Flora of India
Series 3

FLORA OF RAIGAD DISTRICT
MAHARASHTRA STATE

M. J. KOTHARI
&
S. MOORTHY

BOTANICAL SURVEY OF INDIA

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M. J. KOTHARI M. Sc., Ph. D., F. I. A. A. T.
and
S. MOORTHY M. Sc.

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FOREWORD

The Botanical Survey of India has been actively engaged in survey and assessment of the plant wealth of the country. The results are being published by the Survey under four series, *viz.*, Flora of India Fascicles, State Flora Analysis, District Floras and Special / Miscellaneous publications. The printing of important and selected District Floras under the Series 3 provides considerable data towards preparation of State Floras and Flora of India volumes.

The Flora of Raigad district was extensively explored by the authors during the years 1976-80. The district covers an area of 7,19,889 sq.km. The flora is phytogeographically interesting and rich in plant diversity with dry deciduous and evergreen types of forests in the hilly region, riparian flora along the river banks and mangroves along the Arabian coast. 1248 species including 33 pteridophytes and 1 gymnosperm have been dealt in the flora. The area is rich in endemic content; *ca* 114 endemic species of India are represented in the district of which some are very rare and threatened. A new species, *Cassia kolabensis*, was collected and described from the area.

The Flora of Raigad district in Maharashtra provides comprehensive data on floristic elements of the area with their nomenclature, identity, description, distribution, uses (tribal, industrial, medicinal etc.) and information on rare plants with possible measures for their conservation.

It is hopped that this work would be much useful to students and teachers of botany, foresters, agricultural scientists, environmentalists and others interested in biological resources and allied aspects.

Botanical Survey of India,
Calcutta.
4th January, 1993.

B.D. Sharma
Director

PREFACE

Plants are useful to man and animals in many ways. For that reason, our late Prime Minister Smt. Indira Gandhi stated that "the survival of man is dependent on the survival of animal and plant life"

In order to update the information on plant resources and their uses, the Botanical Survey of India has taken up the projects of rewriting the Flora of India. As a result, several fascicles on the Flora of India, State Flora analysis such as Flora of Karnataka (Sharma, *et al.* 1984) and many District Floras viz. Flora of Jowai (Balakrishnan, 1981), Flora of Raipur, Durg and Rajnandagaon (Verma, *et al.* 1985) etc. were published.

The Raigad (Kolaba) district in Maharashtra is well known in Indian history because of the 'Raigad Fort' an old capital of Chatrapati Shivaji's empire. Recently the district is named after its famous fort 'Raigad'. Other historical forts and noteworthy places in the district are the Elephanta caves (Gharapuri), Gheramanikgad, Ghosale Fort, Janjira Fort, Karnala Bird Sanctuary (Abhayaranya), Phansad (Panther) Wild Life Sanctuary, Sarasgad, Sudhagad and two old temples of Lord Ganesh among 'Astavinayaka' at Pali and Madh.

Over and above, the district is rich in plant wealth with different vegetational types. The present work on the 'Flora of Raigad district, Maharashtra State deals with 1136 species and 39 varieties belonging to 620 genera under 151 families in Phanerogams or Flowering plants. In addition, 40 cultigens are also recorded. Besides, 33 pteridophytes belonging to 19 families in Cryptogams or Non-flowering plants are also enumerated. Results of our observations are supported by Maps (3), Tables (3), line drawings of a few species and rare/threatened plants (13 plates), photographs (12 plates) depicting the vegetation at Raigad, other forts and hill tops; in sanctuaries and sacred groves; different forest types; some economic, rare and noteworthy plants. This contribution is based on extensive field work and intensive laboratory/ herbarium studies.

The authors wish to express their deep sense of gratitude to Dr.B.D.Sharma, Director and Dr. M.P. Nayar, ex-Director, Botanical

Survey of India, Calcutta for providing facilities and to Shri A.R.K. Sastry, Scientist 'SE' & In-charge, Publication Unit, Botanical Survey of India, Calcutta for kindly going through the typescript and also for making valuable suggestions and corrections.

The authors are much thankful to Dr. S. Karthikeyan, Scientist 'SD' In-charge, Botanical Survey of India, Western Circle, Pune for his constant encouragement and also for his useful suggestions from time to time. The authors are also thankful to all the Officers and staff of Western Circle, Pune as well as Northern Circle, Dehra Dun of Botanical Survey of India for their help in various ways. Thanks are also due to Shri P.D. Modak for photography, to Shri L.D. Sangle, Smt. Gopalan and to Shri K. Perumal for typing and to Shri S.R. Gupta and his staff of Flamingo Business Systems, Pune for printing. Last but not least the authors wish to thank the Forest Department officials of Raigad district for their kind help in the exploration work during 1976-1980.

Botanical Survey of India,
Western Circle, Pune.
1993.

M. J. Kothari
and
S. Moorthy

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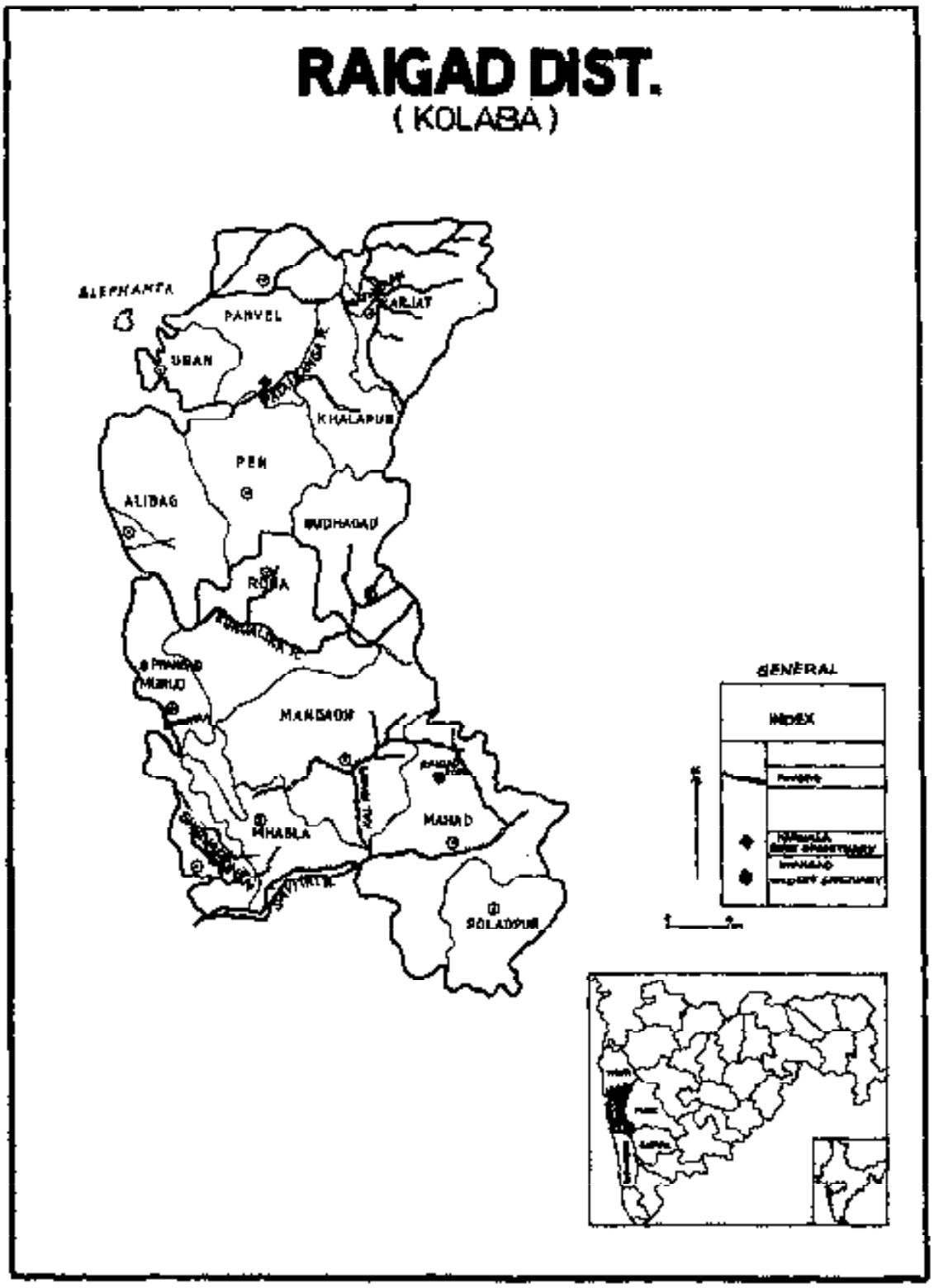
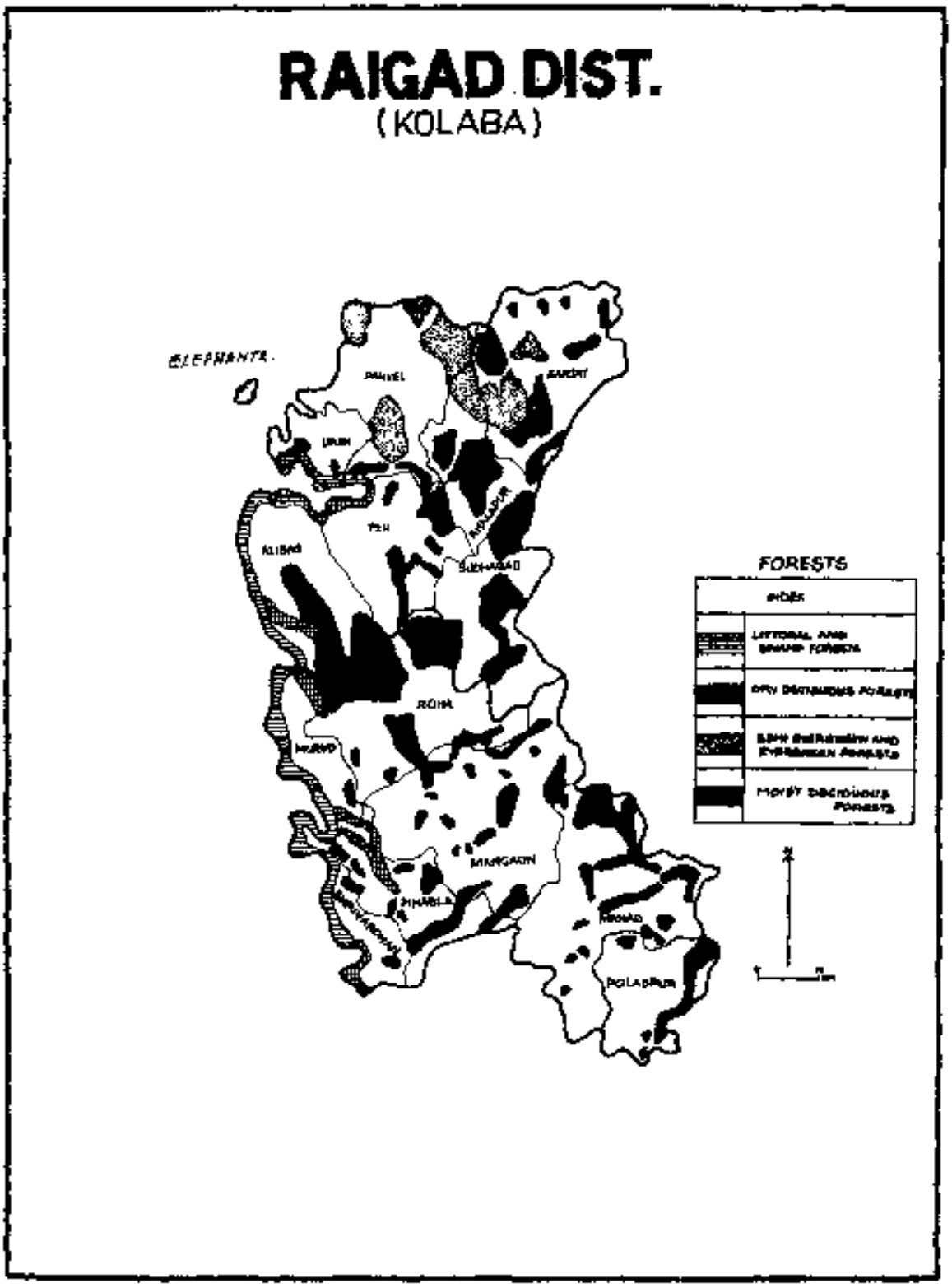
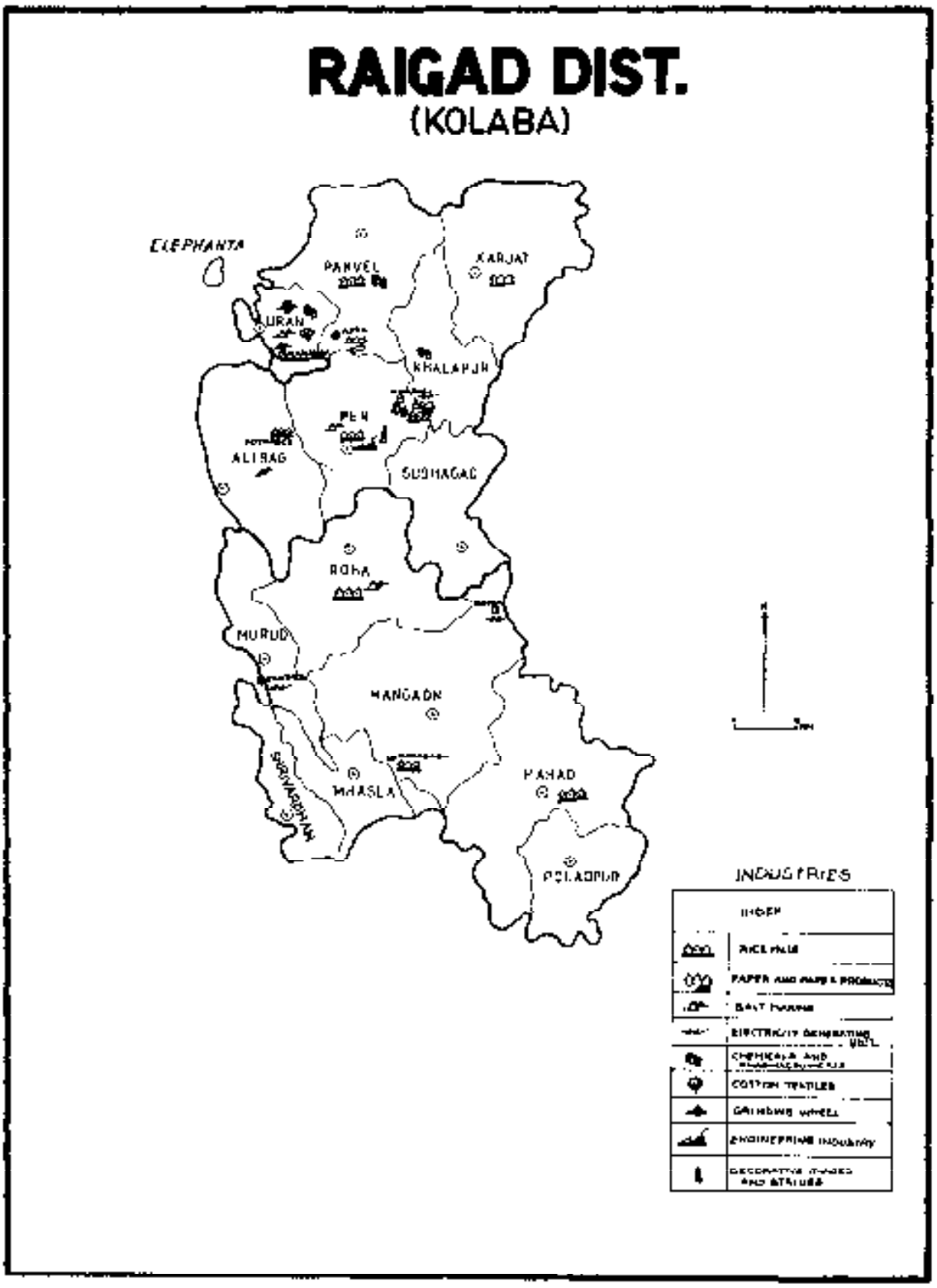


Map-1. Showing Location, Ranges, Forts, Rivers, Sanctuaries etc. in Raigad district (Maharashtra State).

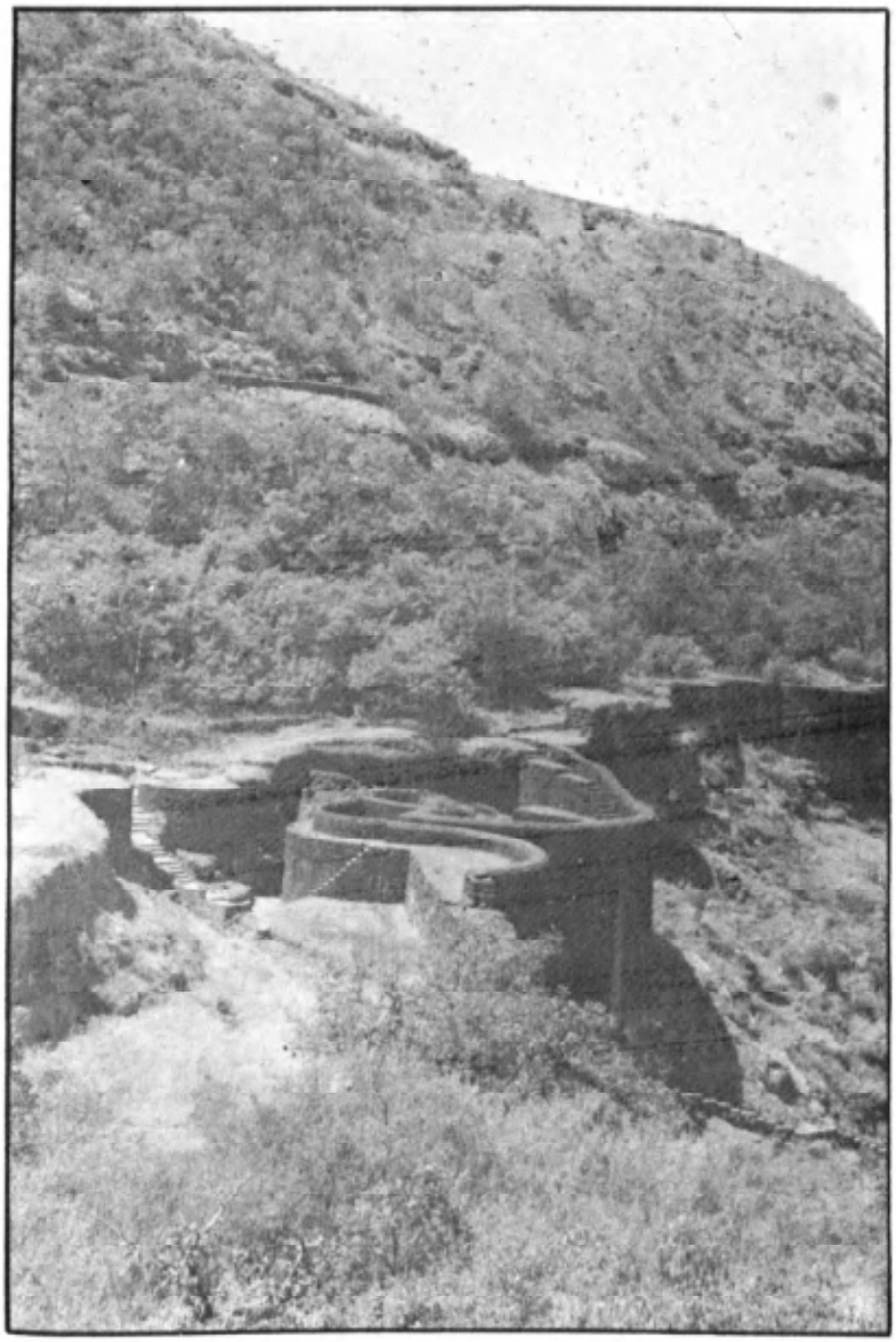


Map–2. Vegetation types observed in different parts of the Raigad district (Maharashtra State).



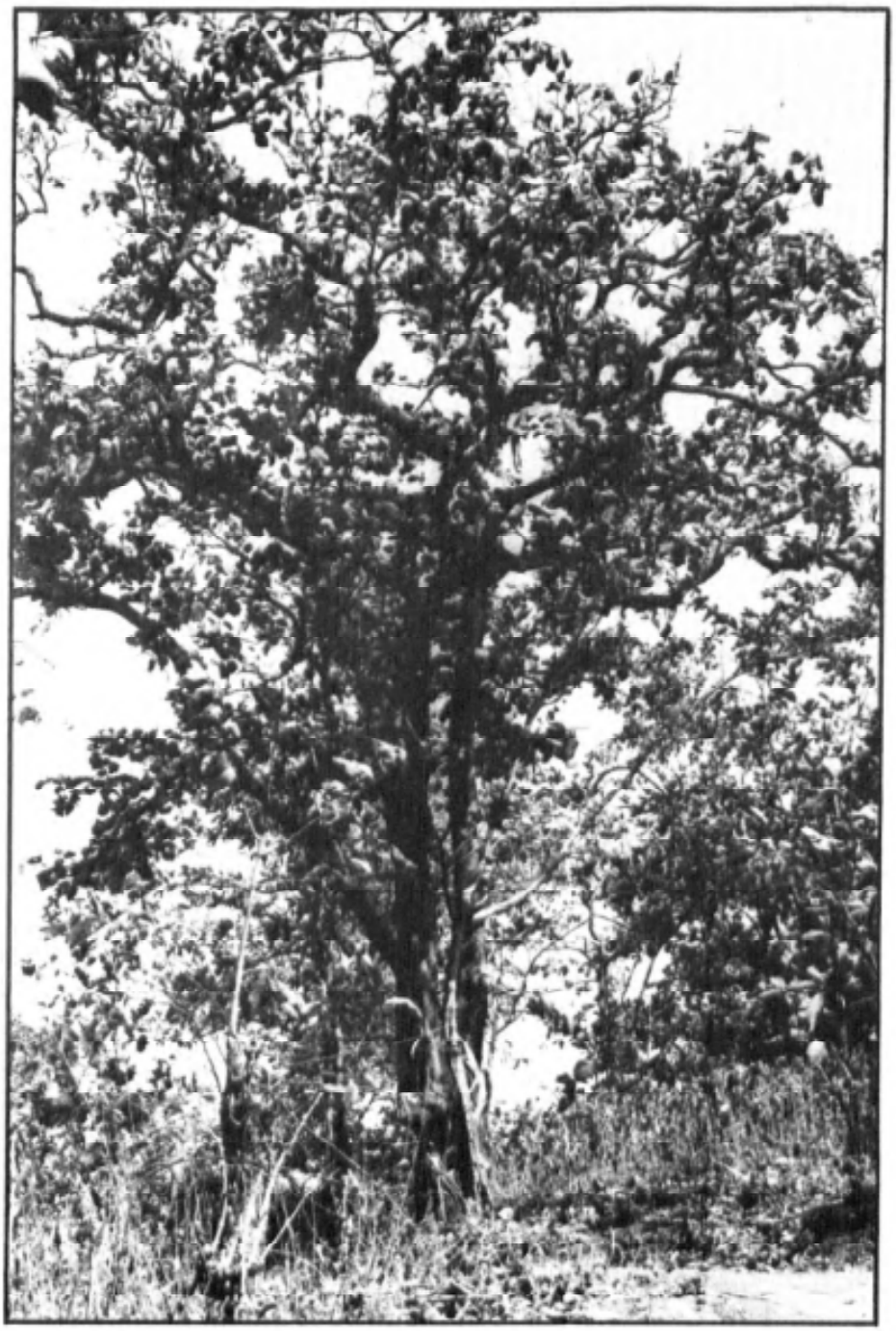
Map- 3. Industries located in Raigad district (Maharashtra State).

PLATE 1



Vegetation on Raigad fort :
Bridelia retusa, Ficus racemosa, Mangifera indica, Memecylon umbellatum, Syzygium cumini etc.

PLATE 2



Vegetation in sacred groves :
Bauhinia foveolata, Bridelia retusa, Ficus arnottiana etc.

PLATE 3

Endemic, Rare and noteworthy plants

(a)

(b)

(c)

(d)

a) **Gnetum ula** Brongn. ('Umbli') : Mahan forest, Alibag.
b) **Flacourtia montana** Grah. ('Atki') : Matheran.
c) **Tetrameles nudiflora** R. Br. (*'Bondsa'*, *'Ranbhend'*) : Lohiwat forest, Mhasla.
d) **Hyphaene dichotoma** (Wight) Furtado ('Sindhi') : Nagaon beach, Alibag.

PLATE 4

Endemic, Rare and noteworthy plants

(a)

(b)

(c)

(d)

a) **Justicia santapaui** Bennet : Pangloli forests, Mhasla.
b) **Smithia sensitiva** Ait. var. **flava** (Dalz. ex Prain) T. Cooke : Mirya dongar, Pen.
c). **Ixora brachiata** Roxb. ('Lokhandi') : Matheran.
d) **Ficus callosa** Willd. ('Garud') : Masadi forests, Roha.

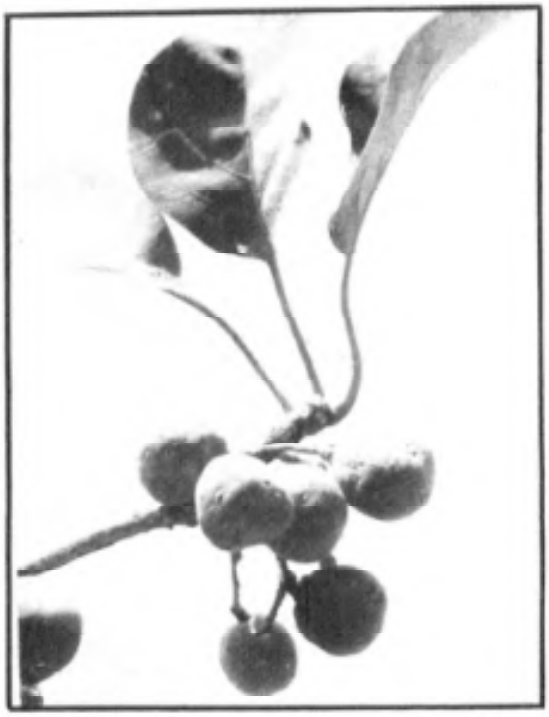
PLATE 5

Plants with economic/medicinal value

(a)

(b)

(c)



(d)

a) **Eragrostis tenella** P. Beauv. ex R. & S. (*'Woya'*).
b) **Wrightia tinctoria** (Roxb.) R. Br. (*'Kuda'*).
c) **Euphorbia neriifolia** L. (*'Nurang'*).
d) **Terminalia bellirica** (Gaertn.) Roxb. (*'Beheda'*).

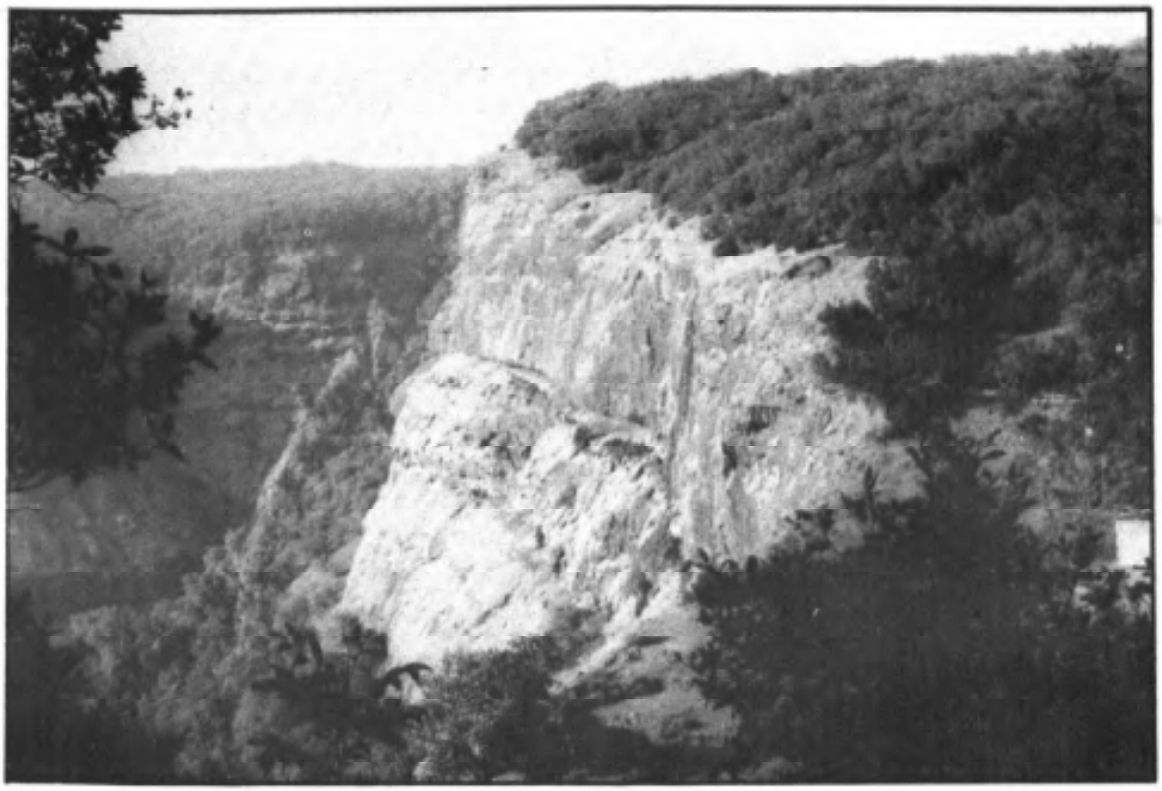
PLATE 6

Plants with economic/medicinal value

▲(b) ▼(d)

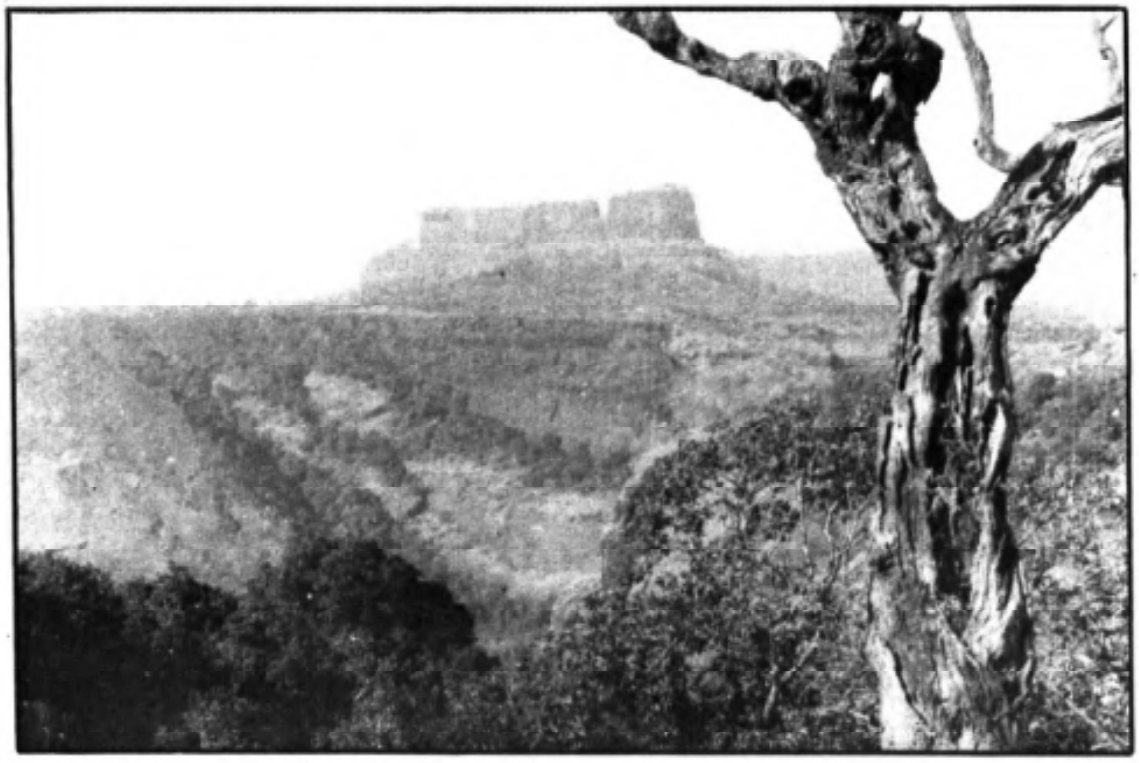
▲(a) ▼(e)

a) **Gloriosa superba** L. (*'Bachnag'*).
b) **Calycopteris floribunda** (Roxb.) Poir. (*'Ukshi'*).
c) **Rhizophora mucronata** Lam. (*'Kandel'*).
d) **Heterophragma quadriloculare** (Roxb.) K. Schum. (*'Varas'*).

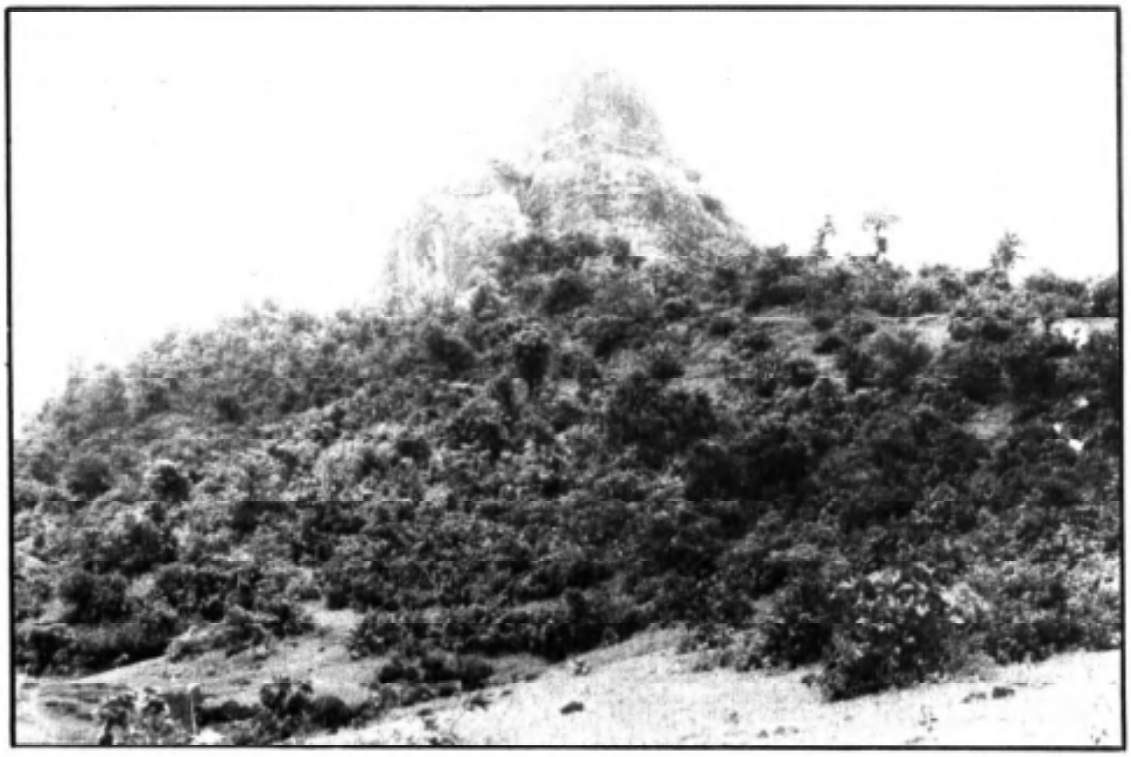


a. Hill top vegetation : Matheran.
Ficus racemosa, Memecylon umbellatum, Olea dioica, Syzygium cumini, Carallia brachiata, Carvia callosa etc.

b. Moist deciduous forests : Gheramanik Gad (Panvel).
Ficus racemosa, Pongamia pinnata, Sageraea laurifolia etc.

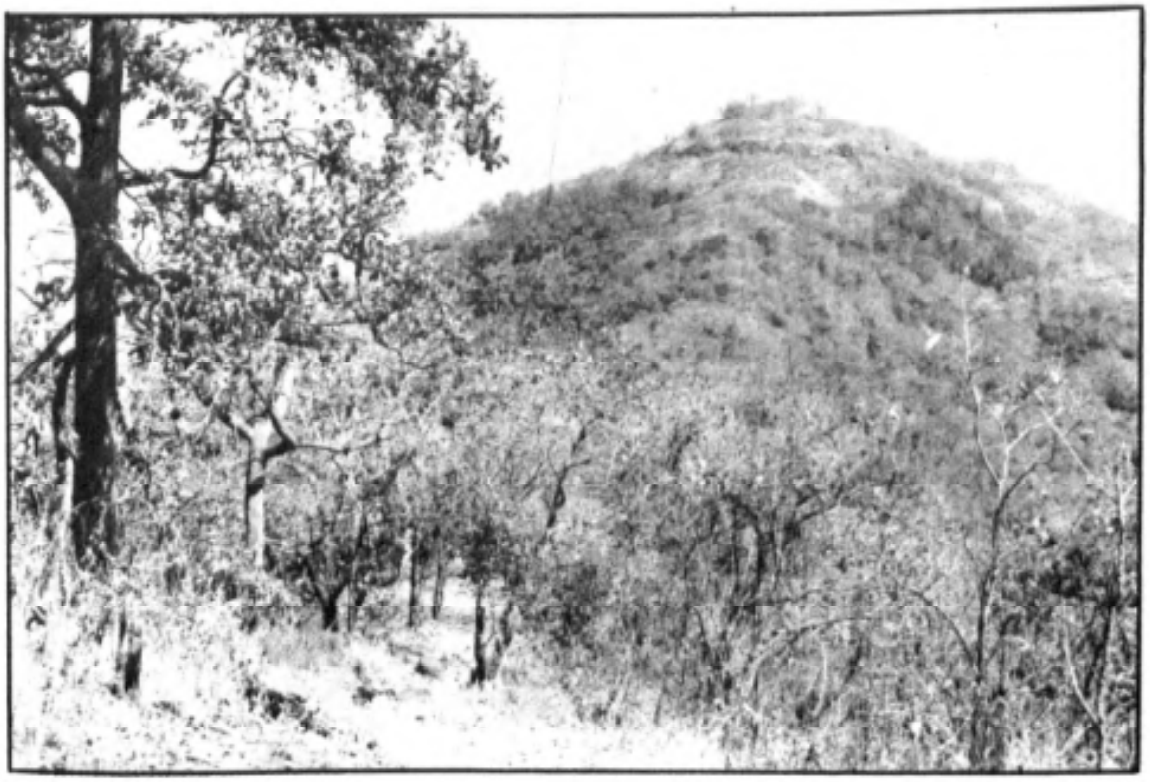


a. Vegetation on Sudhagad fort :
Bridelia retusa, Ficus arnottiana, Mangifera indica etc.



b. Moist deciduous forests : Sarasgad (Pali).
Bombax ceiba, Bridelia retusa, Heterophragma quadriloculare, Terminalia spp., **Wrightia tinctoria** etc.

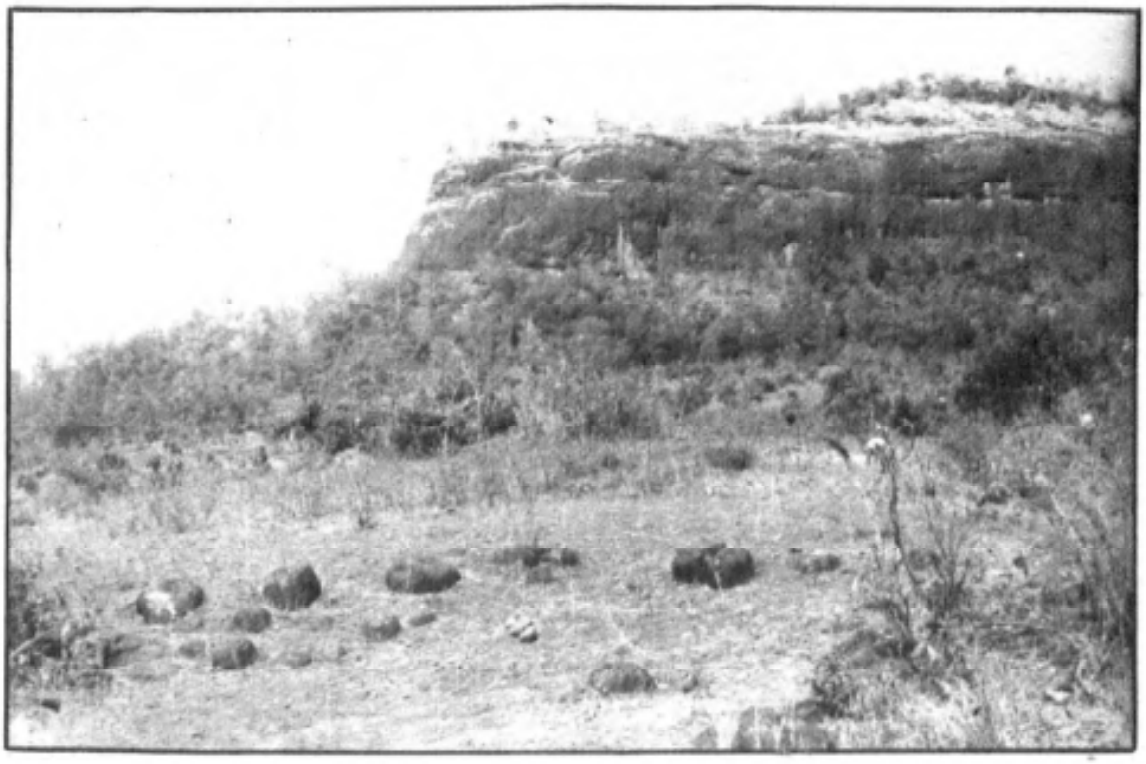
a. Vegetation in Karnala Bird Sanctuary.
Anogeissus latifolia, Flacourtia indica, Lannea coromandelica etc.



b. Vegetation on Hill top, Karnala Bird Sanctuary.
Dillenia pentagyna, Ficus racemosa, Trema orientalis, Urena lobata, Woodfordia fruticosa, xylia xylocarpa etc.

a. Charlote lake, Matheran. **Memecylon umbellatum, Olea dioica, Syzygium cumini, Carallia brachiata** etc.

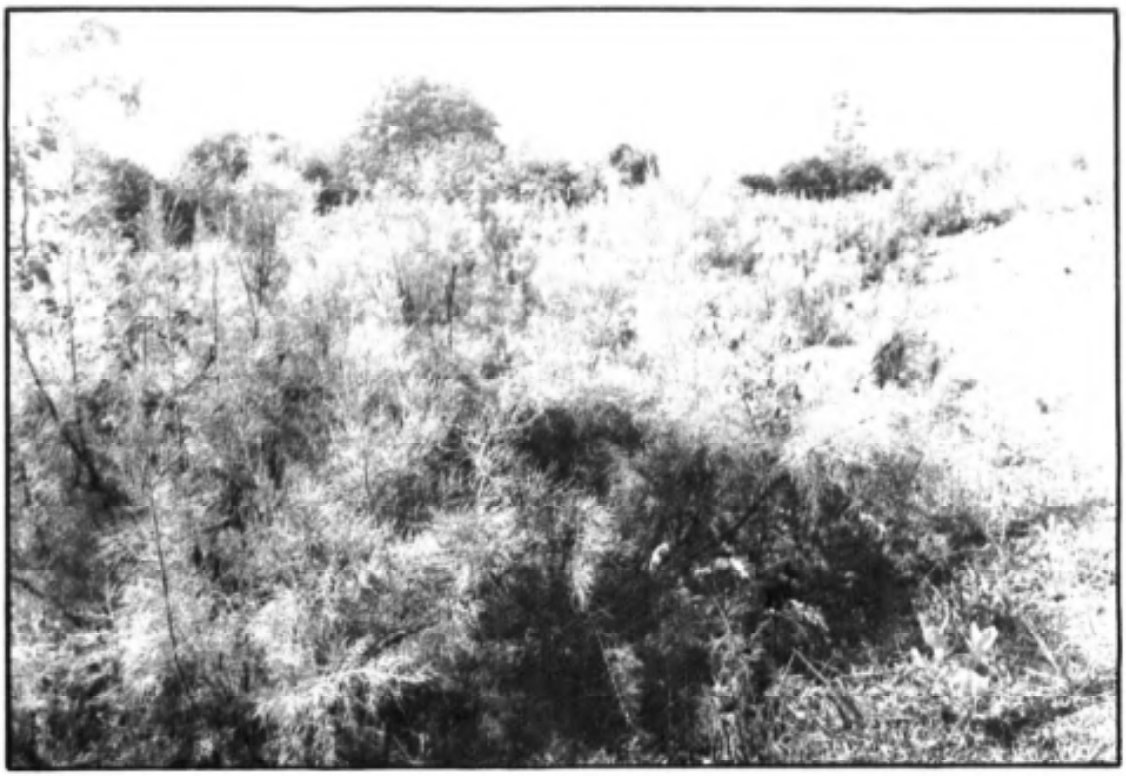
b. Moist deciduous forests : Mirya dongar, Pen. **Anogeissus latifolia, Tectona grandis, Terminalia crenulata, Albizia lebbeck, Erinocarpus** sp., **Woodfordia fruticosa.**



a. Dry deciduous forests : Chavni forests, Pen. General view of **Bauhinia foveolata, Bridelia retusa, Cassia fistula, Erythrina variegata, Garuga pinnata, Tectona grandis, Terminalia crenulata** etc.

b. Mangroves : Around Elephanta island. In foreground **Sonneratia apetala** with vertical roots (Pneumatophores).

a. Riparian flora : Sanegaon, Roha.
Homonoia riparia, Rotala spp., **Tamarix** sp., **Vitex negundo** etc.



b. Riparian flora : General view near 'Pej' river, Karjat.
Pure community of **Tamarix ericoides** associated with a few **Argemone mexicana.**

INTRODUCTION

The need for a comprehensive flora of Raigad (Kolaba) district in Maharashtra state was long felt. Nairne (1894) in his book 'The flowering plants of Western India' had cited localities of *ca* 60 species from Raigad district and *ca* 300 species without precise locality simply mentioned as 'Konkan' a place which stretches from Bombay to Goa. Similarly, Cooke (1901-08) also had recorded *ca* 375 species from Raigad district in his 'Flora of Bombay Presidency : Blatter & McCann (1926-35, 1935) have mentioned *ca* 70 plants from Raigad district in their articles on Revision of Flora of Bombay Presidency' and a few grasses from Raigad district in their "Bombay Grasses" Besides, a few others such as Birdwood (1886) enumerated *ca* 205 flowering and *ca* 22 non-flowering species from Matheran. Woodrow (1895) had written some botanical notes on 'vegetation between Pune to Nagothana' based on his journey in 1894. R.R. Chaudhari (1951-52) gave a list of common trees, shrubs, herbs climbers etc., in forest working plan of Kolaba district. A revised Gazetteer of Kolaba district was published in 1964 by Govt. of Maharashtra (Ed. P. Setu Madhav Rao).

After reorganisation of the Botanical Survey of India in 1956, several officers have undertaken botanical exploration in Maharashtra and published some accounts on regional flora (Puri & Jain 1959, 1960; Puri & Mahajan 1960; Billore & Hemadri 1969; Venkata Reddy 1970; Malhotra & Moorthy 1974; Karthikeyan *et al:* 1981; Deshpande & Singh, 1986). Some of them included plants collected from Raigad district, in Konkan (Jain 1959) and W. India (Raghavan & Singh 1983). Similarly from Agharkar Research Institute (Formerly MACS) Pune, Vartak (1981, 1983) has mentioned some plants from Raigad district in this articles on 'Wild edible plants of Maharashtra & Goa' and 'Endemic plants from sacred groves of W. Maharashtra respectively.

Regarding seedless vascular plants or Pteridophytes, a review of literature (Birdwood 1886-87, 1897; Blatter 1909; Blatter & Almeida, 1922, Bir 1977, Nair & Bhargavan 1981; Dixit 1984) and consultation of Regional herbarium, Pune (BSI) reveals insufficient information and only sporadic collections from Raigad district.

A few articles such as Enumeration of wild edible plants from Karnala bird sanctuary (Datar & Vartak 1975); An interesting new species of *Cassia* L. from Kolaba district (Kothari *et al.* 1981); Some noteworthy plants from Raigad district (Kothari & Moorthy 1983); Floristic composition and utility of wild plants from Raigad district (Kothari & Moorthy 1992) and some unpublished thesis like 'Flora of Matheran' (Irani 1962), Flora of Uran (Kuttan 1965), Flora of Karnala Bird sanctuary (Mandavgane 1978), Vegetation and flora of

Kankeshwar hills (Sane 1983) are the only publications pertaining to the Raigad flora. Nevertheless, a comprehensive flora of this district is a long felt need, particularly so, when most of our indigenous flora is being altered due to deforestation activities. Therefore, an attempt has been made here to present a flora of Raigad district, Maharashtra State.

LOCATION, PHYSIOGRAPHY AND DRAINAGE PATTERN (Map – 1)

The Raigad district in Maharashtra state lies between 17° 53' & 19° 08' N. Latitude and 72° 51' and 73° 42' E. Longitude and covers an area of 719,889 Sq. kms. The district is bounded on the west by Arabian sea and on the east, partly by foot hill zone and partly by the water shed of the major Sahyadrian scrap, adjoining Ratnagiri district, on the north by Thane district and on the south the Savitri river which flows along the boundary over a stretch of 30 kms., on the south-east, the Satara district and on the east the Pune district.

Though the district forms an important part of traditional 'Konkan plain', ruggedness and uneven topography are the characteristic physical features. There are several hill ranges stretching out from the main Sahyadri mountains which run almost parallel to the West coast at a distance of 64-80 Kms. In the Westwards 'The main Sahyadrian range sheds several transverse members of subsidiary hills with varying heights to form head-lands or promoteries. They rise in the east to an average elevation of about 600 m. The highest point being 1,367 m on the Nhad-Kedar hill of Western ghats in Dhawla village. These hills are steeply cut and traversed by a network of rivers, rivulets and streams forming many irregular terraces, ravines and valleys. The higher slopes and spurs of these hills are with dense forests.

Many rivers and streams originate in the Sahyadris and flow westwards to the Arabian sea. The chief rivers are the Ulhas with its main tributaries Posheri, Chilar and Pej in Karjat range, the Patalganga and its tributaries Balganga and Bhogeshwari in Panvel and Pen ranges, the 'Amba' in Nagothana range, the Kundalika in Roha range, the Savitri with its tributary 'Kal' in Mangaon and Mahad ranges. The Patalganga joins in South to South-West in a stretch of about 32 Kms, the Dharmatar Creek. Here hilly topography persists but river valley is broader and merges into tidal flat of Dharamatar Creek. Hot water springs 'Unhere' are also found near Sav village in Dasgaon, Mahad range.

Hills : The chief hills of the district are of Shayadris, the N.E. boundaries of the district; the Sahyadrian range is crossed by several passes or ghats beginning from Bhimashankar ghat (N.E.) to Parghat (South); Varandh ghat joining Mahad and Bhor, useful for wheeled traffic.

Besides, hill ranges, west of Panvel is Karnala (468 m), Ratangad (540 m), Mirya dongar (330 m), South of Pen is Sarasgad (407 m) and west of Alibag are more prominent elevations in the northern portion of the district. In the southern half, Talagad (300 m), the famous Raigad (855 m) and Mangalgad are detached outliers from the main Sahyadris. Matheran with its highest Panorama point (760 m), is situated in N.E. part of the district near Neral.

