 1822. *Neue entdeckungen im ganzen umfang der pflanzenkunde*. 3 Vols. Leipzig.
- Sprengel, K. P. J. 1824 - 1828. *Systema vegetabilium*. 5 Vols. Göttingen.
- Sreemadhavan, C. R. 1968. *Indoneesiella echioides*. *Phytologia* 16: 466.
- Srinivasan, K. S. 1960. Aspects of vegetation of Church Island off Tuticorin port in south India. *J. Bombay Nat. Hist. Soc.* 57: 348 - 353.

- Srinivasan, K. S. & Agarwal, V. S. 1963. Taxa of Indian Acanthaceae, Verbenaceae and Labiatae amending and/or supplementing Calder's (1926) and Razi's (1959) lists of additions to Hooker's flora of British India. *Bull. Bot. Surv. India*. 5: 79 - 88.
- Srinivasan, S. R. & Narasimhan, D. 1987. A new variety of *Polycarpha corymbosa* (L.) Lam. (Caryophyllaceae) from southern India. *J. Econ. Tax. Bot.* 10: 347 - 349.
- Stafleu, F. A. & Cowan, R. S. 1976 - 1988. Taxonomic literature, ed. 2. 7 Vols. *Regnum Veg.* Vols. 94, 98, 105, 110, 112, 115 & 116.
- Stafleu, F. A. & Mennega, E. A. 1992 - 1995. Taxonomic literature (Suppl.) 3 Vols.
- Stapf, O. 1896. *Halopyrum mucronatum*. *Hooker's Icon. Pl.* t. 2448.
- Stapf, O. 1906. The oil-grasses of India and Ceylon (*Cymbopogon*, *Vetiveria*, *Andropogon* spp.). *Bull. Misc. Inform.* 1906: 297 - 363.
- Stapf, O. 1907. The grasses of British Somaliland. *Bull. Misc. Inform.* 1907: 203 - 228.
- Stapf, O. 1916. *Amphilophis pertuses*. *Agric. News (Barbados)* 15: 179.
- Stapf, O. 1923. *Wattakaka volubilis*. *Bot. Mag.* sub t. 8976.
- Stapf, O. & Hubbard, C. E. 1929. XLIII - A new genus of grasses. *Bull. Misc. Inform.* 1929: 244 - 247.
- Stearn, W. T. 1983. *Botanical Latin*. ed. 3. London.
- Steenis, C. G. G. J. van 1948 - date (ed.). *Flora Malesiana*. Ser. 1, 10 Vols.
- Steudel, E. G. von 1840 - 1841. *Nomenclator botanicus*. ed. 2. 2 Vols. Stuttgart.
- Steudel, E. G. von 1853 - 1855. *Synopsis plantarum glumacearum*. 2 Vols. Stuttgart.
- Steward, A. N. 1930. *Polygonum barbatum* L. var. *stagninum*. *Contr. Gray Herb.* 88: 54.
- Stewart, J. L. 1869. *Punjab plants*. Lahore.
- Stransfield, H. 1957. The missionary botanists of Tranquebar. *Bull. Libr. Committee Liverpool* 6: 19 - 42.
- Stuntz, S. C. 1914. *Prosopis chilensis*. *U.S.D.A. Bur. Pl. Industr. Invent. Seeds* 31: 85.
- Subramanian, P. 1998. Secondary productivity and larval resources of Gulf of Mannar Biosphere Reserve. In: Maikhuri R. K., Rao, K. S. & Rai, R. K. (ed.). *Biosphere reserves and management in India*. 227 - 236. Almora.
- Subramanyam, K. & Nayar, M. P. 1964. A new species of *Jatropha* from Madras state. *Bull. Bot. Surv. India* 6: 331 - 332.
- Sudhakar, S. 1980. *Scaevola taccada* (Gaertn.) Roxb. (Goodeniaceae) - an interesting record from Vishakhapatnam area, Andhra Pradesh. *Bull. Bot. Surv. India* 22: 217 - 221.