GEOLOGY AND SOIL

The geology of entire district consists of dark coloured volcanic lava flows and laterites. Approximately 80 to 100 million years ago, the lava flows were poured out of the long and narrow fissures in the earth's crust, at the close of Mesozoic Era. These are spread out in the form of horizontal sheets or beds and constitute the innumerable spur hills and hill ranges; bold, flat topped ridges; lofty peaks and plateaux with impressive cliffs. The hill ranges and plateaux form a part of the famous western ghats. In plains and valleys, the lava flows occur below thin blankets of soil of variable thickness.

In plateau basalts the lava forms dominant 'basaltic composition' since the basaltic lava covers an extensive region in the Deccan and frequently present 'step-like' appearance to the hills and ridges which are commonly termed as 'Deccan traps'. The 'traps' attain a thickness of 750 to 810 m, around Matheran and Raigad plateaux respectively.

The basalts are composed of abundant labradorite, feldspur, enstatite, augite and interstitial glass. Magnate is the most common accessory mineral, though at times 'Olivine' is also present. The basalts are dark grey to grey and bluish-grey in colour and are hard, compact, tough and fine to medium grained in texture.

Next to this is found the comparatively softer amygdular and scoriaceous traps, purple to greyish in colour, usually showing rounded and elongated or tubular cavities and geode with infillings of secondary minerals like calcite, zeolites, a variety of secondary quartz like agate, jasper, chalcedony etc. these generally occupy the lower portions of the ridges and slopes and usually in the valleys and plains. Associated with this acid lava flows are also found represented by light coloured trachyte, rhyolite etc. Tufaceous beds, volcanic ash etc. are also noticed at places in the district. A 'Red clayey bed' often termed as 'Red bole' is also noticeable in some places.

Sandwitched between the above two traps, flows, thin beds of grey to dark-grey and dirty green, argillaceous and calcaraceous shales or clays and friable sand-stones usually occur. No such beds have been reported so far from the district. These are known as the inter-trappean

beds, representing sediments deposited in shallow lakes during the quiescent periods of volcanic eruptions which are, however, not reported in the cliffs.

Beds of 'Laterites', usually formed by the mechanical and chemical disintegration brought about by the atmospheric agencies on the underlying traps cap, the several peaks and lofty ridges are present in the district. They are found at places in the lower regions also. The beds vary in thickness from 5-50 feet or more. The rocks are usually mottled, reddish or yellowish-brown in colour and show vermicular and tubular cavities often stained with dark-brown, ferrugenous solution. The rocks are soft and show bright colours when freshly cut but become very hard and dull on exposure to atmosphere. The outer surface of the beds, present dark to dirty-brown coloured rugged and pitted appearance. Examples are Western Ghats, Geramanck gad, Mirya-dongar, Sukeli, Sarasgad, Kankeshwar hill and Raigad.

Soil : The traps on weathering give rise to a greyish to dirty green friable 'murum' which on decomposition and decay yield a rich and fertile, reddish-brown to coffee-brown and black soil. The laterite on disintegration gives rise to a dusty reddish to reddish-brown soil.

The soils of the district fall under 6 categories viz. 1. the forest soils, 2. varkas soils, 3. rice soils, 4. Khar soils, 5. coastal alluvial soils and 6. laterite soils. Of these, forest soils are not put to cultivation but yield valuable forest produce like teak, hirda, beheda, pepper etc. Varkas soils located just below the forest soils are poor in organic matter and nitrogen and are suitable for the growth of millets. Rice soils occupy the largest area of the district. Khar soils situated on the flat levelled land near the creeks are being brought under reclamation, best suited for garden crops eg. Areca nut, coconut etc. Coastal alluvial soils all along the coasts and laterite soils are observed among the Sahyadri ranges in the traps rock, mainly at Matheran and Poladpur suitable for valuable species of evergreen and semievergreen types.

CLIMATE

The climate is similar to that of the west coast of India with plentiful and regular seasonal rainfall, oppressive weather in the hot months and high humidity throughout the year. The summer season from March to May is followed by the south-west monsoon from June to September-October and November forms the post-monsoon or the retreating monsoon season. The period from December to February is the cold season.

The average annual rainfall for the district as a whole is 2500 mm. The rainfall increases rapidly from the coast towards the Western

Ghats on the eastern border of the district. In the coastal strip, the annual rainfall decreases from south to north; Uran and Alibag at the north end of the coast get annually 2070 mm and 2080 mm of rain, respectively. Matheran gets about as much as 5160 mm of rain, annually. Nearly 95% of the annual rainfall is received during the south-west monsoon months and rainfall in October forms the major portion of the rest. July receives the heaviest rainfall with 38% of the annual rainfall. The climate is however, generally pleasant from December to March.

VEGETATION TYPES (MAP - 2)

The wide variation in physiography, geology, soil and climate of the district have regulated in various forests types. Based on Champion and Seth (1968), the forests of the district can be broadly classified under the following types.

1. Tropical semi-evergreen to evergreen forests.
2. Tropical moist deciduous forests.
3. Tropical dry deciduous forests.
4. Littoral and swamp forests: a) Riparian. b) Mangrove.

1. Tropical semi-evergreen to evergreen forests : This type of forest is found mainly in hilly regions, particularly in the Western Ghats and some of its spurs such as north of Alibag slopes, Matheran, upper slopes of Dhamni and Mirya dongar, Pen; Parghat and Varandh ghat, Mahad range etc. The forest composition particularly in Matheran and other places shows different stratification as follows.

i) The plateau forests or top layer is composed of the evergreen species of which *Actinodaphne angustifolia, Ficus racemosa Glochidion hohenackeri, Mangifera indica, Memecylon umbellatum, Olea dioica, Syzygium cumini* etc. are some important. (Plates 1,2, 7a)

ii) In the middle layer or terraces below the plateau *Bridelia retusa, Careya arborea, Heterophragma quadriloculare, Lagerstroemia microcarpa, Terminalia bellirica* etc. are found.

iii) The ground layer or the undergrowth consists of *Carissa congesta, Carvia callosa, Gnidia glauca, Leea indica, L. macrophylla, Pavetta indica, Woodfordia fruticosa* etc.

A number of twiners, climbers or lianas are also found in the forests. To mention a few, are *Arbus precatorius, Acacia pennata, A. rugata, Butea superba, Cansjera rheedii, Celastrus paniculata, Combretum ovalifolium, Dioscorea spp., Entada rheedei, Gnetum ula, Mucuna prurita* etc.

Orchids like *Habenaria spp., Pecteilis susannae, Peristylus lawii, P. plantageneus* etc., ferns like *Selaginella delicatula, Lygodium flexuosum* etc. mosses like *Funeria* spp. , *Bryophytes* like *Riccia* spp. etc., are frequent particularly in Matheran. Grasses are found usually on steep slopes, edges of the plateau, tops and bases of the cliffs.

The plateau forests in Matheran, are very dense and even congested in places and their most luxurient growth represents the natural climatic climax.

2. **Tropical moist deciduous forests** : Throughout the district, major part of the forests are of this type, usually found on hill slopes eg. Matheran, Panvel, Karnala birds sanctuary, Mahad, Mhasla, Nagothana, Roha, Raigad, Sudhagad etc. (Plates 7b, 8,9, 10b)

Like evergreen types, here also the vegetation is observed in 3 different storeys or zonations.

i) Top storey :The chief deciduous species are *Tectona grandis and its associates like Acacia catechu, Albizia lebbeck, Bombax ceiba, Dalbergia latifolia, Pterocarpus marsupium, Terminalia paniculata, Trewia nudiflora* etc. The preponderence of teak or *Tectona grandis* is overwhelming with 60% or more.

ii) Middle storey : The species forming middle layer are *Careya arborea, Erythrina indica, Gmelina arborea, Grewia tiliifolia, Haldina cordifolia* etc.

iii) Ground layer : The undergrowth mostly consists of *Carissa congesta, Carvia callosa, Helicteres isora, Holarrhena antidysenterica, Wrightia tinctoria* etc.

3. **Tropical dry deciduous forests** : This type of forests, (Plate 11 a) popularly known as 'Fuel forests' are found especially in Roha division eg. Tharbat forest in Sanegaon round. The forest is characterized by high percentage (*ca* 60%) of 'Ain' i.e. *Terminalia crenulata associated with Bombax ceiba, Haldina cordifolia, Holoptelia integrifolia, Mitragyna parvifolia, Pterocarpus marsupium, Terminalia chebula* etc.

As a subtype of 'fuel forests'various evergreen patches spread all over the area need special mention. A part of village 'Phansad'in Murud range (area about 903 hectares) consists *Memecylon umbellatum* as *principal species associated with Syzygium cumini, Mangifera indica* etc. and other sacred groves known as 'Devrai' or 'Devrath' in Maharashtra located near 'Gani' and 'Vinhere' in Mahad range and 'Ransai' near Karnala are mainly composed of evergreen species such as

Artocarpus heterophyllus, Ficus spp., *Gardenia gummifera, Mangifera indica* etc. Here the middle and ground layer is nearly the same as described in moist deciduous forests. These pockets in protected localities have alone reached the climax evergreen stage as they are relatively free form adverse biotic influences.

4. **Littoral and swamp forests** : a) Riparian flora : This vegetation type is found along the river banks, river beds on stony, sandy or alluvial habitat in the area. (Plate 12)

Along the sandy soils and stony river banks, plants found are *Capillipedium huegalli, Homonoia reparia, Indigofera cordifolia, Rotala serpyllifolia, Rotula aquatica, Tamarix ericoides, Vitex negundo* etc.

On alluvial soil, number of wetland and marshy plants are met with. They are *Ageratum conyzoides, Ammannia baccifera, Caesulia axillaris, Chenopodium album, Typha angustata*, species of *Chrozophora, Commelina, Cyperus* and *Polygonum*.

b) Mangrove forests : The vegetation found along the muddy sea-shores and sandy saline areas observed in the district particularly at Alibag, Dasgaon around in Mahad, Dharamtar creek from Ghosale to Murud, Elephanta island, Rajapuri-Mhasla creek in Janjira-Murud, Revas, Revdanda, Uran etc. fall under this category. The dominant species are *Avicennia marina* var. *acutissima* and *A officinalis* associated with *Acanthus ilicifolius, Aegiceras corniculata, Carallia brachiata, Rhizophora mucronata, Sonneratia* spp. etc. (Plate 11b)

On muddy soil, *Salvadora persica, Sesuvium portulacastrum* and *Suaeda monoica* are frequent while on sandy sea-shore *Aeluropus lagopoides, Cressa cretica, Cyperus bulbosus, Hyphaene dichotoma, Pandanus tectorius, Pedalium murex, Spinifix littoreus, Tribulus terrestris* etc., are found.

To arrest soil erosion by high tides and also as wind breakers etc. huge plantations or 'Man made forests' of *Casuarina equisetifolia* have been raised at Nagaon beach in Alibag.

In addition to the plants mentioned in the above forest types a number of hydrophytes, epiphytes, parasites a few insectivorous, plants of Biological interest and pteridophytes area also found in the area and to mention a few of each category are :

i) Hydrophytes : In ponds and ditches a number of water plants are found. They are either subemerged, floating or in wetlands.

Subemerged : *Blyxa echinosperma, Ceratophyllum demersum, Hydrilla verticillata* etc.

Floating : *Eichhornia crassipes, Hygroryza aristata, Nymphaea pubescence, Nymphoides hydrophylla, Pistia stratiotes, Trapa natans* etc.

Wet land or marshy plants are similar to riparian flora.

ii) Epiphytes : There are many epiphytes in the area mostly belonging to the family Orchidaceae, viz. *Acampe ochracea, Aerides maculosum, Dendrobium* spp. *Eria* spp. *Porpax jerdoniana, P. reticulata, Rhynchostylis retusa, Vanda parviflora* etc.

iii) Parasites : Two types of parasites met in the area are (a) Root parasites eg. *Aeginetia indica, Buchnera hispida, Christisonia calcarata, Santalum album, Sopubia delphinifolia, Striga* spp. and (b) Stem parasites eg. *Cassytha filiformis, Cuscuta chinensis, C. reflexa, Dendropthoe falcata, Viscum articulatum* etc.

iv) Insectivorus plants : *Drosera indica* and *Utricularia* spp. are usually met with.

v) Plants of Biological interest : The branched palm *Hyphaene* dichotoma(Plate 3d) occurs in Nagaon & Revdanda beach in Alibag : *Gnetum ula,* (Plate 3a) a botanically important and interesting Gymnosperm species occurs in the area; *Oroxylum indicum* with its fruits resembling large swords, *Entada rheedei* a liana for its woody fruits and largest seeds, *Radermachera xylocarpa* for its longest, branch like fruits with external warty protruberances are found in Roha division and other places of the district.

vi) Pteridophytes : These seedless vascular plants are comparatively rich in hilly regions like Kalasgiri in Roha, Karnala fort and Matheran where humidity is high and altitude reaches upto 760 m. Among them 'Sanchrini' or walking ferns like *Adiantum philippense; silver ferns like Cheilanthes albomarginata and C. farinosa; epiphytic ferns like Drynaria quercifolia, Microsorium membranaceum, Pteris pellucida and P. quadriaurita; terrestrial ferns like Athyrium hohenackerianum and Tectaria macrodonta; aquatic or semiaquatic ferns like ceratopteris thalictroides, Marsilea minuta and climbing* Ferns *Lygodium flexuosum* etc. are frequent. The members of a most primitive family, Ophioglossaceae, viz. *Ophioglossum costatum, O. nudicaule* and *O. reticulatum* also occur in plains and hilly areas. The fern-allies like *Selaginella delicatula* are found in shady and moist habitats while free floating *Azolla pinnata* in small ditches.

Factors affecting Vegetation : The vegetation of the district is greatly affected by abiotic (ecological) and biotic factors.

Abiotic (Ecological) factors : Forest fires have cleared the forests in some places like "Shriganchari" near Alibag. Due to forest fires or felling, some of the areas have retrogressed from moist or mixed forest to deciduous type (Jain, 1959). Soil erosion also has affected the vegetation in coastal region, especially in Alibag, Murud, Nagaon, Shrivardhan etc. Forest department has now taken steps to prevent erosion by planting *Casuarina equisetifolia* at Nagaon beach etc. and 'teak' plantations in the area cleared by forest-fires. Land-slides in hilly region like Matheran has also affected the vegetation in some parts.

Biotic factors : Various biotic factors like felling, grazing, Industrialization, construction of roads and heavy transport at Mahad-ghat and Varandh-ghat have affected the natural vegetation.

Construction of Railway-line between Neral to Matheran and Trolly-line between Roha to Bhira have also affected the natural vegetation in the area. Similarly, clearing of the natural forests for house building, rehabilitation and for industrial purposes have also affected plant wealth particularly in Mhasla, Roha etc.

Hill stations like Matheran and coastal places like Alibag, Elephanta caves, Murud, Shrivardhan etc. are constantly visited by tourists and this also affected the vegetation.

Over-exploitation of many economic and medicinal plants for commercial purposes have depleted important plants like *Rauvolfia serpentina, Santalum album* etc.

Grazing has considerably affected habitat of natural vegetation especially in Roha and other parts of the district.

Industrialization in certain areas eg. Khalapur (Hindustan Organic Chemicals Co.) and Uran (O.N.G.C. project) have created partly water and air pollution in the district. Because of waste chemicals thrown into the Patalganga river by Hindustan Organic Chemicals, water becomes polluted and number of fishes as well as water plants have been depleted. This process is still continued. Similarly, due to O.N.G.C. Project at Uran air, sea-water is also polluted. Perhaps because these reasons, the plants like *Bruguiera cylindrica, Tamarix troupii* etc. recorded by Kuttan (1965) could not be located by present authors in recent plant explorations.

Botanical collectors are also responsible to some extent for depletion of certain species. For instance, Matheran hill is visited

botanically by innumerable batches of Research workers, excursion parties from colleges and universities etc. and have greatly disturbed the distribution and depleted some species.

Conservation : To save the plants from all kinds of threats (i.e. ecological and biological), Govt. of India has taken a number of steps such as ban on over export of commercial plants like *Aconitum* and beautiful orchids, under Convention on Interanational Trade in Endangered Species of Wild Fauna & Flora (CITES). The Indian Wild life (Protection) Act 1972, is also further amended to include plants in its schedules to restrict or prohibit trade. Certain areas in India are also declared as Biosphere Reserves, National parks and Sanctuaries to protect plants and animals from adverse biotic effects. In Maharashtra state there are 5 National parks, 24 Wild life Sanctuaries and 3 Game reserves. In Raigad district, there are 2 Wild life Sanctuaries, one being Karnala bird Sanctuary and the other Phansad (Panther) wild life Sanctuary. 'Karnala Bird Sanctuary' is located in Panvel range and Phansad (Panther) Wild life Sanctuary in Murud range.

Karnala bird Sanctuary : Karnala or Funnel hill (18° 57' N. Lat. & 73° 07' E. Long.) is a small historic fort in Konkan region having an altitude of 475 m located 62 kms from South of Bombay and 12 Km. from West of Panvel along the Bombay-Goa high way. It covers an area of about 4.48 sq. kms. The peak of the fort is dome shaped and Funnel or centre of the upper part is almost inaccesible. Basal pillar considered to be religious in origin. The Funnel is full of honey bees.

Geologically the soil is rugged terrain of Deccan trappean hills and climate is similar to central coastal areas in W.India. A review of literature (Graham 1839, Dalz. & Gibs. 1861, Cooke 1901-08) suggests that the Karnala forests were not explored for many years. After construction of Bombay-Goa national high-way, a few workers visited the area and published some data (Datar & Vartak 1975, Vartak *et al.* 1985). The area was also intensively explored by present authors during 1976-80 and specimens collected are deposited in BSI.

The forests are of moist deciduous type with a few isolated patches of semi-evergreen species in the ravines. The Karnala flora consists of about 114 plant families, 432 Genera and 642 species. Not only the vegetation but also a large variety of birds *ca* 152 (Grubh 1982) such as snipes (*Gallinago* spp., *Rhynchaea* spp.), ducks whistling Teal (*Dandrocygna javanica*), patridges (*Ortigornis* spp.), grey quail (*Corturnix communis*), golden & stone ploier (*Charadrius* spp., *Edicnemus* spp.), pegions (*Columba* spp.) etc., and animals such as snakes, python, Deers (*Tetraceros* spp.), Monkeys Vanar & Makad (*Presbytis entellus, Macaca radiata*), jackals (*Canis aureus*), Dukkar

(*Sus indicus*), red squirrel (*Sciurus elphinstonei*), Mungus (*Herpestes edwardsi*), Peacock, Lahuri, Harial, Pankombari, Rabbits, Titar etc. provide a great interest to Naturalists. Hence the Govt. of Maharashtra on 4.5. 1968 declared 4.48 sq. Kms. area of Karnala Bird sanctuary as Reserved or protected forests for its beautiful birds and developed a tourist complex with a view to preserve an old culture and traditions of the local tribal people.

Phansad (Panther) Wild life Sanctuary : This is of relatively recent origin, declared on 25-2-1986 with an area of 69.79 sq. kms. Besides Private forests (Avagikrut van) of about 4504.474 hectares and conserved forests of about 903.265 hectares totalling to 5407.739, say roughly 5408 hectares around it.

The type of forest, located 60 kms from Roha is classified as Tropical moist deciduous one. The wild life existing at present is Chitad (Panther), Bibat tiger, Bhekar, Taras, Ran dukkar, Kolhe, Pisora (Makus deer), Mangoose, Makad (Monkey), Pankutra, Sambar etc. (cf. 'Rastriya Udyana Va Abhayaranya Cha Sadya Sthiti Darshak Ahaval' in Marathi by R.N. Indurkar (C.C.F.), M.state, Nagpur, dt- 4-3-1991.

ETHNOBOTANY

The main tribals which are economically, educationally and socially backward are Katkaries or Kathodies, Mahadev kolis, Thakurs etc. known as Adivasis. They are famous for their folk dances.

The Katkaries are known as 'Kathodies' because of their occupation making 'Kath' or catechu, the thickened juice of Khair (*Acacia catechu*). They worship the kanbi village God'Gamdev' or minor Tiger God such as Muslya, Mhasa, Vetal etc. For their food they usually hunt wild boar or Dukkar or cultivate millets like Sawa (*Panicum miliaceum*) and Nagli (*Eleusine corocana*).

The Thakurs are comparatively advanced than Katkaries. They usually plough the narrow steeps along hills and raise paddy crops during rainy season and also grow plantains and vegetables near their houses. They worship 'Shankar-Parvati' These tribal communities have been always believers and devotees of forest gods. Hence, cutting of any trees or killing of animals in sacred groves or Devrai (Devarth) is tabooed (Vartak 1981). Perhaps vegetation and wild life survives in Devrath near Karnala bird sanctuary and Vinhere for the same reason.

There are number of wild plants used as food, medicine and in cottage industries by the tribal people and the study of this branch is known as 'Ethnobotany'. These plants are discussed in detail under cultivated and other useful plants.

Cultivated and other useful plants: The main food crops cultivated in the district are *Eleusine corocana, Oryza sativa, Panicum miliaceum and Paspalum scrobiculatum among cereals; Cajanus cajan, Cicer arietinum, Pisum sativum, Vigna angularis, V. radiata etc. among pulses; Abelmoscus esculentus , Brassica oleracea, Colocasia esculenta, Ipomoea batatas, Raphanus sativus* etc. among vegetables; *Anacardium occidentale, Carica papaya* etc. among fruits.

There are many wild plants which are consumed by the local people.

a) Roots, tubers or rhizomes of many wild plants are eaten raw or boiled. Some examples are : *Asparagus racemosus, Ceropegia attenuata, Colocasia esculenta, Costus speciosus, Cyperus bulbosus, C. rotundus, Dioscorea bulbifera, Nelumbo nucifera, Nymphoides indicum, Tacca pinnatifida, Vigna vexillata.*

b) Leaves or young shoots of wild plants eaten raw or cooked as green vegetables are *Abrus precatorius, Casearia esculenta, Chlorophytum tuberosum, Clerodendrum serratum, Cressa cretica, Cyanotis tuberosa, Ipomoea aquatica, Leea indica, Melothria heterophylla, Mussaenda frondosa, Portulaca oleracea, Thunbergia grandiflora, Typha angustata* etc.

c) Buds or flowers of many wild plants are eaten raw or cooked. They are *Bauhinia purpurea, Bombax ceiba, Buddleja asiatica, Dillenia indica* (Fleshy-calyx), *Dioscorea pentaphylla, Oroxylum indicum* etc.

d) Ripe or unripe fruits of many wild plants are eaten raw, cooked or pickled, Such as *Aegle marmelos, Capparis zeylanica, Carissa congesta, Cordia dichotoma, Dillenia indica, Eragrostis tenella,* (Plate 5a), *Garuga pinnata, Jasminum malabaricum, Leea crispa, Mucuna prurita, Phyllanthus officinalis* etc.

e) Seeds of many wild plants roasted or boiled and eaten. They are *Bauhinia vahlii, Entada rheedei, Gnetum ula, Holoptelia integrifolia, Sterculia guttata, Vigna umbellata* etc.

There are plants from which delicious beverages or drugs and narcotics are obtained. Fresh sap of *Borassus flabellifer* and *Phoenix sylvestris* provides a good beverage. *Areca catechu* is cultivated for its fruit 'supari' used along with betal leaves as a masticatory. Many tree species like *Erythrina variegata, Moringa pterygosperma, Phoenix acaulis, Sesbania grandiflora* etc. are planted for support of the vines.

There are many species used as condiment and spices. They are *Brassica juncea, Coriandrum sativum, Garcinia indica, Piper nigrum, Zanthoxylum rhetsa* etc.

Among oil yielding *plants Azadirachta indica* , *Cocos nucifera, Pongamia pinnata, Ricinus communis* and *Sesamum indicum* are noteworthy.

For building huts, making brooms, baskets, mats ropes, clothes etc. natural fibre from plants like *Abutilon indicum, Bombax ceiba, Calotropis gigantea, Corchorus capsularis, C. olitorius, Gossypium herbaceum, Helicteres isora, Hibiscus cannabinus, Kydia calycina, Phoenix sylvestris, Sida acuta, Urena lobata* etc. used.

Major forest products that occur in the district are timber, fire-wood and char-coal. Timber is obtained from *Haldina cordifolia, Bambusa arundinacea, Dalbergia latifolia, Pterocarpus marsupium, Tectona grandis, Terminalia bellirica, T. crenulata* etc.

Minor forest products such as dyes obtained from *Acacia catechu, Butea monosperma, Cassia fistula, Mallotus philippensis; Bidi-wrappers from Bauhinia racemosa, Diospyros melanoxylon;* Shikakai pods for hair wash from *Acacia concinna*; leaves for thaching for *Borassus flabellifer, Bambusa arundinacea, Dendrocalamus strictus, Dillenia pentagyna* etc.; Resin and gum from *Acacia nilotica* ssp. *indica, Gardenia resinifera, Garuga pinnata, Sterculia urens* etc. are also of considerable value.

There are many wild plants which are used medicinally either by the local people or commercially by the business men. These are : *Ailanthus triphysa, Asparagus racemosus, Barleria cristata, Calophyllum inophyllum, Capparis zeylanica, Flaucourtia indica, Garcinia indica, Helicteres isora, Heterophragma quadriloculare, Holarrhena antidysenterica, Ipomoea aquatica, Michelia champaca, Nelumbo nucifera, Plumbago zeylanica, Rauvolfia serpentina, Tephrosia purpurea, Tinospora cordifolia, Vitex negundo, Woodfordia fruticosa, Xeromphis spinosa* etc.

INDUSTRIES (MAP - 9)

The district was considered as industrially backward upto 1914. Fishing, Timber, Carpentry, Ceramics, Rice pounding and Transport are the major industries which accomodate more than 60 % of persons employed. Among large and small scale industries 'manufacturing of Grinding wheels' is an important industry at Mora (Uran). Among two to four 'Electricity generating units' (Bhira, Bhivpuri, Khopoli, Janjira)., the power system located at Khopoli is one of the largest in South East Asia. As paddy is main crop of the district, 'Rice milling' forms one of its

major industry. About 125 Rice mills in the district are located in Pen, Panvel, Karjat, Mahad, Khopoli, Goregaon, Roha and Poynad. Panvel is the biggest collecting and distributing centre of Rice.

Paper and Paper products: Because of abundant availability of water, electricity, raw materials (Wood pulp, rags, waste paper, straw and hay) and cheap labour, Paper industry units at Khopoli and Apta have been established, which manufacture printing and binding paper and paper boards. Plants used in paper industries are *Ficus racemosa, Gnidia glauca, Lannea coromandelica, Streblus asper* etc.

Chemicals and Pharmaceuticals : Panvel is one of the centres for manufacturing Ayurvedic medicines. The main products of the industry are : Kadha, Asava, Churna, Bhasma, Gutika (Pills) etc. Plants used in Ayurvedic medicines are *Terminalia bellirica, T. Chebula, Tinospora cordifolia, Tribulus terrestris* etc. A pioneer concern of manufacturing Sodium Salicylate, Salicilic acid and Aspirin was started at Khopoli in 1954.

'Hindustan Organic Chemicals' near Patalganga river in Vadgaon area, Khalapur is one of the bigger factories in India where production of chemicals are in lakhs of metric tons per annum.

India's biggest Oil and Natural Gas Commision's Project (ca 1,700 crore rupees) started in 1975-76 and is earning a revenue/profit of Rupees 300 crores per annum is also located at Uran-Pirwad area of Raigad district.

Cotton textiles : A power loom factory was started in 1932 at Uran. It produces mainly Grey long cloth, coating and canvas. Plants used in this industry are *Corchorus* spp., *Gossypium* spp. etc.

Engineering industry : There is a cutlery workshop at 'Pen' which produces Pen-knives, Scissors and similar articles.

Coated fabrics : Adhesive tapes, varnish tapes, packing strips, medical tapes and water proof tapes are produced in small scale industries at 'Khopoli'

Salt making : It is an old industry started at Alibag, Pen and Roha. Now it is expanded at Shewa, Karanja and Uran.

Cottage industries : 'Charcoal making' is one of the oldest industries in which 'Adivasis' and 'Katkaries' are engaged for years. Among cottage industries fishing, wool weaving, leather, bamboo-plaiting, carpentry, smithy, boxes & toy making (from wood of *Erythrina variegata, Haldina cordifolia, Mitragyna parvifolia,* etc.), Walking sticks (Branches of *Combretum ovalifolium, Masea indica,*

Murraya paniculata etc.), Pottery and brick making are main. Pen is famous for making decorative images, idols and statues of different sizes and shapes (particularly of Lord Ganesh) out of Kaolin and plaster of Paris.

SALIENT STATISTICS ON THE FLORA

The present flora mainly deals with flowering plants and includes 1137 species and 36 varieties +40 cultigens belonging to 620 genera spread over in 151 families. The table-1 shows the proportion of monocot–dicot ratio, which is 1: 2.5 and genera to species is nearly 1: 2. Hooker (1904) estimated the ratio between monocot to dicots as 1: 2.3 and genera to species as 1: 7.

Table-I : General Survey

Group	Family	Genera	Species	Varieties	Cultigens
Monocots	22	134	303	8	3
Dicots	128	485	833	31	37
Gymnosperms	1	1	1		
Total	151	620	1,136	39	40

Besides 33 Pteridophytes found in the area are also enumerated in 19 families. A comparision between this sequence and with those given in Hooker's (1904) Flora of British India is given Table-II. The position of Poaceae is first in present flora which is third in Flora of British India. The position of Orchidaceae is first in Flora of British India while it is 8th in present flora. The position of other families too vary in both cases. In present flora Fabaceae, Caesalpiniaceae and Mimosaceae are treated seperately while Hooker included them under Leguminosae.

Table-II : The Ten Dominant Families Comparision with Flora of British India

Flora of Raigad	Flora of British India
1. Poaceae	1. Orchidaceae
2. Leguminosae (Fabaceae)	2. Leguminosae
3. Cyperaceae	3. Poaceae
4. Acanthaceae	4. Rubiaceae
5. Asteraceae	5. Euphorbiaceae
6. Euphorbiaceae	7. Acanthaceae
7. Rubiaceae	7. Asteraceae
8. Orchidaceae	8. Cyperaceae
9. Convolvulaceae	9. Lamiaceae
10. Caesalpiniaceae	10. Urticaceae

Floristic analysis : An analysis of the distribution of floristic elements occuring in the area was made to understand the phytogeographical affinity on one hand and to find out the endemic content of the flora on the other.

Being a part of the western ghats in Peninsular India, the flora of Raigad district shows some phytogeographical affinity with Sri Lanka and African floras. A few examples of such an affinity are given below.

Chloroxylon swietenia DC., *Chukrassia tabularis* Juss., *Melothria leiosperma* Cogn., *Soymida febrifuga* Juss. etc. are a few examples of some common elements which occur in Sri Lanka and in this area. Similarly, some African elements occur in this region are *Alstonia scholaris* R.Br. , *Grewia tiliifolia* Vahl and members of the family capparaceae. Some Malesian elements which occur in this region are in the genera *Macrosolen, Pueraria* and *Xantolis* and Arabian elements in genera *Acacia, Heliotropium, Salvadora* etc. A few species such as *Dicliptera zeylanica* Nees and *Indigofera constricta* are restricted to India and Sri Lanka, *Commelina hasskarlii* C.B.Cl. to India and Bangla Desh while *Cyanotis fasciculata* Schult. with rare and restricted distribution in India, Sri Lanka and Bangla Desh are also met within the Raigad flora.

A notable work to analyse such phytogeographical elements and characteristic flora confined to the Indian sub-continent is done by D. Chatterjee (1940, 1962). He estimated that Himalayas have the largest number of endemics with 3,169 species of dicotyledons and about 1000 species of monocotyledons. Nayar (1980 a,b) mention the total endemic genera in India represents 6.5% of the 2252 genera occuring in India Ahmedullah & Nayar (1987) mention that out of about 15,000 species of Angiosperms 12% are found to be endemic to Peninsular India.

Raghavan & Singh (1983) reported 27 species which are apparently very rare or possibly extinct and not collected since their original type collections. Among them *Bidaria khandalense* (Sant.) Jagtap & *Singh* has recently been recollected from Raigad district (Kothari & Moorthy, 1983). Similarly, *Achyranthus coynei* Sant., *Canscora concanensis* C.B.Cl. and *Eriocaulon humile* Mold. are also recollected from Matheran in Raigad district (Irani, 1962). *Typhonium bulbiferum* Dalz. confined to Konkan is found in W. ghats, Karnataka, Kerala, Meghalaya etc. (Ahmedullah & Nayar, 1987). *Ischaemum santapaui* Bor, earlier reported from Maharashtra is now known from Dangs in Gujarat (Kothari & Hajra, 1983). Of the 93 endemic species reported so far from Maharashtra, 23 species occur in Raigad district. A new species *Cassia kolabensis* Kothari *et al* (1981) also has been discovered from Raigad district, confined at present to Raigad and

Thana districts in Maharashtra. Similarly, species such as *Hoya alexicaca* (N.J. Jacq.) Man., *Iphigenia magnifica* Ansari *et* Rolla Rao, *Pogonachne racemosa* etc., have been originally described from Riagad district but are now known to occur in other parts of Maharashtra state but not outside, while *Hypoestes lanata* Dalz. has been confined to North western ghats and Konkan at present. Simlarly, *Nilgirianthus membranaceous* (Talb.) Brem. known from W. Ghats in Karnataka (cf. Ahmedullah & Nayer, 1987) is now known to be in W.Ghats of Maharashtra also.

According to an estimate of threatened plants committte of IUCN, about 10% of world's flora are under varying degrees of threat (Jain & Sastry 1980). The floristic analysis in the present area revealed that *c a* 114 species of flowering plants out of several hundred endemic species occuring in the flora of India are distributed in Raigad district, facing the same problem either in district, state or country level having restricted distribution. eg. some plants occur with very small populations at present. *Flemingia gracilis Bidaria khandalense* etc. are the best examples of rarity in occurence in the district. Similarly plants like *Entada* r heedei *Gnetum ula* and *Hyphaene dichotoma* are becoming rare due to ecological and biotic factors.

A comprehensive list of endemic plants of India having distribution in Raigad district with remarks on their status is given in Table-III based on extensive plant exploration in the area (1976-80) and consultation of literature and herbaria at Pune (BSI), Blatter herbarium, Bombay (BLAT), Northern circle herbarium of Botanical Survey of India, Debradun (BSD), FRI herbarium, Dehra Dun (DD) and Cental National Herbarium, Howrah (CAL).

Table-III : A list of endemic plants of India having distribution in Raigad district

Name of species	Family	Range of distribution
+*Achyranthes coynei* Sant.	Amaranthaceae	Western Ghats (Khandala, Matheran). Extremely rare.
Aerides maculosum Lindl.	Orchidaceae	Peninsular India, W. Ghats, Konkan, Ramdurg, Belgaum, Bellary, Hassan, Deccan & upto Rajashtan.

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
Aglaia lawii(Wight) Sald.	Meliaceae	W. Ghats, Konkan, Kanara, Malabar-Tirunelvelli.
Ancistrocladus heyneanus Wall. ex Grah.	Ancistrocladaceae	Western Peninsula (Konkan to Travancore).
Aporosa lindleyana (Wight) Baill.	Euphorbiaceae	W.Ghats.
Argyreia sericea Dalz.	Convolvulaceae	W. Ghats, Konkan, Malabar, Nilgiris to Tirunelvelli hill.
Arthraxon jubatus Hack.	Poaceae	W. Ghats (Maharashtra).
Asystasia dalzelliana Sant.	Acanthaceae	W. Ghats from S. Kanara, Southwards at low alt.
Atylosia lineata Wight & Arn.	Fabaceae	W.Ghats, Konkan, Karnataka to Travancore.
A. sericea Benth.	Fabaceae	W. Ghats, Konkan, Deccan & E. Ghats, Visakhapatnam hills.
Barleria gibsoni Dalz.	Acanthaceae	Maharashtra, Rajasthan, Andhra Pradesh, Madhya Pradesh, Kerala, Karnataka.
B. prattensis Sant.	Acanthaceae	Western India (Maharashtra, Goa, Rajasthan, Karnataka)
Begonia concanensis A. DC.	Begoniaceae	Maharashtra (Karnala grove in Raigad, Khandesh). Rare.

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
+*Bidaria khandalense* (Sant.) Jagtap & Singh	Asclepiadaceae	Maharashtra (Khandala, Raigad). Extremely rare.
Blepharis asperrima Nees	Acanthaceae	W. Ghats, hills of Karnataka, S. Kanara, Coorg.
Blumea malcolmii (C.B.Cl.) Hook.f.	Asteraceae	W. India, Gujarat, Madhya Pradesh, Bihar, Maharashtra, Karnataka, Tamilnadu.
Bothriochloa concanensis (Hook. f.) Henr.	Poaceae	Maharashtra (Common), Karnataka (Rare).
Calacanthus grandiflorus (Dalz.) Radlk.	Acanthaceae	W. Ghats (Kanara & Mysore in Karnataka). Threatened.
Canarium strictum Roxb.	Burseraceae	W. Ghats, Assam, Sikkim.
Canscora concanensis C.B.Cl.	Gentianaceae	Gujarat &Maharashtra. Rare and Threatened.
C. khandalensis Sant.	Gentianaceae	Maharashtra (Pune, Raigad, Thane).
Carvia callosa (Nees) Brem.	Acanthaceae	Gujarat, W. Ghats of Maharashtra & Karnataka.
Cassia kolabensis Kothari *et al.*	Caesalpiniaceae	Maharashtra (Raigad, Thane).
+*Ceropegia attenuata* Hook.	Asclepiadaceae	Western Ghats of Maharashtra, Malwan; Goa; Karnataka, N. Kanara. Threatened.
+ *C. oculata* Hook.	Asclepiadaceae	W. Peninsula (Goa, N. Kanara, Maharashtra). Threatened.

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
+*C. vincaefolia Hook.*	Asclepiadaceae	Maharashtra (Bombay, Pune,Raigad, Ratnagiri, Satara, Thane). Rare.
+*Chlorophytum borivilianum* Sant. & Fern.	Liliaceae	Greater Bombay, Borivili, Gujarat,Raigad (Matheran). Rare & Threatened.
C. glaucum Dalz.	Liliaceae	W. Ghats, Konkan, Sahyadri ranges, N. Kanara, Chikmagalur & Mysore. Rare & Threatened.
Christisonia calcarata Wight	Orobanchaceae	Peninsular India (Konkan).
Cissus woodrowii (Stapf ex Cooke) Sant.	Vitaceae	Peninsular India (Konkan)
Clitoria biflora Dalz.	Fabaceae	W. Ghats (Sahyadri ranges), Uttar Pradesh.
+*Crotalaria filipes* var. *trichophora* (Benth. ex Baker) Cooke	Fabaceae	W. Ghats (Konkan, Kanara), Bengal, Bihar. Rare & Threatened.
+*C. stocksii* Benth. ex Baker	Fabaceae	Maharashtra (Igatpuri, Mumbra, Raigad) & Andaman Islands.
Curcuma inodora Blatt.	Zingiberaceae	Western India (Gujarat, Maharashtra).
C. pseudomontana Grah.	Zingiberaceae	W. ghats, Konkan, Chikmagalur, Mysore, Anamalais, Madhya Pradesh.
Cyanotis concanensis Hasek.	Commelinaceae	South-West India.
Dalbergia horrida (Dennst.) Mabb.	Fabaceae	W. Ghats, Konkan, Kanara & Travancore etc.

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
Dalzellia zeylanica (Gardn.) Wight var. *konkanica* (Willis) Janardhanan	Podostemaceae	Peninsular India (Maharashtra: Thane, Raigad), Nilgiri & Malabar hills (S. India).
Delphinium malabaricum (Huth) Munz	Ranunculaceae	W. Ghats (Matheran). Threatened.
Dendrobium barbatulum Lindl.	Orchidaceae	Gujarat, W. Ghats, Konkan, Travancore & Nilgiris.
D. microbulbon A. Rich.	Orchidaceae	Gujarat, W. Ghats, konkan, N. Kanara, Nilgiris, Anamalais. Rare & Threatened.
D. ovatum (Willd.) Kranz.	Orchidaceae	W. Ghats, Konkan, N. Kanara, Belgaum & Hassan.
Dicaelospermum ritchiei C.B.Cl	Cucurbitaceae	Western India (Karnataka, Maharashtra), Punjab, Tamilnadu.
Entada rheedei Spreng.	Mimosaceae	Himalaya, Assam. W. Peninsula. Threatened.
Eranthemum roseum (Vahl) R. Br.	Acanthaceae	W. Ghats, S. Kanara.
Eria dalzellii Lindl.	Orchidaceae	W. Ghats, Konkan. Hassan, Mysore to Nilgiris.
E. microchilos Lindl.	Orchidaceae	Throughout W. Ghats, Konkan, Travancore & Tamilnadu hills.
+*Erinocarpus nimmonii* Grah.	Tiliaceae	W. Ghats (Maharashtra, Kanara). Threatened.
Eriocaulon cuspidatum Dalz.	Eriocaulaceae	W. Ghats, N. Kanara, Shimoga. Rare & Threatened.

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
E. dianae Fyson var. *longibracteatum* Fyson	Eriocaulaceae	Gujarat, Maharashtra, Karnataka (South Kanara), Calicut.
+*E. humile* Mold.	Eriocaulaceae	Maharashtra (Khandala, Matheran). Vulnerable.
Eriolaena stocksii Hook. f.	Sterculiaceae	Peninsular India (Karnataka,Tamilnadu, Maharashtra). Threatened.
Euphorbia khandalensis Blatt. & Hallb.	Euphorbiaceae	Maharashtra (Khandala, Matheran).
Flacourtia montana Grah.	Flacourtiaceae	Peninsular India (Maharashtra, Karnataka,Tamilnadu). Threatened.
+*Flemingia gracilis* (Mukerjee) Ali	Fabaceae	Peninsular India (Pune, Raigad, kanara). Rare.
+*Frerea indica Daly.*	Asclepiadaceae	W. Ghats (Pune, Raigad) Endangered.
Garcinia talbotii Raiz. ex Sant.	Clusiaceae	Peninsular India (S. Kanara, Karnataka, Coimbatore, Tamilnadu).
Geissaspis tenella Benth.	Fabaceae	W. Coast, konkan (Raigad, Thane), Kanara, Karnataka plains.
Gnetum ula Brongn.	Gnetaceae	W. Ghats. Threatened.
Habenaria grandifloriformis Blatt. & McC.	Orchidaceae	W. Ghats, Konkan, hills of Karnataka to Shevaroys of E. Ghats
H. heyneana Lindl	Orchidaceae	W. Ghats, Konkan, throughout Karnataka

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
		hills to Nilgiris, Eastwards to Shevaroys of E. Ghats.
H. longicorniculata Grah.	Orchidaceae	W. Ghats, Konkan, Karnataka hills to Nilgiris.
H.. rariflora A. Rich.	Orchidaceae	W. Ghats, Konkan, Kolar, Mysore, shimoga to Travancore, Nilgiris.
Haplanthodes neilgherryensis (Wight) R.B. Majumdar	Acanthaceae	W. Ghats, hills of Karnatak,(incl. S. Kanara) & Malabar.
H. plumosa (T. Anders.) Panigrahi *et* Das	Acanthaceae	Throughout W. Ghats.
H. tentaculata (L.) R.B.Majumdar	Acanthaceae	Maharashtra, Goa.
H. verticillata (Roxb.) R.B. Majumdar	Acanthaceae	Deccan, Bellary.
Hemigraphis latebrosa Nees var. *heyneana* Brem.	Acanthaceae	Peninsular India.
Heterostemma urceolatum Dalz.	Asclepiadaceae	Maharashtra, Karnataka.
Hibiscus talbotii (Rakshit) T.K. Paul *et* Nayar	Malvaceae	W. Ghats, Konkan to Karnataka.
Hoya alexicaca (N.J.Jacq.) Man.	Asclepiadaceae	Maharashtra (Raigad). Extremely rare.
Hygrophila pinnatifida (Dalz.) Sreem.	Acanthaceae	W. Ghats, Konkan, Kanara, Deccan. Rare & Threatened.
+*Hypoestes lanata* Dalz.	Acanthaceae	N. & W. Ghats, Konkan, (Roha in Raigad, Dapoli in Ratnagiri). Rare

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
+*Hyphaene dichotoma* (White) Furtado	Arecaceae	West coast regions. (Diu, off Saurashtra coast, Goa, Nagaon and Revdanda in Raigad; occasionally cultivated in gardens).Threatened.
Impatiens dalzellii Hook. f. & Thoms.	Balsaminaceae	Western peninsula (Konkan). Threatened.
+*Iphigenia magnifica* Ansari *et* Rolla Rao	Liliaceae	Maharashtra (Dhule, Pune, Raigad), Karnataka. Vulnerable.
+*Isachne elegans* Dalz.	Poaceae	Maharashtra (Pune, Raigad, Satara, Thane).
Ischaemum diplopogon Hook. f.	Poaceae	Western India (Gujarat, Maharashtra).
I. santapaui Bor	Poaceae	Western India (Dangs in Gujarat; Pune, Raigad, Thane in Maharashtra).
Ixora brachiata Roxb.	Rubiaceae	W. Ghats, Konkan, Karnataka & South to Travancore at low alt.
Jasminum malabaricum Wight	Oleaceae	W. Ghats, Konkan, southwards Karnataka to Nilgiris.
Knema attenuata (Hook. f. & Thoms.) Warb.	Myristicaceae	W. Ghats, Konkan, Kanara & Southwards.
Mackenziea integrifolia (Dalz.) Brem.	Acanthaceae	W. Ghats, hills of S. Kanara & Coorg.
Maytenus rothiana (Walp.) Lobreau Callen	Celastraceae	Peninsular India (Maharashtra, Karnataka, Tamilnadu).
Neanotis foetida (Dalz.) W.H.Lewis	Rubiaceae	W. Ghats, Konkan, Kanara.

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
N. montholonii (Hook. f.) W.H.Lewis	Rubiaceae	W. Ghats, Konkan, Karnataka, Kanara, Malabar, Kerala, Madhya Pradesh. Rare & Threatened.
N. rheedei (Wall. ex Wight & Arn.) W.H.Lewis.	Rubiaceae	West Cost, W. Ghats, Konkan, Kanara, Karnataka, southwards to Cochin & Anamalais. Rare & Threatened.
Nervilia infundibulifolia Blatt. & McC.	Orchidaceae	Maharashtra: Khandala, Lonavala, Matheran; N. Kanara in Karnataka, Uttar Pradesh (Dehra Dun).
Neuracanthus sphaerostachyus (Nees) Dalz.	Acanthaceae	Gujarat, W. Ghats of Maharashtra & Karnataka (N. Kanara).
Nilgirianthus asper Sant.	Acanthaceae	W. Ghats in Maharashtra, Karnataka, Nilgiris, Anamalais, Travancore hills.
N. heyneanus (Nees) Brem.	Acanthaceae	W.ghats, Maharashtra, Karnataka, Nilgiris, Anamalais, Travancore & Tirunelvelli hills.
N. membranaceous (Talb.) Brem.	Acanthaceae	W. Ghats in Maharashtra and Karnataka.
Nothapodytes nimmoniana (Grah.) Mabb.	Icacinaceae	Peninsular India (Maharashtra, Karnataka,Tamilnadu).
Pinda concanense (Dalz.) Mukh. & Const.	Apiaceae	Maharashtra (Pune, Raigad, Satara). Rare.

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
Pogonachne racemosa Bor	Poaceae	Maharashtra (Pune, Raigad, Thane).
+*Polyzygus tuberosus* Dalz.	Apiaceae	W. Ghats (Kanara, Mysore, Raigad). Rare.
Porpax jerdoniana (Wight) Rolfe	Orchidaceae	W. Ghats, Konkan, hills of Karnataka & Malabar -Travancore.
P. reticulata Lindl.	Orchidaceae	W. Ghats.
Reissantia grahami (Wight) Ding Hou	Hippocrateaceae	Peninsular India (Maharashtra, Karnataka, Kerala.) Rare.
Rhamphicarpa longiflora (Arn.) Benth.	Scrophulariaceae	W. Ghats/ coast, Konkan, Matheran, Mahabaleshwar, Belgaum, N. Kanara to Chikmagalur, Shimoga & S. Kanara.
Sageraea laurifolia Dalz.	Annonaceae	Peninsular India (Malabar, Travancore, Konkan, N. Kanara, Kerala, Tamilnadu).
Senesio bombayensis Balakr.	Asteraceae	Western India (Maharashtra, Mt. Abu in Rajasthan, N. Kanara). Threatened.
S. dalzellii C.B.Cl.	Asteraceae	Bababudan hills, W. Ghats, Konkan to Karnataka. Rare & Threatened.
Striga gesnerioides (Willd.) Vatke var. *minor* Sant.	Scrophulariaceae	Peninsular India (Maharashtra: Khandala, Ambavane-Mulshi, Matheran). Threatened.
Swertia minor (Griseb.) Knobl.	Gentianaceae	W. Ghats, Konkan to Nilgiris.

A list of endemic plants of India having distribution in Raigad district.

Name of species	Family	Range of distribution
Thelepaepale ixiocephala (Benth.) Brem.	Acanthaceae	W. Ghats, S. Kanara & Tamilnadu.
Tolypanthus lagenifer (Wight) van Tiegh.	Loranthaceae	W. Ghats, Konkan, Kanara, Malabar.
Torenia indica Sald.	Scrophulariacese	Maharashtra (Bombay, Raigad, Ratnagiri, Thane), Karnataka.
Triplopogon ramosissimus (Hack.) Bor	Poaceae	Peninsular India (Maharashtra).
Typhonium bulbiferum Dalz.	Araceae	W.Ghats, (Konkan & Raigad dist.), Karnataka, Kerala, Meghalaya.
Ventilago bombaiensis Dalz.	Rhamnaceae	Palghat dist., W. Ghats, Chikmagalur, Coorg, N. Kanara, Wynaad.
+*Vigna khandalensis* (Sant.) Raghavan *et* Wadhwa	Fabaceae	W. India (Gujarat, Maharashtra, Karnataka). Threatened.
Zingiber cernuum Dalz.	Zingiberaceae	Peninsular India (Konkan in Maharashtra, Bababudan hills in Karnataka). Rare.
Z. neesanum (Graf) Ramamoorthy	Zingiberaceae	Peninsular India (Maharashtra, Kanara, Travancore).

+Plants published in Red data book of Indian Plants. Vols. I-III.

STYLE OF PRESENTATION

For phanerogams, Bentham and Hooker's system (1862-83) has been followed in the present flora. For splitting the families, in general, Hutchinson's classification (1959) is adopted.

The dichotomous keys provided are purely artificial and are mostly based on macroscopic characters. Key to the families is given before the enumeration. The genera within a family and species within a genus are arranged according to number given in keys.

The nomenclature adopted for the present work is based on latest taxonomic literature and in accordance with the recommendations made by International Code of Botanical Nomenclature (Stafleu, 1972). The correct name of the species is followed with a reference to the recent monographs or taxonomic revisions and basionym, if any. The synonyms are given only for valid names and each valid name is linked with 'The Flora of British India' and The 'Flora of the Presidency of Bombay'. Vernacular names as locally used in Marathi language are given at the end of each citation. Each species is provided with citation, local name, if any, description, phenological data, habitat, relative abundance, distribution in the district and notes, if any. Specimens are cited only for rare and noteworthy plants.

The plants marked with an asterisk (*) indicate that no specimens have been seen by the authors but included only on the basis of literature available.

A few abbreviations, acronyms etc. are also used in the present work eg. *op. cit.*: opere citato in the work cited; m: metre; cm: centimetre; mm: millimetre; Fls.: Flowering; Frts.: Fruiting; var.: variety

In the descriptions of plants, the measurements are given in metric system and usually at the end of each unit. The measurements refer to length, breadth or height eg. Herbs '30-60 cm' means that the plants are 30-60 cm high; leaves '3-8 x 2-5 cm' means that the leaves are 3-8 cm long and 2-5 cm broad.

Field and herbarium study : Forests of Raigad district were explored extensively in different seasons. Specimens collected are deposited in the BSI herbarium, Pune. There are specimens in the same herbarium collected by Cooke, his collectors and other Botanists from Raigad district were studied referred critically and data incorporated. Similarly before finalizing the present text, Blatter herbarium, Bombay was also consulted for collections made by Rev. Father Santapau, Dr. Irani etc. from Karjat and Matheran etc.

Cryptogams (pteridophytes) are also enumerated family wise following the classification of Nayar (1970) with a little modification of Pichi-sermolli (1965, 1970, 1982). Originial citation for each species along with a recent reference of monographic or revisionary work, basionym, reference to Baker (1984, Repr. ed.), or Beddome's Hand book

(1969, Repr.ed.), short description, habitat, frequency, fertile period, distribution and uses (if any) are given.

KEY TO FAMILIES

1a. Ovules encased in ovary formed by the stigma bearing carpels; flowers not or very rarely arranged in cones:

2a. Leaves reticulately veined; flowers typically 5-to 4-merous, rarely 3-merous; vascular bundles of stem arranged in ring :

3a. Plants insectivorous; leaves modified into flat or dish-like sticky structures or bladders :

4a. Leaves flat, sticky with gland-tipped hairs at margins; petals free, not spurred; fertile stamens 5-20; ovary with parietal placentation ... DROSERACEAE 50

4b. Leaves modified into subovoid bladders with sensitive trap doors; petals united, spurred at base; fertile stamens 2; ovary with free-central placentation ... LENTIBULARIACEAE 100

3b. Plants not insectivorous; leaves not modified for traping insects :

5a. Petals free; flowers dichlamydeous :

6a. Calyx of distinct sepals; ovary superior or immersed in the disk :

7a. Torus small or elongated; not expanded:

8a. Plants aquatic :

9a. Leaf margins entire; petioles attached almost at the centre of orbicular leaves; carpels free, sunken in pits ... NELUMBONACEAE 6

9b. Leaf margins sharply dentate; petioles attached at the base of sagittate or cordate leaves; carpels conf -luent, not sunken in pits ... NYMPHAEACEAE 7

8b. Plants terrestrials :

10a. Stamens numerous (15 or more) :

11a. Carpels distinct or solitary :

12a. Herbs ... RANUNCULACEAE 1

12b. Trees or shrubs :

13a. Leaves stipulate ... MAGNOLIACEAE 3

13b. Leaves exstipulate :

14a. Sepals 3, valvate, usually caducous; seeds with copious ruminate endosperm ... ANNONACEAE 4

14b. Sepals 5, imbricate, persistent; seeds without ruminate endosperm ... DILLENIACEAE 2

11b. Carpels syncarpous; ovary unite or multilocular :

15a. Plants not succulent; ovary superior; placentation parietal, axile or sometimes basal ;

15a. Placentation parietal :

17a. Ovary elevated on a gynophore ... CAPPARACEAE 10

17b. Ovary sessile :

18a. Sepals 2; fruit a capsule, dehiscing by apical pores; flowers bisexual; stamens indefinite ... PAPAVERACEAE 8

18b. Sepals 4—5; fruits indehiscent; flowers unisexual; stamens definite ... FLACOURTIACEAE 12

16b. Placentation usually axile, sometimes basal :

19a. Stamens monadelphous or polyadelphous :

20a. Fruits indehiscent with a fleshy or pulpy pericarp ... CLUSIACEAE 18

20b. Fruits capsular, not as above :

21a. Anthers 1-celled :

22a. Herbs or shrubs rarely trees; leaves simple; pollen grains spiny ... MALVACEAE 20

22b. Trees; leaves compound; pollen grains smooth ... BOMBACACEAE 21

21b. Anthers 2- celled ... STERCULIACEAE 22

19b. Stamens distinct, anthers 2- celled ... TILIACEAE 23

15b. Plants succulent; ovary 1/2 inferior; placentation free -central or basal-central ... PORTULACACEAE 15

10b. Stamens upto 10 :

23a. Carpels free; twining shrubs ... MENISPERMACEAE 5

23b. Carpels united; herbs, shrubs or trees :

24a. Flowers zygomorphic :

25a. Sepals 5, two inner enlarged, petaloid; stamens 8; placentation axile ... POLYGALACEAE 19

25b. Sepals 2 or 5, not enlarged; stamens 5 or 6; placentation axile ... VIOLACEAE 11

24b. Flowers actinomorphic :

26a. Leaves scale-like; seeds plumose or winged ... TAMARICACEAE 16

26b. Leaves well developed; seeds not as above :

27a. Placentation parietal :

28a. Petals cruciform; stamens tetradynamous ... BRASSICACEAE 9

28b. Petals not cruciform; stamens if six, not tetradynamous ... CAPPARACEAE 10

27b. Placentation free-central, axile or basal:

29a. Placentation free central :

30a. Sepals 2 ... PORTULACACEAE 15

30b. Sepals 5 ... CARYOPHYLLACEAE 14

29b. Placentation axile or sometimes basal:

31a. Stamens monadelphous ... STERCULIACEAE 22

31b. Stamens distinct :

32a. Prostrate or suberect herbs; branches without hooks; leaves opposite ... ELATINACEAE 17

32b. Scandent shrubs; branches hooked; leaves alternate ...ANCISTROCLADACEAE 19

7b. Torus thickened or expanded into a fleshy disk :

33a. Placentation parietal; fruits 3-valved elongated capsules ... MORINGACEAE 43

33b. Placentation axile or axile-pendulous; fruits not elongated :

34a. Styles 1-5 free :

35a. Flowers zygomorphic :

36a. Flowers spurred, anthers syngenesious ... BALSAMINACEAE 28

36b. Flowers not spurred, anthers free ... SAPINDACEAE 41

35b. Flowers actinomorphic :

37a. Leaves compound ... OXALIDACEAE 27

37b. Leaves simple :

38a. Leaves opposite :

39a. Leaves (lower surface) and either side of the petiole often glandular; sepals often-biglandular outside; stamens mostly 10 ... MALPIGHIACEAE 25

39b. Leaves, petioles and sepals not as above; stamens mostly 3, rarely 2-5... ... HIPPOCRATEACEAE 37

38b. Leaves alternate :

40a. Flowers with unpleasant odour ... ICACINACEAE 35

40b. Flowers not as above : ...

41a. Erect herbs; flowers in terminal corymbose cymes ... LINACEAE 14

41b. Scandent shrubs; flowers in axillary, solitary racemes or spikes :

42a. Flowers greenish yellow in axillary spikes ... OPILIACEAE 33

42b. Flowers white in axillary, solitary or in clustered racemes ... OLACACEAE 34

34b. Styles more or less connate or solitary :

43a. Leaves aromatic, gland dotted ... RUTACEAE 29

43b. Leaves not as above :

44a. Stamens monadelphous ... MELIACEAE 32

44b. Stamens free, distinct :

45a. Ovules 1 in each cell :

46a. Stems bearing resin passages ... ANACARDIACEAE 42

46b. Stems usually without resin passages :

47a. Leaves simple ... RHAMNACEAE 38

47b. Leaves compound :

48a. Flowers regular; ovary lobed; styles 2-5 ... SIMAROUBACEAE 30

48b. Flowers not regular; ovary entire; styles simple, sometimes divided above ... SAPINDACEAE 41

45b. Ovules usually 2 in each cell; sometimes many :

49a. Plants resinous; leaves gland dotted ... BURSERACEAE 31

49b. Plants not resinous; leaves not gland dotted :

50a. Plants with tendrils :

51a. Erect shrubs, ecirrhose; stamens connate with disk; ovary 3-6-celled ... LEEACEAE 40

51b. Usually scandent and cirrhose shrubs; stamens distinct, free; ovary 2-celled ... VITACEAE 39

50b. Plants without tendrils :

52a. Leaves simple ... CELASTRACEAE 36

52b. Leaves compound :

53a. Prostrate herbs; stamens with appendages; fruits globose with 5, indehiscent cocci, spinous ... ZYGOPHYLLACEAE 26

53b. Trees or shrubs; stamens without appendages; fruits dehiscent, not spinous ... CONNARACEAE 44

6b. Calyx of united sepals; ovary usually included in calyx tube or inferior.

54a. Fruit a legume:

55a. Flowers actinomorphic ... MIMOSACEAE 47

55b. Flowers zygomorphic :

56a. Flowers papilionaceous; odd petal adaxial ... FABACEAE 45

56b. Flowers not papilionaceous; odd petal adaxial ... CAESALPINIACEAE 46

54b. Fruit various but not legume :

57a. Stamens usually indefinite :

58a. Leaves much reduced or 0; succulent, prickly plants with phylloclades: ... CACTACEAE 67

58b. Leaves well developed; plants neither succulent nor with phylloclades:

59a. Calyx free from the ovary (ovary superior):

60a. Leaves stipulate; carpels distinct or solitary ... ROSACEAE 48

60b. Leaves exstipulate; carpels more or less combined :

61a. Petals crumpled in bud when present; leaves not fleshy; placentation usually axile ... LYTHRACEAE 58

61b. Petals absent; leaves often fleshy; placentation basal ... AIZOACEAE 69

59b. Calyx more or less adnate to the ovary (ovary inferior):

62a. Herbs; leaves oblique at base; flowers unisexual; capsules winged ... BEGONIACEAE 65

62b. Trees; leaves equal sided at base; flowers bisexual; fruit a berry or a fibrous drupe, never winged:

63a. Leaves alternate, without intramarginal nerves and not glandular punctate :

64a. Ovary 1-celled :

65a. Fruit a berry ... ALANGIACEAE 71

65b. Fruit a capsule ... DATISCACEAE 66

64b. Ovary 2-4-celled :

66a. Fruit angular, fibrous, 1-seeded ... LECYTHIDACEAE 56

66b. Fruit ovoid or globular, fleshy, many seeded ... BARRINGTONIACEAE 55

63b. Leaves opposite, glandular punctate with intra-marginal nerves ... MYRTACEAE 54

57b. Stamens usually definite, not more than 10 :

67a. Ovary inferior or 1/2 superior:

68a. Aquatic herbs ... TRAPACEAE 61

68b. Terrestrials:

69a. Plants always tendril bearing; flowers unisexual ... CUCURBITACEAE 64

69b. Plants etendriller :

70a. Mangroves or halophytic plants; leaves opposite, stipulate; fruits crowned with persistent calyx teeth; seeds with viviparous germination ... RHIZOPHORACEAE 52

70b. Plants not as above; leaves alternate, if opposite then exstipulate; fruits and seed not as above :

71a. Flowers in simple or compound umbels... APIACEAE 70

71b. Flowers not in umbels :

72a. Herbs :

73a. Capsule trigonous ... MELASTOMATACEAE 57

73b. Capsule sub-globose, linear, cylindric or obcylindric :

74a. Capsule 2-celled, subglobose ... VAHLIACEAE 49

74b. Capsule 4-5-celled, linear-cylindric or obcylindric ... ONAGRACEAE 60

72b. Trees, shrubs or woody climbers ... COMBRETACEAE 58

67b. Ovary superior :

75a. Soft wooded trees with latex; leaves palmatifid to palmatipartite with long, hollow petiole; petals united ... CARICACEAE 63

75b. Herbs or undershrubs without latex; leaves not as above; petals free :

76a. Flowers yellow; placentation parietal ... TURNERACEAE 62

76b. Flowers not pure yellow; placentation axile or basal :

77a. Petals usually present; seeds not reniform, smooth:

78a. Fruit 2-6-celled, capsule ... LYTHRACEAE 58

78b. Fruit many-celled, berry ... SONNERATIACEAE 59

77b. Petals absent; seeds reniform, variously striate, rugulose or muriculate :

79a. Fruit a 3-5-valved capsule or 2-5, 1-seeded cocci ... MOLLUGINACEAE 68

79b. Fruit transversely dehiscing; petiole often dilated at base and forming pouch ... AIZOACEAE 69

5b. Petals united; stamens usually attached to the corolla lobes :

80a. Ovary completely inferior or 1/2 superior :

81a. Inflorescence an involucrate head; calyx absent or variously modified pappus; anthers united in a tube around the style; ovary 1-celled ... ASTERACEAE 73

81b. Inflorescence not as above; calyx present; anthers free or connivent in a ring around the style; ovary 2-or more-celled :

82a. Leaves opposite; stipules inter-or intra-petiolar ... RUBIACEAE 72

82b. Leaves alternate, exstipulate :

83a. Flowers in compact, conical spikes; capsules circumscissile (dehiscing by a transverse slit) ...SPHENOCLEACEAE 75

83b. Flowers in paniculate cymes; capsules not circumscissile ... CAMPANULACEAE 74

80b. Ovary superior :

84a. Leafless, non-green, root or stem parasites :

85a. Stem parasites ... CUSCUTACEAE 96

85b. Root parasites :

86a. Placentation parietal ... OROBANCHACEAE 99

86b. Placentation axile ... SCROPHULARIACEAE 98

84b. Green plants, not parasites :

87a. Carpels more than 2 :

88a. Flowers usually unisexual; stamens inserted on the receptacle ... EBENACEAE 80

88b. Flowers bisexual; stamens inserted on the corolla :

89a. Trees, shrub or woody twiners:

90a. Plants with milky latex ... SAPOTACEAE 79

90b. Plants without milky juic, if at all with watery sap:

91a. Ovary 1-celled ... MYRSINACEAE 78

91b. Ovary2– many celled. ... SYMPLOCACEAE 81

89b. Herbs or undershrubs:

92a. Aquatic herbs ... MENYANTHACEAE 91

92b. Terrestrial herbs or undershrubs ...PLUMBAGINACEAE 76

87b. Carpels 2 (rarely 3-4 and then plants succulent, aquatic) :

93a. Plants with milky latex or greenish-yellow sap :

94a. Pollinia absent; style one; anthers sagittate; stigma hour-glass-shaped or dumbell-shaped ... APOCYNACEAE 84

94b. Pollinia present; styles usually 2; anthers and stigma not as above :

95a. Filaments united; anthers with horny wings ... ASCLEPIADACEAE 85

95b. Filaments free; anthers without horny wings ... PERIPLOCACEAE 86

93b. Plants without milky-latex or greenish-yellow sap :

96a. Flowers actinomorphic or regular:

97a. Inflorescence usually secund or one-sided cymes :

98a. Leaves thick and fleshy; calyx hypogynous scales within the stamens ... CRASSULACEAE 51

98b. Leaves and stamens not as above :

99a. Fruit a capsule; ovules indefinite in each loculus ... HYDROPHYLLACEAE 92

99b. Fruit a drupe, or of four nutlets; ovules definite in each loculus :

100a. Herbs or undershrubs; style entire or shortly 2-lobed ... BORAGINACEAE 93

100b. Trees or shrubs; style once forked or styles 2 ... CORDIACEAE 94

97b. Inflorescence not as above :

101a. Leaves usually alternate:

102a. Plants erect or diffuse, but not twining; ovary 2-celled; ovules many in each loculus on swollen placentas,... SOLANACEAE 97

102b. Plants twining, diffuse or erect; ovary 2-celled; ovules 2 in each loculus or 4-celled with one ovule in each loculus ...CONVOLVULACEAE 95

101b. Leaves all or atleast lower opposite :

103a. Stamens 2 ... OLEACEAE 82

103b. Stamens 4-5 :

104a. Trees or shrubs; rarely herbs then stipules small or reduced :

105a. Ovary 1-celled, 1-2-ovuled ... SALVADORACEAE 83

105b. Ovary 2-celled; ovules usually many in each cell :

106a. Plants with lepidote, stellate or glandular tomentum; intraxylary phloem absent from wood ... BUDDLEJACEAE 87

106b. Plants without such tomentum; intraxylary phloem present in wood :

107a. Trees or shrubs; calyx imbricate or contorted ... LOGANIACEAE 89

107b. Herbs; calyx valvate ... SPIGELIACEAE 88

104b. Herbs, seldom undershrubs :

108a. Ovary 1-celled; placentation not axile :

109a. Placentation free-central; stamens opposite the petals ... PRIMULACEAE 77

109b. Placentation parietal; stamens alternate with petals ... GENTIANACEAE 90

108b. Ovary 2-celled; placentation axile ... SCROPHULARIACEAE 98

96b. Flowers zygomorphic or irregular :

110a. Leaves compound; if simple, seeds winged; fruits elongated ... BIGNONIACEAE 102

110b. Leaves usually simple; seeds not winged; fruit not elongated :

111a. Bracts conspicuous; stems with swollen joints :

112a. Calyx minute, annular or 10-16-toothed; bracteoles large like spathaceous epicalyx; corolla lobes contorted; ovules 2 in each loculus of the ovary ... THUNBERGIACEAE 105

112b. Calyx distinct, 4-5-fid; bracteoles not as above; ovules more than 2 in each loculus ... ACANTHACEAE 106

111b. Bracts minute or absent; stems without swollen joints :

113a. Flowers with extra-floral glands at base of pedicel :

114a. Placentation axile; fruit a capsule or indehiscent and spinous ... PEDALIACEAE 103

114b. Placentation parietal; fruit with hooked prongs ... MARTYNIACEAE 104

113b. Flowers without extra-floral glands at base of pedicels :

115a. Ovules 1 or 2 in each cell:

116a. Inflorescence a verticellaster; style gynobasic; plants aromatic ... LAMIACEAE 109

116b. Inflorescence not as above; style terminal; plants not aromatic :

117a. Plants with pneumato phores, branches prominently nodose; placentation free central; seed germination viviparous ... AVICENNIACEAE 107

117b. Plants without pneumato -phores; branches not nodose; placentation axile; seed germination not viviparous ... VERBENACEAE 108

115b. Ovules many in each loculus :

118a. Placentation axile ... SCROPHULARIACEAE 98

118b. Placentation parietal ... GESNERIACEAE 101

5c. Perianth generally calycine, single or absent :

119a. Ovary superior :

120a. Flowers bisexual :

121a. Perianth absent; vascular bundles in stem scattered as in monocots ... PIPERACEAE 116

121b. Perianth present; vascular bundles not (as above)

122a. Plants parasitic, leafless stem filiform ... LAURACEAE 118

122b. Plants not parasitic; stem not filiform :

123a. Leaves with sheathing ochreate stipules ... POLYGONACEAE 113

123b. Leaves exstipulate :

124a. Trees ... MYRISTICACEAE 117

124b. Herbs, under -shrubs, woody stragglers or twining:

125a. Plants aquatic, growing on rocks in flowing streams ...PODOSTEMACEAE 114

125b. Plants not as above :

126a. Perianth petaloid; fruits glandular ... NYCTAGINACEAE 110

126b. Perianth not petaloid, if petaloid, bracts and bracteoles scarious; fruits not glandular :

127a. Perianth with densely silky hairs or scales :

128a. Stamens 10; style long, filiform; stigma capitate; fruit enclosed in perianth, upto 1.2 cm long ...THYMELAEACEAE 119

128b. Stamens 4; style linear, included; stigma lateral; fruits with 8 ribs, crowned by top of perianth, upto 2.5 cm long ... ELAEAGNACEAE 120

127b. Perianth not as above :

129a. Bracts and bracteoles absent, or if present herbaceous ... CHENOPODIACEAE 112

129b. Bracts and bracteoles scarious ... AMARANTHACEAE 111

120b. Flowers unisexual or polygamous:

130a. Trees or shrubs :

131a. Ovary 3-celled ...EUPHORBIACEAE 123

131b. Ovary 1-celled :

132a. Calyx absent; flowers in erect or pendulous catkins or spikes; leaves muchreduced, scale like; fruits 1-seeded, samaroid nuts crowded in woody cone ... CASUARINACEAE 127

132b. Calyx present; inflorescence various, cymose, spike or hypanthodium; leaves well developed; fruits not as above :

133a. Plants with milky juice; anthers inflexed in bud; leaves not oblique at base; fruit commonly multiple ... MORACEAE 126

133b. Plants with watery sap; anthers erect in bud; fruit a samara, nut or drupe ... ULMACEAE 125

130b. Herbs :

134a. Aquatics; leaves verticillate, dichotomously cleft into filiform, toothed, lobed; stamens 20-30 with 2-toothed or truncate connective ... CERATOPHYLLACEAE 128

134b. Terrestrials; leaves not as above; stamens definite, if indefinite connective not as above :

135a. Ovary 3-celled ... EUPHORBIACEAE 123

135b. Ovary 1-celled :

136a. Leaves exstipulate; bracts and bracteoles scarious ... AMARANTHACEAE 111

136b. Leaves stipulate; bracts and bracteoles when present, not scarious ... URTICACEAE 124

119b. Ovary inferior :

137a. Plants parasitic; flowers actinomorphic :

138a. Root parasites; disc present ... SANTALACEAE 122

138b. Stem parasites; disc absent ... LORANTHACEAE 121

137b. Plants not parasitic; flowers zygomorphic ... ARISTOLOCHIACEAE 115

2b. Leaves usually parallel veined; flowers typically 3-merous; vascular bundles of stem usually scattered :

139a. Leaves palm-like, fan-shaped or pinnate ... ARECACEAE 142 (Palmae)

139b. Leaves not as above:

140a. Perianth present, usually of 2 series, at least the inner petaloid, not of bristles or scales :

141a. Ovary inferior :

142a. Flowers actinomorphic (rarely zygomorphic i.e. irregular) :

143a. Aquatic, sub-mborged herbs ... HYDROCHARITACEAE 129

143b. Terrestrial plants :

144a. Plants twining; flowers unisexual ... DIOSCOREACEAE 137

144b. Plants erect, not twining; flowers bisexual :

145a. Perianth connate in winged or angled tube; capsule more or less 3-winged ... BURMANNIACEAE 130

145b. Perianth and capsule not as above :

146a. Stem false with convolute leaf-sheaths ... MUSACEAE 133

146b. Stem not as above :

147a. Leaves long petiolate, lobed, reticulately veined; flowers umbellate; ovules on parietal placenta ... TACCACEAE 136

147b. Leaves entire, parallel veined; petiole not so long; flowers in racemes; ovules on axile placenta ... HYPOXIDACEAE 135

142b. Flowers zygomorphic :

148a. Corolla spurred; ovary spirally twisted; gynostemium and pollinia present; epiphytic or terrestrial ... ORCHIDACEAE 131

148b. Corolla not spurred; ovary not twisted; gynostemium and pollinia absent; plants terrestrial :

149a. 1/2 stamen fertile ... CANNACEAE 134

149b. 1 stamen fertile ... ZINGIBERACEAE 132

141b. Ovary superior :

150a. Plants aquatic :

151a. Inflorescence with spatho like bract; fruit a capsule ... PONTEDERIACEAE 140

151b. Inflorescence not so; fruit an achene ... ALISMATACEAE 146

150b. Plants terrestial :

152a. Plants climbing or twining :

153a. Flowers unisexual, in umbels; anthers 1-celled; leaves 3-5-nerved with reticulate venation ... SMILACACEAE 139

153b. Flowers bi-sexual, in racemes; anthers 2-celled; leaves parallel veined or some -times branches reduced to cladodes ... LILIACEAE 138

152b. Plants not as above ;

154a. Flowers in terminal, solitary compact head; leaves radical ... ERIOCAULACEAE 148

154b. Flowers and leaves not as above :

155a. Outer and inner segments of perianth alike, petaloid ... LILIACEAE 138

155b. Outer sogement of perianth calyxlike and different from the inner corolla segment ... COMMELINACEAE 141

140b. Perianth absent at least in male flowers or rudimentary or of scales or bristles not petaloid :

156a. Perianth absent; flowers with dry, chaffy, imbricating bracts or glumes :

157a. Stem trigonous; leaves not ligulate; fruit a compressed or trigonous nut ... CYPERACEAE 149

157b. Stem hollow, cylindrical or flattened; leaves ligulate; fruit a caryopsis ... POACEAE 150 (GRAMINEAE)

156b. Perianth represented by scales or bristles; if perianth absent, inflorescence not made up of spikelets; flowers without glumes or scales :

158a. Plants submerged or floating :

159a. Plants floating; stem stoloniferous; perianth absent or of a few scales ... ARACEAE 145

159b. Plants submerged; stem tuberous, creeping or absent; perianth absent or 2-lipped ... NAJADACEAE 147

158b. Plants not submerged or floating :

160a. Plants monoecious; male above and female below on the same axis, in spikes; leaves not spinulose :

161a. Inflorescence with spathaceous bracts; plants tuberous ... ARACEAE 145

161b. Inflorescence without spathaceous bracts; plants rhizomatous ... TYPHACEAE 144

160b. Plants dioecious; leaves spinulose on margins and keels ... PANDANACEAE 143

1b. Ovules naked, borne on a floral axis without carpels, flowers arranged in cones ... GNETACEAE 151

1. RANUNCULACEAE

1a. Climbing shrubs; leaves opposite; flowers regular; petals absent; styles feathery; posterior sepal not spurred ... CLEMATIS 1

1b. Herbs; leaves alternate; flowers irregular; petals present; styles not feathery; posterior sepal spurred ... DELPHINIUM 2

1. CLEMATIS L.

1a. Leaves simple or once ternate; flowers 2.5–4cm across ... *C. triloba* 1

1b. Leaves pinnate; flowers 1.2–2 cm across:

2a. Connective not prolonged beyond anther-lobes; achenes brown, thinly margined ... *C. gouriana* 2

2b. Connective prolonged beyond anther–lobes; achenes orange, thickly margined ... *C. hedysarifolia* 3

1. **Clematis triloba** Heyne ex Roth, Nov. Pl. Sp. 251.1821; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:3. 1872; Birdwood in J. Bombay nat. Hist. Soc. 1:203. 1886; Cooke, Fl. Pres. Bombay 1:2. 1958 (Repr. ed.). *Morvel, Ranjai.*

Extensive climbers; leaves ovate, entire or 2-7-lobed, puberulous on both sides; flowers white, showy in corymbose panicles; achenes silky-villous with long, feathery tails.

Fls. & Frts. : September-November.

In moist deciduous forests, occasional. Matheran.

2. **Clematis gouriana** Roxb. ex DC. Syst. 1:138. 1818; Wight, Icon. tt. 933 & 934. 1845; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:4. 1872; Cooke, Fl. Pres. Bombay 1:2. 1958 (Repr. ed.). *Morvel.*

Large climbers; leaflets ovate-elliptic, sparsely hairy beneath, 3.2-7x1.4-4.5 cm; flowers greenish-yellow, fragrant, on axillary or terminal, much branched panicles; achenes ovoid, hairy.

Fls. & Frts. : October-April.

On trees along hilly forests, infrequent. Matheran; Varandh ghat.

3. **Clematis hedysarifolia** DC. Syst. 1: 148.1818; Hook.f & Thoms. in Hook.f. Fl.Brit. India 1:4. 1872; Cooke, Fl. Pres. Bombay 1:3.1958 (Repr.ed.); A.S. Rao in Bull. Bot. Surv. India 6 (1):19.1964. *Bendrichivel, Mor-vel.*

Woody climbers; leaflets ovate-lanceolate, glabrous, 4.2-10.5x1.8-5.6 cm; flowers creamy–yellow in decompound panicles; achenes ovoid–obovoid, compressed with feathery tails.

Fls. & Frts. : October-March.

In deciduous forests and upper ghats, frequent. Matheran; Neral to Matheran; Parhur reserve forest, Alibag; Varandh ghat.

The type locality of this plant is (Dasgam) Dasgaon, Mahad.

2. DELPHINIUM L.

Delphinium malabaricum (Huth) Munz in J. Arnold Arb. 49:106. 1968. *D. dasycaulon* var. *malabaricum* Huth Bot. Jahrb. 20:435. 1895. *D. dasycaulon auct. non* Fres. (1837); Hook.f. & Thoms. in Hook.f. Fl. Brit. India 1:25. 1872; Cooke, Fl. Pres. Bombay 1:5. 1958 (Repr. ed.).

Hairy herbs; leaves reniform, 5-7 lobed; lobes trapezoidal with few hairs on upper surface and nerves beneath; flowers deep blue to white in terminal racemes; follicles 3, straight, upto 1cm.

Fls. & Frts : October-November.

On rocky slopes among grasses, rare. Matheran, *Irani* 4736-8, 5519 (BLAT).

2. DILLENIACEAE

DILLENIA L.

1a. Flowers white, solitary, *ca* 15 cm across	...	*D. indica* 1
1b. Flowers greenish-yellow; fascicled, *ca* 2.5 cm across	...	*D. pentagyna* 2

1. **Dillenia indica** L.Sp. Pl. 538. 1753; Hook. f. & Thoms. in Hook. f. Fl.Brit. India 1:36. 1872; Cooke, Fl. Pres. Bombay 1:6.1958 (Repr.ed.); Mukerjee in Bull. Bot. Surv. India 3:351. 1962; Majumdar in Fasc. Fl. India 2: 6. t.1.1979. *Mota Karmal.*

Trees, 20–30m; leaves oblong to oblanceolate, sharply serrate, 20–30x8–12 cm; flowers solitary, terminal, appearing with leaves; fruits 8–10 cm across, yellowish–green; seeds many

Fls. & Frts. : June–March.

In deciduous forests, infrequent. Bandhan village, Karjat.

Sepals of the flowers are eaten by natives. It is also used to cure cough.

2. Dillenia pentagyna Roxb. Pl. Cor. 1:21. t. 20.1795; Hook. f. & Thoms. in Hook.f. Fl. Brit. India 1:38. 1872; Cooke, Fl. Pres. Bombay 1:7. 1958 (Repr.ed.); Mukerjee in Bull. Bot. Surv. India 3:352.1962; Majumdar in Fasc. Fl. India 2:7. 1979. *Karmbel.*

Trees, upto 25m; leaves elliptic–obovate, dentate, lateral nerves often forked towards margins, 35–50x20–30 cm; flowers fascicled on shoots, appearing before leaves; fruits 15mm across, yellow–red; seeds solitary.

Fls. & Frts. : March–May.

In deciduous and semi–evergreen forests, frequent. Bhira; Indapur; Matheran; Roha.

Leaves are used for thatching as roofs. Flower buds and fruits are said to be edible.

3. MAGNOLIACEAE

MICHELIA L.

Michelia champaca L. Sp. Pl. 536. 1753; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:42. 1872; Cooke, Fl. Pres. Bombay 1:8. 1958 (Repr. ed.). *Pivla champa, Son champa.*

Evergreen trees; leaves lanceolate, glabrous above, sparsely hairy beneath; flowers yellow; capsules dark–brown; seeds orbicular, reddish–brown.

Fls. & Frts. : May–September.

Generally planted for its fragrant and attractive flowers near temples, at times found as an escape. Karjat.

4. ANNONACEAE

1a. Scandent shrubs ... UVARIA 1

1b. Trees :

2a. Fruits hairy ... MILIUSA 2

2b. Fruits glabrous :

3a. Petals imbricate ... SAGERAEA 3

3b. Petals valvate ... ANNONA 4

1. UVARIA L.

Uvaria narum (Dunal) Blume, Fl. Java 5. 1828; Birdwood in J. Bombay nat. Hist. Soc. 1:203. 1886; Cooke, Fl. Pres. Bombay 1:9. 1958 (Repr. ed.); Debika Mitra in Fasc. Fl. India 10:18. 1982. *Unona narum* Dunal, Monogr. Fam. Anon. 99. 1817 *pro parte. Uvaria narum* Wall. ex Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:50. 1872. *Naram-panal.*

Extensive climbers; leaves oblong–lanceolate, glabrous, 5–15x2.5–4 cm; flowers solitary, terminal, reddish–brown; fruitlets numerous, cylindric to torulose, stalked.

Fls. &Frts. : November– January.

In hilly forests, infrequent. Matheran.

2. MILIUSA Leschen.

Miliusa tomentosa (Roxb.) Sincl. in Gard. Bull. Singapore 14 : 378.1955. *Uvaria tomentosa* Roxb. Pl.Cor.t. 35. 1795. *Saccopetalum tomento*sum (Roxb.) Hook.f. & Thoms. Fl. Ind.152.1855; & in Hook.f. Fl. Brit. India 1:88.1872; Cooke, Fl. Pres. Bombay 1:17.1958 (Repr.ed.). *Humb.*

Trees,10–15 m; leaves membranous, ovate–oblong, 10–16 x7.5 –9cm; flowers reddish–brown, purple within; fruits subglobose, succulent, stalked.

Fls. & Frts. : February –May.

In deciduous forests, frequent. Mangaon; Matheran; Poladpur.

3. SAGERAEA Dalz.

Sageraea laurifolia (Grah.) Blatt.in J. Bombay nat. Hist. Soc.34:294.1931;Debika Mitra in Fasc. Fl.India 10:7. 1982. *Guatteria laurifolia* Grah. Cat. Pl. Bombay 4.1839. *Bocagea dalzellii* Hook.f. & Thoms. in Hook. f. Fl. Brit. India 1:92.1872; Cooke, Fl. Pres. Bombay 1:18.1958 (Repr.ed.) *Harkinjal, Sajeri.*

Small, evergreen trees; leaves oblong– lanceolate, coriaceous, glabrous, 8.5 –15.6 x4–7.2 cm; flowers white, solitary or in fascicles; fruits globose, sessile, smooth.

Fls. & Frts. : November–January.

Hilly tracts and ravines, frequent. Matheran; Mhasla; Nagothana.

This species is endemic to Western Ghats. It yields good timber.

4. ANNONA L.

1a. Fruits tubercled, 5–10 cm across ... *A. squamosa* 1

1b. Fruits smooth with solid exterior, 10–20 cm across ... *A. reticulata* 2

1. **Annona squamosa** L.Sp. Pl.537.1753; Hook.f. & Thoms.in Hook.f.Fl.Brit. India 1:78.1872; Cooke,Fl.Pres. Bombay 1:15.1958 (Repr.ed.). *Sitaphal.*

Trees, 3–5 m; leaves oblong–lanceolate,pellucido–punctate, glabrous above, glaucous and pubescent beneath when young, 3.2–8.5 x 1.2–4.8 cm; flowers greenish; fruits greenish with brownish–black tinge, subglobose; seeds brownish–black, smooth.

Fls. & Frts.: May –December.

Cultivated, often runs wild or as an escape. Mahad;Neral.

2. **Annona reticulata** L. Sp. Pl. 537.1753; Hook.f. & Thoms. in Hook. f. Fl. Brit. India 1:78.1872;Cooke, Fl. Pres.Bombay 1:15.1958 (Repr.ed.). *Ramphal.*

Trees, 2–4m; leaves obong–lanceolate, membranous,4.8 – 16.2 x 1.5 –3.3 cm; flowers greenish– yellow; fruits yellow with reddish–brown tinge, subglobose or cordate; seeds black, smooth.

Fls. & Frts. : June– September.

Usually cultivated or planted, occasionally as an escape. Alibag; Mangaon; Pen; Shrivardhan.

Cultivated or introduced :

1. **Polyalthia cerasoides** (Roxb.) Hook. f. & Benth. ex Hook.f. & Thoms. in Hook.f. Fl.Brit.India1:63. 1872; Cooke, Fl. Pres. Bombay 1:14. 1958 (Repr. ed.).*Uvaria cerasoides* Roxb. Pl. Cor. t. 33. 1795. *Hoom,Vabbina.*

Large shrubs or small trees; leaves oblong–lanceolate, glabrous or sparsely hairy beneath; flowers greenish; fruits ovoid, apiculate, upto 1 cm.

Ornamental in gardens.

2. **Polyalthia longifolia** (Sonn.) Thw. Enum. Pl. Zeyl. 398. 1864; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:62. 1872; Cooke, Fl. Pres.

Bombay 1:13. 1958 (Repr.ed.). *Uvaria longifolia* Sonn. Voy. Ind. Orient. 2:233. t. 131. 1782. *Ashok.*

Trees, 8–12m; leaves narrowly lanceolate, glabrous, shining, wavy; flowers yellowish–green; fruits ovoid–oblong, 1–2 cm.

Planted in gardens as an avenue tree.

5. MENISPERMACEAE

1a. Inflorescence arising directly from old wood :

- 2a. Stamens free; drupelets compressed ... DIPLOCLISIA 1
- 2b. Stamens connate; drupelets subglobose ... ANAMIRTA 2

1b. Inflorescence arising from the leaf axils:

- 3a. Leaves peltate; anthers connate; carpels solitary :
  - 4a. Inflorescence of compound umbels; leaves glabrous ... STEPHANIA 3
  - 4b. Inflorescence not of compound umbels; leaves pubescent :
    - 5a. Leaves as long as broad;pistillate flowers with foliaceous bracts ... CISSAMPELOS 4
    - 5b. Leaves longer than broad; pistillate flowers without foliaceous bracts ... CYCLEA 5
- 3b. Leaves not peltate; anthers free; carpels 3 or more :
  - 6a. Leaves cordate at base; bark corky; seeds reniform ... TINOSPORA 6
  - 6b. Leaves rounded or subcordate at base; bark not corky;seeds round or oblong ... COCCULUS 7

1. DIPLOCLISIA Miers

Diploclisia glaucescens (Blume) Diels in Engl. pflanzenr. 46:225.t.77.1910. *Cocculus glaucescens* Blume, Bijdr. 25.1825.*C. macrocarpus* Wight & Arn. Prodr. 13.1834; Hook.f. & Thoms. in Hook.f. Fl.Brit.India 1:101.1872; Cooke, Fl.Pres.Bombay 1:22.1958 (Repr. ed.). *Batki, Vatoli, Vatoyel.*

Extensive, woody climbers with brownish bark; leaves variable, broader than long, mucronate, 5–nerved, 4.6–11.5 x 6.5–14 cm; flowers bright yellow; drupes pendulous, glaucous–green, obovoid–oblong.

Fls. & Frts. : February–May.

In moist deciduous forests, frequent. Matheran; Sudhagad; Varandh ghat.

Leaves used as wrappers for making bidis.

2. ANAMIRTA Colebr.

Anamirta cocculus (L.). Wight & Arn. Prodr. 446.1834; Hook.f. & Thoms. in Hook. f. Fl. Brit. India 1:98. 1872. *Menispermum cocculus* L. Sp. Pl. 340.1753. *Anamirta paniculata* Colebr. in Trans. Linn. Soc. 13:66. 1821; Cooke, Fl. Pres. Bombay 1:20. 1958 (Repr.ed.). *Kakphali.*

Scandent shrubs; leaves broadly ovate, cordate or truncate, subcoriaceous, 10–20 x 7–13 cm; flowers greenish–white in branched panicles; drupelets white, turning purple–black at length.

Fls. & Frts. : January.

In deciduous forests, Konkan.

The plant is enlisted in forest working plan (1951–52) and also in Gazetteer of Kolaba district (Rev. ed. 1964).

3. STEPHANIA Lour.

Stephania japonica (Thunb.) Miers in Ann. Mag. Nat. Hist. Ser. 3, 18:14. 1866; Banerji in J. Bombay nat. Hist. Soc. 51:420. 1953. *Menispermum japonicum* Thunb. Fl. Jap. 193. 1784. *Stephania hernandifolia sensu* Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:103. 1872; Cooke, Fl. Pres. Bombay 1:23. 1958 (Repr. ed.). *non* Walp. (1842). *Clypea hernandifolia* Wight & Arn. Prodr. 14.1834; Wight, Icon. t. 939. 1845.

Twining shrubs;leaves broadly ovate, peltate, acute–acuminate, 4–10.5 x 3–8.2 cm; flowers greenish–yellow, minute; drupes solitary, oboviod, red at maturity.

Fls.& Frts. : August– October.

In hilly forests, infrequent; Pachhad, Mahad.

4. CISSAMPELOS L.

Cissampelos pareira L. var. **hirsuta** (Buch.–Ham.ex DC.) Forman in Kew Bull. 22:356.1968. *C. hirsuta* Buch.–Ham.ex DC. Syst. Nat.1:535.1817. *C. pareira* L. Sp.Pl. 1031. 1753; Hook.f. & Thoms. in

Hook. f. Fl. Brit. India 1:103. 1872; Cooke, Fl. Pres. Bombay 1:24. 1958 (Repr. ed.) *Pahadvel, Pedachi vel.*

Slender, climbing shrubs; leaves ovate–orbicular, reniform, alternate, silky pubescent beneath, 3.5–7.4 x 3.5–7.5 cm; flowers greenish–yellow, minute; drupes rounded, green to reddish –brown with transversely ridged endocarps.

Fls. & Frts. : May – October.

On hedges and small trees, frequent. Alibag; Karnala bird sanctuary; Mazheri; Mhasla; Neral to Matheran; Phansad forests, Murud.

The leaves and roots are used medicinally. The stem yields a strong fibre.

5. CYCLEA Arn. ex Wight

Cyclea peltata (Lam.) Hook.f. & Thoms. Fl. Ind. 201.1855 & in Hook. f. Fl. Brit. India 1:104. 1872; Cooke, Fl. Pres. Bombay 1:25. 1958 (Repr. ed.); Sant. & Janardhanan in Bull. Bot.Surv. India 10:368. 1969. *Menispermum peltatum* Lam. Encycl. 4: 96. 1797. *Cyclea burmanni* Hook. f. & Thoms. *op. cit.*; Cooke, *op. cit. Pakar, Parvel.*

Climbers; leaves ovate, apex acute, base cordate and broadly hastate, glabrous above, pubescent beneath, 4.2–16.8 x 3–12 cm; male inflorescence longer than female; drupes white, turning black, hairy, glabrescent at length.

Fls.& Frts. : September–March.

On hedges and in hilly forests, frequent. Alibag fort; Bhira ; Matheran; Mazheri to Shivthalgad; Roha.

6. TINOSPORA Miers

1a. Plants hairy;leaves 10–20 x 9–16 cm, densely hairy beneath ... *T. sinensis* 1

1b. Plants glabrous; leaves 8–9 x 2.5–6 cm, glabrous ... *T. cordifolia* 2

1. **Tinospora sinensis** (Lour.) Merr. in Sunyatsenia 1: 193. 1934; Raiz. in Indian Forester 94:452. 1968. *Campylus sinensis* Lour. Fl. Cochinch. 113. 1790. *Tinospora malabarica* (Lam.) Miers in Ann. Hist. Nat. Ser. 2, 7 :38. 1851; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:96. 1872; Cooke, Fl.Pres. Bombay 1: 19. 1958 (Repr. ed.). *Garudvel.*

Large, woody, climbers with warty bark; leaves broadly ovate, apex acuminate, cordate; flowers green in racemes; drupes reddish, ovoid, smooth; endocarp with prominent tubercles.

Fls. & Frts. : May–June.

In moist forests, occasional. Matheran; Murud.

2. **Tinospora cordifolia** (Willd.) Miers ex Hook. f. & Thoms. Fl. Ind.184. 1855 & in Hook f. Fl. Brit. India 1: 97. 1872; Cooke, Fl. Pres. Bombay 1: 20 1958 (Repr.ed.). *Menispermum cordifolium* Willd. Sp. Pl. 4: 826. 1806. *Cocculus cordifolius* (Willd.) DC. Syst. 1:517. 1817; Wight, Icon. tt. 485 & 486. 1841. *Gulvel.*

Extensive climbers with corky, greyish–white bark; leaves ovate–cordate; flowers greenish–yellow; males in fascicles, females solitary; drupes red, globose; endocarp smooth, without tubercles.

Fls. & Frts. : September –February.

On hedges and bushes, frequent. Panvel; Shrivardhan sea– coast.

Leaves, stems and roots are used medicinally to cure fever, blood pressure and swellings.

7. COCCULUS A.P. DC. *nom. cons.*

Cocculus hirsutus (L.) Theob. in Mason, Burma ed. Theob. 2:657. 1883; Mabb. in Taxon 34:155. 1985. *Menispermum hirsutum* L. Sp. Pl. 341. 1753. *Cocculus villosus* DC. Syst. Nat. 1: 525. 1817; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:101. 1872; Cooke, Fl. Pres. Bombay 1:22. 1958. (Repr. ed.). *Tan, Vasanvel.*

Scandent herbs; young parts softly villous; leaves ovate–oblong, subdeltoid or hastate, at length glabrous, 1.2 – 6.5 x 0.6 – 4.3 cm; greenish–yellow in axillary clustered cymes; drupes purplish-black, transversely rugose.

Fls. & Frts. : Greater part of the year.

On hedges of cultivated fields and on other shrubs, frequent. Janjira fort, Murud; Karjat; Kolaba fort, Alibag; Nagothana; Panvel;. Roha to Sanegaon.

6. NELUMBONACEAE

NELUMBO Adans.

Nelumbo nucifera Gaertn. Fruct. 1: 73. t. 19. f. 2. 1788; Subr. Aquat. Ang. 8: f. 4. 1962. *Nelumbium speciosum* Willd. Sp. Pl. 2: 1258. 1800; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:116. 1872; Cooke, Fl. Pres. Bombay 1: 28. 1958 (Repr. ed.).

Aquatic, rhizomatous herbs; leaves orbicular, glaucous–green, glabrous, margins upturned; flowers pink, solitary, above water; torus turbinate, 2–3 cm; fruits ovoid, glabrous, 6–10 cm across.

Fls. & Frts. : Grearter part of the year.

In ponds and lakes, frequent. Alibag; Vavarli village on way to Panvel from karjat.

A monotypic genus with attractive, beautiful, coloured flowers. Rhizome and thalamus are edible. Seeds also said to be edible and medicinal.

7. NYMPHAEACEAE

NYMPHAEA L. *nom. cons.*

1a. Leaves regularly toothed, prominently nerved and velvety tomentose beneath; anthers not appendaged; calyx 5–10 nerved ... *N.pubescens 1*

1b. Leaves irregularly toothed, not prominently nerved and sparsely tomentose beneath; anthers appendaged; calyx not nerved ... *N. nouchali 2*

1. **Nymphaea pubescens** Willd. Sp. Pl. 2: 1154. 1799. *N. lotus* var. *pubescens* Hook. f. & Thoms. Fl. Ind. 241. 1855 & in Hook. f. Fl. Brit.India 1: 114. 1872 *non* L. (1753); Cooke, Fl.Pres. Bombay 1:27. 1958 (Repr. ed.). *N. nouchali auct.* non Burm. f. (1768); Subr. Aquat. Ang. 6. t. 1. f. 2. 1962. *Kamal.*

Floating herbs; leaves orbicular or reniform, base broadly cordate, glabrous, often nigro–punctate above; flowers rosy–red or pale blue; fruits fleshy, globose; seeds small, ellipsoid.

Fls. &Frts. : Throughout the year.

In ponds, frequent. Dasgaon, Mahad.

2. **Nymphaea nouchali** Burm. f. Fl. Ind. 120. 1768. *N. stellata* Willd. Sp. Pl. 2: 1153. 1799; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:114. 1872; Cooke, Fl. Pres. Bombay 1: 27. 1958 (Repr. ed.); Subr. Aquat. Ang. 6. f. 1. 1962. *Pivla Kamal.*

Aquatic, floating, perennial herbs; leaves membranous, elliptic to orbicular, base acutely cordate or sagittate, glabrous, 10– 22.5 x 12–25.2 cm; flowers white; fruits globose; seeds small, ovoid–ellipsoid, longitudinally striate.

Fls. & Frts. : Throughout the year.

In ponds and small ditches, frequent. Alibag; Ghosale, Roha; Matheran.

Though the petals are pure white, the sepals are having a light brownish–yellow colour and hence the natives generally call the plant, Pivla Kamal.

8. PAPAVERACEAE

ARGEMONE L.

Argemone mexicana L. Sp. Pl. 508. 1753; Wight, Ill. 1: t. 11. 1840; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:117. 1872; Cooke, Fl. Pres. Bombay 1: 29. 1958 (Repr. ed.).

Erect, prickly, suffruticose herbs with yellow latex; leaves radical and cauline, sessile to sub–amplexicaul, pinnatifid to pinnatipartite, spiny on margins and veins; flowers bright yellow, solitary; capsules spiny ; seeds small, many, blackish–brown, globose.

Fls. & Frts. : Almost throughout the year.

In moist soil, frequent.Along nala side, Neral; along Savitri river in Dasgaon, Mahad.

An exotic weed, often trouble–some usually found growing along road sides, wastelands, river sides etc. Oil extracted from the seeds is used in soap industry.

9. BRASSICACEAE
(CRUCIFERAE)

1a. Leaves simple ; pods upto 6.5 cm long, linear ... BRASSICA 1

1b. Leaves pinnate; pods upto 16 cm long, linear-lanceolate ... CARDAMINE 2

1. BRASSICA L.

Brassica juncea (L.) Czern. & Coss. ex Coss. in Bull. Soc. Bot. France 6 : 609. 1859; Hook. f. & T. Anders. in Hook. f. Fl. Brit. India 1: 157. 1872; Cooke, Fl. Pres.Bombay 1:37.1958 (Repr.ed.). *Sinapis juncea* L. Sp. Pl. 668.1753

Erect herbs, 50–100 cm; leaves radical and cauline, former lyrately pinnatifid, later oblong–lanceolate; flowers yellow in terminal and axillary racemes; pods appressed to spreading from floral axis, linear; seeds blackish–brown, spherical.

Fls. &Frts. : February–May.

Often cultivated for its seeds, also as an escape in fields, frequent. Matheran.

2. CARDAMINE L.

Cardamine trichocarpa Hochst. ex Rich. Tent. Fl. Abyss. 1:18. 1847. *C. subumbellata* Hook. f. & T. Anders. in Hook. f. Fl. Brit. India 1: 138. 1872; Cooke, Fl. Pres. Bombay 1: 32. 1958 (Repr. ed.).

Prostrate or suberect herbs; leaves 5–7 segmented, ovate–elliptic, sparsely hairy beneath; flowers yellow in racemes; pods linear–lanceolate, compressed, shortly beaked; seeds minute, reddish–brown.

Fls.& Frts. : June– August.

On hill slopes, rock–crevices or in shady places, frequent. Matheran; Raigad.

Cultivated or introduced:

Raphanus sativus L. Sp. Pl. 669. 1753; Hook.f. & T. Anders. in Hook. f. Fl. Brit. India 1 : 166. 1872; Cooke, Fl. Pres. Bombay 1:37. 1958 (Repr. ed.). *Mula*.

Biennial,hairy herbs; leaves radical, lyrate, pinnatifid, cauline, linear–lanceolate; flowers yellow in terminal racemes; pods ovoid lanceolate, green, septate; seeds brown.

Largely cultivated for its roots (mula) and fruits (Dingri). Leaves also used as a vegetable.

10. CAPPARACEAE

1a. Shrubs, trees or woody climbers; leaves simple; ovary with a gynophore; fruit a globose or ellipsoid berry ... CAPPARIS 1

1b. Herbs; leaves simple or compound; ovary sessile, seldom on a gynophore; fruit a beaked, cyclindrical capsule ... CLEOME 2

1. CAPPARIS Tourn. ex L.

1a. Flowers in corymbose cymes ... *C. moonii* 1

1b. Flowers in umbellate cymes or axillary, solitary, sometimes in fascicles of 2–3 :

2a. Flowers in umbellate cymes :

3a. Erect shrubs with normal branching; spines straight, 0.5 – 1 cm long; leaves small, ovate – orbicular ... *C. rotundifolia* 2

3b. Scandent shrubs with zigzag branching ; spines recurved, 0. 2–0.3 cm long; leaves comparatively large, oblong–lanceolate ... *C. sepiaria* 3

2b. Flowers axillary, solitary or in fascicles of 2– 3 :

4a. Large shrubs or small trees; spines straight ... *C. divaricata* 4

4b. Scandent shrubs or undershrubs; spines recurved:

5a. Scandent shrubs; leaves ovate–oblong ... *C. zeylanica* 5

5b. Diffusely branched undershrubs; leaves orbicular ... *C. spinosa* 6

1. **Capparis moonii** Wight, Ill. 1:35. 1840; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 175. 1872; Cooke, Fl. Pres. Bombay 1: 49. 1958 (Repr. ed.); Jacobs in Blumea 12:472.1965. *Wagati.*

Robust, woody climbers; leaves elliptic–oblong with a callus tip, glabrous, 7–10 x 3–5 cm; flowers white; fruits subglobose, 5–10 cm across, on a thick, woody stalk; seeds many, reddish–brown, ovoid.