- Summerhayes, V. S. & Hubbard, C. E. 1930. A supplement to the grasses of the Fiji Islands. *Bull. Misc. Inform.* 1930: 252 - 265.
- Sundararaj, D. D. 1956. New plant records for south India - I. *J. Bombay Nat. Hist. Soc.* 53: 522 - 526.
- Sundararaj, D. D. & Nagarajan, M. 1964. The flora of Hare and Church Islands off Tuticorin. *J. Bombay Nat. Hist. Soc.* 61: 587 - 602.
- Sundararaj, D. D. & Nagarajan, M. 1966. New plant records for south India - III. *J. Bombay Nat. Hist. Soc.* 63: 226 - 228.
- Suryanarayana, B., Srinivasa Rao, A., Madhusudana Rao, A. & Veeraj, V. 1998. *Flora of Sriharikota Island*. Bangalore.
- Swartz, O. P. 1788. *Nova genera & species plantarum seu prodromus*. Stockholm.
- Swartz, O. P. 1797 - 1806. *Flora Indiae Occidentalis*. 3 Vols. Erlangen.
- Sweet, R. 1826. *Hortus Britannicus*. London.
- Takhtajan, A. L. 1986. *Floristic regions of the world*. California.
- Thiyagaraj, J. G. 1994. Studies on the south Indian Araceae. Ph. D. thesis, Madurai Kamaraj Univ., India. (unpublished)
- Thothathri, K. 1961. Studies in Leguminosae. 1. A taxonomic revision of the genus *Derris* Lour. in India. *Bull. Bot. Surv. India* 3: 175 - 200.
- Thunberg, C. P. 1780. *Gardenia*. Uppsala.
- Thunberg, C. P. 1784. *Flora Japonica*. Leipzig.
- Thunberg, C. P. 1794 - 1800. *Prodromus plantarum Capensium*. 2 Parts. Uppsala.
- Thwaites, G. H. K. 1858 - 1864. *Enumeratio plantarum Zeylanicae*. 5 Parts. London.
- Tirvengadam, D. D. 1978. Re-establishment of the genus *Catunaregam* Wolf (Rubiaceae) - A contribution towards the plants described in Rheede's "Hortus Malabaricus". *Taxon* 27: 513 - 517.
- Townsend, C. C. 1962. A note on *Scirpus subulatus* Vahl. *Kew Bull.* 15: 415 - 417.
- Townsend, C. C. 1974. Notes on Amaranthaceae - 2. *Kew Bull.* 29: 461 - 475.
- Trimen, H. 1885. *A systematic catalogue of the flowering plants in Ceylon*. Colombo.
- Trimen, H. 1895. *A hand-book to the flora of Ceylon*. 5 Vols. London.
- Trinius, C. B. 1820. *Fundamenta agrostographiae*. Vienna.
- Trinius, C. B. 1824. *De graminibus unifloris et sesquifloris*. Petersburg.

- Trinius, C. B. 1831. *Eragrostis coromandelliana*. *Mém. Acad. Imp. Sci. St. Pétersbourg, Sér. 6, Sci. Math.* 1: 415.
- Trinius, C. B. 1831. *Eragrostis japonica*. *Mém. Acad. Imp. Sci. St. Pétersbourg, Sér. 6, Sci. Math.* 1: 405.
- Trinius, C. B. 1831. *Eragrostis viscosa*. *Mém. Acad. Imp. Sci. St. Petersbourg, Ser. 6, Sci. Math.* 1: 397.
- Trinius, C. B. 1834. *Trachys muricata*. *Mém. Acad. Imp. Sci. St. Pétersbourg, Sér. 6, Sci. Math.* 3: 189.
- Tripathi, A. K., Shukla, Y. N. & Kumar, S. 1996. Ashvagandha [*Withania somnifera* Dunal (Solanaceae)]: A status report. *J. Med. Arom. Pl. Sci.* 18: 46 - 62.
- Tuckey, J. H. 1818. *Narrative of an expedition to explore the river Zaire*. London.
- Turrill, W. B. & Milne-Redhead, E. 1961. *Flora of tropical east Africa*. London.