Fls. & Frts. : February–September.

On trees, in crevices of walls, occasional. Janjira fort and Phansad forests, Murud.

2. **Capparis rotundifolia** Rottl. Neue. Schr. Ges. Naturf. Fr. Berlin 4: 185. 1803 ; Jacobs in Blumea 12: 485. 1965.*C. pedunculosa* Wall. ex Wight & Arn.var. *longispina* Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:176. 1872; Cooke, Fl. Pres. Bombay 1:51. 1958 (Repr. ed.). *Katya busuk, Kolisna.*

Armed shrubs; leaves 1–1.5 x 0.5–1.3 cm; stipular spines acicular; flowers creamy–white; fruits globose; seeds solitary.

Fls. & Frts. : Almost throughout the year.

Along the ghats or in open forests, frequent. Karlekhind, Alibag; on way to Panorma point, Matheran.

3. **Capparis sepiaria L.** Syst. Nat. (ed. 10) 2:1071. 1759; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 177. 1872; Cooke, Fl. Pres. Bombay 1: 51. 1958 (Repr. ed.). *Kanthar.*

Scandent shrubs; leaves emarginate, 2.5–5 x 1.4–2.5 cm; flowers white; fruits globose, green-black, long stalked.

Fls. & Frts. : February–September.

On hedges of cultivated fields and bushes in deciduous forests, frequent. Dhamni forests, Pen; Parhur Reserve forests & Revas, Alibag; Survey & Phansad forests, Murud.

4. **Capparis divaricata** Lam. Encycl. 1:606. 1785; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 174. 1872; Cooke, Fl. Pres. Bombay 1: 48.1958 (Repr.ed.).

Large shrubs or small trees; leaves ovate to narrowly oblong or lanceolate,3.2–6.5 x 1.2–1.7 cm; flowers greenish; fruits scarlet, sub–globose,ribbed,5 cm across.

Fls. & Frts. : February–April.

In deciduous forests, infrequent. Mahad.

5. **Capparis zeylanica L.** Sp.Pl. (ed. 2) 720. 1762; Jacobs in Blumea 12 : 505. f. 33.1965. *C. horrida* L. f. Suppl. 264.1781; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 178. 1872; Cooke, Fl. Pres. Bombay 1:51.1958 (Repr.ed.). *Tarati, Vagoti.*

Scandent shrubs; leaves mucronate, 1.7– 4.8 x 0.8– 2.2 cm; flowers greenish or creamy–white, supra–axillary; fruits reddish, ovoid–globular, upto 4cm across, stalked.

Fls. & Frts. : November–June.

In deciduous forests, frequent. Indapur; Matheran; Saral village, Revas.

Fruits are used in curries and eaten as a vegetable.

6. Capparis spinosa L. Sp. Pl. 503. 1753; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:173. 1872; Cooke, Fl. Pres. Bombay 1:47. 1958 (Repr. ed.); Jacobs in Blumea 12:416. 1965. *Kabar, Kalvari.*

Undershrubs; leaves glaucous–green, glabrescent, 0.5–1.2 x 0.4–1.2 cm; flowers yellowish, solitary, axillary; fruits obovoid, ribbed, 2.5–5 cm across.

Fls. & Frts. : February–March.

On hills and in rock crevices, frequent. Mirya dongar, Pen; Raigad.

Flower buds are used as condiment.

2. CLEOME L.

1a. Plants glabrous or scarcely hairy; flowers rosy; capsules glabrous; seeds echinate ... *C. chelidonii* 1

1b. Plants viscous with glandular hairs; flowers yellow; capsules glandular pubescent; seeds transversely striate ... *C. viscosa* 2

1. Cleome chelidonii L. f. Suppl. 300. 1781; Hook .f. & Thoms. in Hook. f. Fl. Brit. India 1:170. 1872; Cooke, Fl. Pres. Bombay 1:42. 1958 (Repr. ed.). *Polanisia chelidonii* DC. Prodr. 1 : 242 1824; Wight, Icon. t. 319. 1840.

Erect, much branched herbs; leaves 3–7 foliolate; leaflets oblong–obovate, appressed hairy, 5–7 x 3–5 cm; flowers in terminal and axillary racemes; capsules slender, cyclindric, striate.

Fls. & Frts. : July –February.

In moist places, infrequent. Nadgaon, Mahad.

2. Cleome viscosa L. Sp. Pl. 672.1753; Wight, Icon. t. 2. 1838; Hook. f. & Thoms. in Hook. f. Fl. Birt. India 1: 170. 1872; Cooke, Fl. Pres. Bombay 1:41. 1958 (Repr.ed.). *Pivli tilvan, Ran siras.*

Aromatic herbs; leaves 3–5 foliolate; leaflets elliptic–oblong or oblanceolate; flowers axillary or in racemes; capsules terete, obliquely striate.

Fls. & Frts. : August–June.

In waste places and open forests, frequent. Mandatna to Pangloli Reserve forests, Mhasla.

11. VIOLACEAE

HYBANTHUS Jacq.

Hybanthus enneaspermus (L.) F. v. Muell. Fragm. 10: 81 1876; Banerjee & Pramanik in Fasc. Fl. India 12:2. ff. 1–6. 1983. *Viola enneasperma* L. Sp. Pl. 2:937. 1753. *Ionidium heterophyllum* Vent. Jard. Malm. in addn. sub. t. 27. 1803; Cooke, Fl. Pres. Bombay 1: 55. 1958 (Repr. ed.). *I. suffruticosum* (L.) Roem. *et* Schult. Syst.Veg. 5:394. 1819; Wight, Icon. t. 308. 1840; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1:185 .1872. *Ratanparas.*

Suffruticose, perennial herbs, 16–30 cm; leaves variable, oblong–lanceolate, mucronate, crenate or serrate, 2.4 – 6 x 0.3 –0.7 cm; flowers red, axillary , solitary; capsules subglobose.

Fls. & Frts. : October–December.

In hilly forests, infrequent. Karjat, *Santapau* 11100 **(BLAT).**

12. FLACOURTIACEAE

1a. Plants unarmed; leaves gland–dotted; flowers bisexual; stigma capitate; fruit a capsule; seeds arillate ... CASEARIA 1

1b. Plants armed; leaves not gland–dotted; flowers unisexual ; stigma bi–fid; fruit a drupe; seeds without aril ... FLACOURTIA 2

1. CASEARIA Jacq.

1a. Stipules conspicuously long, lanceolate or subulate ... *C. graveolens 1*

1b. Stipules minute, scaly :

2a. Branches, leaves and calyx glabrous; flowers yellow; capsules 1– 1.3 cm long ... *C. ovata 2*

2b. Branches, leaves and calyx hairy; flowers greenish; capsules 1.5 – 2.5 cm long ... *C. elliptica 3*

1. **Casearia graveolens** Dalz. in Hook. Kew J. Bot. 4:107. 1852; C. B. Cl. in Hook. f. Fl. Brit. India 2:592. 1879; Cooke Fl. Pres. Bombay 1:553. 1958 (Repr. ed.).

Trees, 5–9 m; leaves elliptic–oblong, crenate–serrate, glabrous, 4–18 x 2.5–8.6 cm; flowers greenish, fascicled on leafless branches; capsules ellipsoid, orange–yellow; seeds many.

Fls. &Frts. : February–June.

In deciduous forests, frequent. Bhorgaon to velamen phata; Karnala fort; Matheran; Roha.

2. **Casearia ovata** (Lam.) Willd. Sp. Pl. 2:629.1799; N.Mukherjee in Bull. Bot Surv. India 14:184 (1972) 1975 *Anavinga ovata* Lam. Encycl. 1:148. 1783. *Casearia esculenta* Roxb. Fl. Ind. 2:422. 1832; C. B. Cl. in Hook. f. Fl. Brit. India 2:592. 1879; Cooke, Fl. Pres. Bombay 1:553. 1958 (Repr.ed.). *Mori.*

Large shrubs or small trees, upto 5m; leaves elliptic–oblong, 3–12.2 x 1.5–5 cm; flowers in axillary fascicles; capsules ellipsoid or subglobose, greenish–yellow; seeds many.

Fls. & Frts. : May–August.

Moist deciduous forests,infrequent. Charlote Lake surroundings, Matheran.

3. **Casearia elliptica** Willd. Sp. Pl. 2:628. 1799; Wight, Icon. t. 1849. 1852. *C. tomentosa* Roxb. Fl. Ind. 2:421. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2:593. 1879; Cooke, Fl. Pres. Bombay 1:554. 1958 (Repr. ed.). *Bogada.*

Trees, 4–8 m; leaves elliptic–oblong, base rounded and asymmetrical, glabrous above, tomentose beneath, 5–24.2 x 2.3–10 cm; flowers in axillary fascicles; capsules ellipsoid; seeds many.

Fls.& Frts. : January–May.

In moist deciduous forests, frequent. Matheran; Pachhad.

The fruit juice is used as a fish–poison.

2. FLACOURTIA Comm. ex L'. Herit.

1a.	Mid rib glabrous beneath; fruits less than 1 cm across	...	*F. indica* 1
1b.	Mid rib hairy beneath; fruits more than 1 cm across	...	*F. montana* 2

1. **Flacourtia indica** (Burm.f.) Merr. Interpr. Herb. Rumph. Amb. 377.1917; Sleum. in Fl. Males. Ser. 1,5:76. 1954. *Gmelina indica* Burm. f. Fl. Ind. 132.t. 39. f. 5. 1768. *Flacourtia sepiaria* Roxb. Pl. Cor. t. 68. 1795; Hook. f. & Thoms. in Hook .f. Fl. Brit. India 1:194. 1872; Cooke, Fl. Pres. Bombay 1:60 1958. (Repr. ed.). *F. latifolia* T. Cooke, Fl. Pres. Bombay 1:56. 1901 (1:59. 1958. Repr.ed.). *Atrun, Tambat.*

Deciduous shrubs or small trees; leaves variable, elliptic, ovate or obovate, lanceolate, acute or acuminate, serrate or crenate, 2.4–7 x 1.8–

4.6 cm; flowers greenish–yellow, fascicled on old wood; fruits deep red or purple.

Fls. & Frts. : February–May.

In deciduous forests, frequent. Chaul; Karle–Khind; Karnala fort; Matheran; Murud; Sudhagad.

2. **Flacourtia montana** Grah. Cat. Pl. Bombay 10. 1839; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1 : 192. 1872; Cooke, Fl. Pres. Bombay 1: 58. 1958 (Repr. ed.). *Atki.*

Trees; leaves broadly elliptic–oblong, acute–acuminate, serrate–crenate, 2.8–14.8 x 2.6–7 cm; flowers greenish– yellow in racemes; fruits reddish–brown, ridged.

Fls. & Frts. : November–March.

In moist deciduous forests, infrequent. Heart Point, Matheran.

13. POLYGALACEAE

POLYGALA L.

1a. Racemes 0.8 – 1.7 cm long; capsules densely ciliate at margins ... *P. arvensis 1*

1b. Racemes 4 – 9.5 cm long ; capsules ciliate ... *P. elongata 2*

1. **Polygala arvensis** Willd. Sp. Pl. 3 :876. 1802; Burtt in Notes Roy. Bot. Gard.Edinb. 32: 404.1973. *P. chinensis auct. non* L. (1753); Bennett in Hook. f. Fl. Brit. India 1:204. 1872; Cooke, Fl. Pres. Bombay 1:64. 1958 (Repr. ed.). *Phutani.*

Erect herbs, 10 –20 cm; leaves elliptic – oblong, obovate – oblong, subsessile, glabrous; flowers yellow; capsules orbicular – oblong, upto 5 mm; seeds 2 , black, ellipsoid– oblong, covered with long, white hairs.

Fls. & Frts. : Almost throughout year.

Among grasses in deciduous forests, frequent. Bandhan village, Karjat; Matheran.

2. **Polygala elongata** Klein ex Willd. Sp. Pl. 3: 879. 1802; Bennett in Hook. f. Fl. Brit. India 1:203. 1872; Cooke, Fl. Pres. Bombay 1:64. 1958 (Repr. ed.).

Erect, hairy herbs, 15–40 cm; leaves linear–oblong or obovate,

glabrous above, hairy beneath, 1.3–2.6 x 0.2–0.4 cm; flowers yellow; capsules oblong, unequal–sided; seeds 2, ellipsoid–obovoid, black with short, whitish hairs.

Fls. & Frts. : August–November.

In open deciduous forests, frequent. Alibag; Ghosale; Mangaon.

14. CARYOPHYLLACEAE

1a. Prostrate herbs; leaves minute in whorls, stipulate; flowers minute; sepals free, keeled ... POLYCARPON 1

1b. Erect herbs; leaves large, opposite, exstipulate; flowers large; sepals united, not keeled ... VACCARIA 2

1. POLYCARPON L.

Polycarpon prostratum (Forssk.) Aschers & Schweinf. in Oster. Bot. Zeit. 39:128. 1889. *Alsine prostrata* Forssk. Fl. Aeg.–Arab. 207. 1775. *Polycarpon loeflingiae* (Wall. ex Wight & Arn.) Benth. ex Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1:245. 1874; Cooke, Fl. Pres. Bombay 1:69. 1958 (Repr. ed.).

Herbs, 10–45 cm; leaves thick, obovate–lanceolate or spathulate, appressed hairy, 0.3–1.2 x 0.1–0.3 cm; flowers pinkish; capsules globose–ovoid, enclosed in persistent calyx; seeds minute, numerous, brownish.

Fls. & Frts. : May–June.

As a weed in waste places, infrequent. Matheran; on way to Panvel; Raigad, Roha.

2. VACCARIA Medic.

Vaccaria pyramidata Medic. Phil.Bot. 1: 96.1789. *Saponaria vaccaria* L. Sp. Pl. 409.1753; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1:217. 1874; Cooke, Fl. Pres. Bombay 1:66 .1958 (Repr. ed.). *Sabani.*

Robust herbs, 30–60 cm; leaves oblong–lanceolate, acute or mucronate, sessile, glabrous, 10.5–16.2 x 0.4–1.4 cm; flowers rosy in dichotomously branched corymbs; capsules straw coloured, obovoid, included; seeds brownish–black, granulate, glabrous.

Fls. & Frts. : February–March.

As a weed in cultivated fields and along road-sides, infrequent. Panvel.

15. PORTULACACEAE

PORTULACA L.

Portulaca oleracea L. Sp. Pl. 45. 1753; Dyer in Hook. f. Fl. Brit. India 1:246. 1874; Cooke, Fl. Pres. Bombay 1:72. 1958 (Repr. ed.). *Ghol. Golu.*

Prostrate, succulent herbs with reddish, glabrous stems; leaves fleshy, alternate, opposite or whorled, obovate, sessile, 0.8–2.4 x 0.5–2 cm; flowers yellow in terminal clusters; capsules ovoid–oblong; seeds minute, numerous, black, granulate.

Fls. & Frts. : Throughout the year.

As a weed in waste places, gardens and in cultivated fields, frequent. Alibag; Matheran; Roha.

Leaves used as a vegetable.

16. TAMARICACEAE

TAMARIX L.

1a. Stamens 5	...	*T. troupii* 1
1b. Stamens 10	...	*T. ericoides* 2

1. **Tamarix troupii** Hole in Indian Forester 45:248. 1919; Blatt. in J. Bombay nat. Hist. Soc. 24:305. 1930; Kuttan, Fl. Uran (Ph. D. Thesis) 114. 1965. *T. gallica* L. var. *indica* Dyer in Hook. f. Fl. Brit. India 1:248. 1874; Cooke. Fl. Pres. Bombay 1:75. 1958 (Repr. ed.). *Jhavarajhad, Lai.*

Shrubs or small trees, 1.5–2 m; branches slender, drooping; leaves scaly, glaucous, subulate, white margined, acute at apex, semi-amplexicaul at base, *ca* 3 mm long; flowers pink in lateral and terminal, panicled, spike-like racemes; capsules conical, trigonous, pinkish, glabrous.

Fls. & Frts. : August–November.

In saline soils, occasional. Mora, Uran *Kuttan* 934, 936, 1508 **(BLAT).**

Wood is used in furniture, twigs for thatching and basket making.

2. **Tamarix ericoides** Rottl. in Gesel. Neue Schr. Naturf. Fr. Berlin 4:214. 1803; Dyer in Hook. f. Fl. Brit. India 1: 249. 1874; Cooke, Fl. Pres. Bombay 1: 76. 1958 (Repr.ed.). *Trichaurus ericoides* (Rottl.) Wight & Arn. Prodr. 40. 1834; Wight, Icon. t. 22. 1838. *Sarub, Sherni.*

Shrubs with dark–brown, cracked bark, 1–2.5 m; leaves ovate–lanceolate, minute, scaly; flowers pinkish in 7–20 cm long, terminal, branched spikes; capsules yellowish,white or straw coloured; seeds oblong, pilose.

Fls. & Frts. : November – May.

In the river–beds and along the sea –coasts, frequent. Alibag; Karjat; Mahad; Matheran; Pali to Nagothana.

17. ELATINACEAE

BERGIA L.

1a. Stamens 5; seeds smooth, polished ...*B. ammannioides* 1

1b. Stamens 10; seeds transversely rugose ... *B. capensis* 2

1. **Bergia ammannioides** Roxb. ex Roth, Nov. Pl. Sp. 219. 1821; Dyer in Hook. f. Fl. Brit. India. 1: 251. 1874; Cooke, Fl. Pres. Bombay 1: 77. 1958 (Repr. ed.).

Suberect or erect, profusely branched, glandular hairy herbs, 15 –35 cm; leaves elliptic–lanceolate or oblanceolate serrate, glabrous ; flowers reddish in dense, axillary fascicles; capsules globose, glabrous; seeds minute, many, ovoid, dark–brown.

Fls. & Frts.: October–June.

In moist or marshy places, frequent. Dasgaon, Indapur; Neral; Pen.

2. **Bergia capensis** L. Mant. Pl. 2:241. 1771; Cooke, Fl. Pres. Bombay 1: 78. 1958 (Repr. ed.). *B. verticillata* Willd. Sp. Pl. 2: 770. 1799; Dyer in Hook. f. Fl. Brit. India 1: 252. 1874. *B. odorata* Roxb. Pl. Cor. t. 142. 1798.

Succulent, glabrous herbs; leaves lanceolate or elliptic–lanceolate, 2.2–6.2 x 0.7–1.3 cm; flowers red, sessile in axillary clusters; capsules globose, 5–valved, apiculate; seeds minute, many, dark–brown.

Fls. & Frts. : October.

Along rice fields, occasional. Dasgaon; Pen.

18. CLUSIACEAE
(GUTTIFERAE)

1a. Ovary 1 – celled, 1 – ovuled or 2 celled, 4–ovuled; styles long, 1–2 ... CALOPHYLLUM 1

1b. Ovary many celled, 1–ovuled each; style short or absent :

2a. Calyx of 4–5 sepals ... GARCINIA 2

2b. Calyx splitting into 2 lobed sepals ... MAMMEA 3

1. CALOPHYLLUM L.

Calophyllum inophyllum L. Sp. Pl .513. 1753; Wight, Ill. 1: t. 77. 1840; T. Anders. in Hook. f. Fl. Brit. India 1: 273. 1874: Cooke, Fl. Pres. Bombay 1: 84 . 1958 (Repr. ed.).*Udai, Undi.*

Trees, 10m; trunk crooked trunk and greyish bark; leaves broadly elliptic–oblong, rounded or emarginate, closely parallel veined , 7.2–18 x 4.2–8 cm; flowers white , few in lax racemes; drupes globose, reddish– yellow, *ca* 3 cm across.

Fls. & Frts. : December–March.

In sacred groves, occasional. Vinhere, Mahad.

Seed oil is used medicinally in skin diseases and rheumatic pains.

2. GARCINIA L.

1a. Branches blackish, not angular; flowers 4– merous; fruits purple, 5–8 seeded ... *G. indica 1*

1b. Branches not blackish, angular; flowers 5–merous; fruits green, 1–3 seeded ... *G. talbotii 2*

1. **Garcinia indica** (Du Petit–Thou.) Choiss. in DC. Prodr. 1: 561. 1824; T. Anders. in Hook. f. Fl. Brit. India 1: 261. 1874; Cooke, Fl. Pres. Bombay 1: 80. 1958 (Repr. ed). *Brindonia indica* Du Petit–Thou. Dict. Sci. Nat. 5: 339. 1804. *Amsul, Kokum.*

Slender trees with drooping branches; leaves oblong–lanceolate, glabrous, 6.2–9 x 2.5– 3.6 cm; flowers unisexual, solitary or in fascicles; fruits globose;seeds compressed.

Fls. & Frts. : February–May.

In evergreen forests, frequent. Matheran; Mhasla.

The fruits are edible and used as spices and in medicine Seeds yield a valuable fat known as 'kokum–butter' of commerce.

2. **Garcinia talbotii** Raiz. ex Sant. in Rec. Bot. Surv. India 16 (1): 14. 1960; Mahesh. in Bull. Bot. Surv. India 6: 113. 1964. *G. malabarica* Talb. in J. Bombay nat. Hist. Soc. 11: 234. 1897.*G. spicata* Hook. f. var. *macrantha* T. Cooke, Fl. Pres. Bombay 1: 79. 1901 (1:83. 1958. Repr. ed.). *G.ovalifolius* Hook. f. var. *macrantha* T. Anders. in Hook. f. Fl. Brit. India 1: 269. 1874. *Poyandi.*

Trees; leaves opposite–superposed, linear–lanceolate or elliptic–oblong ,glabrous, 7–15 x 4–8 cm; flowers unisexual, greenish–white in short racemes on old wood, pedicelled; fruits ellipsoid or ovoid.

Fls. &Frts. : February–September.

In evergreen forests, frequent. Matheran; Sudhagad.

3. MAMMEA L. *emend* J. J. F. E. De Wilde

Mammea suriga (Buch.–Ham. ex Roxb.) Kosterm.in Comm. For. Res. Inst. Indonesia, Bogar 72: 23. f. 19. 1961. *Calophyllum suriga* Buch.–Ham.ex Roxb. Fl. Ind. 2: 608.1832. *Ochrocarpus longifolius* Benth. ex T. Anders. in Hook. f. Fl. Brit. India 1: 270. 1874 *('Ochrocarpos')*; Cooke, Fl. Pres. Bombay 1: 84. 1958 (Repr. ed.). *Calysaccion longifolium* Wight, Ill. 1: 130. 1830 & Icon. t. 1999. 1853. *Punavi, Surangi.*

Much branched trees, 8 m; leaves dark–green, thick, coriaceous, oblong–lanceolate or obovate, glabrous, 5.5–21 x 2.2–6.5 cm; flowers numerous, greenish–white, fragrant on 1–2 cm long pedicels; fruits reddish – green, ovoid; seeds solitary.

Fls. & Frts. : February–April.

Evergreen forests,occasional. Louisa point, Matheran; Phansad forest, Murud.

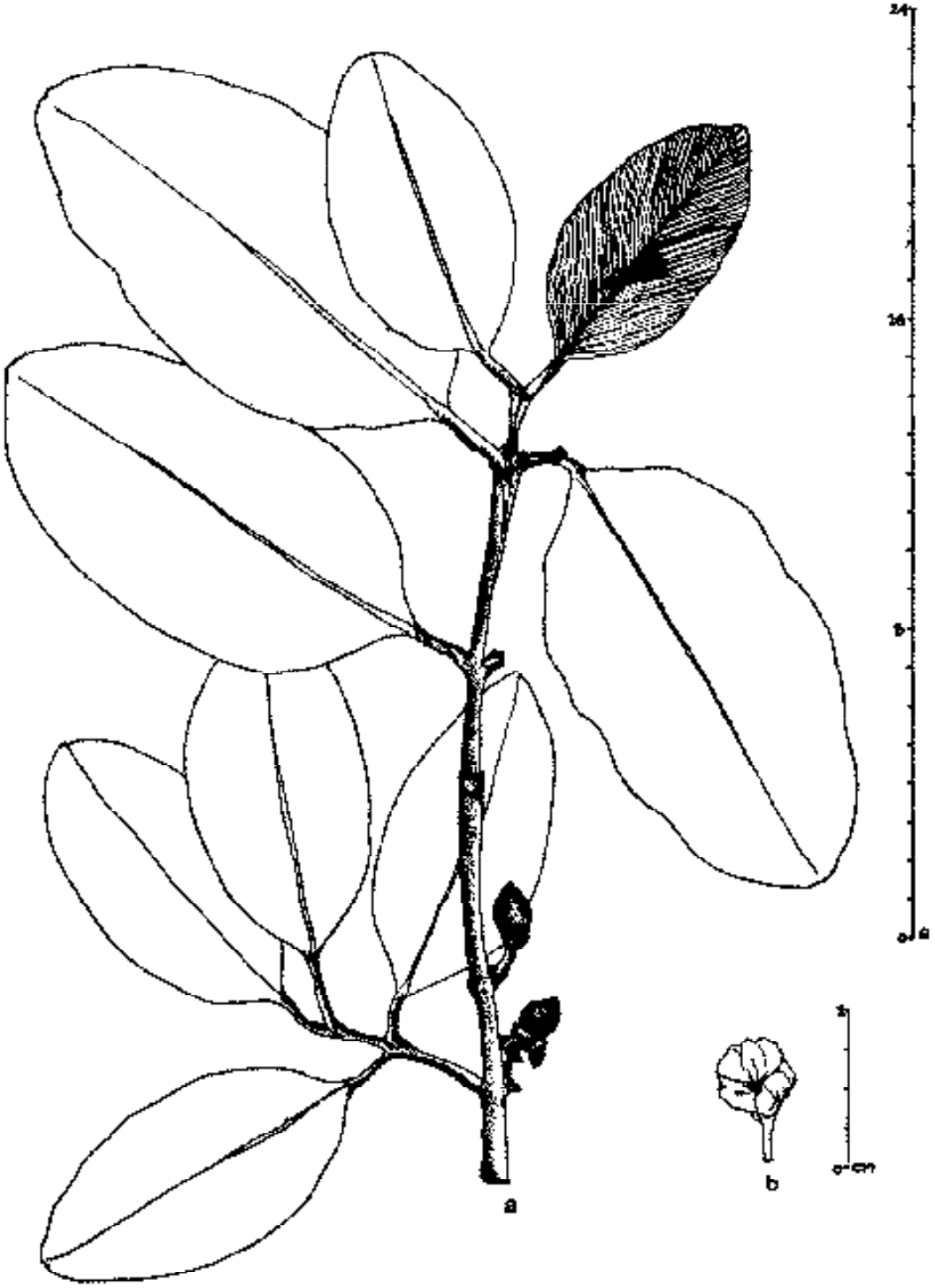
The wood of this species is hard and used for building purposes.

19. ANCISTROCLADACEAE

ANCISTROCLADUS Wall. ex. Arn.

1a. Leaves more than four times as long as wide ... *A. attenuatus 1*

1b. Leaves less than four times as long as wide ... *A. heyneanus 2*



Garcinia talbotii Raiz. Ex Sant.
a) Fruiting twig, b) Flower.

1. **Ancistrocladus attenuatus** Dyer in Hook. f. Fl. Brit. India 1: 300. 1874.

Scandent shrubs, 60–120 cm; leaves cuneate–linear, acute–acuminate, sessile glabrous, 15–40 x 3–7cm.

In moist deciduous forests, occasional. Matheran, *G.S. Puri* 10956 **(BSI).**

The species is included here based on two vegetative specimens collected by Puri from above locality. The identity of these specimens was determined at Central National Herbarium, Calcutta.

2. **Ancistrocladus heyneanus** Wall. ex. Grah. Cat. Pl. Bombay 28. 1839; Wight, Icon. tt. 1987 & 1988. 1853; Dyer in Hook. f. Fl. Brit. India 1: 299. 1874; Cooke, Fl. Pres. Bombay 1: 93. 1958 (Repr. ed.). *Kardal*

Climbing shrubs with hooked branches; leaves oblong–lanceolate, apex subacute–acute, base narrowed, subsessile, 10–25 x 3.5–7.5 cm; flowers white, caducous in branched panicle; fruits surrounded by 5–winged calyx lobes; seeds solitary.

Fls. & Frts. : December–March.

In moist deciduous forests, occasional. Matheran; Mirya dongar, Pen.

20. MALVACEAE

1a. Trees :

2a. Young parts covered with peltate scales; flowers bisexual; fruits not winged ... THESPESIA 1

2b. Young parts stellately tomentose; flowers polygamous; fruits winged ... KYDIA 2

1b. Herbs, undershrubs or shrubs :

3a. Epicalyx present :

4a. Style branches twice the number of carpels :

5a. Epicalyx foliaceous; flowers in a head ... MALACHRA 3

5b. Epicalyx not foliaceous; flowers not in a head :

6a. Leaves lobed ,midrib with a gland beneath; flowers rosy ... URENA 4

6b. Leaves not lobed, midrib without a gland beneath, flowers yellow ... MALVASTRUM 5

4b Style bracches as many as carpels :

7a. Calyx spathaceous, not lobed ... ABELMOSCHUS *6*

7b. Calyx not spathaceous, lobed or toothed :

8a. Calyx cupular, minutely 5 – toothed ... AZANZA *7*

8b. Calyx equally 5–lobed ... HIBISCUS *8*

3b. Epicalyx absent :

9a. Flowers 5–6 cm across; carpel 2–more seeded, dehiscence of the capsule by apical slits ... ABUTILON *9*

9b. Flowers 0.5-1 cm across; carpel 1–seeded;dehiscence of the cpsule irregular ... SIDA *10*

1. THESPESIA Soland. ex corr.

Thespesia populnea (L.) Soland. ex corr. in Ann. Mus. Paris 9: 290. t. 8. f. 1. 1807; Wight, Icon. t. 8. 1838; Masters in Hook. f. Fl. Brit. India 1: 345. 1874; Cooke, Fl. Pres. Bombay 1: 121. 1958 (Repr. ed). Borss. in Blumea 14:106. 1966. *Hibiscus populneus* L. Sp. Pl. 694. 1753. *Bhendike Jhad.*

Trees, 8–12 m; leaves ovate , cordate, acuminate, 6–20 x 4–15cm; flowers yellow with crimson centre; pedicels upto 12.5 cm, calyx cupular; fruits globose; seeds ovoid–oblong, black, hairy.

Fls. & Frts. : Throughout the year.

Usually planted along the road sides, river–banks and sometimes found as an escape, frequent . Matheran; Roha.

Bark–fibre is used as ropes.

2. KYDIA Roxb.

Kydia calycina Roxb. Pl. Cor. 3: 12. t. 215. 1811; Wight, Icon. tt. 879 & 880. 1845; Masters in Hook. f. Fl. Brit. India 1: 348. 1877; Cooke, Fl. Pres. Bombay 1: 100. 1958 (Repr.ed.). *Varang.*

Trees with grey, rough bark; leaves broadly ovate– orbicular, 3–5 angled, cordate, 5–7 nerved, 3.5–9.6 x 3.2–13 cm; flowers white or pink in axillary, terminal panicles; capsules globose, enclosed in persistant calyx; seeds reniform, brown, concentrically striate.

Fls. &Frts. : December–March

In semi evergreen and moist deciduous forests, frequent. Karnala fort; Matheran

Bark fibre is used as cordage and ropes.

3. MALACHRA L.

Malachra capitata (L.) L. Syst. (ed. 12) 2:458. 1767; Masters in Hook. f. Fl. Brit. India 1: 329. 1874; Cooke, Fl. Pres. Bombay 1: 105. 1958 (Repr. ed.); Borss. in Blumea 14: 146. 1966. *Sida capitata* L.Sp. Pl. 685. 1753. *Ran bhendi.*

Erect, scabrid herbs or undershrubs, 40–120 cm;leaves ovate–suborbicular, cordate, crenate, 4.2 –7.5 x 3–9 cm; flowers yellow, 3–4 in axillary and terminal capitate heads; ripe carpels 5, white, reticulated; seeds brown, smooth.

Fls. &Frts. : September–October.

On road sides and waste places, frequent Khopoli.

This Brazilian plant is introduced in India for its fibre. Now it is naturalized as a weed along roadsides and in waste places.

4. URENA L.

Urena lobata L. Sp. Pl. 692. 1753; Masters in Hook. f. Fl. Brit. India 1: 329. 1874; Cooke, Fl. Pres. Bombay 1: 106. 1958 (Repr. ed.); Borss. in Blumea 14: 138. 1966.

Erect, suffruticose herbs or undershrubs, 30–90 cm; leaves ovate–orbicular, shallowly or deeply lobed, stellately hairy, 1.8–6.5 x 1.2–6.3 cm; flowers solitary, axillary; fruits globose, 5–locular, hairy; mericarps reniform with apical stiff spines, concentrically striate.

Fls. & Frts. : September–May.

As forest undergrowth and along the roadsides, frequent. Alibag; Karjat; Matheran; Pen to Khopoli.

Stem fibre is used as substitute for jute, ropes and coarse fabrics.

5. MALVASTRUM A. GRAY *nom. cons.*

Malvastrum coromandelianum (L.) Garcke in Bonplandia 5: 295. 1857; Borss. in Blumea 14: 152. 1966. *Malva coromandeliana* L. Sp. Pl. 687. 1753. *Malvastrum tricuspidatum* (R. Br.) A. Gray, Pl. Wright 1: 16. 1852; Masters in Hook. f. Fl. Brit. India 1: 321. 1874.

Branched hairy herbs, 30–60 cm; leaves ovate–lanceolate, sparsely

hairy, 1.5–4.2 x 0.7–2 cm; flowers axillary, solitary; fruits globose; mericarps sharp edged, hairy, reniform, curved with 3 awns; seeds 1, reniform, brown, glabrous.

Fls. & Frts. : September - October.

In open forests, infrequent. Murud.

6. ABELMOSCHUS Medic.

Abelmoschus manihot (L.) Medic. ssp. **tetraphyllus** (Roxb. ex Hornem.) Borss. in Blumea 14: 97. 1966. *Hibiscus tetraphyllus* Roxb. ex Hornem. Hort. Hafn. 661. 1815; Masters in Hook. Fl. Brit. India 1: 341. 1874; Cooke, Fl. Pres. Bombay 1: 118. 1958. (Repr. ed.). *Ran Bhendi.*

Erect, woody undershrubs, 1–1.8 m; leaves cordate, 3–5 lobed, scabrous, 4–16.5 x 3.2–18 cm; flowers yellow with purple centre; capsules ovoid, densely hispid; seeds globose, concentrically striate, hairy.

Fls. &Frts. : September–October.

In moist, waste places, frequent. Jambulpada; Matheran; Murud; Pen.

7. AZANZA Alef.

Azanza lampas (Cav.) Alef. in Bot. Zeit. 19: 298. 1861. *Hibiscus lampas* Cav. Diss. 3: 154. t. 56. f. 2. 1787. *Thespesia lampas* (Cav.) Dalz. & Gibs. Bombay Fl. 19. 1861; Masters in Hook. f. Fl. Brit. India 1: 345. 1874; Borss. in Blumea 14: 116. 1966. *T. macrophylla* Blume., Bijdr. 73. 1825; Cooke, Fl. Pres. Bombay 1: 121. 1958 (Repr. ed.).

Undershrubs, 1–2.5 m; leaves ovate or ovate–rhomboid, acuminate, entire or 3–lobed, thinly hairy above, tomentose, black dotted beneath; flowers *ca* 12 cm across, bright yellow, axillary, solitary and in terminal racemes; capsules blackish–brown; seeds orbicular, cuneate, pubescent.

Fls. & Frts. : August– October.

As an undergrowth in deciduous forests, frequent. Neral to Matheran; Pali.

8. HIBISCUS L.

1a. Flowers Yellow with purple centre :

2a. Leaves eglandular beneath; capsules 5–winged; seeds uniformly tuberculate ... *H. vitifolius* 1

2b. Leaves with a gland on midrib beneath; capsules not winged; seeds smooth or with few tubercles ... *H. cannabinus* 2

1b. Flowers white or pink, never yellow :

3a. Epicalyx present; leaves ovate, acute, more or less 3-lobed; seeds cottony ... *H. talbotii* 3

3b. Epicalyx absent or minute; leaves obicular-ovate, obtuse, 3-5-lobed; seeds glabrous ... *H. lobatus* 4

1. **Hibiscus vitifolius** L. Sp. Pl. 696. 1753; Masters in Hook. f. Fl. Brit. India 1: 338. 1874; Cooke, Fl. Pres. Bombay 1: 115. 1958 (Repr. ed.); Borss. in Blumea 14: 82.1966. *Van kapas.*

Suffruticose herbs or undershrubs, 1–1.5 m; leaves entire or 3–5 lobed, cordate, ovate–suborbicular, serrate, hairy, 4–10.5 x 2.2–8 cm; flowers drooping in axillary or terminal racemes; capsules suborbicular; seeds reniform, reddish–brown.

Fls. & Frts. : September–December.

As forest undergrowth, frequent. Karnala fort; Neral to Matheran; Revdanda.

2. **Hibiscus cannabinus** L. Syst. (ed. 10) 2: 1149. 1759; Masters in Hook. f. Fl. Brit. India 1:339. 1874; Cooke, Fl. Pres. Bombay 1: 116. 1958 (Repr.ed.); Borss. in Blumea 14:63.1966. *Ambadi.*

Shrubs or undershrubs with prickly stems, 1–3 m; leaves deeply 3–5 lobed; lobes elliptic–lanceolate, 2.5–9.5 x 0.7–2 cm; flowers axillary, solitary; capsules ovoid, beaked; seeds brown, stellately hairy.

Fls. & Frts. : September– January.

As an escape, infrequent. Pen to Khopoli.

The species is often cultivated for its fibres which are used to manufacture ropes by the natives.

3. **Hibscus talbotii** (Rakshit) T. K. Paul et Nayar in Bull. Bot. Surv. India 22 (1–4) : 198. (1980) 1982. *H. hirtus* L. var. *talbotii* Rakshit in Sci. & Cult. 27(4): 193. 1961; Rakshit & Kundu in Bull. Bot. Surv. India 12: 10. 1970. *Dupari.*

Suffruticose herbs; leaves, 1–13x0.5–6 cm; flowers white in terminal racemes, ca 2.5 cm across; capsules obovoid, green with white streaks.

Fls. & Frts. : February–April.

As an undergrowth on hill slopes of the forests, frequent. Karjat; Matheran; Mirya dongar, Pen; Panvel; Raigad, Roha.

4. **Hibiscus lobatus** (Murr.) O. Ktze. Rev. Gen. Pl. 3: 19. 1898; Borss. in Blumea 14: 77. 1966. *Solandra lobata* Murr. in Comm. Soc. Reg. Sc. Goett. 6: 21. t. 1.1785. *Hibiscus solandra* L' Herit Stirp. Nov. 1: 103. t. 49. 1788; Masters in Hook. f. Fl. Brit. India 1: 335. 1874; Cooke, Fl. Pres. Bombay 1: 114. 1958 (Repr. ed.).

Hairy herbs, 30–60 cm; leaves crenate, hairy, 2.3–7x1–6 cm; flowers solitary, axillary or in terminal racemes; capsules ovoid, beaked, hairy; seeds blackish, reniform, minutely tubercled.

Fls. & Frts. : October–November.

As an undergrowth in the forests, occasional. Tata power station, Bhira.

9. Abutilon Mill.

1a.	Carpels 10–20 ; leaves orbicular–reniform	...	*A. indicum* 1
1b.	Carpels 5 ; leaves ovate–lanceolate	...	*A. persicum* 2

1. **Abutilon indicum** (L.) Sweet, Hort. Brit. 54.1826; Wight, Icon. t. 12. 1838; Masters in Hook. f. Fl. Brit. India 1: 326. 1874; Cooke, Fl. Pres. Bombay 1:102. 1958 (Repr.ed.); Borss. in Blumea 14: 170. 1966. *Sida indica* L. in Torner Cent. Pl. 2: 26. 1756 & Sp. Pl. (ed.2) 964.1762. *Bhouri, Mudra, Petari.*

Suffruticose, tomentose herbs or undershrubs; leaves hairy, 2.5–12 x 1.8–10.6 cm; flowers bright yellow, axillary, solitary; fruits blackish, hairy; seeds reniform, brown, scrobiculate.

Fls. & Frts. : Almost throughout the year.

Along the sea coast, frequent. Alibag; Janjira fort, Murud.

Stems on retting yeilds fibre, used for making ropes etc.

2. **Abutilon persicum** (Burm.f.) Merr. in Philip J. Sci. 19: 364. 1921; Borss. in Blumea 14: 163.1966. *Sida persica* Burm. f. Fl. Ind. 148. t. 47.f.1. 1768. *Abutilon polyandrum* (Roxb.) Wight. & Arn. Prodr. 55. 1834 *non* G. Don (1831); Masters in Hook. f. Fl. Brit. India 1: 325. 1874; Cooke, Fl. Pres. Bombay 1: 101. 1958 (Repr. ed.). *Bhamruti, Madam.*

Undershrubs or shrubs, 1–2 m; leaves stellate–tomentose, 3.5–9.6 x 1.2–4.2 cm; flowers orange–yellow, solitary, axillary or in terminal

racemes; fruits with ripe carpels mucronate, acuminate, brownish-black, hairy; seeds reniform, brown, hairy.

Fls. & Frts. : November–March.

In hilly forests, frequent. Alibag; Matheran.

10. SIDA L.

1a. Fruits indehiscent; mericarps without prominent reticulate venation :

- 2a. Plants viscous hairy; leaves ovate–lanceolate ... *S. glutinosa* 1
- 2b. Plants stellately hairy; leaves cordate ... *S. cordata* 2

1b. Fruits dehiscent; mericarps with prominent reticulate venation :

- 3a. Styles and mericarps 5; stem at the base of petiole with 1–2 spiny emergences ... *S. spinosa* 3
- 3b. Styles and mericarps 5–10; stem at the petiolar base not spiny :
  - 4a. Leaves lanceolate, glabrous; stipules of each pair different i.e. one linear–lanceolate, the other linear–filiform ... *S. acuta* 4
  - 4b. Leaves rhomboid or obovate–cuneate, hairy or finely tomentose; stipules of each pair not differnt :
    - 5a. Leaves ovate–oblong, rhomboid, acute at apex ... *S. rhombifolia* ssp. *rhombifolia* 5
    - 5b. Leaves obovate–cuneate, often, atleast lower leaves truncate at apex ... *S. rhombifolia* ssp. *retusa* 6

1. **Sida glutinosa** Comm. ex Cav. Diss. 1: 16. t. 2. f. 8. 1785; Cooke. Fl. Pres. Bombay 1: 97. 1958 (Repr. ed.); Borss. in Blumea 14: 190. 1966. *S. mysorensis* Wight & Arn. Prodr. 59. 1834; Masters in Hook. f. Fl. Brit. India 1: 322. 1874.

Erect herbs, 30–90 cm; leaves membranous, 2.5–9x1.3–8 cm; flowers Yellow, axillary, solitary or fascicled in terminal racemes; fruits obovate, hairy; seeds dark brown.

Fls. & Frts. : October–January

Along road sides and hill slopes, frequent Neral to Jummapatti, *Irani* 2432–33, 5616; Thakurwadi, *Irani* 5515 (BLAT).

2. **Sida cordata** (Burm.f.) Borss. in Blumea 14: 182. 1966. *Melochia cordata* Burm. f. Fl. Ind. 143. 1768. *sida veronicifolia* Lam. Encyl. 1:5. 1783; Cooke, Fl. Pres. Bombay 1: 97.1958 (Repr. ed.). *S*

humilis Cav. Diss. 5:227.t. 134. f. 2.1788; Masters in Hook. f. Fl. Brit. India 1: 322. 1874. *Chikni.*

Prostrate herbs; leaves crenate, palminerved, 1.2 – 8.2 x 0.7–5 cm; flowers yellow, axillary, solitary or few, mostly 2 in racemes; fruits subglobose, mericarps with 5 not cuspidate; seeds triangular, brownish–black.

Fls. & Frts. : September–May.

Throughout, frequent .Alibag; Bhira; Varandh ghat.

3. **Sida spinosa** L. Sp. Pl. 683.1753; Masters in Hook. f. Fl. Brit. India 1: 323. 1874; Cooke, Fl. Pres. Bombay 1: 98. 1958 (Repr. ed.); Borss. in Blumea 14: 191. 1966.

Much branched, stout herbs or undershrubs; leaves elliptic, crenate, apex obtuse or triangular, base cuneate, grey tomentose beneath, 1.5–3.2x0.6–2.2 cm; flowers yellow; fruits subglobose, mericarps with two setaceous awns; seeds brownish–black, smooth.

Fls. & Frts. : October –November.

Along road sides and waste places, infrequent. Karjat.

4. **Sida acuta** Burm.f. Fl. Ind.147. 1768; Wight, Icon. t. 95. 1838; Cooke, Fl. Pres. Bombay 1:98. 1958 (Repr.ed.); Borss. in Blumea 14: 186. 1966. *S. carpinifolia* L. f. Suppl. 307. 1781; Masters in Hook. f. Fl. Brit. India 1: 323. 1874.

Suffruticose herbs or undershrubs, 20-60 cm; leaves serrate, 2.6– 7 x 0.9-2.6 cm; flowers yellow, axillary, solitary or fascicled; fruits globose; seeds triangular, reddish–brown.

Fls. & Frts. : September–December.

Along road sides and waste places, frequent. Pen.

Stem–fiber is used for ropes.

5. **Sida rhombifolia** L. ssp. **rhombifolia:** Borss. in Blumea 14: 195. 1966. *S. rhombifolia* L. Sp. Pl. 684. 1753; Masters in Hook. f. Fl. Brit. India 1: 323. 1874.

Suberect herbs; leaves serrate in upper half of the rhomboid lamina, 2–7.3 x 0.7–3 cm; flowers yellow, axillary, pedicellate; fruits subglobose.

Fls. & Frts. : September – October.

In moist deciduous forests , infrequent. Matheran.

6. **Sida rhombifolia** L. ssp. **retusa** (L.) Borss. in Blumea 14: 198. 1966. *S. retusa* L. Sp. Pl. (ed. 2.) 961.1763. *S. rhombifolia* var. *retusa* (L.) Masters in Hook. f. Fl. Brit. India 1: 324. 1874; Cooke, Fl. Pres. Bombay 1:99. 1958 (Repr.ed.). *Jangli Methi.*

Undershrubs; bracches hairy; leaves coarsely toothed at truncate top, 1.8-3.2 x 0.8-6.5 cm; flowers yellow, axillary; fruits subglobose.

Fls. & Frts. : September–October.

Along road sides, infrequent. Neral to Matheran.

Cultivated or introduced:

1. **Abelmoschus esculentus** (L.) Moench, Meth. 617. 1794. *Hibiscus esculentus* L. Sp. Pl. 676. 1753; Masters in Hook. f. Fl. Brit. India 1: 343. 1874; Cooke, Fl. Pres. Bombay 1: 119. 1958 (Repr. ed.). *Bhendi.*

Hispidly hairy herbs or undershrubs; leaves 3–5 lobed; flowers yellow with purple base within.

Cultivated throughout the district. Fruits popularly known as'Ladies fingers' used as a vegetable.

2. **Hibiscus rosa- sinensis** L. Sp. Pl. 694. 1753; Masters in Hook. f. Fl. Brit. India 1: 344.1874; Cooke, Fl. Pres. Bombay 1: 120. 1958 (Repr. ed.).

Woody plants; leaves ovate, serrate; flowers deep red; staminal tube exserted.

Cultivated in gardens throughout the district for its showey flowers.

3. **Hibiscus schizopetalous** Hook. f. in Bot. Mag. t. 6524.1880.

Shrubs; leaves ovate–elliptic; flowers light red, drooping, petals laciniately recurved.

Planted. Janjira fort, Murud.

21. BOMBACACEAE

1a. Unarmed trees with much enlarged trunk towards base; flowers solitary, long pedicelled, pendulous; involucral bracts 2; fruits indehiscent; seeds embedded in wool ... ADANSONIA 1

1b. Armed trees with uniform trunks; flowers short pedicelled, crowded on leafless branches; involucral bracts absent or

fugacious; fruits dehiscent; seeds not embedded in wool :

2a. Trunk prickly; petioles shorter than leaflets; leaflets lanceolate; stamens ca 80, filaments flattened ... BOMBAX 2

2b. Trunk not prickly; petioles longer than leaflets; leaflets obovate; stamens 400–500, filaments filiform ... SALMALIA 3

1. ADANSONIA L.

Adansonia digitata L. Sp. Pl. 1190. 1753; Masters in Hook. f. Fl. Brit. India 1 :348. 1874; Cooke, Fl. Pres. Bombay 1: 126. 1958 (Repr.ed.). *Gorakh amli, Gorakh chinch.*

Deciduous trees; leaves digitate; leaflets 3–9, obovate–oblong, 4.5–10 x 2.4–5.2 c.m.; flowers white; fruits densly hairy; seeds blackish, reniform.

Fls. & Frts. : August– October.

Along road sides, probably planted infrequent. Chaul, Alibag.

2. BOMBAX L.

Bombax ceiba L. Sp. Pl. 511. 1753; Robyns in Taxon 10: 160. 1961; Nicols. in Taxon 28 : 367. 1979. *B. malabaricum* DC. Prodr. 1:479. 1824; Wight, Ill. 1: t. 29. 1840; Masters in Hook. f. Fl. Brit. India 1: 349. 1874; Cooke, Fl. Pres. Bombay 1:127. 1958 (Repr. ed.). *Kate savar, Sawar.*

Trees with grey bark, 10–30 m; leaves digitate, 5–7 foliolate, crowded at the tips of branches; leaflets acuminate, 6–15 x 2–6 cm; flowers scarlet in clusters; capsules woody, 5–valved, dark reddish–brown; seeds many.

Fls. & Frts. : February –June.

In deciduous forests, frequent. Matheran; Nadgaon, Mahad.

The red silk–cotton obtained from capsules is used for stuffing pillows and mattresses and wood is used in the manufacture of match sticks.

3. SALMALIA Schott & Endl.

Salmalia insignis (Wall.) Schott & Endl. Melet. Bot. 35. 1832. *Bombax insigne* Wall. Pl. As. Rar. 1: 71. 1830; Masters in Hook. f. Fl. Brit. India 1: 349. 1874; Cooke, Fl. Pres. Bombay 1: 128. 1958 (Repr. ed.). *Pandri Sawar.*

Trees, 6–7 m; leaflets obovate, acuminate, 10–22.5 x 4.3 –7.6 cm; flowers scarlet or white; capsules woody, obtusely 5–angular, glabrous.

Fls. & Frts. : July–December.

In deciduous forests, infrequent. Matheran; Pen to khopoli.

22. STERCULIACEAE

1a. Trees; petals absent, if present deciduous :

2a. Flowers unisexual or polygamous; petals absent :

3a. Leaves entire or shallowly lobed; flowers pale or greenish–yellow; follicles coriaceous ... STERCULIA 1

3b. Leaves 3–7- lobed; flowers scarlet to bright orange; follicles membranous ... FIRMIANA 2

2b. Flowers bisexual; petals present, deciduous ... ERIOLAENA 3

1b. Herbs or shrubs; petals always present:

4a. Herbs or undershrubs; leaves acute; flowers many in terminal clusters; capsules subglobose, not twisted ... MELOCHIA 4

4b. Shrubs; leaves acuminate; flowers 2-6 in axillary clusters; follicles spirally twisted ... HELICTERES 5

1. STERCULIA L.

1a. Leaves palmately lobed:

2a. Panicles erect; sepals yellow; follicles covered with rusty-brown stinging hairs ... S. urens 1

2b. Panicales drooping; petals pink; follicles covered with reddish–purple non–stinging hairs ... *S. villosa* 2

1b. Leaves entire, not lobed ... *S. guttata* 3

1. **Sterculia urens** Roxb. Pl. Cor. 1: 25. t. 24.1795; Masters in Hook. f. Fl. Brit. India 1: 355. 1874; Cooke, Fl. Pres. Bombay 1: 131. 1958 (Repr. ed.). *Kandol , Karai.*

Trees, 6–15 m; bark shining; leaves velvety hairy, crowded at the tips of branches, 2.5–7 x 2.4–6.5 cm; flowers in terminal panicles; follicles 4–6, ovoid–oblong; seeds oblong, black.

Fls. & Frts. : December–May.

In deciduous and semi evergreen forests, frequent. Karle–Khind, Alibag; Karnala bird–sanctuary; Matheran.

2. **Sterculia villosa** Roxb. ex. Smith in Rees. Cyclop. n. 16. 1816; Masters in Hook. f. Fl. Brit. India 1: 355. 1874; Cooke, Fl. Pres. Bombay 1: 132. 1958 (Repr. ed.). *Sardol.*

Monoecious trees, 4–5 m; leaves 5–7–lobed; lobes acuminate, 4– 13 x 3–10 cm; flowers in much branched, rusty pubescent, terminal panicles; follicles 5, oblong; seeds oblong, black.

Fls. & Frts. : December – January.

In deciduous forests, infrequent. Mahad.

3. **Sterculia guttata** Roxb. ex DC. Prodr. 1: 482. 1824; Wight, Icon. t. 487. 1841; Masters in Hook. f. Fl. Brit. India 1: 355. 1874; Cooke, Fl. Pres. Bombay 1: 132. 1958 (Repr. ed.). *Goldar, Petari.*

Trees; leaves ovate–oblong, acute, stellately pubescent beneath, upto 19.5 x 9 cm; flowers greenish–yellow with reddish–purple streaks inside; follicles 1–5, obovoid, woody, orange –red; seeds oblong.

Fls. & Frts. : January– March.

In moist deciduous forests, frequent. Karjat; Matheran; Mhasla.

Seeds are edible.

2. Firmiana Marsili

Firmiana colorata (Roxb.) R. Br. in Bennett & Brown, Pl. Jav. Rar. 235. 1844. *Sterculia colorata* Roxb. Pl. Cor. 1: 26. t. 25. 1795; Masters in Hook. f. Fl. Brit. India 1: 359. 1874; Cooke, Fl. Pres. Bombay 1: 133. 1958 (Repr. ed.). *Kavas.*

Moderate sized trees; leaves palmately lobed; lobes caudate–acuminate; flowers in terminal panicles; follicles papery, deep orange; seeds 2 , ovoid, yellowish.

Fls. & Frts. : January–May.

In deciduous and semi evergreen forests, frequent. Bedesgaon, Neral; Elephanta island; Matheran; Murud; Poladpur.

3. Eriolaena DC.

Eriolaena stocksii Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 370. 1874; Cooke, Fl. Pres. Bombay 1: 139. 1958 (Repr. ed.).

Trees, 2–5 m; leaves ovate or orbicular, stellately hairy above,

grey–tomentose beneath, 3.5–12.6 x 3–5 cm; flowers yellow; capsules ovoid, 10–valved; seeds brown, wings papery.

Fls. & Frts. : July–October.

In moist deciduous forests, infrequent. Matheran.

4. MELOCHIA L.

Melochia corchorifolia L. Sp. Pl. 675. 1753; Masters in Hook. f. Fl. Brit. India 1:374. 1874; Cooke, Fl. Pres. Bombay 1:142. 1958 (Repr.ed).

Suffruticose, branched herbs or undershrubs, 40–120 cm; leaves much variable, ovate–oblong, serrate, sometimes obscurely lobed, 2.2–6 x 0.6–2 cm; flowers pink; capsules 5–valved, hairy; seeds blackish–brown, angular.

Fls. & Frts. : September – October.

Along road sides and moist places, infrequent. Neral.

5. HELICTERES L.

Helicteres isora L. Sp. Pl. 963. 1753; Wight, Icon. t. 180. 1839; Masters in Hook. f. Fl. Brit. India 1: 365. 1874; Cooke, Fl. Pres. Bombay 1: 136. 1958 (Repr. ed.). *Murudseng.*

Large shrubs or small trees, 1– 3m; leaves obovate–oblong, hairy, 4.3–14.2 x 3.4–7 cm; flowers bright–red; follicles woody, brownish; seeds reddish–brown, triangular.

Fls. & Frts. : July – October.

As forest undergrowth, frequent. Karnala fort; Mandatna to Pangloli, Mhasla; Roha.

The fruits are used medicinally for stomach pain and dysentery.

23. TILIACEAE

1a. Herbs or undershrubs :

2a. Petals eglandular; fruits unarmed, dehiscent, elongate, if spherical distinctly warty ... CORCHORUS 1

2b. Petals glandular; fruits prickly, indehiscent, spherical or ovoid ... TRIUMFETTA 2

1b. Shrubs or trees :

3a. Leaves palmi–nerved, acutely lobed, cordate; flowers in lax, terminal panicles; fruits triquetrous, prickly, angles winged ... ERINOCARPUS 3

3b. Leaves, flowers & fruits not as above :

4a. Leaves glabrous, entire; flowers in typical, terminal paniculate cymes i. e. 3 flowers encircled by 3–fid bracts; drupes not lobed ... MICROCOS 4

4b. Leaves pubescent, if glabrous then with serrate margins; flowers not paniculate and without encircling bracts; drupes 2–4 lobed ... GREWIA 5

1. CORCHORUS L.

1a. Fruits globose, not beaked ... *C. capsularis* 1

1b. Fruits elongate, beaked :

2a. Capsules angular, winged, beak 3–fid ... *C. aestuans* 2

2b. Capsules cylindrical, not winged, beak entire ... *C. olitorius* 3

1. **Corchorus capsularis** L. Sp. Pl. 529. 1753; Wight Icon. t. 311. 1840; Masters in Hook. f. Fl. Brit. India 1: 397. 1874; Cooke, Fl. Pres. Bombay 1: 157. 1958 (Repr. ed).

Herbs or undershrubs, 50–150 cm; leaves ovate–lanceolate, glabrous, 2–10.5 x 1–4 cm; flowers yellow, solitary or fascicled, axillary; capsules ridged, muricate, 5–valved; seeds brown, wedge–shaped.

Fls. & Frts. : September–October.

Along road sides, infrequent . Matheran; Pen to Khopoli.

The stem–bark yields jute of commerce.

2. **Corchorus aestuans** L. Syst. Nat. (ed.10) 1079. 1759. *C acutangulus* Lam. Encycl. 2: 104. 1786; Wight, Icon.t.739.1844; Masters in Hook. f. Fl. Brit. India 1: 398. 1874; Cooke, Fl. Pres. Bombay 1: 160. 1958 (Repr. ed.).

Prostrate or suberect herbs; leaves ovate–lanceolate, glabrous or sparsely hairy, 1.6–7.5 x 0.7 –3.8 cm; flowers yellow in extra–axillary or leaf–opposed cymes; capsules 3– winged, 6–angled; seeds dark brown, rough, truncate.

Fls. & Frts. : September–October.

Along road sides and as forest undergrowth, frequent. Neral to Matheran.

The plant yields coarse fibre. Roots and leaves are said to cure Gonorrhoea and seeds in Pneumonia.

3. **Corchorus olitorius** L. Sp. Pl. 529. 1753; Masters in Hook. f. Fl. Brit. India 1: 397. 1874; Cooke, Fl. Pres.Bombay 1: 158. 1958 (Repr. ed.). *Banpat.*

Suffruticose herbs or undershrubs, 40–120 cm; leaves ovate–lanceolate, acute, glabrous, 2.7–11 x 1.2–4 cm; flowers yellow, solitary or fascicled; capsules reddish–brown, muricated, 10–ribbed; seeds blackish–brown, angular, cuneiform.

Fls. & Frts. : September–October.

In moist places, frequent. Matheran; Pen.

This species also yields 'Jute' fiber. The leaves are said to be used in chronic Gonorrhoea and the seeds are purgative.

2. TRIUMFETTA L.

1a. Plants glabrous to sparsely hairy; capsules including hooked spines 0.5–1.5 cm across, glabrous ... *T. annua* 1

1b. Plants hairy; capsules including spines 0.3–2.4 cm across, hairy :

2a. Leaves entire; capsules 1.5–2.4 cm across, pilose ... *T. pilosa* 2

2b. Leaves atleast lower 3–lobed; capsules 0.3–0.7 cm across, hairy but not pilose :

3a. Capsules ovoid, spines ciliate ... *T. rhomboidea* 3

3b. Capsules globose–oblong; spines ciliate on one side ... *T. pentandra* 4

1. **Triumfetta annua** L. Mant. Pl. 1: 73. 1767; Masters in Hook. f. Fl. Brit. India 1: 396. 1874.

Erect herbs, upto 1 m ; leaves ovate or ovate–laceolate, acute–acuminate, serrate, 2.5–9 x 1.5–6 cm; flowers yellow in axillary cymes ; capsules globose, 4–loculed; seeds brown, glabrous.

Fls. & Frts. : September–October.

As forest undergrowth, frequent. Ghosale; Kalasgiri hill, Roha; Karnala fort.

2. **Triumfetta pilosa** Roth, Nov. Pl. Sp. 223. 1821; Masters in Hook. f. Fl. Brit. India 1: 394. 1874; Cooke, Fl. Pres. Bombay 1:156. 1958 (Repr.ed.). *Nichardi.*

Suffruticose, branched herbs, 40–120 cm; leaves ovate–lanceolate, velvety–tomentose beneath, 2.2 – 4.5 x 1–2 cm; flowers yellow, many in axillary or leaf opposed cymes; capsules black, subglobose with hooked spines; seeds dark brown, smooth, polished.

Fls. & Frts. : November.

In hilly forests, infrequent. Mahad ghat.

3. **Triumfetta rhomboidea** Jacq. Enum. Pl. Carib. 22. 1760; Masters in Hook. f. Fl. Brit. India 1: 395. 1874; Cooke, Fl. Pres. Bombay 1: 156. 1958 (Repr. ed.). *T. angulata* Lam. Encycl. 3: 41. 1789; Wight, Icon. t. 320. 1840.

Herbs or undershrubs, 50–150 cm; leaves variable, generally rhomboid–ovate, stellately hairy, upto 7x5.5 cm; flowers yellow in terminal or leaf opposed cymes.

Fls. & Frts. : February – October.

As forest undergrowth, as well as along road sides and in waste places, frequent. karjat; Matheran; Pen to Khopoli; Roha; Varandh ghat.

Stem yields a soft, glossy fibre. Root is useful in dysentery while bark and fresh leaves used in diarrhoea.

4. **Triumfetta pentandra** A. Rich. in Guill. & Perr. Fl. Senegamb. Tent. 1: 93. t. 19. 1831. *T. neglecta* Wight & Arn. Prodr. 75. 1834; Masters in Hook. f. Fl. Brit. India 1:396. 1874.

Erect, branched , suffruticose herbs, 20–60 cm; leaves lower rhomboid–ovate, upper ovate–lanceolate, stellately hairy beneath, 1.5–4 x 1.2–3.2 cm; flowers yellow in axillary or extra axillary, racemose, clustered cymes; capsules tomentose; seeds reddish–brown, minutely beaked.

Fls. & Frts. : September–October.

Along forest road sides, infrequent. Vikroli–phata, on Pen–Khopoli road.

3. Erinocarpus Nimmo

Erinocarpus nimmonii Grah. Cat. Bombay Pl. 21. 1839; Masters in Hook. f. Fl. Brit. India 1: 394. 1874 (*'nimmoanus'*); Cooke, Fl. Pres.

Bombay 1: 155. 1958 (Repr. ed.); Ahemd. & Nayar in Red Data book Ind. Pl. 3:257.ff.A-B.1990. *Chaora, Cher.*

Medium sized trees; leaves variable, orbicular–ovate or rhomboid, irregularly toothed, glabrous, 2.5–15 x 2.5–19.8 cm; flowers yellow; fruits 1–4 celled; seeds solitary, oblong, fleshy, brown.

Fls. & Frts. : September – October.

In hilly forests, frequent. Karjat; Matheran; Mhasla; Roha; Varandh ghat.

This taxon is an endemic to Western Ghats in Maharashtra and Karnataka.

4. Microcos L.

Microcos paniculata L. Sp. Pl. 514. 1753. *Grewia microcos* L. Syst. (ed. 12) 2: 602. 1767; Masters in Hook. f. Fl. Brit. India 1: 392. 1874; Cooke, Fl. Pres. Bombay 1: 154. 1958 (Repr. ed.). *G. ulmifolia* Roxb. Fl. Ind. 2: 591. 1832; Wight, Icon. t. 84. 1838.

Shrubs, 1–2 m; leaves lanceolate or elliptic–lanceolate, glabrous, 5–20 x 2.2 –9 cm; flowers yellow; fruits obcordate–obovoid, glabrous, deep purple on ripening.

Fls. & Frts. : August–October.

In deciduous forests, frequent. Mhasla; Pen.

5. Grewia L.

1a. Leaves usually hoary tomentose beneath :

- 2a. Leaves cordate, unequal or oblique at base; stipules foliaceous; drupes 1–4–lobed ... *G. tiliifolia* 1
- 2b. Leaves usually truncate, equal or parallel sided at base; stipules linear–lanceolate; drupes unlobed ... *G. subinaequalis* 2

1b. Leaves not hoary tomentose beneath :

- 3a. Trees; leaves glabrous, glandular at base ... *G. serrulata* 3
- 3b. Shrubs; leaves hairy, eglandular :
  - 4a. Leaves irregularly toothed or lobed at apex; drupes fleshy ... *G. abutilifolia* 4
  - 4b. Leaves not lobed, serrate; drupes not fleshy ... *G. flavescens* 5

1. **Grewia tiliifolia** Vahl, Symb. Bot. 1: 35. 1790 (*'tiliaefolia'*);

Masters in Hook. f. Fl. Brit. India 1: 386. 1874; Cooke, Fl. Pres. Bombay 1: 150. 1958 (Repr.ed.). *Dhaman*.

Trees, 5–10 m; leaves ovate, acuminate; flowers yellow in axillary, umbellate cymes; drupes greenish–black, globose, 2–4–lobed.

Fls. & Frts. : May–October.

In moist deciduous forests, frequent. Alibag; Elephanta island; Karnala fort; Matheran; Neral ; Varandh ghat.

The wood is used for agricultural implements and fibrous bark for cordage. Leaves are largely used by local tribals for feeding the cattle.

2. **Grewia subinaequalis** DC. Prodr. 1: 511. 1824. *G. asiatica auct. non* L. (1767); Masters in Hook. f. Fl. Brit. India 1: 386. 1874; Cooke, Fl. Pres. Bombay 1: 150. 1958 (Repr. ed.). *Phalsa*.

Trees, 4–7 m; leaves ovate, 1.7–3 x1–1.8 cm; flowers yellow in axillary cymes; drupes dark red, spherical, hairy.

Fls. & Frts. : May–June.

As an escape, Ramraj forest, Alibag.

The ripe fruits are edible. The root–bark is said to be used in rheumatic pains.

3. **Grewia serrulata** DC. Prodr. 1: 510. 1824; Narayanswami & Rao in J. Ind. Bot. Soc. 29: 187. 1950. *G. laevigata sensu* Masters in Hook. f. Fl. Brit. India 1: 389. 1874. *auct. Plur. non* Vahl (1790); Cooke, Fl. Pres. Bombay 1: 152. 1958 (Repr. ed.). *God. Kala Dhaman. Kaosi*.

Trees, 3–5 m; leaves ovate–lanceolate, serrate, acuminate, 5.5–20 x 1.4–5.4 cm; flowers white in axillary cymes; drupes green–black, 2–lobed, hairy, pyrenes 2, each 2–seeded.

Fls. & Frts. : March–October.

In moist deciduous forests, frequent. Alibag; Karjat; Karnala fort; Matheran; Varandh ghat.

The bark is said to be used for stomach pains and drupes for controlling loose motions in cattle. It is one of the host plants for Indian Lac insects.

4. **Grewia abutilifolia** Vent. ex. A. Juss. in Ann. Mus. Nat. Hist. Paris 4 : 92. 1804; Masters in Hook. f. Fl. Brit. India 1: 390. 1874; Cooke, Fl. Pres. Bombay 1: 152. 1958 (Repr. ed.). *Chikti*.

Straggling shrubs, 1–3.5 m; leaves ovate–elliptic or orbicular, stellately hairy, 3.5– 16 x 1.6–6.5 cm; flowers yellow in axillary fascicles; drupes wrinkled, 4–lobed, hairy.

Fls. & Frts. : September–October.

In moist deciduous forests, frequent. Alibag; Karjat; Karnala fort; Matheran; Murud; Neral.

5. **Grewia flavescens** A. Juss. in Ann. Mus. Nat. Hist. Paris 4: 91. 1804. *G. pilosa sensu* Masters in Hook. f. Fl. Brit. India 1: 388. 1874 *auct. non.* Lam. (1789); Cooke, Fl. Pres. Bombay 1: 151. 1958 (Repr. ed.).

Shrubs, 1.5–3 m; leaves ovate, acute, stellately hairy, 2.2–4.7 x 1.1-2.2 cm; flowers yellow in short, axillary, umbellate cymes; drupes globose with crustaceous rind, brownish, hairy.

Fls. & Frts. : February–March.

In hilly forests, infrequent. Dasgaon; Roha.

A fodder plant. The flattened angular branches used for making baskets and the drupes are edible.

24. LINACEAE

LINUM L.

Linum mysorense Heyne ex Benth. in Edward's Bot. Reg. 16. sub. t. 1326. 1830; Hook. f. Fl. Brit. India 1:411. 1874; Cooke, Fl. Pres. Bombay 1: 164. 1958 (Repr. ed.); Hajra in Fasc. Fl. India 13: 7. 1983. *Undri.*

Erect, slender, glabrous herbs, 10–40 cm; leaves liner–lanceolate, mucronate, 3–nerved, 0.6–1.3 x 0.2–0.3 cm; flowers yellow in terminal, corymbose, unilateral, paniculate cymes; capsules globose; seeds compressed, ellipsoid, brownish, smooth, shining.

Fls. & Frts. : September–October.

On open plateau, frequent. Matheran; Raigad; Varandh ghat.

25. MALPIGHIACEAE

ASPIDOPTERYS A. Juss.

Aspidopterys cordata (Heyne ex Wight & Arn.) Juss. in Ann. Sci. Nat. Bot. Ser. 2, 13: 267. 1840; Hook. f. Fl. Brit. India 1:421. 1874;

Cooke, Fl. Pres. Bombay 1: 168. 1958 (Repr. ed.). *Hiraea cordata* Heyne ex Wight & Arn. Prodr. 108. 1834. *Buryel.*

Extensive climbers; young parts white–tomentose; leaves ovate–suborbicular, acuminate, subglabrous above, silky–tomentose beneath, 2.7–13 x 0.9–12.8 cm; flowers creamy yellow in terminal and axillary panicles; samaras brownish, orbicular, membranous, reticulately veined.

Fls. & Frts. : September–November.

In moist deciduous and semi evergreen forests, frequent. Alibag; Matheran; Pen; Roha.

26. ZYGOPHYLLACEAE

TRIBULUS L.

Tribulus terrestris L. Sp. Pl. 387. 1753; Edgew. & Hook f. in Hook. f. Fl. Brit. India 1: 423. 1874; Cooke, Fl. Pres. Bombay 1: 170. 1958 (Repr. ed.). *T. lanuginosus* L. Sp. Pl. 387. 1753; Wight, Icon. t. 98. 1838 *Gokru*.

Prostrate or suberect hairy herbs; leaves opposite, unequal; leaflets 3–6 pairs, oblong, mucronate, hairy, 0.8–1.7 x 0.2–0.4 cm; flowers yellow, solitary, axillary or leaf opposed; fruits globose, spiny, cocci 5, each with 2 pairs of spines, hairy; seeds minute, ellipsoid–oblong.

Fls. & Frts. : March–July.

In dry, sandy places, frequent. Indapur; Mangaon; Shrivardhan.

Roots are used as an appetizer, young leaves for blood purification and fruits as a tonic for urinary disorders.

27. OXALIDACEAE

1a. Trailing herbs; leaves palmately 3–foliolate; capsules linear–cylindric, beaked, many seeded ... OXALIS 1

1b. Erect herbs; leaves pinnately compound; capsules ellipsoid–oblong or globose, not beaked, few seeded ... BIOPHYTUM 2

1. OXALIS L.

Oxalis corniculata L. Sp. Pl. 435. 1753; Wight, Icon. t. 18. 1838. Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1: 436. 1874; Cooke, Fl, Pres. Bombay 1: 177. 1958 (Repr.ed.). *Ambuśi.*

Prostrate or suberect herbs with radially spreading branches; leaflets cuneate–obovate or obcordate, sparsely hairy beneath, margins ciliate, 0.5–1.5 x 0.3–1.2 cm; flowers yellow, solitary, axillary; capsules, flat, tomentose; seeds ovoid, brownish, striate.

Fls. & Frts. : September–October.

As a weed in Gardens and moist places, frequent. Matheran; Pachhad; Mahad.

The leaves and seeds are edible and said to be a cure for Scurvy.

2. BIOPHYTUM DC.

Biophytum sensitivum (L.) DC. Prodr. 1: 690. 1824; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1: 436. 1874; Cooke, Fl. Pres. Bombay 1: 177. 1958 (Repr. ed.). *Oxalis sensitiva* L. Sp. Pl. 434. 1753.

Small herbs with reddish, hairy, unbranched stem; leaves in rosette on top of stem; leaflets 5–12 paired, terminal pair largest, opposite, oblong or obovate–oblong, glabrous, 0.4–1.4 x 0.2–0.8 cm; flowers yellow, reddish tinged, 3–4 in terminal umbels; capsules glabrous; seeds ovoid, brownish, striate.

Fls. & Frts. : September–October.

As a weed in moist places, frequent. Alibag; Mhasla; Noral.

The plant is used medicinally in chest complaints and its ash for stomach–ache.

28. BALSAMINACEAE

IMPATIENS L.

1a. Plants scapigerous with root stalk; leaves radical; flowers racemose ... *I. acaulis* 1

1b. Plants not scapigerous :

2a. Leaves opposite; sepals elongate, linear:

3a. Leaves petioled; lip with long spur ... *I. kleinii* 2

3b. Leaves sessile or nearly so; lip with short spur :

4a. Flowers yellow ... *I. dalzellii* 3

4b. Flowers dark pink :

5a. Pedicels pubescent ... *I. inconspicua* 4

5b. Pedicels glabrous ... *I. oppositifolia* 5

2b. Leaves alternate; sepals short, minute:

6a. Capsules tomentose :

7a. Spur more than 0.5 (upto 2) cm ... *I. balsamina* var *coccinea* 6

7b. Spur less than 0.5 cm ... *I. balsamina* var. *rosea* 7

6b. Capsules glabrous ; ... *I pulcherrima* 8

1. **Impatiens acaulis** Arn. in Hook. Comp. Bot. Mag. 1: 325. 1835; Hook. f. Fl. Brit. India 1: 443. 1874; Fyson, Fl. South Indian Hill St. 2: t. 58. 1932; Cooke, Fl. Pres. Bombay 1: 180. 1958 (Repr. ed.). *Barki, Lahan-Tirda.*

Erect, fleshy herbs; leaves ovate or obovate–oblong, dentate, glabrous, 3.6–20.5 x 2.2–7.5 cm; flowers showy pink, lip with incurved, long, white spur, wings 2–lobed; capsules ellipsoid, acute at both ends; seeds minute.

Fls. & Frts. : September–October.

On wet rocks, infrequent. Matheran; Raigad; Varandh ghat.

2. **Impatiens kleinii** Wight & Arn. Prodr. 140. 1834; Wight, Icon. t. 884. 1844–1845; Hook. f. Fl. Brit. India 1: 445. 1874; Cooke, Fl. Pres. Bombay 1: 181. 1958 (Repr. ed.)

Slender, branched herbs; leaves opposite, elliptic–lanceolate, obovate, acute, glabrous, 1.4–5.2 x 0.8–1.5 cm; flowers pink–purple, axillary, wings with long claws, obovate; capsules spindle shaped, glabrous.

Fls. & Frts. : July–October.

As forest undergrowth, frequent. Matheran; Mirya donger, Pen; Pali; Roha.

3. **Impatiens dalzellii** Hook. f. & Thoms. in J. Linn. Soc. 4: 123. 1860; Hook. f. Fl. Brit. India 1: 449. 1874; Cooke, Fl. Pres. Bombay 1: 183. 1958 (Repr. ed.).

Erect, fleshy, branched herbs; leaves ovate–lanceolate, acute–acuminate, spinous-serrate, glabrous, pale beneath, 2.5–5x1–1.5 cm; flowers solitary or fascicled; capsules ellipsoid, turgid, tapering at both ends.

Fls. & Frts. : September–October.

In rock crevices, infrequent. Parghat, Poladpur.

4. **Impatiens inconspicua** Benth. ex Wight & Arn. Prodr. 139. 1834; Wight, Icon. t. 970. 1845; Hook. f. Fl. Brit. India 1: 447. 1874; Cooke, Fl. Pres. Bombay 1: 182. 1958 (Repr. ed.). *Tarda*.

Robust, fleshy herbs, branched from base; leaves obovate–oblong or linear–lanceolate, pubescent above, glabrous and pale beneath; flowers axillary, solitary or in pairs; capsules grey–black, ellipsoid, turgid, pointed at both ends; seeds globular, black.

Fls. & Frts. : September–October.

Along the hilly forests, frequent. Pali to Nagothana; Poladpur.

5. **Impatiens oppositifolia** L. Sp. Pl. 937. 1753; Wight, Icon. t. 883. 1844–1845; Hook. f. Fl. Brit. India 1: 448. 1874; Cooke, Fl. Pres. Bombay 1: 182. 1958 (Repr. ed.).

Erect, glabrous herbs; leaves linear–lanceolate, oblong–obovate, subsessile or lower petioled, obtuse or acute, serrate, 2.5–7.5x1.5–3 cm; flowers axillary, solitary or 2–3 together, spur short, stout, slightly curved; capsules ellipsoid; seeds black, globose.

Fls. & Frts. : August–October.

In hilly forests frequent. Matheran; Parghat, Poladpur.

6. **Impatiens balsamina** L. var. **coccinea** Hook. f. Fl. Brit. India 1: 454. 1874 & in Rec. Bot. Surv. India 4: 7. 1904; Cooke, Fl. Pres. Bombay 1: 185. 1958 (Repr. ed.).

Erect, glabrous herbs; leaves alternate, lanceolate, serrate, acuminate, 3.5–12.5x1.3–2.2 cm; flowers rosy; capsules tomentose; seeds reddish–brown, globular.

Fls. & Frts. : September–October.

In hilly forests, frequent. Kolaba fort, Alibag; Matheran; Varandh ghat.

7. **Impatiens balsamina** L. var. **rosea** (Lindl.) Hook. f. Fl. Brit. India 1: 454. 1874. *I rosea* Lindl. Bot. Reg. t. 27. 1841. *I. balsamina* var *brevicalcarata* T. Cooke, Fl. Pres. Bombay 1: 185. 1901 (1. 185. 1958. Repr. ed.).

Erect, variable herbs; leaves narrow, lanceolate; flowers rosy, pinkish or reddish.

Fls. & Frts. : September–October.

In hilly forests, frequent. Matheran.

8. **Impatiens pulcherrima** Dalz. in Hook. Kew J. Bot. 2:37. 1850; Hook. f. Fl. Brit. India 1:458. 1874; Cooke, Fl. Pres. Bombay 1:185. 1958 (Repr.ed.).

Erect, branched herbs; leaves elliptic–oblong, acute, crenate-serrate, glabrous, 5.5–9.6x3–4.2 cm; flowers white–purplish, lip with long spur; capsules turgid; seeds subglobose, rugose.

Fls. & Frts. : July–October.

As an undergrowth of forests, infrequent. Matheran.

29. RUTACEAE

1a. Flowers polygamous or monoecious; fruits dehiscent:

2a. Unarmed trees or shrubs; leaves opposite, 3–foliolate ... EUODIA 1

2b. Armed trees or shrubs; leaves alternate, 3–more foliolate ... ZANTHOXYLUM 2

1b. Flowers bisexual; fruits indehiscent:

3a. Ovules 1–2 in each cell:

4a. Unarmed :

5a. Style persistent; anthers glandular ... GLYCOSMIS 3

5b. Style deciduous; anthers eglandular ... MURRAYA 4

4b. Armed :

6a. Flowers solitary or fascicled; pedicels stout; stamens 8–10 ... PARAMIGNYA 5

6b. Flowers in short cymes; pedicels slender; stamens 6–8 ... ATALANTIA 6

3b. Ovules many in each cell ... AEGLE 7

1. EUODIA J.R. & G. Forst.

Euodia lunu–ankenda (Gaertn.) Merr. Philipp. J. Sci. Bot. 7: 378. 1912 (*Euodia lunar–akenda*). *Fagara lunu–ankenda* Gaertn. Fruct. 1: 334. t. 68. f.9. 1788. *Euodia roxburghiana* Benth. Fl. Hongk. 59. 1861; Hook. f. Fl. Brit. India 1: 487. 1875; Cooke, Fl. Pres. Bombay 1: 188. 1958 (Repr.ed.).

Trees with yellowish–white bark, 10–12m; leaflets oblong–lanceolate, acuminate, glabrous, 4–14.5x1.7–6 cm; flowers white, small

in dense, axillary cymes; fruits dark green, 2–loculed; seeds black, globular, shining.

Fls. & Frts. : May–February.

In hilly forests, infrequent. Parghat, Poladpur.

2. ZANTHOXYLUM L.

Zanthoxylum rhetsa (Roxb.) DC. Prodr. 1: 728. 1824; Bedd. For. Man. Bot. 41. t. 6. 1848; Hook. f. Fl. Brit. India 1: 495. 1875; Cooke, Fl Pres. Bombay 1:189. 1958 (Repr. ed.); Babu in Bull. Bot. Surv. India 16: 56. 1974. *Fagara rhetsa* Roxb. Fl. Ind. 1: 438. 1820. *Tisal.*

Trees; leaves crowded at the tips of branchlets, imparipinnate; leaflets ovate–lanceolate, acuminate, glabrous, 4.5–10.2 x 2.6–4.5 cm; flowers greenish–white in terminal and axillary panicles; fruits green, reddish–black on ripening, round, rugose; seeds globular, black.

Fls. & Frts. : August–March.

In moist deciduous forests, frequent. Mangaon; Mhasla.

Fruits are used as condiment.

3. GLYCOSMIS Corr.

Glycosmis mauritiana (Lam.) Tanaka in Bull. Soc. Bot. France 75: 708. 1928; Brizicky in J. Arnold Arb. 18: 90. 1962.*Limonia mauritiana* Lam. Encycl. 3:517. 1792. *Glycosmis pentaphylla* (Retz.) Corr. in Ann. Mus. Nat. Paris 6: 386. 1805; Hook. f. Fl. Brit. India 1: 499. 1875; Cooke, Fl. Pres. Bombay 1: 192. 1958 (Repr. ed.). *Kirmira.*

Large shrubs or small trees; leaves 3–5 (rarely 1) foliolate; leaflets oblong – lanceolate, entire–crenate, glabrous, 3.5–14.6 x 1.2–4.7 cm; flowers white in axillary and terminal clusters; berries subglobose.

Fls. & Frts. : March–December.

In hilly forests, infrequent. Matheran; Pali to Nagothana.

Infusion of dried leaves is given as a tonic and appetiser to women after delivery. Fruits are edible.

4. MURRAYA L. nom. cons.

1a. Flowers numerous in terminal corymbose cymes; leaflets 11–25, aromatic ... *M. Koenigii* 1

1b. Flowers few, in axillary and terminal corymbs; leaflets 3–7, not aromatic ... *M. paniculata* 2

1. **Murraya koenigii** (L.) Spreng. Syrt. Veg. 2: 3. 1825; Hook. f. Fl. Brit. India 1: 503. 1875; Cooke, Fl. Pres. Bombay 1: 193. 1958 (Repr. ed.). *Bergera Koenigii* L. Mant Pl. 2: 565. 1771; Wight, Icon. t. 13. 1838. *Kadi–nimb*.

Large shrubs or small trees; leaflets broadly ovate, rhomboid or lanceolate, glabrous, 2.7–12.4x1–4 cm; flowers creamy–white; fruits black, ovoid–subglobose, 2 seeded.

Fls.& Frts. : January–May.

Along the hilly forests, frequent. Alibag; Mahad; Matheran; Mhasla.

Roots are useful to cure piles, itching, leucoderma and blood-purification. The green leaves are eaten raw in dysentery and also used to flavour curries.

2. **Murraya paniculata** (L.) Jack. in Malay. Misc. 1 (5) : 31. 1820. *Chalcas paniculata* L. Mant. Pl. 1:68. 1767. *Murraya exotica* L. Mant. Pl. 2: 563. 1771; Wight, Icon. t. 96. 1838; Hook. f. Fl. Brit. India 1:502. 1875; Cooke, Fl. Pres. Bombay 1: 193. 1958. (Repr.ed.). *Pandhri*.

Small; evergreen trees; leaflets ovate–lanceolate, oblique, acuminate, glabrous, 2.7–9.5x1.6–3 cm; flowers white; fruits orange–red, ellipsoid, 2–seeded.

Fls. & Frts. : August–October.

Along the hill slopes, frequent. Matheran; Mhasla; Sudhagad.

This species is also cultivated in gardens for its white fragrant flowers. Tribal people use the branch as a stick and keep it in their houses with the belief that it keeps ghosts and snakes away.

5. PARAMIGNYA Wight

Paramignya monophylla Wight, Ill. 1: 109. t. 42.1840; Hook. f. Fl. Brit. India 1:510. 1875; Cooke, Fl. Pres. Bombay 1: 197. 1958 (Repr. ed). *Kari vageti, Kurvi vageti*.

Evergreen, scandent shrubs, armed with recurved, axillary spines; leaves leathery, glossy, ovate–oblong, 7.5–11.7x3.8–6.2 cm; flowers white; fruits ellipsoid, smooth.

Fls. & Frts. : November–March.

Along hilly forests, infrequent. Mhasla; Parghat; Poladpur.

Roots are said to be used to cure urinary and abdominal disorders in cattle.

6. ATALANTIA Corr. *nom. cons.*

Atalantia racemosa Wight & Arn. Prodr. 91.1834; Hook. f. Fl. Brit. India 1: 502. 1875; Cooke, Fl. Pres. Bombay 1: 199. 1958 (Repr. ed.). *Sclerostylis parviflora* Wight, Icon t. 71.1838. *Kadu nimb, Kate nimb, Makad nimb.*

Small trees with sharp spines; leaflets elliptic, ovate–lanceolate, entire or crenate, glabrous, 3.4–7.2x1.6–4.2 cm; flowers white; fruits globose, green when young, greyish–black at length.

Fls. & Frts. : April–December.

Along the hill slopes, frequent. Matheran; Pali to Nagothana; Parghat, Poladpur.

The berries yield oil (Ainolic) which is said to be valuable in chronic 'Rheumatism and Paralysis'. The leaf juice is used in hemiplegia in Konkan region.

7. AEGLE Corr. *nom. cons.*

Aegle marmelos (L) Corr. in Trans. Linn. Soc. London 5 : 223. 1800; Wight, Icon. t. 16. 1838; Hook. f. Fl.Brit. India 1: 516. 1875; Cooke, Fl. Pres. Bombay 1: 204. 1958 (Repr. ed.). *Crateva marmelos* L. Sp. Pl. 444. 1753. *Bel.*

Small, deciduous spiny trees; leaves alternate, glabrous; leaflets ovate–lanceolate, 1.7–3.8x1.2–1.8 cm; flower buds greenish in axillary panicles; fruits large, globose, pulpy, glabrous, grey, many seeded.

Fls. & Frts. : April–June.

Usually near temples, planted. Occasionally found as an escape. Elephanta island; Sudhagad.

The fruit pulp is eaten in stomach disorders.

Cultivated or introduced.

Citrus limon (L.) Burm. f. Fl. Ind. 173. 1768. *C. medica* L. var. *limon* L. Sp. Pl. 782. 1753. *C. medica* L. var. *limonum* (Risso) Hook. f.

Fl. Brit. India 1:515. 1875; Cooke, Fl. Pres. Bombay 1:201. 1958 (Repr. ed.). *Limbu*.

Thorny shrubs or small trees; leaves 1–foliolate, elliptic–oblong; flowers white; fruits globose, greenish–yellow.

Cultivated for its fruits. The rind of the fruit removes vata and lung troubles. Juice of the ripe fruit is valuable.

30. SIMAROUBACEAE

AILANTHUS Desf. *nom. cons.*

Ailanthus triphysa (Dennst.) Alst. in Trim. Handb. Fl. Ceylon 6 (Suppl.) : 41. 1931; Basak in Fasc. Fl. India 4: 5. 1980. *Adenanthera triphysa* Dennst Schluss. Hort. Malab. 32. 1818. *Ailanthus malabarica* DC. Prodr. 2: 89. 1825; Wight, Icon. t. 1604. 1850; Bennett in Hook. f. Fl. Brit. India 1: 518. 1875; Cooke, Fl. Pres. Bombay 1: 206. 1958 (Repr.ed.).

Lofty trees; leaves large, pinnate; leaflets 8–10 pairs, ovate–oblong, unequal sided, entire, glabrous, 7.5–15x3–5.7 cm; flowers creamy–white in axillary panicles; samara reddish–brown, flat, 1–seeded.

Fls. & Frts. : February–March.

In deciduous forests, infrequent. Nagothana.

The bark is said to be used in dyspesia and is considered valuable tonic and febrifuge, fresh juice of the bark is a good remedy in desentery.

31. BURSERACEAE

1a. Flowers white, 3–merous; calyx 3–fid; stamens inserted outside or at the base of disk ... CANARIUM 1

1b. Flowers yellow, 5–merous; calyx 5–fid; stamens at the margin of the disk ... GARUGA 2

1. CANARIUM L.

Canarium strictum Roxb. Fl. Ind. 3: 138. 1832; Bedd. Fl. Sylv. t. 128. 1871; Bennett in Hook. f. Fl. Brit. India 1: 534. 1875; Cooke, Fl. Pres. Bombay 1: 214. 1958 (Repr. ed.). *Dhup*.

Large, rufous, trees; leaves pinnate, coriaceous; leaflets 7–15, ovate–lanceolate, acuminate, serrate, 10–20x4.5–9 cm; flowers unisexual in panicles; drupes ellipsoid, tapering at both ends.

Fls. & Frts. : February–May.

In moist deciduous forests, infrequent. Matheran; Mirya dongar near Pen; Varandh Ghat.

The gum extracted from this 'black dammer trees' mixed with gingelly oil is used in rheumatic pains.

2. GARUGA Roxb.

Garuga pinnata Roxb. Pl. Cor. 3: 5. t. 208. 1819; Bennett in Hook. f. Fl. Brit. India 1: 528. 1875; Cooke, Fl. Pres. Bombay 1: 211. 1958 (Repr.ed.); Kalkman in Blumea 7: 468. 1953. *Kakad, Kunak.*

Deciduous trees; leaves pinnate; leaflets 17–21, ovate–lanceolate, acuminate, crenate, oblique, pubescent when young, glabrous at length; flowers in axillary, much branched panicles; drupes ellipsoid, green–black, 5–seeded.

Fls. & Frts. : March–June.

In hilly forests, frequent. Alibag; Bhisekhind, Roha; Mahad; Matheran; Neral.

32. MELIACEAE

1a. Seeds not winged :

2a. Seeds albuminous; cotyledons thin, foliaceous :

3a. Leaves not pinnate; fruits capsular :

4a. Leaves simple; petiole not winged ... TURRAEA 1

4b. Leaves 3–foliolate; petiole winged ... NAREGAMIA 2

3b. Leaves bipinnate; fruits fleshy, drupaceous ... MELIA 3

2b. Seeds exalbuminous; cotyledons thick, not foliaceous :

5a. Leaflets serrate; style long; stigma 3–toothed, included ... AZADIRACHTA 4

5b. Leaflets entire; style short; stigma not as above :

6a. Anthers included in the staminal tube or tips only exserted ... AGLAIA 5

6b. Anthers wholly exserted from the staminal tube ... TRICHILIA 6

1b. Seeds winged :

7a. Stamens united into a tube ;

8a. Staminal tube cup–shaped; disk conspicuous ... SOYMIDA 7

8b. Staminal tube cylindric, disk absent ... CHICKRASSIA 8

7b. Stamens not united ... CHLOROXYLON 9

1. TURRAEA L.

Turraea villosa Benn. in Benn. & R.Br. Pl. Jav. Rar. I: 182. 1840; Wight, Icon. t. 1593. 1850; Hiern in Hook. f. Fl. Brit. India 1: 542. 1875; Cooke, Fl. Pres. Bombay 1: 216. 1958 (Repr. ed.). *Kapur bhendi.*

Large shrubs; leaves deciduous, elliptic-ovate, acuminate, villous when young, glabrous at length; flowers creamy–white, axillary, staminal tube linear, *ca* 2.5 cm long; capsules subglobose.

Fls. & Frts. : August–October.

In deciduous forests, frequent. Pen; Sudhagad; Vankad to Nagothana.

The root is used as an application to 'fistulas' and is administered internally in leprosy.

2. NAREGAMIA Wight & Arn.

Naregamia alata Wight; & Arn. Prodr. 117. 1834; Wight, Icon. t. 90. 1838; Hiern in Hook. f. Fl. Brit. India 1:542. 1875; Cooke, Fl. Pres. Bombay 1:217. 1958 (Repr. ed).

Suffruticose herbs or undershrubs; leaflets cuneate-obovate or lanceolate, glabrous, 1.2–3x0.7–1.5 cm; flowers white, solitary, axillary; capsules 3–lobed with 3–orbicular valves; seeds reddish–brown, muriculate, curved.

Fls. & Frts. : November–January.

In plain forests, infrequent. East of Panvel.

The roots are said to be sweet and cooling, cures asthma, bronchites, biliousness and ulcers. Leaves and stem are given in decoction with bitters and aromatics as a remedy for biliousness in Konkan region.

3. MELIA L.

1a. Flowers lilac; anthers as long as the teeth of staminal tube ... *M. azedarach* 1

1b. Flowers creamy–white; anthers longer than teeth of staminal tube ... *M. composita* 2

1. **Melia azedarach** L. Sp. Pl. 384. 1753; Wight, Icon. t. 160.1839; Hiern in Hook. f. Fl. Brit. India 1: 544. 1875; Cooke, Fl. Pres Bombay 1: 218. 1958 (Repr. ed.). *Bakan Nimb.*

Trees, 5–10 m; leaves 2(–3)–pinnate; leaflets opposite, elliptic, ovate–lanceolate, serrate, acuminate, 2.5–5x0.5–1.8 cm; flowers sweet scented in axillary panicles; drupes globose, yellowish, 3–6–seeded.

Fls. & Frts. : Almost throughout the year.

In the outskirts of the forest, infrequent. Mahad.

This fast growing 'Persian Lilac' tree is often planted along road–sides. Fruits are eaten by domestic animals. The leaf–juice used an anthelmintic and seeds in rheumatic, pains.

2. **Melia composita** Willd. Sp. Pl. 2:559. 1799; Cooke, Fl. Pres. Bombay 1: 218. 1958 (Repr. ed.). *M. dubia* Hiern in Hook. f. Fl. Brit. India 1: 545. 1875 *non* Cav. (1789). *Nimbara.*

Large trees, 15–20m; leaves 2–3 pinnate; leaflets 5–11, ovate–lanceolate, glabrous, 4.5–12x0.8–5.2 cm; flowers fragrant in much branched, terminal panicles; drupes ovoid–ellipsoid, smooth, yellow.

Fls. & Frts. : March – April.

In deciduous forests, infrequent. On way to Shivthalgad, Mahad.

4. AZADIRACHTA A. JUSS.

Azadirachta indica A. Juss. in Mem. Mus. Nat. Hist. Paris 19:221. t. 2. f. 5. 1830; Wight, Icon. t. 17. 1838; Cooke, Fl. Pres. Bombay 1:220. 1958 (Repr. ed.). *Melia azadirachta* L.Sp. Pl. 385. 1753; Hiern in Hook. f. Fl. Brit. India 1:544. 1875. *Nim.*

Large trees upto 15m; leaves pinnate; leaflets crenate–serrate; flowers white, fragrant; drupes pulpy, cylindric–oblong, greenish–yellow, 1–seeded.

Fls. & Frts. : March–May.

In plains and along road sides, frequent. Throughout the district.

Usually planted and often runs wild. It yields good timber as well as gum. All parts of the plant are medicinal. An extract of leaves used in

tooth paste and soaps. The fruits are edible and oil extracted from seeds used as a purgative and anthelmintic.

5. AGLAIA Lour. *nom. cons.*

Aglaia lawii (Wight) Sald. in Sald. & Nocols. Fl. Hassan 392. 1976. *Nimmonia lawii* Wight in Calcutta J. Nat. Hist. 7:13. 1847. *Amoora lawii* (Wight) Bedd. Fl. Sylv. t. 133. 1871; Hiern in Hook. f. Fl. Brit. India 1: 561.1875; Cooke, Fl. Pres. Bombay 1: 225. 1958 (Repr. ed.).

Medium sized trees; leaves imparipinnate; leaflets ovate–lanceolate, acuminate, glabrous, 5.5–11x3.5–4.7 cm; flower buds yellowish–green in axillary panicles; fruits yellowish–buff coloured, pyriform.

Fls. & Frts. : December–June.

In hilly forests, frequent. Karjat; Matheran; Mhasla; Nagothana; Parghat, Poladpur; Sudhagad.

6. TRICHILIA P. Browne

Trichilia connaroides (Wight & Arn.) Bentvel. in Acta Bot. Neerl. 11:13. 1962. *Zanthoxylon connaroides* Wight & Arn. Prodr. 148. 1834. *Heynea trijuga* Roxb. ex Sims in Bot. Mag. 41:t. 1738. 1815; Hiern in Hook. f. Fl. Brit. India 1: 565. 1875; Cooke, Fl. Pres. Bombay 1:227. 1958 (Repr. ed.). *Limbara.*

Small trees, 8–15m; Leaves imparipinnate; leaflets opposite, ovate–lanceolate, acuminate, glabrous, 3.5–8.5x1.8–3.7 cm; flowers white in corymbose panicles; fruits globose, red; seeds solitary, black, roundish, smooth.

Fls. & Frts. : February – March.

Along the hilly tracts, infrequent. Parghat, Poladpur.

7. SOYMIDA A. Juss.

Soymida febrifuga (Roxb.) A. Juss. in Mem. Mus. Nat. Hist. Paris 19: 251. t. 22. f. 26. 1830; Hiern in Hook. f. Fl. Brit. India 1: 567. 1875; Cooke, Fl. Pres. Bombay 1: 228. 1958 (Repr. ed.). *Swietenia febrifuga* Roxb. Pl. Cor. t. 17.1795. *Rohan, Ruhin.*

Trees, upto 15 m; leaves pinnate; leaflets elliptic – oblong, obtuse, oblique, glabrous, 5–11.5 x 3.5–6 cm; flowers white in terminal or axillary panicles; capsules obovoid, 5–celled; seeds winged.

Fls. & Frts. : March–April.

In hilly forests, infrequent. Matheran.

The 'Red–fibre' obtained from the bark of this 'Red–wood tree' used for ropes. The bark is also used as a tan in diarrhoea, dysentery and as a stimulant.

8. CHUKRASSIA A. Juss.

1a. Leaves 2-3-pinnate; leaflets glabrous above, velvety beneath ... *C. tabularis* 1

1b. Leaves 1-pinnate; leaflets tomentose or pubescent on both surfaces ... *C. tabularis bur. velutina* 2

1. **Chukrassia tabularis** A. Juss in Mem. Mus. Nat. Hist. Paris 19:251. t. 22. 1830; Hiern in Hook. f. Fl. Brit. India 1:568. 1875; Cooke, Fl. Pres. Bombay 1:229. 1958 (Repr.ed.). *Dalmara, Lal devdari, Pabba.*

Trees, 12–15 m; leaves bi or tri–pinnate; leaflets 10–24, ovate, ovate–oblong, acuminate, glabrous above, velvety beneath; flowers dirty white in terminal panicles; capsules ovoid; seeds winged, many.

Fls. & Frts. : February–May.

In moist deciduous forests, infrequent. Matheran.

This beautiful 'Chittagong wood tree' yields a valuable timber for making high class furniture for decorative work. A yellow gum is extracted from it and the bark is used medicinally.

2. **Chukrassia tabularis** A. Juss var. **velutina** King in J. As. Soc. Bengal 64: 88. 1895; Cooke, Fl. Pres. Bombay 1: 230. 1958 (Repr. ed.).

Medium sized trees; leave pinnate; leaflets tomentose or pubescent on both surfaces; panicles tomentose; capsules 4–valved.

Fls. & Frts. : February – May.

In deciduous forests, infrequent. Monkey point, Matheran, *Irani* 4910 **(Blat)**; Roha (Rohe).

9. CHLOROXYLON DC.

Chlor oxylon swietenia DC. Prodr. 1 : 625. 1824; Hiern in Hook. f. Fl. Brit. India 1 : 569. 1875; Cooke, Fl. Pres. Bombay 1 : 231. 1958 (Repr. ed.). *Bheria, Billu, Halda.*

Trees, 9–12 m; leaves pinnate; leaflets 20–40, oblong, obtuse,

glabrous, 1.5 – 3.2 x 0.6 – 1.4 cm; flowers white in axillary or terminal panicles; capsules oblong, 3–celled, reddish–black; seeds with membranous, falcate wings.

Fls. & Frts. : March – May.

In moist deciduous forests, infrequent. Matheran.

The bark is an astringent. The leaves are applied to wounds and also useful in rheumatic pains.

33. OPILIACEAE

CANSJERA A. L. Juss. *nom. cons.*

Cansjera rheedii Gmel. Syst. Nat. (ed.13) 2: 280.1791; Wight, Icon. t. 1861. 1862; Masters in Hook. f. Fl. Brit. India 1: 237.1958 (Repr. ed.).

Scandent shrubs; leaves coriaceous, ovate, oblong–lanceolate, acute, glabrous, 2.3 –9.2 x 1–3.5 cm; flowers greenish–yellow in axillary spikes; fruits orange–red, ellipsoid, glabrous.

Fls.&. Frts. : November –June.

Along river–banks and in moist deciduous forests, frequent. Elephanta island; Karjat; Mangoan.

34. OLACACEAE

OLAX L.

Olax wightiana Wall. ex Wight & Arn. Prodr. 89. 1834; Masters in Hook. f. Fl. Brit. India 1:575. 1875; Cooke, Fl. Pres. Bombay 1:235. 1958 (Repr.ed.). *Harduli, Urchirri.*

Unarmed, much branched, climbing shrubs; leaves oblong–lanceolate, glabrous, 4–11.5x1.5–5 cm; flowers white, axillary, solitary or in clustered racemes; drupes orange, subglobose.