- Tutin, T. G., Heywood, V. H., Burges, N. A., Valentine, D. H., Walters, S. M. & Webb, D. A. 1980 (ed.). *Flora Europaea*. Vol. 5. Cambridge.
- Umamaheswari, P. & Daniel, P. 1998. *Eragrostis amabilis* (L.) Wight & Arn. (Poaceae) and its varieties. *J. Econ. Tax. Bot.* 22: 211 - 216.
- Umamaheswari, P. & Daniel, P. 1998. A new species of *Sporobolus* (Poaceae) from southeastern India. *Nord. J. Bot.* 18: 577 - 579.
- Umamaheswari, P. & Daniel, P. 1999. *Leucas anandaraoana* (Lamiaceae) - a new species from southeastern India. *Kew Bull.* 54: 103 - 104.
- Umamaheswari, P. & Daniel, P. 1999. Two new taxa from the Gulf of Mannar Coast, Tamil Nadu. *J. Econ. Tax. Bot.* 23: 691 - 693.
- Umamaheswari, P., Muthukumar, S. A. & Daniel, P. 1997. *Acrachne sundararajii* - A new grass from coastal Tamil Nadu, India. *Kew Bull.* 52: 1007 - 1009.
- Ungern-Sternberg, F. 1874. *Arthrocnemon glaucum*. *Atti Bot. Congr. Firenze* 283.
- Uphof, J. C. 1968. *Dictionary of economic plants*. London.
- Urban, I. 1884. *Ilysanthes veronicifolia*. *Ber. Deutsch. Bot. Ges.* 2: 436.
- Urban, I. 1898 - 1928. *Symbolae Antillanae*. 9 Vols. Berlin.
- Vahl, M. 1790 - 1794. *Symbolae botanicae*. 3 Parts. Copenhagen.
- Vahl, M. 1797 - 1807. *Ecologiae Americanae*. 3 Vols. Copenhagen.
- Vahl, M. 1804 - 1805. *Enumeratio plantarum*. 2 Vols. Copenhagen.
- Vannucci, M. 1991. Mangroves: Saving a crucial ecosystem. *The Hindu - survey of the environment*. 157 - 161. Madras.

- Vatke, G. 1876. *Heliotropium subulatum*. *Oesterr. Bot. Z.* 25: 166.
- Veldkamp, J. F. 1971. Notes on Malesian grasses V. New species and combinations in *Phaidochloa*, *Hyparrhenia* and *Leptochloa*. *Blumea* 19: 61 - 64.
- Veldkamp, J. F. 1973. A revision of *Digitaria* Haller (Gramineae) in Malesia. *Blumea* 21: 1 - 80.
- Veldkamp, J. F., Koning, R. de & Sosef, M. S. M. 1986. Generic delimitation of *Rottboellia* and related genera (Gramineae). *Blumea* 31: 281 - 307.
- Ventenat, E. P. 1803 - 1805. *Jardin de la Malmaison*, 2 Vols. Paris.
- Venu, P. & Daniel, P. 2000. The identity of *Leucas wightiana* Benth. (Lamiaceae). *J. Swamy Bot. Club* 17: 69-74.
- Verdcourt, B. 1962. *Enicostema hyssopifolium*. *Bothalia* 7: 462.
- Verdcourt, B. 1964. Notes from the East African herbarium. XVI. Typification and variation of *Salvadora persica* L. *Kew Bull.* 19: 147 - 162.
- Verdcourt, B. 1964. Notes from the East African herbarium. XV. *Kew Bull.* 17: 489 - 501.
- Verdcourt, B. 1968. The identities of *Dolichos trilobus* L. and *Dolichos trilobatus* L. *Taxon* 17: 170 - 173.
- Verdcourt, B. 1970. Studies in the Leguminosae - Papilionoideae for the 'Flora of Tropical East Africa'. III. *Kew Bull.* 24: 379 - 447.
- Verdcourt, B. 1970. Studies in the Leguminosae - Papilionoideae for the 'Flora of Tropical East Africa'. IV. *Kew Bull.* 24: 507 - 569.