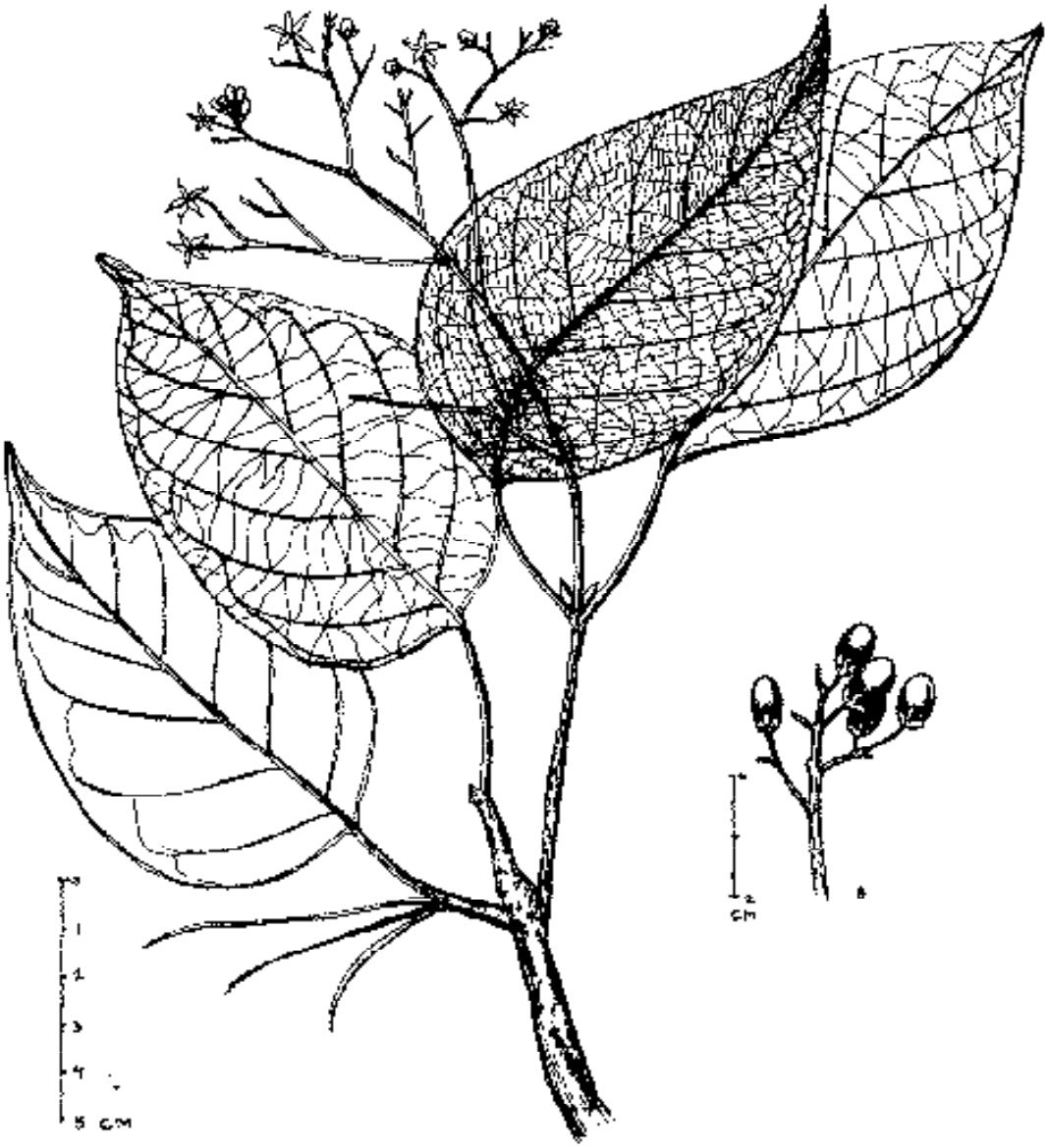
Fls. & Frts. : March – April.

In moist deciduous forests, frequent. Karnala fort; Khopoli.

35. ICACINACEAE

NOTHAPODYTES Blume

Nothapodytes nimmoniana (Grah.) Mabb. in Manilal Bot. Hist.



Nothapodytes nimmoniana (Grah.) Mabber.
a) Habit, b) Fruits.

Hort. Malab. 88.1980. *Premna nimmoniana* Grah. Cat. Pl. Bombay 155. 1839. *Nothapodytes foetida* (Wight) Sleum. Notizbl. Bot. Gart. Berlin–Dahlem 15:247.1940. *Stemonurus foetidus* Wight, Icon. t. 955. 1845. *Mappia foetida* (Wight) Miers Ann. Mag. Nat. Hist. Ser. 2, 9: 395.1852; Masters in Hook. f. Fl.Brit. India 1: 589. 1875; Cooke, Fl. Pres. Bombay 1: 239. 1958 (Repr. ed.). *Ghanera, Kalgur, Ranvangi.*

Trees with wrinkled bark; leaves ovate- oblong, glabrous, 8–20.5 x 4.6–9.5 cm; flowers dirty–white or yellow in terminal panicles with unpleasant odour; fruits ellipsoid, green to reddish–purple.

Fls. & Frts. : March–November.

In hilly forests, frequent. Matheran; Raigad; Sudhagad.

36. CELASTRACEAE

1a Trees, unarmed; leaves opposite or sub–opposite; fruits drupaceous; seeds exarillate ... CASSINE 1

1b. Erect or climbing shrubs, armed or unarmed; leaves alternate; fruits capsular; seeds arillate :

2a. Climbing shrubs, unarmed; flowers polygamous in pendulous racemes; ovary free from disk ... CELASTRUS 2

2b. Erect shrubs armed with spines; flowers bisexual in axillary, solitary or fascicled cymes; ovary confluent with the disk ... MAYTENUS 3

1. CASSINE L.

Cassine glauca (Rottb.) Kuntze, Rev. Gen. Pl. 1: 114. 1891; Ding Hou in Steenis Fl. Males. 6: 286.1963. *Mangifera glauca* Rottb. Nyc. Sam. Vid. Selsk. Skirft. 2: 534. t. 4. f. 1. 1783. *Elaeodendron glaucum* (Rottb.) Pers. Syn. 1: 241. 1805; Lawson in Hook. f. Fl. Brit. India 1: 623. 1875; Cooke, Fl. Pres. Bombay 1:248. 1958 (Repr. ed.). *Bhutkesi, Bhutya.*

Moderate sized trees; leaves ovate–elliptic or elliptic–oblong, acute–acuminate, crenate, coriaceous, 2.5–12 x 1.3–6.5 cm; flowers greenish in axillary cymes; drupes obovoid, apiculate; seeds solitary, black, ellipsoid.

Fls. & Frts. : February–May.

In hilly forests,infrequent. Khopoli.

The bark and dried powdered leaves are used in medicine and wood for making furniture.

2. CELASTRUS L.

Celastrus paniculatus Willd.Sp. Pl. 1:1125. 1797; Wight, Icon. t. 58. 1838; Lawson in Hook. fl. Brit. India 1:617. 1875; Cooke, Fl. Pres. Bombay 1: 245. 1958 (Repr. ed.); Ding Hou in Steenis Fl. Males. 6:235. 1963.

Scandent shrubs; leaves elliptic–ovate, crenate –serrate, acuminate–emarginate, glabrous, 3.5–11.5 x 2.4 –7 *cm*; flowers greenish–yellow; capsules greenish to orange–yellow, subglobose; seeds reddish–brown, ovoid.

Fls. & Frts. : May– October.

In hilly forests, frequent. Alibag; Karjat; Matheran.

3. MAYTENUS Molina *emend* Bosc.

1a. Spines bearing leaves and flowers ; flowers in axillary, lax cymes or in fascicles; mature fruits dark purple ... *M. emarginata* 1

1b Spines not bearing leaves and flowers; cymes reduced to subsessile, axillary clusters from tubercles on old wood; mature fruits bright red ... *M. rothiana* 2

1. **Maytenus emarginata** (Willd.) Ding Hou in Steenis, Fl. Males. 6: 241. 1962. *Celastrus emarginatus* Willd. Sp. Pl. 1: 1128. 1798. *Gymnosporia montana* (Roth ex Roem. & Schult.) Benth. Fl. Austr. 1: 400. 1863; Lawson in Hook. f. Fl. Brit. India 1: 621. 1875; Cooke, Fl. Pres. Bombay 1: 247. 1958 (Repr. ed.). *Hakel, Malkanguni.*

Large shrubs or small trees; leaves coriaceous, elliptic or obovate, rounded, apiculate or slightly emarginate,crenulate, glabrous; flowers white in furcately branched cymes; capsules globose; seeds chestnut brown.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

2. **Maytenus rothiana** (Walp.) Lobreau callen in Adansonia ser. 2 15 : 223.1975 *Catha rothiana* Walp. Rep. 1:532.1842. *Gymnosporia rothiana* (Walp.) Lawson in Hook. f. Fl. Brit. India 1:620 1875; Cooke, Fl. Pres. Bombay 1:246. 1958 (Repr. ed.).

Large shrubs or small trees;leaves obovate–cuneate; flowers white in short peduncled or fascicles from tubercled old branches; capsules 3–lobed; seeds 6, brownish–red, ellipsoid, smooth.

Fls. & Frts. : April–October.

In hilly forests, frequent. Matheran; Parghat, Poladpur.

37. HIPPOCRATEACEAE

REISSANTIA Halle

1a. Flowers yellow in dichotomous cymes, usually shorter than leaves; follicles upto 4 cm long ... *R. indica* 1

1b. Flowers white in thyrsiform or paniculate cymes, usually longer than leaves; follicles upto 10cm long ... *R. grahamii* 2

1. **Reissantia indica** (Willd.) Halle in Mem. Inst. France Afrique Noire n. 64: 85. 1962; Ding Hou in Blumea 12: 33. 1963. *Hippocratea indica* Willd. Sp. Pl. 1: 193. 1797; Cooke, Fl. Pres. Bombay 1:250. 1958 (Repr. ed.). *Kazarati, Turruli.*

Woody climbers; leaves opposite, elliptic–oblong or lanceolate, blunt–acuminate, glabrous, 4.2–9.6 x 1.3–4.2 cm; flowers small in axillary, corymbose cymes; follicles ellipsoid, winged.

Fls. & Frts. : March–April.

Along the hilly forest, occasional. Parghat, Poladpur.

2. **Reissantia grahamii** (Wight) Ding Hou in Blumea 12:33. 1963. *Hippocratea grahamii* Wight, Ill. 1: 134. 1839; Lawson in Hook. f. Fl. Brit. India 1: 624. 1875; Cooke, Fl. Pres. Bombay 1:249. 1958 (Repr. ed.). *Lokhandi, Yesti, Yevti.*

Climbing shrubs; leaves coriaceous, ovate–elliptic, entire, acute, opposite; flowers in branched panicles; follicles linear–oblong, flat, emarginate at apex; seeds ovoid– oblong, winged.

Fls. & Frts. : January–April.

In hilly forests, occasional. Matheran.

The species is so far restricted to peninsular India.

38. RHAMNACEAE

1a. Leaves alternate; ovary 1/2 inferior :

2a. Fruits indehiscent :

3a. Fruits dry, winged, 1–seeded ... VENTILAGO 1

3b. Fruits dry or fleshy drupes, not winged, 1–4–seeded ... ZIZIPHUS 2

2b. Fruits dehiscent ... COLUBRINA 3

1b. Leaves opposite; ovary superior ... SCUTIA 4

1. VENTILAGO Gaertn.

1a. Flowers in axillary fascicles; leaves rufous hairy on nerves with tufts of rusty villous glands in the axils of the main and the lateral nerves; fruits laterally compressed ... *V. bombaiensis* 1

1b. Flowers in terminal, simple or paniceled spikes; leaves and fruits not as above ... *V. denticulata* 2

1. **Ventilago bombaiensis** Dalz. in Hook. Kew J. Bot. 3:36. 1851; Lawson in Hook. f. Fl. Brit. India 1: 631. 1875; Cooke, Fl. Pres. Bombay 1 : 254. 1958 (Repr. ed.). *Madval.*

Climbing shrubs; leaves lanceolate, acute–acuminate, crenate, oblique at base, 7–13 x 2–3 cm; flowers in dense axillary clusters; fruits greenish–yellow.

Fls. & Frts. : February – September.

Along the hilly forests, occasional. Matheran.

2. **Ventilago denticulata** Willd. in Ges. Naturf. Fr. Neue Schr. 3: 417. 1801; Banerjee & Mukerjee in Indian Forester 96: 209. 1970. *V. calyculata* Tulas. in Ann. Sci. Nat. Ser. 4, 8: 124. 1857; Lawson in Hook. f. Fl. Brit. India 1: 631. 1875; Cooke, Fl. Pres. Bombay 1: 254. 1958 (Repr. ed.). *Kanvel, Lokhandi.*

Much branched, scandent shrubs; leaves ovate–elliptic or oblong–lanceolate, hairy beneath, at length glabrous; flowers greenish in drooping panicles; fruits yellowish, globular with basal flat disk formed by persistent calyx; wings linear–oblong, 1–nerved.

Fls. & Frts. : December–March.

In hilly forests, infrequent. Matheran; Pen.

2. ZIZIPHUS Mill.

1a. Petals absent; flowers in pedunculate cymes arranged in long, axillary or terminal panicles ... *Z. rugosa* 1

1b. Petals 5; flowers in fascicles or in sessile or shortly pedunculate cymes :

2a. Scandent or climbing shrubs ... *Z. oenoplia* 2

2b. Plants not as above:

3a. Leaves whitish or dusty tomentose beneath; styles 2 :

4a. Small trees; disk grooved; fruits 1.25 cm across or more ... *Z. mauritiana* 3

4b. Bushy shrubs; disk pitted; fruits not more than 1.2 cm across ... *Z. nummularia* 4

3b. Leaves not whitish or dusty-tomentose beneath; styles 3 ... *Z. xylopyrus* 5

1. Ziziphus rugosa Lam. Encycl. 3: 319. 1789; Wight, Icon. t. 339. 1840; Lawson in Hook. f. Fl. Brit. India 1: 636. 1875; Cooke, Fl. Pres. Bombay 1: 258. 1958 (Repr. ed.). *Toran, Toranvel.*

Scandent, armed shrubs; leaves ovate–elliptic , oblique, glabrous above, fulvous tomentose beneath, 6.5–15 x 3.2–9.5 cm; flowers yellowish on spinous, tomentose peduncles; fruits globose, pale green to whitish, 1–seeded

Fls. & Frts. : December– May.

In hilly forests, frequent. Alibag; Matheran; Varandh ghat.

2. Ziziphus oenoplia (L.) Mill. Gard. Dict. (ed.8.) no.3. 1768; Lawson in Hook. f. Fl. Brit. India 1: 634. 1875; Cooke, Fl. Pres. Bombay 1:257. 1958 (Repr. ed.). *Rhamnus oenoplia* L. Sp. Pl. 194.1753. *Chena –bor , Kateri–Bor.*

Straggling shrubs; leaves ovate–lanceolate, acute–acuminate, pubescent above, densely silky–rufous hairy beneath; flowers greenish–white in axillary , subsessile panicles; drupes reddish–black, globose, 1–seeded.

Fls. & Frts. : August–February.

In moist deciduous forests, frequent. Alibag; Karjat; Mangaon; Mhasla; Roha.

Fruits are edible.

3. Ziziphus mauritiana Lam. Encycl. 3: 319. 1789. *Z. jujuba* Lam. Encycl 3: 318. 1789 *non* Mill. (1768) ; Wight, Icon. t. 99. 1838; Lawson in Hook. f. Fl. Brit. India 1: 632. 1875; Cooke, Fl. Pres. Bombay 1: 256. 1958 (Repr. ed.).

Large shrubs or small trees; leaves ovate–elliptic, glabrous above,

dusty –tomentose beneath, 3–nerved 2.4 –6.5 x 1.5 –2.3 cm; flowers greenish–yellow or orange when ripe.

Fls. & Frts. : September –October.

In deciduous forests, infrequent. Alibag; Pachhad.

The species is also cultivated near villages for its edibles fruits.

4. **Ziziphus nummularia** (Burm.f.) Wight & Arn. Prodr. 162. 1834; Lawson in Hook. f. Fl. Brit. India 1: 633. 1875. *Rhamnus nummularia* Burm. f. Fl. Ind. 61. 1768. *Zizyphus rotundifolia* Lam. Encycl. 3: 319.1789; Cooke, Fl. Pres. Bombay 1: 257.1958 (Repr. ed). *Gangra, Jangra.*

Thorny, branched shrubs; leaves broadly Ovate–orbicular, buff–tomentose; flowers greenish –yellow or creamy-white in axillary cymes, disk pitted; drupes globose, red when ripe.

Fls. & Frts. : October –December.

In deciduous forests, infrequent. Roha.

5. **Ziziphus xylopyrus** (Retz.) Willd. Sp. Pl. 1: 1104. 1798; Lawson in Hook. f. Fl. Brit. India 1: 634. 1875; Cooke, Fl. Pres. Bombay 1: 258. 1958 (Repr. ed.). *Rhamnus xylopyrus* Retz. Obs. 2: 11. 1781. *Ghot, Guti.*

Scandent shrubs or small trees; leaves ovate–elliptic or oblong, crenate –serrate, oblique, 2–7.5 x 1.3 –4 cm; flowers white in paniculate cymes; drupes hard, globose, grey–tomentose, 2–3–seeded.

Fls. & Frts. : May–October.

In hilly forests, frequent. Mangaon; Matheran; Pachhad; Roha; way to Shivthalgad, Mahad.

3. COLUBRINA Rich. ex. Brongn. *nom. cons.*

Colubrina asiatica (L.) Brongn. Mem fam. Rhamn. 62. 1826 & in Ann. Sci. Nat. Ser. 1. (ed. 10). 369. 1827; Lawson in Hook. f. Fl. Brit. India 1: 642. 1875; Cooke, Fl. pres. Bombay 1: 261. 1958 (Repr. ed.). *Ceanothus asiaticus* L. Sp. Pl. 196. 1753.

Much branched, unarmed shrubs; leaves alternate, ovate, crenate–serrate, apex acute–acuminate, base rounded or cordate, 3.6 –7.5 x 5 cm; flowers yellowish in axillary cymes; capsules globose; seeds 3 , brown, rounded on dorsal side,angular ventrally.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Elephanta island.

4. SCUTIA (Comm. ex. A.P.DC.) Brongn. *nom. cons.*

Scutia circumscissa (L.f.) Druce in Rep. Bot. Exch. cl. Brit. Isles 1916: 646. 1947. *Rhamnus circumscissus* L.f. Suppl. 152. 1781. *Scutia indica* Brongn. in Ann. Sci.Nat.Ser. 1 (ed. 10) 363. 1827; Wight, Ill. 1: t. 73. 1840; Lawson in Hook. f. Fl. Brit. India 1: 640. 1875; Cooke, Fl. Pres. Bombay 1: 260. 1958 (Repr. ed). *Chimat.*

Armed, straggling shrubs; leaves orbicular–obovate, coriaceous, shining , flowers greenish–white in axillary umbels; fruits baccate, pyrenes 2–4, crustaceous, compressed.

Fls. & Frts. : February–May.

In hilly forests, infrequent. Mahad.

39. VITACEAE

1a. Flowers polygamo-monoecious ... AMPELOCISSUS 1

1b. Flowers polygamo–dioecious or hermaphrodite :

2a. Flowers polygamo–dioecious; stigma 4 –lobed ... TETRASTIGMA 2

2b. Flowers hermaphrodite; stigma not as above :

3a. Leaves simple; berries 1–seeded; seeds ellipsoid or pyriform, smooth or pitted ... CISSUS 3

3b. Leaves pedately compound, 3–many foliolate; berries 2–4 seeded; seeds semispheric, deeply pitted ... CAYRATIA 4

1. AMPELOCISSUS Planch. *nom. cons.*

Ampelocissus latifolia (Roxb.) Planch. in J. vigne Amer.374. 1884. *vitis Latifolia* Roxb. Fl. Ind. 1: 661. 1832; Lawson in Hook. f. Fl. Brit. India 1: 652. 1875; Cooke, Fl. Pres. Bombay 1: 269. 1958 (Repr. ed.). *Koland, Nandena.*

Extensive woody climbers; leaves broadly ovate, 3–7 angled or deeply lobed, sharply or irregularly toothed; flowers deep reddish in compact, panicled cymes; berries globose, glabrous; seeds 2,ellipsoid, transversely grooved on the back.

Fls. & Frts. : June – October.

In hilly forests, frequent. Dasgaon; Matheran; Murud; Pen to Khopoli.

Fruits edible.

2. TETRASTIGMA Planch.

Tetrastigma lanceolarium (Roxb.) Planch. in DC. Monogr. Phan. 2: 423. 1887.*Vitis lanceolaria* Roxb. Fl. Ind. 412. 1832; Wight, Icon. t. 177. 1839; Lawson in Hook. f. Fl. Brit. India 1: 660. 1875; Cooke, Fl. Pres. Bombay 1: 274.1958 (Repr. ed.). *Kajolisa yel, Kazorlicha yel.*

Large, woody climbers; tendrils simple, slender; leaves 3–5–foliolate; leaflets lanceolate–oblanceolate, acuminate, serrate, glabrous, 7.5–12.5 x 2.5 –5 cm; flowers: male cymes paniculate, longer than petioles; female cymes densely corymbose, shorter than petioles; peduncles pubescent; berries globose, cream coloured; seeds 2–4, ellipsoid, deeply grooved on back

Fls. & Frts. : December–March.

On bushes along the hilly forests, infrequent. Matheran.

3. CISSUS L.

1a. Stems and branches succulent, acutely 4–angled, angles winged with tendrils : ... *C. quadrangularis* 1

1b. Stems and branches not succulent, cyclindric or obscurely angled, with or without tendrils :

2a. Erect shrubs without tendrils; leaves 5–24.5 x 3.5 –21.5 cm with long petioles upto 18.5 cm ... *C. woodrowii* 2

2b. Scandent or climbing shrubs with leaf–opposed tendrils; leaves and petioles comparatively smaller :

3a. Leaves glabrous :

4a. Leaves blotched with white above and bright red beneath, apex not lobed; stem woody at base ... *C. discolor* 3

4b. Leaves pale–green, apex 2–3 lobed; stem woody at base ... *C.pallida* 4

3b. Leaves pubescent or tomentose beneath :

5a. Young leaves with dense rufous tomentum beneath; flowers pink ... *C. repanda* 5

5b. Leaves with orange –red pubescence beneath; flowers greenish–yellow ... *C. adnata* 6

1. **Cissus quadrangularis** L. Mant. Pl. 1: 39. 1767. *Vitis quadrangularis* Wall. ex Wight & Arn. Prodr. 125. 1834; Lawson in Hook. f. Fl. Brit. India 1: 645. 1875; Cooke, Fl. Pres. Bombay 1: 266. 1958(Repr. ed.). *Chaudari, Had–Mod, Harsankar.*

Trailing herbs; leaves orbicular, crenate; flowers white; berries obovoid–globose, red at maturity, 1–seeded.

Fls. &Frts. : May–June.

In deciduous forests, infrequent. Janjira fort, Murud.

2. **Cissus woodrowii** (Stapf ex T. Cooke) Sant. in Kew Bull. 1948: 276. 1948. *Vitis woodrowii* Stapf ex.T.Cooke, Fl. Pres. Bombay 1: 208. 1902 (1: 264. 1958, Repr. ed.). *Cissus vitiginea* Dalz. & Gibs. Bombay Fl. 40. 1861 (*non* Roxb.) *Girnul.*

Erect, woody shrubs; leaves cordate–ovate, acute–acuminate, repand–crenate, glabrous; flowers 4–merous in compound umbels, peduncles stout; berries green, obovoid–subglobose, 1–seeded.

Fls. & Frts. : August–October.

In hilly forests, frequent. Karjat; Matheran; Neral–Matheran; Pen to Khopoli; Vankad to Nagothana.

3. **Cissus discolor** Blume, Bijdr. 181. 1825. *Vitis discolor* (Blume) Dalz. in Hook. Kew J. Bot. 2: 39. 1850; Lawson in Hook. f. Fl. Brit. India 1: 647.1875; Cooke, Fl. Pres. Bombay 1: 266. 1958 (Repr. ed.). *Telitsayel.*

Slender climbers; leaves obliquely ovate–lanceolate, acuminate, cordate–truncate, serrate, 5.6 –13 x 1.7 –6.2 cm; flowers reddish–yellow, 4–merous in leaf opposed umbels; berries dark brown–black, shining; seeds solitary, ellipsoid or pear shaped.

Fls. & Frts. : September–October.

In moist, waste places, frequent. Jambulpada; Matheran; Murud; Pen.

4. **Cissus pallida** (Wight & Arn.) Steud. Nom. Bot. (ed. 2) 1: 372. 1840; Planch. in DC. Monogr. Phan. 5 : 477. 1887. *Vitis pallida* Wight & Arn. Prodr. 125. 1834; Lawson in Hook. f. Fl. Brit. India 1: 647. 1875; Cooke, Fl. Prds. Bombay 1: 265. 1958 (Repr. ed.). *Gardhan, Khaud.*

Scandent shrubs with glaucous–white stems; leaves broadly ovate–suborbicular or cordate, shortly acuminate, with small, distant,

glandular incurved serratures; flowers 4–merous in compound umbels; berries subglobose, 1–seeded.

Fls. & Frts. : May– June.

In deciduous forests, infrequent. Bhadval, Neral.

The root is said to be useful medicinally to cure tumours. It is also tied on affected parts.

5. **Cissus repanda** Vahl, Symb. 3: 18. 1794. *Vitis repanda* Wight & Arn. Prodr. 125. 1834; Lawson in Hook. f. Fl. Brit. India 1: 648. 1875; Cooke, Fl. Pres. Bombay 1: 267. 1958. (Repr. ed.). *Gendal, Pankanda.*

Tomentose, climbing shrubs; leaves simple, alternate, ovate–cordate, crenate–dentate or incisodentate, acute–acuminate, 1.2–5.7 x 0.8–4.6 cm; flowers reddish in compound, branched, umbellate cymes; fruits green, turns yellow–black, obovoid–pyriform, 1–seeded.

Fls. & Frts. : March–May.

In hilly forests, frequent. Elephanta island; Karnala fort.

6. **Cissus adnata** Roxb. Fl. Ind. 1: 423. 1820; Wight, Icon. t. 144.1839. *Vitis adnata* Wall. ex Lawson in Hook. f. Fl. Brit. India 1: 649. 1875; Cooke, Fl. Pres. Bombay 1: 267. 1958 (Repr. ed.).

Scandent, hairy shrubs; leaves ovate–cordate, acuminate, serrate, 2–9.5 x 1.3–8 cm; flowers in much branched, peduncled, compound umbellate cymes; berries ovoid–subglobose, apiculate; seeds solitary, black, smooth, angular pitted.

Fls. & Frts. : May– June.

In moist deciduous forests, frequent. Alibag; Parghat, Poladpur.

4. CAYRATIA A. Juss. *nom. cons.*

1a. Leaves 3–foliolate; leaflets ovate–orbicular, acute or obtuse ... *C. trifolia* 1

1b. Leaves 5–foliolate; leaflets oblong–lanceolate or elliptic–lanceolate, obovate, acuminate ... *C. elongata* 2

1. **Cayratia trifolia** (L.) Domin, Biblioth. Bot. 89: 371. 1972. *Vitis trifolia* L. Sp. Pl. 203. 1753; Cooke, Fl. Pres. Bombay 1: 271. 1958 (Repr. ed.). *Vitis carnosa* Wall. ex Wight & Arn. Prodr. 127. 1834; Wight, Icon. t. 171. 1839; Lawson in Hook. f. Fl. Brit. India 1: 654. 1875. *Ambat vel, Dhavri.*

Slender or woody climbers; leaflets variable in size, shape, texture, 2–7 x1–3.2 cm; flowers yellowish or greenish–white in long peduncled, branched cymes; berries, roundish–obovoid, green–black; seeds 2–4, triangular with tubercles, front side–wedge shaped.

Fls. & Frts. : August–September.

Along the coast and in hilly forests, frequent. Alibag; Janjira fort, Murud.

2. **Cayratia elongata** (Roxb.) Susseng. in Pflanzenr. (ed. 2) 20d: 281. 1953. *Cissus elongatus* Roxb. Fl. Ind. 1: 411. 1820. *Vitis elongata* Wall. ex. Wight & Arn. Prodr. 128. 1834; Lawson in Hook. f. Fl. Brit. India 1: 658. 1875; Cooke, Fl. Pres. Bombay 1: 273. 1958 (Repr. ed.). *Khajulgi.*

Large, extensive climbers; leaflets variable in shape, glabrous, 2.4–15.5 x 0.5–5 cm; flowers yellowish–green or violet, 4–merous in di or trichotomous cymes; berries round–ovoid, greenish at length, black; seeds solitary, ellipsoid, rugose on the back, pitted ventrally.

Fls. & Frts. : May–October.

In moist deciduous forests, frequent. Matheran; Murud; Raigad.

40. LEEACEAE

LEEA L. *nom. cons.*

1a. Leaves simple, 18–36. 5 x 9.5 – 29 cm or even more ... *L. macrophylla* 1

1b. Leaves uni–tripinnately compound, comparatively smaller :

2a. Leaves 1–pinnate (scarcely 2–pinnate); main nerves close; anthers not united in bud ... *L.crispa* 2

2b. Leaves 2–3 pinnate; main nerves distant; anthers united in bud :

3a. Young branches and inflorescence almost glabrous; leaflets small, glabrous ... *L.indica* 3

3b. Young branches and inflorescence more or less rusty pubescent; leaflets comparatively large, strigose above and hirsute below on nerves ... *L. robusta* 4

1. **Leea macrophylla** Roxb. ex Hornem. Hort. Hafn 1: 231. 1813; Roxb. Fl. Ind. 1: 654. 1832; Wight, Icon. t. 1154.1846; Lawson in Hook. f. Fl. Brit. India 1: 664. 1875; Cooke, Fl. Pres. Bombay 1:276. 1958. (Repr. ed.). *Dinda.*

Herbs, 30–90 cm; leaves broadly ovate, cordate, acute–acuminate, hoary–tomentose beneath; flowers white in corymbose cymes; berries black, 3–6–lobed.

Fls. & Frts. : July–October.

As an undergrowth of forests, frequent. Karnala fort; Matheran; Pen to Khopoli; Roha.

2. **Leea crispa** Van Royen ex L. Syst. Nat. (ed.12) 2: 627. 1767; Ridsdale in Blumea 22: 88. 1974. *L. aspera* Edgew. in Trans. Linn. Soc. London 20: 36. 1846, *non* Wall. ex G. Don 1831; Lawson in Hook. f. Fl. Brit. India 1: 665. 1875; Cooke, Fl. Pres. Bombay 1 : 277. 1958 (Repr. ed.).

Shrubs; leaflets elliptic–oblong, acute–acuminate, truncate–cordate, sparsely hairy on nerves; flowers greenish–white in much branched cymes; berries depressed–globose, black at maturity.

Fls. & Frts. : July – October.

In deciduous and semi evergreen forests, frequent. Matheran; Roha.

Fruits are edible.

3. **Leea indica** (Burm. f.) Merr. in Philipp. J. Sci. Bot. 14: 245. 1919; Ridsdale in Blumea 22: 95. 1974. *Staphylea indica* Burm. f. Fl. Ind. 75. t. 23. f. 2. 1768. *Leea sambucina* Willd. Sp. Pl. 1: 1177. 1768; Lawson in Hook. f. Fl. Brit. India 1: 66. 1875; Cooke, Fl. Pres. Bombay 1: 277. 1958. (Repr. ed.).

Shrubs; leaflets ovate, oblong–lanceolate, acuminate, cordate, 5.5–16 x 2.6–5.8 cm; flowers greenish –white in branched, corymbose cymes; berries 2–6–lobed, purple–black.

Fls. & Frts. : May–October.

In moist deciduous and semievergreen forests, frequent. Karjat; Matheran; Pen to Khopoli; Raigad, Varandh ghat, Mahad.

Fresh roots are eaten as a vegetable. The roots used in diarrhoea and dysentery.

4. **Leea robusta** Roxb. Fl. Ind. 1: 655. 1820; Lawson in Hook. f. Fl. Brit. India 1: 667. 1875; Cooke, Fl. Pres. Bombay 1: 278. 1958 (Repr. ed.).

Shrubs; leaflets oblong, ovate–lanceolate, irregularly serrate,

acuminate, upto 15 x 6 cm; flowers white in branched cymes; berries depressed, globular, black when ripe.

Fls. & Frts. : August–September.

In deciduous forests, frequent. Mhasla; Mirya–dongar, Pen.

41. SAPINDACEAE

1a. Tendril climbing herbs; leaves bi–ternate; fruit a membranous, inflated, winged capsule ... CARDIOSPERMUM 1

1b. Erect shrubs or trees; leaves simple or compound, not ternate; fruit not as above:

2a. Flowers regular; disk annular :

3a. Petals absent; fruit beaked, minutely echinate, not lobed, not breaking up into seperate cocci ... SCHLEICHERA 2

3b. Petals present; fruit neither beaked nor echinate, lobed, seperating into 1–3 cocci ... SAPINDUS 3

2b. Flowers irregular; disk unilateral:

4a. Shrubs; leaves imparipinnate, digitately 3 foliolate ... ALLOPHYLUS 4

4b. Trees; leaves paripinnate, 4–6 pairs ... LEPISANTHES 5

1. CARDIOSPERMUM L.

Cardiospermum halicacabum L. Sp. Pl. 366. 1753; Wight, Icon. t. 508. 1841; Hiern in Hook. f. Fl. Brit. India 1: 670. 1875; Cooke, Fl. Pres. Bombay 1: 280. 1958 (Repr. ed.). *Kapal phali, Tejovati.*

Tender climbers; leaves alternate; leaflets lobed, ovate–lanceolate, acuminate, upto 5.2 x 3cm; flowers creamy–white; capsules trigonously pyriform, 3–valved; seeds 3, black,globose, arillate.

Fls. & Frts. : December–May.

On hedges, frequent. Chaul, Alibag.

The green parts of plant are eaten as vegetable.

2. SCHLEICHERA Willd. *nom. cons.*

Schleichera oleosa (Lour.) Oken, Alleg. Naturg. 3(2): 1341. 1841. *Pistacia oleosa* Lour. Fl. Cochinch 2: 615. 1790. *Schleichera trijuga* Willd. Sp. Pl. 4: 1096. 1806; Bedd. Fl. Sylv. t. 119. 1871; Hiern in Hook. f. Fl. Brit. India 1: 681. 1875; Cooke, Fl. Pres. Bombay 1: 283. 1958 (Repr. ed.). *Koshymb.*

Trees, 4–15 m; leaves paripinnate; leaflets obovate–lanceolate, glabrous, reddish, 4.5–17.5 x 2.7–6 cm; flowers greenish–white in paniculate cymes; fruits ovoid, reddish–brown, crustaceous; seeds 1–2, hard.

Fls. & Frts. : February–May.

In moist deciduous and semievergreen forests, frequent. Alibag; Matheran; Mirya dongar, Pen.

This plant serves as a host for lac insects. Seeds–oil is used as an illuminant and also used in soap and perfumery industries. Young fruits are edible.

3. Sapindus L.

Sapindus laurifolia Vahl, Symb. Bot. 3: 54. 1794; Cooke, Fl. Pres. Bombay 1: 284. 1958 (Repr. ed.), '*laurifolius* *S. trifoliata* sensu Hiern in Hook. f. Fl. Brit. India 1: 682. 1875 *pro parte*, '*trifoliatus*' non. L. (1753). *Ritha*.

Trees; leaves pinnate; leaflets elliptic–lanceolate, glabrous, 7.5– 21 x 3–8.4 cm; flowers greenish–white in rusty–pubescent panicles; fruits fleshy, subglobose; seeds 2, hard, blackish.

Fls. & Frts. : September – December.

In moist deciduous forests, frequent. Matheran; Pen; Unhare in 'Sav' village, Mahad.

The fruits serve as a substitute for soap.

4. Allophylus L.

Allophylus cobbe (L.) Raeusch. Nomencl. Bot. (ed. 3) 108.1797; Hiern in Hook. f. Fl. Brit. India 1: 673. 1875; Leenhouts in Blumea 15: 322. 1968. *Rhus cobbe* L. Sp. Pl. 267. 1753. *Schmidelia rheedii* Wight, Icon. t. 964. 1845. *Allophylus cobbe* Blume in Rumphia 3: 131. 1847; Cooke, Fl. Pres. Bombay 1: 282. 1958 (Repr. ed.). *Tipan*.

Shrubs; leaves 3–foliolate; leaflets ovate–elliptic or broadly lanceolate, sharply serrate, hairy, 3.8–14.2 x 1.2–6.2 cm; flowers white; fruits small, green, red when ripe.

Fls. & Frts. : May–August.

In deciduous and semievergreen forests, frequent. Matheran; Mhasla; Mirya dongar, Pen; Varandh ghat.

5. LEPISANTHES Blume

Lepisanthes tetraphylla (Vahl) Radlk. Holl. Sitzungsb. Math.–Phys. Cl. Koenig. Bayer. Akad. Wiss. Muenchen 8: 276. 1878; Leenhouts in Blumea 17: 63. 1969. *Sapindus tetraphylla* Vahl, Symb. 3: 54. 1794. *Hemigyrosa canescens* (Roxb.) Blume in Rumphia 3: 166. 1849; Bedd. Fl. Sylv. t. 151. 1871; Hiern in Hook. f. Fl. Brit. India 1: 671. 1875; Cooke, Fl. Pres. Bombay 1: 281. 1958 (Repr. ed.).

Trees; leaves variable; leaflets coriaceous, elliptic–lanceolate, glabrous, 12.5–20 x 3.6–5 cm; flowers creamy–white; fruits yellowish–green, subglobose, velvety.

Fls. & Frts. : February–May.

Along the hilly regions of moist deciduous and semievergreen forests, frequent. Matheran; Roha; Sudhagad.

42. ANACARDIACEAE

1a. Leaves simple :

- 2a. Stamens 8–10; fruits reniform nuts, seated on an enlarged, fleshy receptacle ... ANACARDIUM 1
- 2b. Stamens 1–5 or 5–6; fruits drupes or nuts, not seated on an enlarged receptacle :
  - 3a. Leaves lanceolate, glabrous; stamens 1–5 but only 1 fertile; style 1; fruits fleshy drupes ... MANGIFERA 2
  - 3b. Leaves obovate, grey–tomentose beneath; stamens 5–6; styles 3; fruits nuts ... SEMECARPUS 3

1b. Leaves compound :

- 4a. Plants glabrous; drupes upto 4.5 x 3.6 cm ... SPONDIAS 4
- 4b. Plants stellately pubescent; drupes upto 1.6 x 0.5 cm ... LANNEA 5

1. ANACARDIUM L.

Anacardium occidentale L. Sp. Pl. 383. 1753; Bedd. fl. Sylv. t. 163. 1871; Hook. f. Fl. Brit. India 2: 20. 1876; Cooke, Fl. Pres. Bombay 1: 292. 1958 (Repr. ed.). *Kaju.*

Evergreen trees, 4–6 m; leaves obovate–oblong, glabrous, 7.2–13 x 4.7–8.2 cm; flowers red in terminal panicles; nuts greenish–yellow.

Fls. & Frts. : January – May.

Usually cultivated, at times as an escape. Alibag; Karjat; Mhasla.

The cashew-apple and kernels are edible. Shell-oil used as a water proofing agent and as a preservative in the painting of boats and light wood work.

2. MANGIFERA L.

Mangifera indica L. Sp. Pl. 200. 1753; Bedd. Fl. Sylv. t. 162. 1871; Hook. f. Fl. Brit.India 2: 13. 1876; Cooke, Fl. Pres. Bombay 1: 291. 1958 (Repr .ed.). *Amb, Amba.*

Large trees, 15 –20 m; leaves coriaceous 8–30 x 2.2 – 8 cm; flowers many in terminal panicles; drupes pyriform with hard, fibrous stones.

Fls. & Frts. : January–May.

In open moist deciduous forests and also in orchards, frequent. Mahad; Matheran; Roha.

Widely cultivated for its edible 'Mango' fruits.

3. SEMECARPUS L. f.

Semecarpus anacardium L. f. Suppl. Pl. 182. 1781; Wight, Icon. t. 558. 1842; Hook. f. Fl. Brit. India 2: 30. 1876; Cooke, Fl. Pres. Bombay 1: 296. 1958 (Repr. ed.). *Bhilava, Bibba.*

Trees, 4–8 m; leaves coriaceous, 6.4–30.5 x 4.2–15 cm; flowers greenish–white in terminal and axillary panicles; fruits obliquely ovoid, black, shining.

Fls. & Frts. : July – November.

In dry deciduous forests, frequent. Alibag; Karjat; Matheran; Vankad to Nagothana.

Black resin obtained from pericarp of the fruit is used as marking ink as well as in native medicine. The nuts are also used in tannary.

4. SPONDIAS L.

Spondias pinnata (L. f.) Kurz in Pegu Report A, 44, B. 42. 1875; Airy Shaw & Forman in Kew Bull. 21 : 8. 1967. *Mangifera pinnata* L. f. Suppl. Pl. 156. 1781. *Spondias mangifera* Willd. Sp. Pl. 2: 751. 1799; Wight. Ill. 1: t. 76. 1840; Hook. f. Fl. Brit. India 2: 42. 1876; Cooke, Fl. Pres. Bombay 1: 299. 1958 (Repr. ed.). *Ambada.*

Deciduous trees, 10 –12 m; leaves imparipinnate; leaflets 7 –11,

broadly elliptic, 7–14.5 x 3–5.2 cm; flowers white in panicles; drupes ovoid–ellipsoid, greenish–yellow.

Fls. & Frts. : February–April.

In moist deciduous forests, infrequent. Matheran; Mirya dongar, Pen.

Fruits are used as vegetable and also made into pickles.

5. LANNEA A. Rich. *nom. cons.*

Lannea coromandelica (Houtt.) Merr. in J. Arnold Arb. 19: 353. 1939; C.R. Rao in Indian Forester 93: 45. 1967. *Dialium coromandelicum* Houtt. Nat. Hist. Ser. 2 ,2 :39. t. 5. f. 2. 1774. *Odina wodier* Roxb. Fl. Ind. 2 : 293. 1832; Wight, Icon. t. 60. 1838; Hook. f. Fl. Brit. India 2 : 29. 1876; Cooke, Fl. Pres. Bombay 1: 296. 1958 (Repr. ed.). *Moya, Shemath, Shimati.*

Deciduous trees with grey–white bark, 10–15 m; leaves crowded at the branch tips; leaflets 5–11, 1–12 x 0.8 –4.5 cm; flowers creamy–white in panicles at the tips of leaflets branches; drupes reddish, ellipsoid–oblong, drooping.

Fls. & Frts. : February–May.

In deciduous forests, frequent. Elephanta island; Karjat; Matheran; Pen; Sanegaon, Roha.

The stem–bark yields gum which is used in confectionary and as a mucilage for making ink.

43. MORINGACEAE

MORINGA Adans.

1a. Leaves 2–pinnate; leaflets upto 3 x 1.5 cm, veins distinct ... *M. concanensis* 1

1b. Leaves 3–pinnate; leaflets upto 1.5 x0.8 cm, veins not distinct ... *M. oleifera* 2

1. **Moringa concanensis** Nimmo ex Gibs. in Dalz & Gibs. Bombay Fl. 311. 1861; Hook. f. Fl. Brit. India 2: 45. 1876; Hookers Icon. Pl. t. 2596. 1899; Cooke, Fl. Pres. Bombay 1: 301. 1958 (Repr. ed.). *Mosing, Ran–Shegat.*

Trees, 8–10 m; leaflets 17–21, elliptic –suborbicular, glabrous; flowers yellow, streaked with red; capsules straight, acutely triquetrous, slightly constricted between seeds.

Fls. & Frts. : October–December.

In deciduous forest, occasional.Near Pen.

2. **Moringa oleifera** Lam. Encycl. 1: 398. 1785; Bedd. Fl. Sylv. t. 80. 1871; Steenis, Fl. Males. Ser 1, 5: 554. 1953. *M. pterygosperma* Gaertn. Fruct. 2 : 314. 1791; Hook. f. Fl. Brit. India 2 : 45. 1876; Cooke, Fl. Pres. Bombay 1 : 301. 1958 (Repr.ed.). *Shegata, Shevga.*

Trees; leaflets ovate or obovate, glabrous, deciduous; flowers white in panicles; pods cylindric, 9–ribbed.

Fls. & Frts. : January–April.

Mostly cultivated, at times as an escape. Throughout the district.

The leaves and green pods are used as a vegetable.

44. CONNARACEAE

ROUREA Aubl.

1a.	Leaflets shining; carpels falcate, not broad at base	...	*R. minor* 1
1b.	Leaflets dull; carpels ovoid, not falcate, broad at base	...	*R. prainiana* 2

1. **Rourea minor** (Gaertn.) Alst. in Trim. Handb. Fl. Ceylon 6: 67. 1931 ('*minus*')'; Leenhouts in Steenis, Fl. Males. Ser. 1, 5: 514. 1953. *Aegiceras minus* Gaertn. Fruct. 1: 216. t. 46. 1788. *Rourea santaloides* (Vahl) Wight & Arn. Prodr. 144. 1844; Hook. f. Fl. Brit. India 2: 47. 1876; Cooke, Fl. Pres. Bombay 1: 303. 1958 (Repr. ed.). *Vardhara.*

Extensive , woody climbers; leaflets 2–4–paired, imparipinnate, elliptic–lanceolate, glabrous; flowers white in racemose panicles; follicles ellipsoid, sessile, pointed at apex with enlarged clasping calyx; seeds solitary, arillate.

Fls. & Frts. : October.

In moist deciduous or semievergreen forests, infrequent. Matheran; Mirya dongar, Pen.

2. **Rourea prainiana** Talb. For. Fl. Bombay Pres. & Sind. 1: 368. f. 213. 1909; Leenhouts in Steenis, Fl. Males Ser. 1, 5: 520. 1953.

Stout, evergreen, climbing shrubs; leaflets ovate, bluntly acuminate, rounded at base; flowers white in short, fascicled panicles or racemes; ripe carpels brown, seated on an enlarged, turbinate cup–shaped calyx.

Fls. & Frts. : December–May.

In semievergreen forests, infrequent. Matheran.

45. FABACEAE
(PAPILIONACEAE)

1a. Plants erect, suberect or prostrate but not climbing or twining :

2a. Trees (except *Butea parviflora*, *B. superba*, *Dalbergia volubilis* and *Derris scandens*).

3a. Leaves 3–foliolate :

4a. Plants armed; pods subterete, torulose ... ERYTHRINA 1

4b. Plants unarmed; pods flat, not torulose :

5a. Flowers orange, reddish or scarlet coloured ... BUTEA 2

5b. Flowers white ... OUGEINIA 3

3b. Leaves with more than 3–leaflets :

6a. Pods 1–4– seeded :

7a. Evergreen trees; leaflets opposite; pods woody ... PONGAMIA 4

7b. Deciduous trees; leaflets alternate; pods not woody :

8a. Flowers creamy–white; pods oblong or strip shaped, not winged ... DALBERGIA 5

8b. Flowers yellow; pods orbicular, winged ... PTEROCARPUS 6

6b. Pods many seeded ... GLIRICIDIA 7

2b. Shrubs, undershrubs or herbs, erect, diffuse or prostrate :

9a. Shrubs or undershrubs :

10a. Flowers pure yellow or vexillum spotted purple :

11a. Leaves 1–foliolate or simple, pods turgid; corolla pure yellow ... CROTALARIA 8

11b. Leaves 3 or more foliolate; pods not as above; corolla yellow, reddish–yellow or purple spotted :

12a. Leaves 3–foliolate; corolla not spotted purple; pods 3–5–seeded ... ATYLOSIA 9

12b. Leaves more than 3–foliolate; corolla pure yellow or purple spotted; pods many seeded ... SESBANIA 10

10b. Flowers red, reddish–purple or purple :

13a. Leaves 3 –foliolate or rarely 1–foliolate; pods jointed; joints nearly orbicular ... DESMODIUM 11

13b. Leaves 3–5 or more foliolate; pods not as above :

14a. Pods obliquely turgid, 2 (rarely 1)–seeded ... FLEMINGIA 12

14b. Pods not as above :

15a. Pods torulose, terete or obscurely 4–gonous, mostly deflexed; corolla red ... INDIGOFERA 13

15b. Pods flat, not deflexed; corolla pinkish–purple or bluish–purple ... TEPHROSIA 14

9b. Herbs, erect, diffuse or prostrate :

16a. Joints of the pods softly echinate; leaves bi–foliolate; bracts and stipules foliaceous ... ZORNIA 15

16b. Pods jointed or not but never echinate; leaves, bracts and stipules not as above :

17a. Flowers yellow, creamy–yellow or seldom pure white :

18a. Leaves simple ... GONIOGYNA 16

18b. Leaves compound :

19a. Leaves 3–foliolate :

20a. Pods turgid ... CROTALARIA 8

20b. Pods not turgid ... MELILOTUS 17

19b. Leaves more than 3–foliolate :

21a. Leaflet pairs 2; stamens monadelphous ... GEISSASPIS 18

21b. Leaflet more than 2–pairs; stamens diadelphous (5+5) :

22a. Joints of the pods folded inside the calyx ... SMITHIA 19

22b. Joints of the pods not as above; pods exserted ... AESCHYNOMENE 20

17b. Flowers red, reddish–purple, bluish–purple or violet :

23a. Pods jointed :

24a. Joints of pods not folded one above the other :

25a. Joints of pods flattened; leaflets 3–foliolate ... DESMODIUM 11

25b. Joints of pods turgid; leaflets 1–foliolate ... ALYSICARPUS 21

24b. Joints of pods folded one above the other ... URARIA 22

23b. Pods not jointed :

26a. Pods flat :

27a. Plants viscidlly pubescent ... PSEUDARTHRIA 23

27b. Plants not viscidly pubescent ... CLITORIA 24

26b. Pods not flat, if flat, leaves simple :

28a. Pods oblique, turgid; leaves gland dotted beneath ... FLEMINGIA 12

28b. Pods not oblique, not turgid; leaves not gland dotted beneath :

29a. Leaves simple:

30a. Flowers red; pods torulose, cylindric or sub–tetragonous ... INDIGOFERA 13

30b. Flowers bluish to bluish- purple; pods flat ... TEPHROSIA 14

29b. Leaves 3–foliolate ... CYAMOPSIS 25

1b. Climbing herbs or shrubs :

31a. Sepals persistent, accrescent, foliaceous, creamy–white or pale–yellow ... PARACALYX 26

31b. Sepals not as above :

32a. Leaves moe than 3–foliolate :

33a. Plants woody twiners :

34a. Leaflets alternate; pods not winged ... DALBERGIA 5

34b. Leaflets opposite; pods winged ... DERRIS 27

33b. Plants herbaceous twiners :

35a. Flowers in racemes ... ABRUS 28

35b. Flowers solitary or in pairs, axillary ... CLITORIA 24

32b. Leaves 3–foliolate :

36a. Pods indehiscent, grey–downy, oblong, base flat, wing–like, tip splitting, 1–seeded ... BUTEA 2

36b. Pods not as above, more than 1–seeded :

37a. Flowers yellow :

38a. Leaflets gland–dotted beneath; Keel petal not spirally twisted ... ATYLOSIA 9

38b. Leaflets not gland–dotted; Keel strongly twisted .. VIGNA 29

37b. Flowers creamy–white, bright rosy–purple, mauve, bluish–purple or blue :

39a. Floral rachis bears flowers mostly at apex :

40a. Pods terete or subterete ... VIGNA 29

40b. Pods not as above :

41a. Pods turgid, linear–oblong ... CANAVALIA 30

41b. Pods flat, contricted between seeds ... PUERARIA 31

39b. Floral rachis bears flowers throughout :

42a. Inflorescence loose flowered; fruits more than 1cm apart on the lower half of the inflorescence :

43a Racemes drooping; pods S–shaped, covered with irritant bristles ... MUCUNA 32

43b. Racemes erect; pods not as above ... TERAMNUS 33

42b. Inflorescence densely flowered; fruits less than 1 cm apart on the lower half of the inflorescence ... SHUTERIA 34

1.ERYTHRINA L.