- Verdcourt, B. 1982. Notes on Mascarene Rubiaceae. *Kew Bull.* 37: 521 - 574.
- Verdcourt, B. 1983. Studies in the Rubiaceae - Rubioideae for the 'Flora of Tropical East Africa'. I. *Kew Bull.* 30: 247 - 326.
- Verdcourt, B. 1987. Three corrections to the Flora of Tropical East Africa. *Kew Bull.* 42: 657 - 660.
- Verdcourt, B. 1989. *Trichodesma inaequale* Edgeworth (Boraginaceae) - a species of Africa and India. *Kew Bull.* 44: 699 - 701.
- Vierhapper, F. 1907. *Avicennia marina*. *Akad. Wiss. Wien, Math.-Naturwiss. Kl., Denkschr.* 71: 435.
- Voigt, J. O. 1845. *Hortus suburbanus Calcuttensis*. Calcutta.
- Vollesen, K. 1986. The *Sida cuneifolia* complex (Malvaceae) in Africa. *Kew Bull.* 41: 91 - 98.
- Vollesen, K. 1989. A revision of *Megalochlamys* and *Ecbolium* (Acanthaceae: Justicieae). *Kew Bull.* 44: 601 - 680.

- Wallich, N. 1828 - 1849. *A numerical list of dried specimens of plants*. London.
- Wallich, N. 1829 - 1832. *Plantae Asiaticae rariores*. 3 Vols. London.
- Walpers, W. G. 1842 - 1847. *Repertorium botanices systematicae*. 6 Vols. Leipzig.
- Webster, G. L. 1960. The status of *Agynenia* and *Glochidion* (Euphorbiaceae). *Taxon* 9: 25 - 26.
- Webster, G. L. 1967 The genera of Euphorbiaceae in the southeastern United States. *J. Arnold Arbor.* 48: 363 - 430.
- Wight, R. 1833 - 1837. *Catalogue of Indian plants*. London.
- Wight, R. 1834. *Allmania nodiflora*. *J. Bot. (Hooker)* 1: 226.
- Wight, R. 1834. *Contributions to the botany of India*. London.
- Wight, R. 1838 - 1853. *Icones plantarum Indiae Orientalis*. 6 Vols. Madras.
- Wight, R. 1840 - 1850. *Illustrations of Indian Botany*. 2 Vols. Madras.
- Wight, R. 1846. *Loranthus euphorbiae*. *Calcutta J. Nat. Hist.* 6: 363.
- Wight, R. & Arnott, G. A. W. 1834. *Prodromus florum peninsulae Indiae orientalis*. London.
- Wight, W. F. 1909. *Sesbania bispinosa*. *U.S.D.A. Bur. Pl. Industr. Bull.* 137: 15.
- Willdenow, C. L. 1794. *Phytographia*. Erlangen.
- Willdenow, C. L. 1797-1830. *Species plantarum*. ed. 4. 6 Vols. Berlin.
- Willdenow, C. L. 1799. *Salicornia indica*. *Nova Acta Acad. Sci. Imp. Petrop. Hist. Acad.* 5: 111.
- Willdenow, C. L. 1801. *Zoysia pungens*. *Ges. Naturf. Freunde Berlin Neue Schriften* 3: 441.
- Willdenow, C. L. 1809. *Enumeratio plantarum*. 2 Parts. Berlin.
- Williams, F. N. 1905. *Spermacoce hispida* L. *Bull. Herb. Boissier* Ser. 2, 5: 946.
- Wilson, P. G. 1980. *Halosarcia indica*. *Nuytsia* 3: 63.
- Wood, J. R. I., Hillcoat, D. & Brummit, R. K. 1983. Notes on the types of some names of Arabian Acanthaceae in the Forskål herbarium. *Kew Bull.* 38: 429 - 456.
- Wydler, H. 1830 Ein journal für die botanik in ihrem ganzen umfange. *Linnaea* 5: 425 - 430.
- Zollinger, H. 1854 - 1855. *Systematisches Verzeichniss*. 3 Heften. Zürich.

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