1a. Calyx not spathaceous, more or less 2–lipped, not splitting down to the base ... *E.suberosa* 1

1b. Calyx spathaceous, not 2–lipped, splitting down to the base :

2a. Branches sparingly prickly; prickles nearly black; calyx 5–toothed, tips recurved; pods distinctly toruloso, 6–8 seeded ... *E. variegata* 2

2b. Branches much prickly; prickles pale green or yellowish; calyx entire, tips not recurved; pods compressed, slightly torulose, 2–3–(or–5) seeded ... *E. stricta* 3

1. **Erythrina suberosa** Roxb. Fl. Ind. 3: 253. 1832; Bedd. Fl. Sylv. t. 87. 1871; Baker in Hook. f. Fl. Brit. India 2: 189. 1876; Cooke, Fl. Pres. Bombay 1: 392. 1958 (Repr. ed.). *Panghari*.

Trees 4-6 m; bark corky yellowish–white prickles; leaflets hairy beneath, terminal ones obliquely ovate–cordate; flowers scarlet on long racemes; pods beaked, glabrous; seeds oblong, smooth.

Fls. & Frts. : April–May.

In deciduous forests, infrequent. Near Dhangarwada, Neral.

The white wood is durable used as planks, scabbards etc.

2. **Erythrina variegata** L. in Stickm. Herb. Amb.10. 1754 & Amoen. Acad. 4: 122. 1759. *E. indica* Lam. Encycl. 2: 391. 1786; Wight, Icon. t. 58. 1838; Baker in Hook. f. Fl. Brit. India 2: 188. 1876; Cooke, Fl. Pres. Bombay 1: 390. 1958 (Repr. ed.). *Pangara.*

Deciduous trees with greyish bark; leaflets rhomboid–ovate, acute–acuminate, stellately pubescent when young, glabrous at length, 3–11 x 2.5 –13.5 cm; flowers bright red in dense racemes; pods blackish, stalked; seeds subreniform, oblong.

Fls. & Frts. : March–May.

Along the sea–coast, frequent. Revas, Alibag.

3. **Erythrina sticta** Roxb. Fl Ind. 3: 251. 1832; Baker in Hook. f. Fl. Brit. India 2: 189. 1876; Cooke, Fl. Pres. Bombay 1: 391. 1958 (Repr. ed.).

Large trees; leaflets glabrous; terminal leaflet reniform–cordate; lateral ones ovate–cordate, shortly acuminate, 10–15 x 8–12 cm; flowers scarlet in terminal, horizontal racemes; pods narrowed at both ends, brownish.

Fls. & Frts. : February–May.

In moist deciduous forests, infrequent. Elephanta island; Matheran; on way to Revas, Alibag.

2. BUTEA Koen. ex Roxb. *nom. cons.*

1a. Trees ... *B. monosperma* 1

1b. Climbing shrubs or extensive lianas :

2a. Leaflets 3.8 –14.2 x 2.7 – 9.1 cm; flowers small; keel almost straight ... *B. parviflora* 2

2b. Leaflets 17– 25.5 x 9.8 – 14.2 cm; flowers comparatively large; keel incurved. ... *B. superba* 3

1. **Butea monosperma** (Lam.) Taub. in Engl. & Prantl, Pflam. 3(3): 366. 1894. *Erythrina monosperma* Lam. Encycl. 1: 391. 1785. *Butea frondosa* Koen. ex Roxb. in J. Asiat. Res. 3: 369. 1792 & Pl. Cor.

t. 21. 1795; Baker in Hook. f. Fl. Brit. India 2: 194. 1876; Cooke, Fl. Pres. Bombay 1: 395. 1958 (Repr. ed.). *Palas*.

Trees 5–20 m; bark rough, dark brown or ash coloured, fissured; leaves 3–foliolate; leaflets obovate–rhomboid, ovate–elliptic or oblong, glabrous, 15–20.7 x 11.4–17.5 cm; flowers scarlet–red in compact racemes; pods flat, sandy–brown, ellipsoid, hairy, 1–seeded.

Fls. & Frts. : February–May.

In deciduous forests, frequent. Bhira, Karjat to Panvel; Karnala fort; Matheran to Neral; Neral.

The leaves serve as plates and for making native umbrellas. The seeds are used in native medicines.

2. **Butea parviflora** Roxb. Fl. Ind. 3: 248. 1832; Wight, Icon. t. 210. 1839. *Spatholobus roxburghii* Benth. in Miq. Pl. Jungh. 238. 1852; Baker in Hook. f. Fl. Brit. India 2: 193. 1876; Cooke, Fl. Pres. Bombay 1: 394. 1958 (Repr. ed.). *Palas vel, Phalsan*.

Extensive, woody climbers; leaves 3–foliolate, leaflets obovate–elliptic, glabrous; flowers bright red in large, terminal and axillary panicles; pods flat, rufous–pubescent, brownish, stalked.

Fls. & Frts. : January–October.

In deciduous forests, frequent. Hilly places south of Panvel; Mirya dongar, Pen; Mhasla to Shrivardhan; Nagothana.

3. **Butea superba** Roxb. Pl. Cor. 1: 23. t. 22. 1795 & Fl. Ind. 3: 247. 1832; Baker in Hook. f. Fl. Brit. India 2: 195. 1876; Cooke, Fl. Pres. Bombay 1: 396. 1958 (Repr. ed.).

Gigantic climbers; leaves 3–foliolate; leaflets ovate–oblong or rhomboid, glabrous; flowers bright orange or scarlet in terminal and axillary racemes; pods reddish–brown, hairy.

Fls. & Frts. : February–March.

In deciduous forests, occasional. On way to Kolad from Roha.

3. OUGEINIA Benth.

Ougeinia oojeinensis (Roxb.) Hochr. in Ann. Cons. Jard. Bot. Geneve 13 & 14: 51. 1909. *Dalbergia oojeinensis* Roxb. Fl. Ind. 3: 220. 1832; Wight, Icon. t. 391. 1840. *Ougeinia dalbergioides* Benth. in Miq. Pl. Jungh. 216. 1852; Baker in Hook. f. Fl. Brit. India 2: 161. 1876; Cooke, Fl. Pres. Bombay 1: 373. 1958 (Repr. ed.). *Kala Palas, Tiwas*.

Trees, 6-12 m; bark blackish or dark-brown; leflets obovate-suborbicular, coriaceous, glabrous, 5.5-16x4 14.6 cm; flowers numerous in short, compact, fascicled racemes; pods jointed, flat,reticulately veined.

Fls. & Frts. : February–May.

Deciduous forests, infrequent . Matheran.

Ohashi in Ginkgoana 1 : 117. t. 14b. 1973 treated this taxon under the genus *Desmodium* as *D. oojeinensis* (Roxb.) Ohashi.

The leaves are lopped for fodder.

4. PONGAMIA Vent.

Pongamia pinnata (L.) Pierre, Fl. For. Cochinch. t. 385. 1899; Thoth. in Bull. Bot. Surv. India 3: 418. 1962. *Cytisus pinnatus* L. Sp. Pl. 741. 1753. *Pongamia glabra* Vent. Jard. Malm. t. 28. 1803; Wight, Icon. t. 59. 1838; Baker in Hook. f. Fl. Brit. India 2: 240. 1876; Cooke, Fl. Pres. Bombay 1: 429. 1958 (Repr. ed.). *Karanj*.

Trees, 8-16 m; bark greenish–white; leaves imparipinnate; leaflets 3–5, ovate–elliptic or ovate–oblong, glabrous, 3–11.5 x 1.6 –8 cm; flowers pinkish–white in axillary racemes; pods glabrous, 1–seeded.

Fls. & Frts. : April–June.

Along the river banks, moist deciduous forests and also planted on road sides and parks, frequent. Chaul, Alibag; Mahad; Matheran; Roha.

Seed oil is used for skin diseases.

5. DALBERGIA L. f. *nom. cons.*

1a. Trees :

2a. Stamens 9, monadelphous :

3a. Leaflets 3–5, acuminate ... *D. sissoo* 1

3b. Leaflets 5–7, obtuse or emarginate ... *D. latifolia* 2

2b. Stamens 5+5, diadelphous :

4a. Leaflets with prominent parallel nerves; standard with prominent parallel nerves; standard with a callosity at base of limb ... *D. lanceolaria* 3

4b. Leaflets with reticulate venation; standard without callosity at base of limb ... *D. paniculata* 4

1b. Scandent or climbing shrubs :

5a. Leaflets 11–15; pods straight :

6a. Stamens 5+5, diadelphous; stem and branches unarmed ... *D. volubilis* 5

6b. Stamens 10, monadelphous; stem and branches armed ... *D. horrida* 6

5b. Leaflets 5–7; pods crescent shaped ... *D. candenstensis* 7

1. **Dalbergia sissoo** Roxb. Fl. Ind. 3: 23. 1832; Baker in Hook. f. Fl. Brit. India 2: 231. 1876; Cooke, Fl. Pres. Bombay 1: 421. 1958 (Repr. ed.). *Sisvi.*

Trees, 8–12 bark greyish–brown, rough, fissured; leaves imparipinnate; leaflets broadly ovate or suborbicular, glabrescent, 3–6.5 x 2.5–6 cm; flowers white in axillary panicles; pods strap–shaped, glabrous, long–stalked, 1–4 seeded.

Fls. & Frts. : March–June.

In deciduous forests and also planted, frequent. Nagothana.

2. **Dalbergia latifolia** Roxb. Pl. Cor. 2: 7. t. 113. 1798; Baker in Hook. f. Fl. Brit. India 2: 231. 1876: Cooke, Fl. Pres. Bombay 1: 422. 1958 (Repr. ed.). *Shisham, sissu.*

Large trees, 10–15 m; bark grey–ash coloured, glabrous, smooth; leaves imparipinnate; leaflets broadly elliptic–obovate or ovate–orbicular, glabrous, 3.5–8 x 3–7.2 cm; flowers creamy–white in axillary, lax panicles; pods oblong–lanceolate, glabrous, reticulate, 1–4 seeded.

Fls. & Frts. : August–September.

In moist deciduous forests, frequent. Mahad; Matheran; Murud.

The black heart wood of the'Shisham' tree is much valued for furniture, carving, agricultural implements etc.

3. **Dalbergia lanceolaria** L. f. Suppl. 316. 1781; Baker in Hook. f. Fl. Brit. India 2: 235. 1876; Cooke, Fl. Pres. Bombay 1: 425. 1958 (Repr. ed.). *D. frondosa* Roxb. Fl. Ind. 3: 226. 1832; Wight, Icon. t. 266. 1840. *Dandus.*

Trees, 5–10 m; bark smooth, greyish–white; leaflets 11–17, elliptic–oblong or ovate–obovate, glabrous above, puberulous beneath, 2.2–7.5 x 2–4.2 cm; flowers white or pinkish in axillary or terminal, leafless panicles; pods strap shaped, glabrous, stipitate, 1–3 seeded.

Fls. & Frts. : March–May.

In deciduous forests, occasional. Near Magti village, Indapur, Mangaon range.

4. **Dalbergia paniculata** Roxb. Pl. Cor. 2: 8. t. 114. 1789; Baker in Hook. f. Fl. Brit. India 2: 236. 1876; Cooke, Fl. Pres. Bombay 1: 426. 1958 (Repr. ed.). *Phansi.*

Trees,10–15 m; bark smooth, grey; leaflets 10–15, oblong–obovate or elliptic, obtuse or emarginate, glabrous, 1.2– 4 x 0.8– 2.8 cm; flowers creamy–white or reddish in terminal panicles; pods flat, lanceolate, reticulately veined, glabrous, long stalked.

Fls. & Frts. : April–May.

In deciduous forests, frequent. Matheran; Neral.

5. **Dalbergia volubilis** Roxb. Pl. Cor. 2: 48. t. 191. 1805; Baker in Hook. f. Fl. Brit. India 2: 235. 1876; Cooke, Fl. Pres. Bombay 1: 426. 1958 (Repr. ed.). *Alai.*

Extensive, woody climbers, twisted in spiral hooks; leaflets oblong–ovate, apiculate, glabrous, 1–5.2 x 0.8–2.8 cm; flowers pinkish in dense, terminal and axillary, corymbose cymes; pods linear–oblong, glabrous, veined, stipitate.

Fls. & Frts. : February–March.

In moist deciduous as well as semievergreen forests, frequent. Matheran; Nagothana; Panvel; Pen.

6. **Dalberigia horrida** (Dennst.) Mabb, in Taxon 26:538.1977; *Amerimnon horridum* Dennst. Schl Hort. Ind. Malab. 34 1818. *D sympathetica* Nimmo ex Grah. Cat. Bombay Pl. 55. 1839; Baker in Hook. f. Fl. Brit. India 2: 234. 1876; Cooke, Fl. Pres. Bombay 1: 424. 1958 (Repr. ed.). *D. multiflora* Heyne ex Prain in Ann. Roy. Bot. Gard. (Calcutta) 10: 43. t. 18. 1905. *Pendgul, Yekel.*

Scandent shrubs with twisted or spiny branches; leaflets 9–15, oblong or obovate, emarginate, pubescent. 1–3.2 x 0.4–2 cm; flowers white in axillary panicles; pods flat, pubescent, 1–3 seeded.

Fls. & Frts. : February–June.

In moist deciduous forests, frequent. Matheran; Mazheri to Varandh, Mahad, Panvel; Ramraj, Alibag.

7. **Dalbergia candenstensis** (Dennst.) Prain in J. As. Soc. Bengal 70: 49. 1901. *Cassia candenstensis* Dennst. Schkess Zn. Hort.

Mol. 32. 1818. *Dalbergia torta* Grah. ex Baker in Hook. f. Fl. Brit. India 2: 237. 1876; Cooke, Fl. Pres. Bombay 1: 423. 1958 (Repr. ed.). *Garud–Yel*

Scandent shrubs with purplish bark; leaflets 5–7, elliptic–oblong, obtuse –emarginate, glabrous above, puberulous beneath; flowers white in axillary, solitary or racemose panicles; pods brown, crescent shaped, 1–seeded.

Fls. & Frts. : June.

In moist deciduous forests, infrequent. Chowk–plateau, Matheran.

6. PTEROCARPUS Jacq. *nom. cons.*

Pterocarpus marsupium Roxb. var. ***acuminatus*** Prain in J. As. Soc. Bengal 56. 455. 1895; Cooke, Fl. Pres. Bombay 1: 427. 1958 (Repr. ed.). *Bibla.*

Trees, 10–15 m; bark yellowish–grey or ash coloured, fissured; leaflets 5–7, ovate–oblong or lanceolate, glabrous, 4–6 x 3.8– 6.7 cm; flowers in terminal and lateral panicles; pods flat, wing orbicular, white, 1-seeded.

Fls. & Frts. : May–June.

In deciduous forests, infrequent. Indapur, Mangaon.

7. GLIRICIDIA H. B. & K.

Gliricidia sepium (Jacq.) Kunth ex Walp. Repert., Syst. 1: 679. 1842; Bailey, Man. Cult. Pl. 560. 1949. *Robinia sepium* Jacq. Enum. Pl. Carib. 28. 1760.

Deciduous trees, 3–5 m; bark yellowish–brown; leaflets ovate–oblong or lanceolate, glaucous–green, glabrous, 2.2–8.5 x 1.3–4 cm; flowers pinkish–white in terminal, drooping racemes; pods linear, pendulous, glabrous; seeds yellowish, ellipsoid.

Fls. & Frts. : February–March.

Usually planted along road sides occasionally as an escape, infrequent. Elephanta island.

8. CROTALARIA L.

1a. Leaves compound, trifoliolate ... *C. medicaginea* 1

1b. Leaves simple :

2a. Pods hairy :

3a. Stipules large, foliaceous; flowers bluish–purple ... *C. verrucosa* 2

3b. Stipules small, not foliaceous; flowers yellow :

4a. Plants diffuse or suberect; stem and branches triquetrous; pods silky hairy, 15–20–seeded ... *C. triquetra* 3

4b. Plants erect; stem and branches quadrangular; pods fulvous hairy, 4–6–seeded. ... *C. leptostachya* 4

2b. Pods glabrous :

5a. Corolla exserted :

6a. Diffuse herbs; racemes lax, few flowered :

7a. Stem slender, filiform, hairy; pods upto 0.6 cm long ... *C. filipes* 5

7b. Stem stout, densely hairy; pods upto 1 cm long ... *C. filipes* var *trichophora* 6

6b. Erect herbs, undershrubs or shrubs; racemes many flowered, compact or lax :

8a. Stipules present :

9a. Stipules and bracts large, foliaceous ... *C. spectabilis* 7

9b. Stipules and bracts small, subulate ... *C. retusa* 8

8b. Stipules absent ... *C. linifolia* 9

5b. Corolla not exserted :

10a. Plants diffusely spreading or erect; racemes terminal or a few also lateral :

11a. Stipules present; leaves not pellucido–punctate beneath ... *C. stocksii* 10

11b. Stipules absent; leaves pellucido–punctate beneath :

12a. Flowers in capitate racemes ... *C. nana* 11

12b. Flowers in lax racemes ... *C. albida* 12

10b. Plants prostrate; racemes few flowered, all lateral :

13a. Bracts minute, subulate ... *C. prostrata* 13

13b. Bracts foliaceous, lanceolate ... *C. vestita* 14

1. **Crotalaria medicaginea** Lam. Encycl. 2: 201. 1786; Baker in

Hook. f. Fl. Brit. India 2: 81. 1876; Cooke, Fl. Pres. Bombay 1: 322. 1958 (Repr. ed.).

Erect herbs, 40–90 cm; leaflets obovate–oblong, appressedly pubescent beneath, 0.6 –3 x 0.3 –1.2 cm; flowers yellow in terminal and leaf opposed racemes; pods subglobose, pubescent, beaked; seeds 2, dark–brown, subreniform, compressed, smooth.

Fls. & Frts. : September – October.

As forest undergrowth and also in open grasslands, infrequent Revdanda, Alibag; Shrivardhan.

2. **Crotalaria verrucosa** L. Sp. Pl. 715. 1753; Wight, Icon. t. 200. 1839; Baker in Hook. f. Fl. Brit. India 2: 77. 1876; Cooke, Fl. Pres. Bombay 1: 319. 1958. (Repr. ed.).

Erect herbs, 30–90 cm; leaves ovate–rhomboid or obovate–rhomboid, pubescent beneath, 2.5–12 x 1.3–7 cm; flowers in axillary and terminal racemes; pods oblong–cylindric; seeds 10–15, yellowish–brown, subreniform, glabrous.

Fls. & Frts. : September– March.

On sandy sea –shores, frequent. Alibag; Nagoan; Revas; Shrivardhan.

3. **Crotalaria triquetra** Dalz. in Hook. Kew. J. Bot. 2: 34. 1850; Baker in Hook. f. Fl. Brit. India 2 : 71. 1876; Cooke, Fl. Pres. Bombay 1 : 314. 1958. (Repr. ed.).

Herbs, 30–50 cm; leaves simple, elliptic–oblong, sparsely hairy beneath, 0.5 –7x 0.3 –1.5 cm; flowers in terminal and lateral racemes; pods green, ellipsoid–cylindric; seeds dark brown, orbicular, glabrous.

Fls. & Frts. : September – March.

Among grasses in undergrowth of forests and hill slopes, frequent. Bhira; Ghosale fort; Janjira fort; Karnala bird sanctuary; Matheran; Varandh ghat.

4. **Crotalaria leptostachya** Benth. in Hook. London J. Bot. 2 : 562. 1843; Baker in Hook. f. Fl. Brit. India 2: 78. 1876; Cooke, Fl. Pres. Bombay 1: 320. 1958 (Repr. ed.).

Erect, stout, fulvous–pubescent undershrubs, upto 150 cm; leaves linear–oblong or oblong–lanceolate, membranous, subsessile, silky hairy, 5–13.4 x 1–4 cm; flowers in terminal and axillary racemes ; pods oblong; seeds 5–6, subreniform, yellowish–brown.

Fls. & Frts. : September – October.

In moist deciduous forests, occasional. Matheran.

5. **Crotalaria filipes** Benth. in Hook. London J. Bot. 2: 475. 1843; Baker in Hook. f. Fl Brit. India 2: 66. 1876; Cooke, Fl. Pres. Bombay 1 : 312. 1958 (Repr. ed.).

Prostrate herbs, 15–30 cm; leaves ovate, ovate–oblong, subsessile, hairy, 0.5–1.5 x 0.2–0.6 cm; flowers yellow, 1–3 in leaf opposed racemes; pods green, glabrous, 8–10–seeded.

Fls. & Frts. : September–March.

Among grasses in open forests, along road–sides, river banks, frequent. Bhira; Dasgaon; Pen; Roha; Varandh Ghat.

6. **Crotalaria filipes** var. ***trichophora*** (Benth. ex Baker) T. Cooke, Fl. Pres. Bombay 1: 292. 1902 (1: 312. 1958. Repr. ed.).*C trichophora* Benth. ex Baker in Hook. f. Fl. Brit. India 2: 67. 1876.

Robust, much branched herbs, 30–45 cm; leaves ovate–oblong, pubescent, 0.6– 2.5 x 0.2 –1.3 cm; flowers yellow 1–2 in leaf opposed racemes; pods greenish, oblong, glabrous, 6–8–seeded.

Fls. & Frts. : September–October.

Among grasses on rocky substrata, infrequent. Matheran.

7. **Crotalaria spectabilis** Roth, Nov. Pl. Sp. 341. 1821. *C. sericea* Retz. Obs. 5: 26. 1789 *non* Burm. (1768); Baker in Hook. f. Fl. Brit. India 2: 75. 1876; Cooke, Fl. Pres. Bombay 1: 319. 1958 (Repr. ed.).

Undershrubs, 80–120 cm; leaves obovate–oblong or oblong–lanceolate, glabrous above, appressed pubescent beneath, 3.5 –14 x 0.8 –6.7 cm; flowers yellow with purplish tinge in terminal and axillary racemes; pods obovate–oblong; seeds 20– 30, blackish, reniform.

Fls. & Frts. : September–October.

Along the sea–coast, occasional Alibag.

8. **Crotalaria retusa** L. Sp. Pl. 715. 1753; Baker in Hook. f. Fl. Brit. India 2 : 75. 1876; Cooke, Fl. Pres. Bombay 1 : 318. 1958 (Repr.ed.). *Dingala.*

Erect, glabrous or appressed–pubescent undershrubs, 60–120 cm; leaves obovate or obovate–oblong, silky–pubescent beneath, 3.5– 8.6 x 1–2 cm; flowers yellow in long, terminal racemes; pods obovoid–oblong, glabrous; seeds 15–20, dark –brown, reniform.

Fls. & Frts. : September–March.

As forest undergrowth and also along road–sides and sandy soils of sea–coasts, frequent. Janjira fort; Matheran; Varandh ghat.

9. **Crotalaria linifolia** L. f. Suppl. 322. 1781; Baker in Hook. f. Fl. Brit. India 2 : 72. 1876; Cooke, Fl. Pres. Bombay 1 : 317. 1958 (Repr.ed.).

Erect, suffruticose, silky–pubescent herbs, 15–45 cm; leaves obovate–oblong, appressed–hairy beneath, 1.2–5 x 0.5–0.6 cm; flowers yellow in terminal, lax racemes; pods ovoid–oblong, smooth, deflexed; seeds 8–10, pale–brown, reniform, glabrous.

Fls. & Frts. : September – March.

Among grasses and as forest undergrowth, frequent. On sandy river–beds, occasional. Karjat; Murud; Neral–Matheran; Pachhad.

10. **Crotalaria stocksii** Benth. ex Baker in Hook. f. Fl. Brit. India 2: 67. 1876; Cooke, Fl. Pres. Bombay 1: 313. 1958 (Repr. ed.).

Much branched herbs, 30–45 cm; leaves linear–oblong, 1.8–3 x 0.2– 0.4 cm; flowers small, yellow; pods black, linear – oblong, glabrous; seeds 12–16, reniform.

Fls. & Frts. : September – October.

In deciduous forests, infrequent. Jambulpada.

11. **Crotalaria nana** Burm. f. Fl. Ind. 156. t. 48. f. 2. 1768; Baker in Hook. f. Fl. Brit. India 2 : 71. 1876; Cooke, Fl. Pres. Bombay 1: 315. 1958 (Repr. ed.).

Erect, silky–hairy herbs, 30–45 cm; leaves oblong– oblanceolate, silky pubescent, 1.2– 3.5 x 0.3 – 0.8 cm; flowers yellow; pods globose–ovoid; seeds 6–10, dark brown, reniform.

Fls. & Frts. : September – October.

On hill plateau, occasional. Wakzai, Varandh ghat.

12. **Crotalaria albida** Heyne ex Roth, Nov. Pl. Sp. 333. 1821; Baker in Hook. f. Fl. Brit. India 2: 71. 1876; Cooke, Fl. Pres. Bombay 1 : 315. 1958 (Repr. ed.).

Undershrubs, 30–60 cm; leaves linear–oblong or oblanceolate, silky pubescent, 2.4 –5 x 0.4 – 1.2 cm; flowers pale–yellow, 6–20; pods oblong–cylindric, sessile, glabrous, 6–12–seeded.

Fls. & Frts. : September – October.

Among grasses in moist deciduous forests, infrequent. Matheran.

13. **Crotalaria prostrata** Rottl. ex Willd. Enum. Hort. Berol. 747. 1809; Baker in Hook. f. Fl. Brit. India 2: 67. 1876; Cooke, Fl. Pres. Bombay 1: 312. 1958 (Repr. ed.).

Silky–pubescent herbs, 15–45 cm; leaves oblong, oblong–obovate, pubescent, 1.6–3.5 x 1–2 cm; flowers yellow in 2–4 flowered racemes; pods inflated, glabrous, 12–15- seeded.

Fls. & Frts. : September–October.

Among grasses in hilly forests, infrequent. Karnala bird sanctuary; Varandh ghat.

14. **Crotalaria vestita** Baker in Hook. f. Fl. Brit. India 2: 67. 1876; Cooke, Fl. Pres. Bombay 1 : 313. 1958 (Repr. ed.).

Hairy herbs, 15–30 cm; leaves obovate–oblong, appressed–pubescent, 0.6–7.5 x 0.3–2.3 cm; flowers yellow; pods oblong, glabrous; 15–20 seeded.

Fls. & Frts. : September – October.

As forest undergrowth and among grasses on hill–slopes. frequent. Matheran; Varandh ghat.

9. ATYLOSIA* Wight & Arn.

1a. Erect undershrubs or Shrubs:

2a. Leaflets obovate–oblong, 2–3 times as long as broad ... *A. lineata* 1

2b. Leaflets oblanceolate, 5–6 times as long as broad ... *A. sericea* 2

1b. Twining or trailing herbs ... *A. scarabaeoides* 3

1. **Atylosia lineata** Wight & Arn. Prodr. 258. 1834; Baker in Hook. f. Fl. Brit. India 2: 213. 1876; Cooke, Fl. Pres. Bombay 1 : 408. 1958 (Repr.ed.). *Rantur.*

Tomentose shrubs, upto 150 cm; leaflets 3, appressed silky– villous when young, glabrescent at length, 1.8 –3 x 0.7 –1 cm; flowers yellow, axillary, solitary or in pairs; pods linear, turgid, hairy; seeds 2, black.

Fls. & Frts. : October – December.

In hilly forests, infrequent. Matheran; Mahad ghat.

*Van der maesen in Agric. Univ. Wageningen pap. 85 (4) : 65. 1986 treats the genus *Atylosia* Wight & Arn. under *Cajanus* DC.

2. **Atylosia sericea** Benth. ex. Baker in Hook. f. Fl. Brit. India 2: 213 1876; Cooke, Fl. Pres. Bombay 1 : 408. 1958 (Repr. ed.).

Undershrubs, 80–160 cm; leaflets 3, sessile, densely silky pubescent, prominently 3–nerved from base, 1.2– 2.4 x 0.2– 0.4 cm; flowers yellow, axillary, solitary or paired; pods linear–oblong, oblique, silky tomentose, beaked; seeds 2, blackish, compressed, smooth.

Fls. & Frts. : September–October.

In hilly forests, occasional. On way to Garbat point, Matheran.

3. **Atylosia scarabaeoides** (L.) Benth. in Miq. Pl. Jungh. 242. 1852; Baker in Hook. f. Fl. Brit. India 2: 215. 1876; Cooke, Fl. Pres. Bombay 1 : 409. 1958 (Repr.ed.). *Dolichos scarabaeoides* L. Sp. Pl. 726. 1753.

Slender, rusty–hairy herbs; leaflets 3, elliptic, ovate–oblong or obovate, grey–pubescent and gland dotted, 2.2–6 x 1.2 –3 cm; flowers yellow, 2–6 in axillary racemes; pods green, flat, densely pubescent and glandular with deep lines between seeds; seeds 3–6, ellipsoid, black, smooth.

Fls. & Frts. : June–December.

In moist deciduous forests , frequent. Alibag; Matheran; Mhasla; Nagothana–Pali; Shrivardhan.

10. SESBANIA Scop. *nom. cons.*

Sesbania bispinosa (Jacq.) W. F. Wight in U.S. Dept. Agr. Bur. Pl. Ind. Bull. 137. 15. 1909. *Aeschynomene bispinosa* Jacq. Icon. Pl. Rar. 3, t. 564. 1793. *Sesbania aculeata* (Willd.) Pers. Syn. Pl. 2 : 316. 1807; Baker in Hook. f. Fl. Brit. India 2: 114. 1876; Cooke, Fl. Pres. Bombay 1 : 350. 1958 (Repr.ed.).

Erect, simple or branched, prickly undershrubs, 1–2 m; leaves abruptly pinnate; leaflets 10–20 pairs, linear–oblong, glabrous, 0.4 –1.8 x 0.2 –0.3 cm; flowers yellow in axillary and terminal racemes; pods falcate, torulose, beaked, pendulous; seeds oblong, greenish– brown.

Fls. & Frts. : September–October.

As a weed in cultivated fields, road–sides and moist deciduous forests, frequent. Matheran; Pen–Khopoli; Ramraj forest, Alibag.

11. DESMODIUM Desv. *nom. cons.*

1a. Leaves unifoliolate :

2a. Herbs; leaflets orbicular ... *D. ritchie* 1

2b. Shrubs or undershrubs; leaflets not orbicular :

3a. Petioles winged ... *D. triquetrum* 2

3b. Petioles not winged :

4a. Branches angled; joints of pods longer than broad; leaflets fulvous hairy ... *D. gangeticum* 3

4b. Branches terete; joints of pods as long as broad; leaflets fulvous hairy ... *D. velutinum* 4

1b. Leaves trifoliate :

5a. Flowers white or tinged pink in axillary umbels; branches triquetrous; pods woody ... *D. triangulare* 5

5b. Flowers bright purple, seldom white, usually in elongated racemes; branches not triquetrous; pods not woody :

6a. Herbs;

7a. Erect; stipules foliaceous, auriculate ... *D. dichotomum* 6

7b. Trailing; stipules scarious, not foliaceous or auriculate ... *D.triflorum* 7

6b. Shrubs or undershrubs :

8a. Pods deeply constricted between seeds; joints of pod dehiscent ... *D. heterocarpon* 8

8b. Pods scarcely constricted between seeds: joints of pod indehiscent ... *D. laxiflorum* 9

1. **Desmodium ritchie** Sanj., in Bull. Bot. surv. India 22: 229. 1992 & Legumes of India 161. 1992. *D. rotundifolium* Baker in Hook. f. Fl. Brit. India 2 : 172. 1876; Cooke, Fl. Pres. Bombay 1: 381. 1958 (Repr. ed.).

Erect or suberect, branched herbs, 30–60 cm; leaflets membranous, hairy beneath, 0.6–4.2 x 0.5–4 cm; flowers bright purple in axillary and terminal, lax racemes; pods glabrescent, straight, 3–6-jointed, reticulately veined.

Fls. & Frts. : September – October.

Along the road-sides in open forests, occasional. Dasturi point, Matheran, *Irani* 5535 (BLAT).

2. **Desmodium triquetrum** (L.) DC. Prodr. 2: 237. 1825; Baker in

Hook. f. Fl. Brit. India 2 : 163. 1876; Cooke, Fl. Pres. Bombay 1 : 378. 1958 (Repr. ed.). *Hedysarum triquetrum* L. Sp. Pl. 746. 1753. *Kakganga.*

Erect undershrubs; branches triquetrous, 60–90 cm; leaflets ovate–oblong or lanceolate, glabrous, 8.5–18 x 2.6 –9 cm; flowers purple–red in 15–22 cm long, axillary and terminal racemes; pods green, flat, grey–pubescent, 4–7 jointed; seeds yellowish, reniform, glabrous.

Fls. & Frts. : September–March.

In moist deciduous forests, frequent. Mahan near Ramraj, Alibag; Matheran; Mhasla; Poladpur.

Juice of the roots is used against snake–bites by tribal people.

3. **Desmodium gangeticum** (L.) DC. Prodr. 2 : 327. 1825; Wight, Icon. t. 271. 1840; Baker in Hook. f. Fl. Brit. India 2: 168. 1876; Cooke, Fl. Pres. Bombay 1 : 379. 1958 (Repr.ed.). *Hedysarum gangeticum* L. Sp. Pl. 746. 1753. *Salpalni, Salvan.*

Suffruticose herbs or undershrubs, 60–120 cm; leaves simple, ovate–oblong, glabrous above, appressed– pubescent beneath, 2–14.5 x 1–7.6 cm; flowers bluish in terminal and axillary racemes; pods reddish–brown, falcate, hairy, 4–6–jointed; seeds seperated between joints.

Fls. & Frts. : March–November.

As forest undergrowth and along road sides, frequent. Karjat ghats; Matheran; Pali ; Pangari–Devrath, Poladpur.

4. **Desmodium velutinum** (Willd.) DC. Prodr. 2 : 228. 1825. *Hedysarum velutinum* Willd. Sp. Pl. 3 : 117. 1803. *Desmodium latifolium* DC. Prodr. 2 : 328. 1825; Baker in Hook. f. Fl. Brit. India 2 : 168. 1876; Cooke, Fl. Pres. Bombay 1: 380. 1958 (Repr. ed.)

Erect, fulvous pubescent undershrubs, 60–90 cm; leaflets broadly ovate– suborbicular, scabridly hairy above, densely so beneath, ciliate on margins, 4–13.5 x 2.5 – 10.2 cm; flowers purple, fascicled in terminal and axillary racemes; pods straight, densely pubescent, 3–6–jointed.

Fls. & Frts. : July– September.

In hilly forests, occasional. Mirya dongar near Pen.

5. **Desmodium triangulare** (Retz.) Merr. in J. Arnold Arb. 23 : 170. 1942; Van Meeuwen in Reinwardtia 6: 261. 1962. *Hedysarum triangulare* Retz. Obs. Bot. 3: 40. 1783. *Desmodium congestum* Wall. ex

Wight & Arn. Prodr. 224. 1834; Wight, Icon. t. 209. 1839. *Desmodium cephalotes* (Roxb.) Wight & Arn. Prodr. 224. 1834; Baker in Hook. f. Fl. Brit. India 2: 161. 1876 *pro parte. D. cephalotes* var. *congestum* (Wight & Arn.) Prain in J. Asiat. Soc. Bengal 66: 389. 1898; Cooke, Fl. Pres. Bombay 1: 375. 1958 (Repr. ed.).

Erect, hairy shrubs, 60–150 cm; leaflets elliptic–oblong, oblong–lanceolate, argento–silky pubescent beneath, 3.8–9 x 2–4.3 cm; flowers in axillary umbels; pods brown, slightly falcate, pubescent.

Fls. & Frts. : August–March.

In moist deciduous forests, frequent. Alibag; Karnala fort; Matheran; Poladpur.

6. **Desmodium dichotomum** (Klien ex Willd.) DC. Prodr. 2 : 336. 1825; van Meeuwen in Reinwardtia. 6: 248. 1962. *Hedysarum diffusum* Klien ex Willd. Sp. Pl. 3(2): 1180. 1803. *Desmodium diffusum* (Willd.) DC. Prodr. 2: 236. 1825 (*nom. illegit. non* DC. 1825.); Baker in Hook. f. Fl. Brit. India 2: 169. 1876; Cooke, Fl. Pres. Bombay 1: 377. 1958 (Repr.ed.).

Straggling, viscidly pubescent herbs, 30–100 cm; leaflets ovate–oblong or elliptic–obovate, hairy, 1.8–17.5 x 0.7–4.6 cm; flowers white or pink in terminal and axillary, lax racemes; pods linear, moniliform, 3–6–joined, reticulately veined, hairy.

Fls. & Frts : September – October.

As forest undergrowth, occasional. Wankalgar forest, Shrivardhan.

7. **Desmodium triflorum** (L.) DC. Prodr. 2 : 234. 1825; Wight, Icon. t. 292. 184; Baker in Hook. f. Fl. Brit. India 2 : 173. 1876; Cooke, Fl. Pres. Bombay 1 : 378. 1958 (Repr.ed.). *Hedysarum triflorum* L. Sp. Pl. 749. 1753. *Ran Methi.*

Hairy herbs; leaflets obovate, membranous, glabrous or sparsely hairy, 0.3–1.5 x 0.2–0.8 cm; flowers pink, 1–3 in axillary fascicles; pods compressed, falcate, hairy, 4–6–jointed.

Fls. & Frts. : June–October.

In moist places, frequent Matheran; Nadgaon to Mahad; Varandh ghat.

8. **Desmodium heterocarpon** (L.) DC. Prodr. 2 : 337. 1825; Van Meeuwen in Reinwardtia. 6 : 251. 1962. *Hedysarum heterocarpon* L. Sp. Pl. 747. 1753. *H. polycarpon* Poir. Encycl. 6 : 413. 1804. *Desmodium*

polycarpon (Poir.) DC. Prodr. 2: 334. 1825; Baker in Hook. f. Fl. Brit. India 2 : 171. 1876; Cooke, Fl. Pres. Bombay 1 : 377. 1958 (Repr.ed.).

Slender, erect or suberect, pubescent undershrubs, 60–150 cm; leaflets obovate–oblong, glabrous above, hairy beneath, 2–5.6 x 1– 2.3 cm; flowers purple–violet; pods flat, green, linear–oblong, pubescent, 5–8–jointed.

Fls. & Frts. : August–October.

In moist deciduous forests, frequent. Alibag; Dasgaon; Mhasla; Pen to Khopoli.

9. **Desmodium laxiflorum** DC. in Ann. Sci. Nat. Paris Ser. 1, 4 : 100. 1825; Prodr. 2 : 335. 1825; Baker in Hook.f. Fl. Brit. India 2 : 164. 1876; Cooke, Fl. Pres. Bombay 1 : 376. 1958 (Repr.ed.); Van Meeuwen in Reinwardtia 6 : 252. 1962.

Suffruticose, densely pubescent herbs or undershrubs,60–150 cm; leaflets ovate–elliptic, obovate or broadly lanceolate, glabrous above, appressed–pubescent beneath, 6.5–14.6 x 2.6–6.6 cm; flowers purple; pods flat, linear, sticky hairy, 6–10– jointed.

Fls. & Frts. : August–October.

In hilly, moist deciduous forests, frequent. Matheran; Neral–Matheran; Poladpur; Sarasgad, Pali.

The roots are very deep, some times reaching almost equalling the plant's height. Usually associated with grasses and is eaten by cattle.

12. FLEMINGIA Roxb. ex Ait. *nom. cons.*

1a. Erect, shrubs or undershrubs; leaves unifoliolate; bracts foliaceous, glabrescent, folded, concealing flowers :

- 2a. Bracts acuminate, glabrescent ... *F. strobilifera* 1
- 2b. Bracts rounded or emarginate, hirsute ... *F. bracteata* 2

1b. Prostrate or trailing herbs; leaves trifoliolate; bracts not as above :

- 3a. Leaves nigro–punctate beneath; flowers in heads ... *F. gracilis* 3
- 3b. Leaves not nigro–punctate beneath; flowers in lax racemes ... *F. tuberosa* 4

1. **Flemingia strobilifera** (L.) R. Br. in Ait. f. Hort. Kew. (ed.2) 4: 350. 1812; Wight, Icon. t. 267. 1840; Baker in Hook. f. Fl. Brit. India 2: 227. 1876; Cooke, Fl. Pres. Bombay 1 : 416. 1958 (Repr. ed.). *Hedysarum strobilifera* L. Sp. Pl. 764. 1753. *Kanphuti.*

Shrubs, 1–3 m; young parts fulvous–grey pubescent; leaflets ovate–oblong, glabrous but sparsely hairy on nerves above, silky pubescent beneath, gland–dotted, 7–12.5 x 3.5– 4.6 cm; flowers white in terminal and axillary, simple or branched racemes; pods oblong, pubescent, mucronate; seeds 1–2, brownish–black.

Fls. & Frts. : November– May.

In moist deciduous forests, frequent. Matheran.

2. **Flemingia bracteata** (Roxb.) Wight, Icon. t. 268. 1840; Cooke, Fl. Pres. Bombay 1: 416. 1958 (Repr. ed.). *Hedysarum bracteatum* Roxb. Fl. Ind. 3 : 351. 1832. *Flemingia strobilifera* var. *bracteata* (Roxb.) Baker in Hook. f. Fl. Brit. India 2 : 227. 1876.

Densely pubescent undershrubs or shrubs; leaflets, ovate or oblong–lanceolate, acute or acuminate, subglabrous above, hairy on nerves beneath, 6.2–14 x 2.2–6 cm; flowers rosy or white, streaked with pink or purple in terminal and axillary racemes; pods pubescent, 2–seeded.

Fls. & Frts. : December – March.

In moist deciduous forests, infrequent. Matheran.

3. **Flemingia gracilis** (Mukerjee) Ali in Biologia 12: 78. 1966; *Moghania gracilis* Mukerjee in Bull. Bot. Soc. Bengal 6(1): 22. 1952; Reddi in Bull. Bot Surv. India 11 : 145. 1969; Kothari & Moorthy in J. Bombay nat. Hist. Soc. 80: 259. 1983; Kothari in Red data book Ind. Pl. 3:137. 1990.

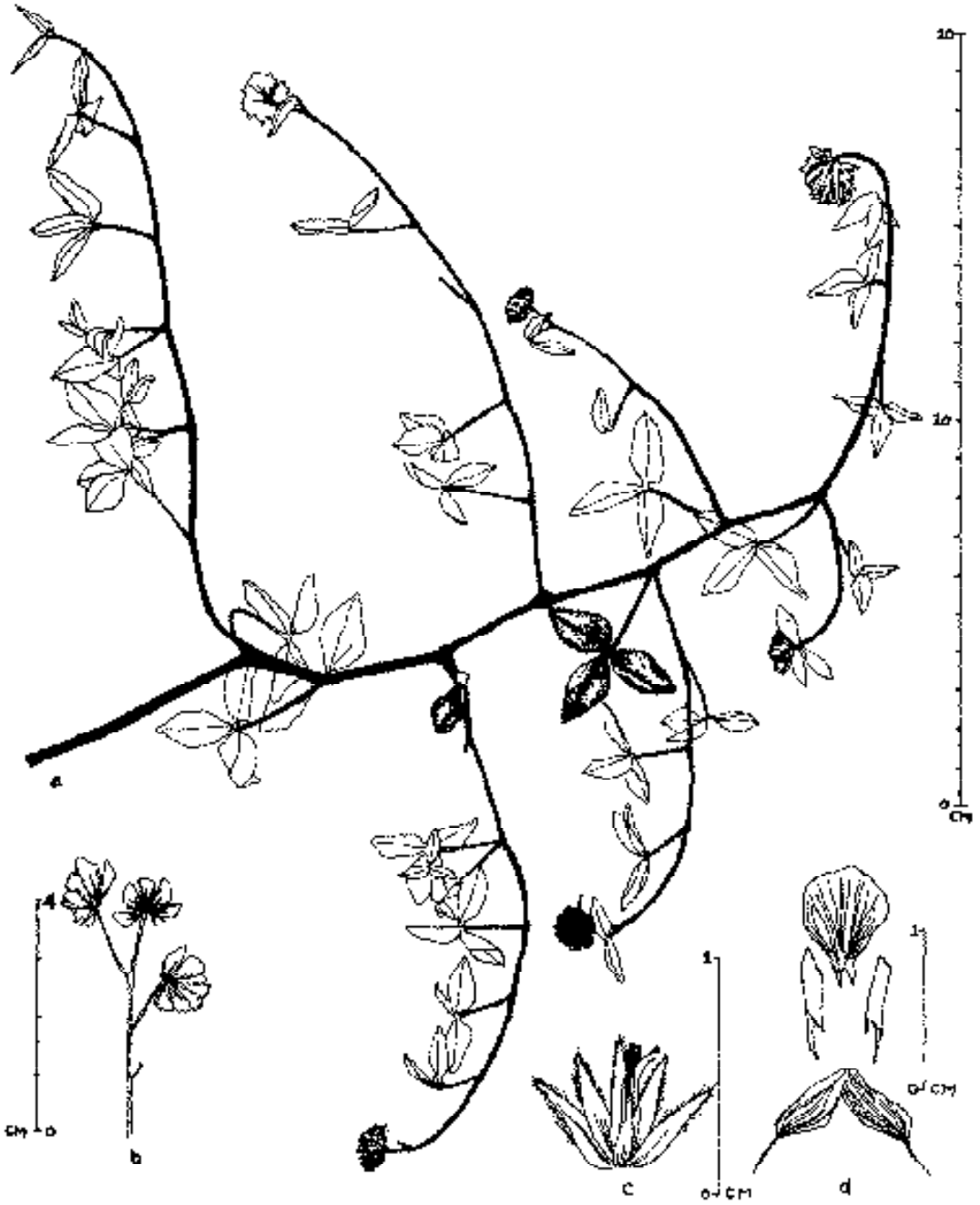
Hairy herbs; leaflets 3, ovate–lanceolate, acute, apiculate, densely pubescent, glaucous green beneath, 2.4–7.5 x 1.5–4.4 cm; flowers deep violet on capitate heads.

Fls. & Frts. : September.

Among grasses on steep cut slope of the rock, extremely rare. Porcupine point, Matheran, 147387.

4. **Flemingia tuberosa** Dalz. in Kew. J. Bot. 2: 34. 1850; Baker in Hook. f. Fl. Brit. India 2 : 230. 1876; Cooke, Fl. Pres. Bombay 1: 420. 1958 (Repr. ed.). *Moghania tuberosa* Dalz. Kuntze, Rev. Gen. Pl. 1: 199. 1891; Mukerjee in Bull. Bot. Soc. Bengal 6: 24. 1952.

Herbs with tuberous roots; leaflets linear–oblong or lanceolate, sparsely hairy beneath, 2.2–5 x 1.5–2.6 cm; flowers pinkish–purple; pods green, oblong, 1–2-seeded.



Flemingia gracilis (Mukerjee) Ali
a) Branch, b) Inflorescence, c) A flower excluding corolla,
d) Papilionaceous corolla separated.

Fls. & Frts. : September–October.

Along the sea coast, occasional. Ramraj; Alibag.

The tubers are said to be edible.

13. INDIGOFERA L.

1a. Leaves simple:

2a. Leaves linear to linear-oblong; pods 1–seeded ... *I. linifolia* 1

2b. Leaves ovate to ovato–oblong; pods 1–2 seeded ... *I. cordifolia* 2

1b. Leaves compound:

3a. Flowers in axillary, sessile or short peduncled heads :

4a. Leaflets 3, nigro–punctate beneath; pods 1–2 seeded, winged on either side of sutures ... *I. glandulosa* 3

4b. Leaflets 5–11, not punctate beneath; pods 2–3–seeded, not winged ... *I. linnaei* 4

3b. Flowers in axillary racemes:

5a. Leaflets 3:

6a. Leaflets nigro–punctate beneath; pods slightly winged on angles ... *I. prostrata* 5

6b. Leaflets not nigro–punctate beneath; pods not winged:

7a. Racemes upto 5 cm; pods 2.5–3 cm long ... *I. trita* 6

7b. Racemes 5–10 cm; pods 1–2 cm long ... *I. trita* var. *maffei* 7

5b. Leaflets 7–21 :

8a. Leaflets 7 – 11 :

9a. Pods cylindric, glabrous ... *I. tinctoria* 8

9b. Pods tetragonous or subtetragonous, hairy :

10a. Pods densely pubescent, not toruloso, deflexed ... *I. astragalina* 9

10b. Pods thinly hairy, toruloso, not deflexed ... *I. constricta* 10

8b. Leaflets 13–21 ... *I. cassioides* 11

1. **Indigofera linifolia** (L.f.) Retz. Obs. Bot. 4: 29. 1786; Wight, Icon. t. 313. 1840; Baker in Hook. f. Fl. Brit. India 2: 92. 1876; Cooke, Fl. Pres. Bombay 1: 330. 1958 (Repr. ed.). *Hedysarum linifolium* L. f. Suppl. 221. 1781. *Pandar–Phali.*

Prostrate, branched, silvery pubescent herbs; leaves simple, appresed–pubescent, 0.6–2.3 x 0.3–0.5 cm; flowers red; pods globose, shining with silvery–white pubescence; seeds blackish.

Fls. & Frts. : August–October.

As an undergrowth in moist deciduous forests and near sea–coast,frequent. Neral to Matheran; Ramraj, Alibag; Sudhagad; Uran.

2. **Indigofera cordifolia** Heyne ex Roth, Nov. Pl. Sp. 357. 1821; Baker in Hook. f. Fl. Brit. India 2: 93. 1876; Cooke, Fl. Pres. Bombay 1 : 331. 1958 (Repr. ed.). *Bochka ,Godadi.*

Prostrately spreading, woody herbs; leaves mucronate, base cordate, hairy, 0.6–2.2 x 0.4–1.5 cm; flowers red, axillary, solitary or in fascicles; pods deflexed, oblong, beaked, densely hairy; seeds greenish–brown, globose, truncate at one end, glabrous.

Fls. & Frts. : August–December.

On sandy soil near sea–coast, frequent. Alibag; Uran.

3. **Indigofera glandulosa** Roxb. ex Willd. Sp. Pl. 3: 1227. 1803; Wight, Icon. t. 330. 1840; Baker in Hook. f. Fl. Brit. India 2: 94. 1876; Cooke, Fl. Pres. Bombay 1: 332. 1958 (Repr. ed.).

Erect herbs, 20–60 cm; leaflets elliptic–obovate or oblanceolate, appressed–pubescent, 0.6–3.5 x 0.3–1.5 cm; flowers red in axillary clusters; pods linear–oblong, densely hairy; seeds brown, subreniform,smooth.

Fls. & Frts. : August–December.

As a weed among grasses along the road sides and in hilly forests, frequent. Elephanta island; Pen to Khopoli.

4. **Indigofera linnaei** Ali in Bot. Notis. 3: 549. 1958. *I enneaphylla* L. Mant. Pl. 2: 571. 1771 (*nom. illegit.*); Wight, Icon. t. 403. 1840; Baker in Hook. f. Fl. Brit. India 2: 94. 1876; Cooke, Fl. Pres. Bombay 1: 332. 1958 (Repr .ed.). *Bhuiguli.*

Prostrate, radially spreading, hairy herbs; leaflets alternate, obovate, appressed pubescent; flowers bright red in axillary, short peduncled spikes; pods cylindric, oblong, pubescent; seeds globose, brownish.

Fls. & Frts. : September–October.

In plains of the forest, frequent; on sandy soil, occasional. Alibag; Bhira; Mahad.

5. **Indigofera prostrata** Willd. Sp. Pl. 3: 1226. 1803. *I. trifoliata sensu* Baker in Hook. f. Fl. Brit. India 2: 96. 1876; Cooke, Fl. Pres. Bombay 1: 335. 1958 (Repr. ed.).

Prostrate or diffuse herbs; leaflets obovate, appressed–pubescent, 1.5 – 3 x 0.5 –1 cm; flowers red in axillary, short, peduncled clusters; pods deflexed, brownish, thin, 3–9–seeded.

Fls. & Frts. : September–November.

In moist places, among grasses in open forests, plains or hilly regions etc., frequent. Dasgaon, Mahad; Pachhad; Sudhagad.

6. **Indigofera trita** L. f. Suppl. 335. 1781; Ali in Bot. Notis. 3 : 556. 1956; Wight, Icon. tt. 315 & 386. 1840; Baker in Hook. f. Fl. Brit. India 2: 96. 1876; Cooke, Fl. Pres. Bombay 1: 335. 1958 (Repr. ed.).

Erect, suffruticose herbs or undershrubs, 60–100 cm; leaves 3–foliolate; terminal leaflet largest, elliptic–obovate, mucronate, appressed–pubescent; seeds oblong, brown.

Fls. & Frts. : September–November.

In hilly forests, occasional. Karnala fort.

7. **Indigofera trita** L.f.var. **maffei** (Chiov.) Ali in Bot. Notis. 3: 559. 1958. *I. maffei* Chiov. in Atti Ist. Bot. Univ. Pavia ser. 4, 7: 128. t. 5. 1936. *I. oreophila* Sant. & Panthki in J. Bombay nat. Hist. Soc. 54: 222. 1956.

Erect, hairy undershrubs, 60–150 cm; leaflets obovate–oblong, hairy, 1.6–4.8 x 0.6–2 cm; flowers red in axillary racemes; pods deflexed, grey–pubescent; seeds 6–8, minute, brownish, cylindric, glabrous.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Matheran.

8. **Indigofera tinctoria** L. Sp. Pl. 751. 1753; Wight, Icon. t. 365. 1840; Baker in Hook. f. Fl. Brit. India 2: 99. 1876; Cooke, Fl. Pres. Bombay 1: 339. 1958 (Repr.ed.). *Guli, Nil.*

Erect, hairy–glabrescent shrubs, 60–150 cm; leaves imparipinnate; leaflets oblong–obovate, pubescent beneath, 0.5–3 x 0.2–1 cm; flowers in axillary, spicate racemes; pods linear, slightly curved, apiculate, deflexed; seeds brownish, cylindric, truncate at ends.

Fls. & Frts. : November – March.

In outskirts of the forest and near sea–shore, frequent. Elephanta island; Shrivardhan.

9. **Indigofera astragalina** DC. Prodr. 2 : 228. 1825. *I. hirsuta sensu* Baker in Hook. f. Fl. Brit. India 2: 98. 1876 non *L.* (1753); Cooke, Fl. Pres. Bombay 1: 339. 1958 (Repr. ed.).

Suffruticose, densely hairy to woolly tomentose undershrubs, 50–100 cm; leaves imparipinnate; leaflets opposite, elliptic–oblong, appressed–pubescent, 3–7 x 1.6–3 cm; flowers bright red to rosy–purple in axillary and terminal racemes; pods slightly mucronate; seeds 4, greenish–brown to black, glabrous.

Fls. & Frts. : August– October.

In moist deciduous forests, frequent. Neral; Neral to Matheran; Pen; Poladpur.

10. **Indigofera constricta** Trim. Cat. Ceyl. Pl. 23. 1885; Cooke, Fl. Pres. Bombay 1: 340. 1958 (Repr. ed.).

Erect shrubs, 90–120 cm; leaflets 7–11, opposite, elliptic–oblong, apiculate, deciduous, 1.8 –2.5 x 0.9–1.4 cm; flowers red in axillary racemes; pods linear, subtetragonous, curved, constricted between seeds; seeds 8–12, brownish.

Fls. & Frts. : September – October.

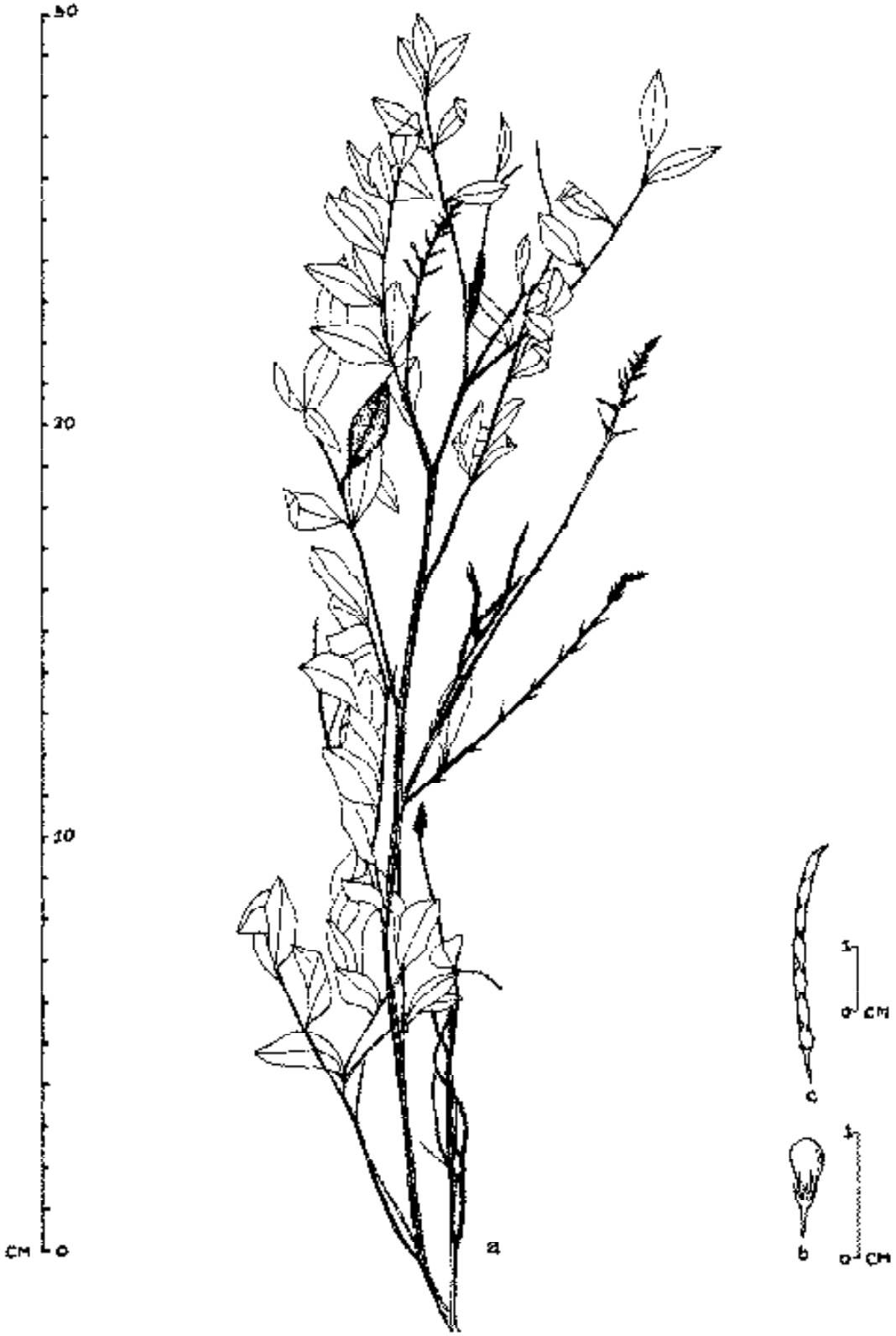
Along road–sides in moist deciduous forests, rare. Pen to Khopoli, 147487.

11. **Indigofera cassioides** Rottl. ex DC. Prodr. 2: 25. 1825. *I pulchella auct. non* Roxb. (1832); Baker in Hook. f. Fl. Brit. India 2: 101. 1876; Fyson, Fl. South Indian Hill St. 2: t. 119. 1932; Cooke, Fl. Pres. Bombay 1: 341. 1958 (Repr. ed.).

Erect, hairy shrubs, 120–180 cm; leaflets opposite, elliptic–oblong, apiculate, 1.5–2.6 x1–1.3 cm; flowers rosy–purple, upto 1 cm in axillary racemes; pods straight, cylindric, turgid; seeds 8–12, reddish brown, orbicular.

Fls. & Frts. : April–May.

In hilly forests, infrequent. Matheran.



Indigofera constricta Trim.
a) Twig, b) flower, c) Pod.

14. TEPHROSIA Pers. *nom. cons.*

1a. Leaves simple ... *T. strigosa* 1

1b. Leaves compound:

2a. Flowers in elongated racemes:

3a. Racemes axillary; style bearded throughout:

4a. Leaflets 7 – 13, elliptic–oblong:

5a. Leaflets upto 7x3 cm ... *T. tinctoria* 2

5b. Leaflets upto 3x1.2 cm ... *T. canaremsis* 3

4b. Leaflets 5, obovate – cuneate ... *T. coccinea* 4

3b. Racemes extra–axillary; style not bearded:

6a. Seeds 5–9 per fruit, loosely packed; stem erect or ascending; leaflets 9–11 ... *T. purpurea* 5

6b. Seeds 8–14 per fruit, closely packed; stem procumbent; leaflets 5–9 ... ... *T. pumila* 6

2b. Flowers 1–2 in leaf axils ... *T. uniflora ssp. petrosa* 7

1. **Tephrosia strigosa** (Dalz.) Sant. & Mahesh. in J. Bombay nat. Hist. Soc. 54(3) : 805. 1957. *Macronyx strigosus* Dalz. in Hook. Kew J. Bot. 2 : 35. 1850. *Tephrosia tenuis* Wall. ex Dalz. & Gibs. Bombay Fl. 61. 1861; Baker in Hook. f. Fl. Brit. India 2 : 111. 1876; Cooke, Fl. Pres. Bombay 1 : 344. 1958 (Repr.ed.).

Prostrate or suberect, slender, densely hairy herbs; leaves linear, acute, apiculate, sparsely hairy above, silky beneath, 2.3–5.2 x 0.5–0.8 cm; flowers yellow, 1 or 2 in axils of leaves; pods flat, linear, yellowish, glabrescent; seeds 6–10, spherical, smooth.

Fls. & Frts. : September–October.

In hilly regions, infrequent. Kankeshwar hill, Alibag.

2. **Tephrosia tinctoria** (L.) Pers. Syn. Pl. 2: 329. 1807; Wight, Icon. t. 388. 1840; Baker in Hook. f. Fl. Brit. India 2: 111. 1876; Cooke, Fl. Pres. Bombay 1: 345. 1958 (Repr. ed.). *Galega tinctoria* L. Syst. Nat. (ed.10) 1172. 1759.

Erect, velvety–pubescent undershrubs, 90–150 cm; leaflets mucronate, densely silky–pubescent beneath; flowers orange–yellow; pods linear, flat, mucronate, curved upwards at apex, silky hairy; seeds 10–12, ellipsoid, compressed.

Fls. & Frts. : September–October.

In hilly forests, frequent. Parghat, Poladpur; Roha.

3. **T. canarensis** J.R. Drummond in Gamble, Fl. Pres. Madras 319. 1918. *T. tinctoria* Pers. var. *intermedia* Baker in Hook. f. Fl. Brit. India 2 : 112. 1876 *pro parte;* Cooke, Fl. Pres. Bombay 1: 345. 1958 (Repr. ed.).

Undershrubs; branches velvety; leaflets 7–13, much smaller, terminal ones almost equalling the lateral ones in size; flowers 3–12, in lax racemes; pods linear, mucronate; seeds 8–12, mottled.

Fls. & Frts. : October.

On plateaus, rare. Mirya donger, Pen.

4. **Tephrosia coccinea** Wall. Pl. As. Rar. 1: 49. t. 60. 1830; Cooke, Fl. Pres. Bombay 1 : 346, 1958 (Repr.ed.). *T. tinctoria* (L.) Pers. var. *coccinea* Baker in Hook. f. Fl. Brit. India 2 : 112. 1876;

Erect, branched , silky –pubescent shrubs; leaflets, mucronate, appressed silky–hairy beneath; flowers brick red in lax racemes; pods linear, flat, mucronate, silky–pubescent.

Fls. & Frts. : September – January.

Along road–sides in hilly forests, frequent. Kalasgiri hill, Roha; Matheran; Neral; Neral to Matheran.

5. **Tephrosia purpurea** (L.) Pers. Syn. Pl. 2: 329. 1807; Baker in Hook. f. Fl. Brit. India 2 : 112. 1876; Cooke, Fl. Pres. Bombay 1: 346. 1958 (Repr. ed.). *Cracca purpurea* L. Sp. Pl. 752. 1753. *Sarpunka, Unhali.*

Perennial, glabrous herbs, 60–100 cm; leaflets obovate–oblanceolate, obtuse–mucronate, silky–hairy beneath, 1.6–3 x 0.5–1 cm; flowers bright purple or violet; pods linear, flat, appressed–pubescent; seeds blackish–brown, oblong.

Fls. & Frts. : Almost throughout year.

In plains, hilly forests and near sea–coast, frequent.Bhira; Matheran; Nagaon, Alibag.

6. **Tephrosia pumila** (Lam.) Pers. Syn. Pl. 2: 230. 1807. *Galega pumila* (Lam.) Baker in Hook. f. Fl. Brit. India 2: 113. 1876.*Tephrosia purpurea* L. var. *pumila* (Lam.) Baker in Hook. f. Fl. Brit. India 2: 113. 1876; Cooke, Fl. Pres. Bombay 1: 347. 1958 (Repr. ed.).

Hairy herbs; leaves imparipinnate; leaflets oblong–oblanceolate,

truncate to retuse, appressed pubescent; flowers rosy–purple, 1–3 in terminal or leaf opposed racemes; pods flat, green, hairy; seeds blackish–brown.

Fls. & Frts. : February–March.

In hilly forests, occasional. Karnala fort.

7. **Tephrosia uniflora** Pers. ssp. **petrosa** (Blatt. & Hallb.) Gillet & Ali in Kew Bull. 13: 114. 1958. *T. petrosa* Blatt. & Hallb. in J. Bombay nat. Hist. Soc. 26: 239. 1918.

Suffruticose, silky–pubescent herbs, 60–100 cm; leaves imparipinnate; leaflets 5–9 (13), obovate–oblanceolate, appressed–silky beneath 3–5.5 x 0.8–1.3 cm; flowers pinkish–red; pods linear, flat, straight, appressed–hairy; seeds 7–8, greenish–yellow, roundish.

Fls. & Frts. : September–October.

Near sea–coast, occasional. Alibag.

The present report of the plant from the district serves as a new record for the Maharashtra state and also bridges the gap of earlier reports grom karnataka and Gujarat State.

15. ZORNIA J. F. Gmel.

Zornia gibbosa Span. in Linnaea 15 : 192. 1841. *Z. diphylla auct. plur. non* (L.) Pers. (1807); Baker in Hook. f. Fl. Brit. India 2: 147. 1876; Cooke, Fl. Pres. Bombay 1: 335. 1958 (Repr. ed.). *Landgu.*

Prostrate or trailing herbs; leaves bifoliolate; leaflets linear–lanceolate, glabrous, glandular punctate beneath, 0.8–3.2 x 0.3–1 cm; flowers yellow in terminal and axillary racemes; pods 1–6 jointed; joints reticulately veined, echinate; seeds reddish–brown, smooth.

Fls. & Frts. : August–October.

Among grasses in cultivated fields, road sides and hilly forests, frequent. Karjat; Neral–Matheran; Varandh ghat.

16. GONIOGYNA DC.

Goniogyna hirta (Willd.) Ali in Taxon 16: 463. 1967. *Hallia hirta* Willd. Sp. Pl. 3(2) : 1169. 1803. *Heylandia letebrosa auct. non.* (L.) DC. (1825); Baker in Hook. f. Fl. Brit. India 2 : 65. 1876; Cooke, Fl. Pres. Bombay 1 : 310. 1958 (Repr. ed.) *Godhari.*

Prostrate, hairy herbs; leaves simple, ovate–cordate, subacute, hairy, 0.6–1.7 x 0.4–0.8 cm; flowers yellow, solitary, axillary; pods oblong, flat, brownish, hairy, 1–2–seeded.

Fls. & Frts. : February–June.

Among grasses in moist deciduous forests, infrequent. Matheran.

17. MELILOTUS Mill.

Melilotus alba Desr. in Lam. Encycl. 4: 63. 1796; Baker in Hook. f. Fl. Brit. India 2: 89. 1876.

Erect herbs, 30–120 cm; leaflets 3, oblanceolate–obovate, sharply serrate, 0.8–2.5 x 0.4–1 cm; flowers white in axillary and terminal, compact racemes; pods turgid, reticulately veined, glabrous.

Fls. & Frts. : April–May.

As a weed in cultivated fields, infrequent. Nagaon village, Alibag.

18. GEISSASPIS Wight & Arn.

1a. Flowers in dense, capitate racemes or heads upto 2.5 cm or even more long; bracts orbicular, margins with long, stiff hairs; flowers much shorter than bracts ... *G. cristata* 1

1b. Flowers in lax, capitate racemes upto 1 cm long; bracts ovate or obliquely oblong, mucronate, margins dentate with shortly, stiff hairs; flowers conspicuous, as long as or longer than bracts ... *G. tenella* 2

1. **Geissaspis cristata** Wight & Arn. Prodr. 218. 1834; Baker in Hook. f. Fl. Brit. India 2: 141. 1876; Cooke, Fl. Pres. Bombay 1: 353. 1958 (Repr. ed.). *Barki.*

Diffuse or prostrate herbs, 15–20 cm; leaves pinnate; leaflets 4, obovate, glabrous, 0.5–1.3 x 0.3–0.5 cm; flowers yellow with reddish–purple streaks; pods moniliform with 1–2 joints, reticulately veined, glabrous, 1–seeded.

Fls. & Frts. : September–March.

In moist places on hill–slopes or plains and among grasses, frequent. Bhishe Khind, Roha; Matheran; Mirya dongar near Pen; Neral; Pachhad.

2. **Geissaspis tenella** Benth. in Flora 32: 559. 1849; Baker in Hook. f. Fl. Brit. India 2: 141. 1876. *Lahan barki.*

Prostrate or trailing herbs, scarcely rooting at nodes; leaves pinnate; leaflets 4, obovate–cuneate, glabrous, upto 0.8 x 0.4 cm; flowers yellow; pods 1–2–jointed; joints orbicular with expanded, flat margins and turgid centre, 1–2–seeded.

Fls. & Frts. : August – October.

In moist situations on plateau or hill slopes, infrequent. Bhise Khind at an elevation of 274 m; on way to Neral from Matheran.

19. SMITHIA Ait. *nom. cons.*

1a. Stem with dense, fulvous bristles :

2a. Plants diffuse or suberect; calyx dichotomously veined; racemes few flowered; pods 4–8–jointed:

3a. Leaflets 2–paired; lowerlip of the calyx 3–lobed ... *S. bigemina* 1

3b. Leaflets 3–4 paired; lower tip of the calyx entire ... *S. hirsuta* 2

2b. Plants erect; calyx parallel veined; flowers many in robust, dichotomous – thyrsoid racemes; pods 10–12–jointed ... *S. setulosa* 3

1b. Stem not bristly :

4a. Leaflets 2–4 paired; calyx reticulately veined; pods 10–15 jointed ... *S. salsuginea* 4

4b. Leaflets 2–13 paired; calyx parallel veined; pods 3–6 jointed :

5a. Flowers 1–2 in axils of leaves, crowded at tips of branches ... *S. conferta* 5

5b. Flowers many in short racemes:

6a. Herbs, 20–40 cm high with slender stem; flowers 0.7–0.9 cm long ... *S. sensitiva* 6

6b. Herbs 50–100 cm high; stem robust; flowers 1–1.3 cm long ... *S. sensitiva var. flava* 7

1. **Smithia bigemina** Dalz. in Hook. Kew J. Bot. 3: 208. 1851; Baker in Hook. f. Fl. Brit. India 2: 249. 1876; Cooke, Fl. Pres. Bombay 1: 360. 1958 (Repr. ed.). *Berki, Kowli.*

Slender, diffusely branched herbs, 15–30 cm; leaflets oblanceolate–cuneate, obtuse, bristly pointed, glabrous above, strigose beneath, 0.8–1.3 x 0.4–0.9 cm; flowers orange–yellow in axillary cymes; pods jointed, dark–brown, tubercled.

Fls. & Frts. : September–December.

Among grasses, frequent. Matheran.

2. **Smithia hirsuta** Dalz. in Hook. Kew J. Bot. 3 : 135. 1851; Baker in Hook. f. Fl. Brit. India 2 : 151. 1876; Cooke, Fl. Pres. Bombay 1: 361. 1958 (Repr. ed.). *S. blanda* Wall. ex Wight & Arn. var. *racemosa* Baker *op. cit. pro parte.*

Erect, sparingly branched, hairy herbs, 30–45 cm; leaflets oblanceolate, cuneate, bristle–tipped at apex, ciliate on margins, sparsely hairy beneath; flowers yellow, 4–10 in capitate racemes; pods 4–8–jointed; joints reticulately veined.

Fls. & Frts. : September-October.

Among grasses on hilly plateau, infrequent, Varandh ghat, Mahad.

3. **Smithia setulosa** Dalz. in Hook. Kew J. Bot. 3: 208. 1851; Baker in Hook. f. Fl. Brit. India 2: 150. 1876; Cooke, Fl. Pres. Bombay 1: 359. 1958 (Repr. ed.).

Dichotomously branched herbs, 90–120 cm; leaflets linear–oblong, bristly on margins and mid–rib beneath, 2–5.6 x 0.8–1.8 cm; flowers bright yellow; pods with orbicular and glabrous joints.

Fls. & Frts. : September–October.

In hilly forests, occasional. One tree hill, Matheran.

4. **Smithia salsuginea** Hance in J. Bot. 7: 164. 1869; Cooke, Fl. Pres. Bombay 1: 362. 1958 (Repr. ed.). *S. dichotoma* Dalz. ex Baker in Hook. f. Fl. Brit. India 2: 150. 1876.

Erect, glabrous herbs with reddish–brown stem, 30–90 cm; leaves abruptly pinnate with short, bristle pointed rachis; leaflets oblanceolate–oblong, glabrous but for few marginal bristles, 0.4–1.3 x 0.3–0.5 cm; flowers yellow in dichotomously branched, lax, corymbose panicles; pods with orbicular joints, glabrous.

Fls. & Frts. : September–October.

Among grasses in hilly forests and along road sides, frequent. Kalasgiri hill, Roha; Neral to Matheran; Pen to Khopoli.

5. **Smithia conferta** Sm. in Rees, Cyclop. 33: 2. 1819; Cooke, Fl. Pres. Bombay 1: 358. 1958 (Repr. ed.). *S. geminiflora* Roth var. *conferta* Baker in Hook. f. Fl. Brit. India 2: 149. 1876. *Kasai, Kaulla.*

Sraggling herbs, 60–120 cm; leaves pinnate; leaflets linear–oblong, bristly on margins and mid–rib beneath, 0.5–1.2 x 0.3–0.6 cm; flowers yellow; pods 3–6–jointed; joints turgid, papillose.

Fls. & Frts.: September–December.

In moist places, frequent. Matheran; Neral; Pachhad; Pen to Khopoli.

6. **Smithia sensitiva** Ait. Hort. Kew. 3: 496. 1789; Baker in Hook. f. Fl. Brit. India 2: 149. 1876; Cooke, Fl. Pres. Bombay 1: 357. 1958 (Repr.ed.). *Kavla.*

Diffuse, branched herbs; leaves pinnate; leaflets 3–10 pairs, linear–oblong, obtuse, bristle pointed, glabrous or bristly on margins and mid–rib beneath, 0.4–1.2 x 0.2–0.3 cm; flowers yellow in axillary racemes; pods jointed; joints orbicular, reddish–brown, glabrous.

Fls. & Frts. : September–October.

Among grasses in moist places, road–sides and in open forests, frequent. Matheran; Neral to Matheran; Pen; Sanegaon forest, Roha.

Adivasis use the leaves of this species as vegetable and whole plant as a cattle fodder.

7. **Smithia sensitiva** Ait. var. **flava** (Dalz. ex Prain) T. Cooke, Fl. Pres. Bombay 1: 336. 1902 (1: 358. 1958. Repr. ed.). *S. flava* Dalz. ex Prain in J. As. Soc. Bengal 66: 378. 1898.

Robust herbs; leaflets 3–13 pairs, linear–oblong, sparsely hairy, bristly on margins and mid–rib beneath; flowers yellow, few in axillary racemes; pods jointed; joints orbicular.

Fls. & Frts. : February–April.

In wet places, occasional. Mirya dongar, Pen.

20. AESCHYNOMENE L.

Aeschynomene indica L. Sp. Pl. 713. 1753; Wight, Icon. t. 405. 1840; Baker in Hook. f. Fl. Brit. India 2: 151. 1876; Cooke, Fl. Pres. Bombay 1: 362. 1958 (Repr. ed.).

Suffruticose herbs or undershrubs, 30–90 cm; leaves pinnate; leaflets 21–71, alternate, subsessile, linear–oblong, glabrous, 0.2–0.6 x 0.1–0.2 cm; flowers creamy–yellow, in axillary racemes; pods 4–10–jointed, flat, straight or slightly curved, greenish, glabrescent.

Fl. & Frts. : September–November.

In moist situations, frequent. Matheran; Neral; Sanegaon forest, Roha.

Leaves and tender shoots are used as fodder.

21. ALYSICARPUS Desv. *nom. cons.*

1a. Calyx much longer than first joint of the pod :

2a. Teeth of the calyx imbricate in fruiting stage:

3a. Pods more or less moniliform; joints not ribbed:

4a. Pods not reticulately veined ... *A. bupleurifolius* 1

4b. Pods reticulately veined ... *A. longifolius* 2

3b. Pods not moniliform; joints transversely ribbed ... *A. rugosus* 3

2b. Teeth of the calyx not imbricate in fruiting stage ... *A. belgaumensis* 4

1b. Calyx shorter equal or slightly longer than the first joint of the pod :

5a. Calyx shorter than the first joint of the pod ... *A. hamosus* 5

5b. Calyx equalling or slightly longer than first joint of the pod ... *A. vaginalis* 6

1. **Alysicarpus bupleurifolius** (L.) DC. Prodr. 2: 352. 1825; Baker in Hook. f. Fl. Brit. Inida 2: 158. 1876; Cooke, Fl. Pres. Bombay 1: 370. 1958 (Repr. ed.). *Hedysarum bupleurifolium* L. Sp. Pl. 745. 1753.

Prostrate or suberect herbs, 10–40 cm; leaves linear–lanceolate or elliptic–lanceolate, glabrous, 0.7–3.6 x 0.4–0.8 cm; flowers reddish–purple in terminal and axillary, lax, spicate racemes; pods exserted, 3–7 jointed, glabrous.

Fls. & Frts. : June–October.

Among grasses in plains and hilly forests, frequent. Bhira, Roha; Neral; Neral to Matheran; Pen to Khopoli.

2. **Alysicarpus longifolius** (Rottl. ex. Spreng.) Wight & Arn. Prodr. 233. 1834; Wight, Icon. t. 251. 1840; Baker in Hook. f. Fl. Brit. India 2: 159. 1876; Cooke, Fl. Pres. Bombay 1: 370. 1958 (Repr. ed). *Hedysarum longifolium* Rottl. ex Spreng. Syst. 3: 319. 1826.

Erect, glabrous herbs, 30–150 cm; leaves ovate–oblong or linear–lanceolate, appressedly hairy beneath, 1.5–4.2 x 0.7–1.8 cm; flowers reddish–purple in terminal and axillary racemes; pods 3–6 jointed, glabrous.

Fls. & Frts. : September–October.

Among grasses in plain and hilly forests, frequent. Ghosale, Roha; Karnala fort; Pachhad.

3. **Alysicarpus rugous** (Willd.) DC. Prodr. 2: 353. 1825; Baker in Hook. f. Fl. Brit. India 2: 159. 1876; Cooke, Fl. Pres. Bombay 1: 371. 1958 (Repr. ed.). *Hedysarum rugosum* Willd. Sp. Pl. 3: 1172. 1802.

Prostrately spreading or suberect herbs, 30–60 cm; leaves oblong, orbicular or linear–lanceolate, glabrous above, appressedly hairy beneath, 0.6–3.5 x 0.3–2.6 cm; flowers reddish–purple in spicate racemes; pods 3–5 jointed, glabrous.

Fls. & Frts. : September–October.

Among grasses in hilly forests, road–sides and in waste places, frequent. Bhise Khind, Roha; Pen to Khopoli; Sarasgad, Pali.

4. **Alysicarpus belgaumensis** Wight, Icon. t. 92. 1838; Baker in Hook. f. Fl. Brit. India 2: 160. 1876; Cooke, Fl. Pres. Bombay 1: 372. 1958 (Repr.ed.).

Erect herbs, 75–100 cm; leaves elliptic or oblong–lanceolate, hairy beneath, ciliate on margins, 1.5–7 x 1–2 cm; flowers reddish–purple in lax, terminal and axillary racemes; pods slightly exserted, subcompressed, pubescent, 3–4 jointed, reticulately veined.

Fls. & Frts. : September–October.

Among grassses on hill slopes, occasional. Matheran, *Irani* 4740, 5652 (BLAT).

5. **Alysicarpus hamosus** Edgew. in J. As. Soc. Bengal 21: 171. 1853; Baker in Hook. f. Fl. Birt. India 2: 157. 1876; Cooke, Fl. Pres. Bombay 1: 368. 1958 (Repr. ed).

Prostrate, diffusely branched, hairy herbs; leaves elliptic-orbicular, hairy, 8-3.7x0.6-3.2 cm; flowers bluish-purple in terminal and axillary racemes; pods compressed, 3-6 jointed, hairy.

Fls. & Frts. : September–October.

Among grasses on raodsides and hilly forests, frequent. Bhira; Karnala fort; Sarasgad, Pali.

6. **Alysicarpus vaginalis** (L.) DC. Prodr. 2 : 353. 1825; Baker in Hook. f. Fl. Brit. India 2: 158. 1876; Cooke, Fl. Pres. Bombay 1: 369. 1958 (Repr.ed.). *Hedysarum vaginale* L. Sp. Pl. 746. 1753. *Alysicarpus vaginalis* var. *nummularifolius* Miq. Fl. Ind. Bot. 1: 232. 1855; Baker *op. cit.*; Cooke, *op. cit.*

Suberect, suffruticose herbs, 30–90 cm; leaves 1–foliolate; leaflets variable, elliptic–oblong, lanceolate, ovate–oblong, truncate or

apiculate, glabrous, 0.8–4.2 x 0.7–3.4 cm; flowers reddish–violet, 6–12 in terminal, axillary racemes; pods green, turns black at length, 6–8 jointed, reticulately veined.

Fls. & Frts. : August–October.

In moist places on road sides and hilly forests, frequent.Dahen, Mhasla; Kolad to Khamb, Roha; Pen to Khopoli; Sarasgad, Pali.

22. URARIA Desv.

1a.	Leaves 5–7 (3)– foliolate	...	*U. picta* 1
1b.	Leaves one and three–foliolate, mixed	...	*U. rufescens* 2

1. **Uraria picta** (Jacq.) Desv. ex DC. Prodr. 2: 324. 1825; Baker in Hook. f. Fl. Brit. India 2: 155. 1876; Cooke, Fl. Pres. Bombay 1: 367. 1958 (Repr. ed.) *Hedysarum pictum* Jacq. Coll. 2 : 262. 1788.

Undershrubs 60–90 cm; leaflets linear–lanceolate or linear–oblong, subcoriaceous, glabrous, 3.6–22 x 1.2–2.4 cm; flowers purple, fascicled in long racemes; pods 3–6 jointed; joints ring like, placed one above the other, glabrous; seeds yellowish or reddish–brown, reticulate.

Fls. & Frts. : August – September.

In deciduous forests, occasional. Near Pen.

2. **Uraria rufescens** (DC.) Schindl. in Fedde, Repert. 21: 14. 1925; Sant. & Shah in J. Bombay nat. Hist. Soc. 62 (2) : 201. 1965. *Desmodium rufescens* DC. in Ann. Sci. Nat. 4: 101. 1825. *Uraria hamosa* (Roxb.) Wall. ex Wight & Arn. Prodr. 222. 1834; Wight, Icon. t. 284. 1840; Baker in Hook. f. Fl. Brit. India 2 : 156. 1876.

Fulvous hairy undershrubs; leaflets ovate or elliptic –oblong, pubescent beneath, 3.5–8 x 3–4 cm; flowers bright purple in long, terminal axillary racemes; pods 4–8 jointed, joints annular, hairy; seeds yellowish–brown, globose or subreniform.

Fls. & Frts. : September–October.

As forest undergrowth, frequent. Mhasla; Pen.

23. PSEUDARTHRIA Wight & Arn.

Pseudarthria viscida Wight & Arn. Prodr. 209. 1834; Wight, Icon. t. 286. 1840; Baker in Hook. f. Fl. Brit. India 2: 154. 1876; Cooke, Fl. Pres. Bombay 1: 366. 1958 (Repr. ed.).

Prostrate or suberect herbs, 60–120 cm; leaves 3–foliolate; leaflets ovate, ovate–rhomboid or ovate–oblong, appressed hairy, ciliate on margins, 2.5–6.7 x 1–4.2 cm; flowers pinkish in terminal, axillary racemes ; pods linear–oblong, beaked, viscidly hairy; seeds dark brown, subreniform, compressed.

Fls. & Frts. : September–October.

In moist deciduous forests and near sea–coast, frequent. Karle–Khind, Alibag; Shrivardhan.

24. CLITORIA L.

1a. Erect herbs; flowers geminate, rarely solitary by abortion of one ... *C. biflora* 1

1b. Twiners; flowers usually solitary ... *C. ternatea* 2

1. **Clitoria biflora** Dalz. in Hook. Kew J. Bot. 2: 35. 1850; Baker in Hook. f. Fl. Brit. India 2: 208. 1876; Cooke, Fl. Pres. Bombay 1: 406. 1958 (Repr. ed.).

Herbs with angular stems, 20–40 cm; leaves imparipinnate; leaflets 3–5, ovate–oblong, elliptic, sparsely hairy, 1.3–4.5 x 1–2.4 cm; flowers bluish–white, deflexed; pods linear, flat, 2.8–4 cm; seeds 4–6, blackish–brown, glabrous.

Fls. & Frts. : August–September.

Among grasses on hill slopes, as forest undergrowth and along road–sides, frequent. Ghosale fort, Roha; Neral to Matheran; Neral; Pen to Khopoli.

The seeds are used for cough trouble by local people.

2. **Clitoria ternatea** L. Sp. Pl. 753. 1753; Baker in Hook. f. Fl. Brit. India 2 : 208. 1876; Cooke, Fl. Pres. Bombay 1 : 405. 1958 (Repr.ed.). *Gokarn.*

Woody twiners; leaflets 5–7, elliptic–oblong, ovate–oblong, glabrescent, 1.2–6 x 0.8– 4.3 cm; flowers blue or white; pods linear, flat, beaked, 8–10.5 cm; seeds 6–10, oblong, yellowish–brown, mottled black, glabrous.

Fls. & Frts. : March–September.

On hedges, frequent. Pen to Khopoli; Roha.

Cultivated in gardens for its beautiful flowers. The leaves, roots and seeds are of medicinal value.

25. CYAMOPSIS DC.

Cyamopsis tetragonoloba (L.) Taub. in Engl. & Prantl, Pflanzenf. 3(3) : 259. 1894. *Psoralea tetragonoloba* L. Mant. Pl. 1: 104. 1767. *Cyamopsis psoralioides* (Lam.) DC. Prodr. 2: 216. 1825; Wight, Icon. t. 248. 1840; Baker in Hook. f. Fl. Brit. India 2: 92. 1876; Cooke, Fl. Pres. Bombay 1: 328. 1958 (Repr. ed.). *Gavari, Nataki.*

Erect herbs, 60 –90 cm; leaflets 3, ovate–elliptic, appressed hairy racemes; pods linear, flat, beaked; seeds 5–6, subtetragonous, greyish–black.

Fls. & Frts. : September-October

Commonly cultivated or as an escape. Shrivardhan.

Cultivated for its fruits which are used as vegetables. Gum obtained from its seed flour is used in food, paper and textile industries.

26. PARACALYX Ali

Paracalyx scariosus (Roxb.) Ali in Univ. Steud. (Karachi) 5 (3): 95. 1968. *Cylista scariosa* Roxb. Pl. Cor. t. 92. 1795; Wight, Icon. t. 1597. 1850; Baker in Hook. f. Fl. Brit. India 2: 219. 1876; Cooke, Fl. Pres. Bombay 1: 412. 1958 (Repr. ed.). *Ran–ghevda.*

Extensive , woody , grey–pubescent twiners; leaves 3–foliolate; leaflets, the terminal rhomboid–ovate, the lateral obliquely ovate, coriaceous, fulvous–pubescent, 4.6–9 x 3.5–5.2 cm; flowers yellow in terminal, axillary racemes; pods pubescent, enclosed in calyx; seeds 1, black, reniform.

Fls. & Frts. : September–February.

In hilly and plain moist deciduous forests, frequent. Panvel; Pen.

27. DERRIS Lour. *nom. cons.*

Derris scandens (Roxb.) Benth. in J. Linn. Soc. 4 (Suppl.): 103. 1860; Baker in Hook. f. Fl. Brit. India 2 : 240. 1876; Cooke, Fl. Pres. Bombay 1 : 340. 1958 (Repr.ed.). *Dalbergia scandens* Roxb. Pl. Cor. t. 192. 1798.

Large, woody climbers with purple bark; leaves imparipinnate; leaflets 7–9, coriaceous, ovate, elliptic–oblong, obovate, glabrous above, pubescent beneath, 2.2–7.5 x 0.8–4 cm; flowers white in axillary, drooping racemes; pods yellowish, lanceolate, flat, 1–4 seeded.

Fls. & Frts. : March–October.

In moist deciduous forests and near sea–shores, frequent. Alibag; Karnala Birds Sanctuary; Shrivardhan.

28. ABRUS L.

Abrus precatorius L. Syst. (ed. 12) 472. 1767; Baker in Hook. f. Fl. Brit. India 2: 175. 1876; Cooke, Fl. Pres. Bombay 1: 382. 1958 (Repr. ed.). *Gunj.*

Deciduous twiners, woody at base; leaves pinnate; leaflets 10–20 pairs, elliptic–oblong, sparsely hairy beneath, 0.7–1.3 x 0.3–0.4 cm; flowers pinkish–purple; pods turgid, linear–oblong; seeds ellipsoid –subglobose, shining, scarlet with a black spot at hilum.

Fls. & Frts. : May – October.

On hedges and small shrubs in forests, frequent. Alibag; Bhadavad, Neral; Dasgaon, Mahad.

The roots and leaves are used medicinally by local people to cure dysentery and cough respectively.

29. VIGNA Savi

1a. Keel spirally twisted :

2a. Pods glabrous; stem slender, wiry and glabrous ... *V. dalzelliana* 1

2b. Pods hirsute; stem stout, robust with deflexed hairs:

3a. Stipules foliaceous, upto 4 x 2.7 cm ... *V. khandalensis* 2

3b. Stipules not foliaceous; if foliaceous, not upto above size :

4a. Pods radially spreading or deflexed, flat :

5a. Stem mostly erect; leaflets usually entire ... *V. radiata* 3

5b. Stem twining or prostrate; leaflets frequently lobed ... *V. radiata* var. *sublobata* 4

4b. Pods erect or suberect, cylindrical ... *V. angularis* 5

1b. Keel not spirally twisted :

6a. Stem twining; stipules basifixed; keel beaked ... *V.vexillata* 6

6b. Stem subcrect, rarely twining; stipules often peltate and spurred at base; keel not beaked ...*V. unguiculata* ssp. *cylindrica* 7

1. **Vigna dalzelliana** (O.Kuntze) Verdc. in Kew Bull. 24: 558. 1970. *Phaseolus dalzellianus* O. Kuntze, Rev. Gen. Pl. 202. 1891. *P. pauciflorus* Dalz. in Hook. Kew J. Bot. 3 : 209. 1851; Baker in Hook. f. Fl. Brit. India 2: 202. 1876. *non* Benth. (1837) *P. dalzellii* T. Cooke, Fl. Pres. Bombay 1: 376. 1902 (1: 401. 1958. Repr. ed.).

Twining or creeping herbs; leaflets 3, broadly ovate, ovate–rhomboid, often lobed, glabrescent, 1.5 –4.8 x 1.2 –3.5 cm; flowers yellow in capitate racemes; pods subcylindric; seeds 8–10, dark brown, truncate.

Fls. & Frts. : September – October.

In hilly forests, frequent. Karnala fort; Matheran; Pachhad.

2. **Vigna khandalensis** (Sant.) Ragh. et Wadhwa in Curr. Sci. 41: 429. 1972; Singh & Kulkarni in Red data book Ind. Pl. 3: 153. 1990. *Phaseolus khandalensis* Sant. in Kew Bull. 1948: 276. 1948. *P. grandis* Dalz. & Gibs. Bombay Fl. 72. 1861; Cooke, Fl. Pres. Bombay 1: 400. 1958 (Repr. ed.). *Vigna grandis* Verdc. in Kew Bull. 24: 558. 1970.

Undershrubs, 60–120 cm; leaflets variable, deltoid, 3–lobed, appressed pubescent, 6.5–12 x 5–13 cm; flowers yellow in compact racemes; pods cylindric, hairy; seeds ellipsoid, brown.

Fls. & Frts. : September– October.

In hilly forests, occasional. Varandh ghat.

3. **Vigna radiata** (L.) Wilczek var. **radiata;** Verdc. in Kew Bull. 24: 559. 1970. *Phaseolus radiatus* L. Sp. Pl. 725. 1753; Cooke, Fl. Pres. Bombay 1: 403. 1958 (Repr. ed.).

Much branched herbs; leaflets ovate, ovate–rhomboid, apex acute, base deltoid or rounded, glabrescent or appressed hairy, 3.7 –12 x 2.6 –8 cm; flowers yellow, many in axillary racemes; pods straight or slightly falcate, linear–cylindric, densely hairy; seeds 8–12, greenish–black.

Fls. & Frts. : September – October.

As and escape, along road–sides , infrequent. Pen to Khopoli.

4. **Vigna radiata** (L.) Wilczek var. **sublobata** (Roxb.) Verdc. in Kew Bull. 24 : 559. 1970. *Phaseolus sublobatus* Roxb. Fl. Ind. 3: 288.

1832; Cooke, Fl. Pres. Bombay 1: 402. 1958 (Repr.ed.). *P. trinervis* Wight & Arn. Prodr. 245. 1834; Baker in Hook. f. Fl. Brit. India 2 : 203. 1876.

Twining herbs with spreading, reddish hairs; leaflets 3, ovate–rhomboid, pilose on both surfaces, 3.6 –10.5 x 2.8 –7 cm; flowers yellow in short racemes; pods flat, subcompressed, densely hairy; seeds grey–black, glabrous.

Fls. & Frts. : August – October.

Along the hilly and open forests, frequent. Ghosale fort, Roha; Neral; Neral to Matheran.

5. **Vigna angularis** (Willd.) Ohwi & Ohashi in J. Jap. Bot. 44 : 29. 1969; Verdc. in Kew Bull. 24 : 557. 1970. *Dolichos angularis* Willd. Sp. Pl. 3 : 1051. 1802. *Phaseolus mungo auct. non.* L. (1753); Baker in Hook. f. Fl. Brit. India 2 : 203. 1876; Cooke, Fl. Pres. Bombay 1 : 403. 1958 (Repr. ed.).

Hairy herbs; leaflets broadly ovate–rhomboid, appressed pubescent, 3.5–9 x 2.8–10.5 cm; flowers yellow in capitate racemes; pods linear–oblong, densely hairy; seeds subquadrate, greenish–black.

Fls. & Frts. : September – October.

As an escape in hilly forests and road–sides, frequent. Matheran; Pen to Khopoli.

6. **Vigna vexillata** (L.) A. Rich. Hist. Fis. Polit. Nat. 1. Cuba (Spanish ed.) 11: 191. 1845; Baker in Hook. f. Fl. Brit. India 2: 206. 1876. Verdc. in Kew Bull. 24: 554. 1970. *Phaseolus vexillatus* L. Sp. Pl. 724. 1753. *P. pulniensis* Wight, Icon. t. 202. 1839. *Vigna capensis auct. non* (L.) Walp. (1839); Cooke, Fl. Pres. Bombay 1 : 404. 1958 (Repr. ed.).

Twining or trailing herbs with fusiform roots; leaflets 3, ovate–lanceolate or ovate–rhomboid, acute–acuminate, appressed–pubescent; flowers pink, purplish or rosy in subumbellate, condensed racemes; pods linear–subterete, brownish, pubescent; seeds 10–16, dark red, subreniform.

Fls. & Frts. : September – October.

In hilly forests, frequent. Karjat; Neral–Matheran; Pali.

7. **Vigna unguiculata** (L.) Walp. ssp. **cylindrica** (L.) Van Eseltine in Hendrick, vegetables of New York 1: 11. 1931; Verdc. in Kew Bull. 24 : 544. 1970. *Phaseolus cylindricus* L. in Stickm. Herb. Amb. 23. 1754. *Vigna catjang* (Burm. f.) Walp. in Linnaea 13 : 533. 1839, *nom.*

illeg.; Baker in Hook. f. Fl. Brit. India 2 : 205. 1876; Cooke, Fl. Pres. Bombay 1 : 405. 1958 (Repr. ed.).

Herbs; leaflets 3, ovate–lanceolate or rhomboid, glabrous; flowers rosy–purple, fading white; pods cylindric, glabrous; seeds oblong, reddish.

Fls. & Frts. : August– October.

Usually cultivated, often found as an escape. Matheran; Pen to Khopoli.

30. CANAVALIA Adans. Corr. DC. *nom. cons.*

Canavalia virosa (Roxb.) Wight & Arn. Prodr. 1: 253. 1834; Chatterjee in J. Ind. Bot. Soc. 28: 93. t. A. 1949. *Dolichos virosus* Roxb. Fl. Ind. 3: 301. 1832 (incl. Syn). *Canavalia ensiformis* (L.) DC. var. *virosa* (Roxb.) Baker in Hook. f. Fl. Brit. India 2: 196. 1876; Cooke, Fl. Pres. Bombay 1: 398. 1958. (Repr. ed.).

Extensive woody climbers; leaflets 3, broadly ovate or ovate–orbicular, pubescent, 5.5–16 x 3– 13.5 cm; flowers bluish–white in peduncled racemes; pods linear–oblong, flat, sparsely hairy; seeds oblong, glabrous.

Fls. & Frts. : February–March.

In deciduous forests, frequent. Karnala bird Sanctuary; Roha.

Roots and bark are used medicinally for killing intestinal worms by local people.

31. PUERARIA DC.

Pueraria tuberosa (Roxb. ex Willd.) DC. in Ann. Sci. Nat. 4: 97. 1825; Wight, Icon. t. 412.1840; Baker in Hook. f. Fl. Brit. India 2: 197. 1876; Cooke, Fl. Pres. Bombay 1: 399. 1958 (Repr. ed.). *Hedysarum tuberosum* Roxb. ex Willd. Sp. Pl. 3: 1197. 1803. *Dari, Pithana.*

Perennial twiners with tuberous roots; leaves 3–foliolate; leaflets ovate–oblong, glabrous above, silky–pubescent below; flowers bluish–purple in axillary, terminal racemes or panicles; pods membranous, brownish–tomentose, constricted between seeds; seeds 3–6, reddish–brown, ellipsoid–oblong.

Fls. & Frts. : February–April.

Near sea–shore, occasional. Uran.

32. MUCUNA Adans. *nom. cons.*

Mucuna pruriens (L.) DC. Prodr. 2: 405. 1825; Baker in Hook. f. Fl. Brit. India 2: 187. 1876; Cooke, Fl. Pres. Bombay 1: 389. 1958 (Repr. ed.). *Dolichos pruriens* L. in Stickm. Herb. Amb. 23. 1754. *Mucuna prurita* Hook. Bot. Misc. 2: 348. 1831. *Khaj–Kuiri, Kivach, Koyli.*

Scandent, hairy herbs; leaves 3–foliolate; leaflets ovate–rhomboid, obovate–lanceolate, appressed silky pubescent, 3.6 –12.5 x 2.5 –10 cm; flowers purple in 10–20 cm long, axillary racemes; pods sandy–brown with irritant bristles; seeds 5–6, ellipsoid, dark brown, spotted black, glabrous.

Fls. & Frts. : August – December.

On hedges in moist deciduous forests, frequent. Dasgaon; Mahad; Matheran; Nagothana.

The seeds and hairs of the pods are used medicinally by local people as an aphrodisiac and vermifuge respectively.

33. TERAMNUS P. Br.

Teramnus labialis (L.f.) Spreng. Syst. Veg. 3: 235. 1826; Baker in Hook. f. Fl. Brit. India 2: 184. 1876; Cooke, Fl. Pres. Bombay 1: 387. 1958 (Repr. ed.). *Glycine labialis* L. f. Suppl. 325. 1781. *Ran–Udid.*

Twining or trailing, strigosely hairy herbs; leaves 3–foliolate; leaflets ovate–elliptic, appressed pubescent, 1.5–7.6 x 1–3.2 cm; flowers pinkish–purple in axillary, terminal racemes; pods linear, straight or curved, beaked; seeds 2–9, brown oblong, polished.

Fls. & Frts. : August – March.

On hedges and low shrubs, frequent. Pen; Pen to Khopoli ; Varandh ghat.

34. SHUTERIA Wight & Arn.

Shuteria involucrata (Wall.) Wight & Arn. Prodr. 207. 1834. *Glycine involucrata* Wall. Pl. As. Rar. 3: 22.t. 241. 1832. *Shuteria vestita* Wight & Arn. Prodr. 207. 1834; Wight, Icon. t. 165. 1839; Cooke, Fl. Pres. Bombay 1: 384. 1958 (Repr. ed.). S. *vestita* Wight & Arn. var. *involucrata* (Wall.) Baker in Hook. f. Fl. Brit. India 2: 182. 1876.

Twining, hairy herbs; leaves pinnately 3–foliolate; leaflets membranous, the terminal rhomboid–obovate, the laterals

ovate–oblong, hairy, 1.7–8 x 0.8–5 cm; flowers in dense, axillary racemes; pods linear, slightly curved, 5–7 seeded.

Fls. & Frts. : September – October.

In hilly forests, infrequent. Hills near Matheran.

Cultivated or introduced:

Sesbania grandiflora (L.) Pers. Syn. Pl. 2: 316. 1807; Baker in Hook. f. Fl. Brit. India 2: 115. 1876; Cooke, Fl. Pres. Bombay 1: 350. 1958 (Repr. ed.). *Robinia grandiflora* L. Sp. Pl. 722. 1753.

Trees, 8–10 m; leaves compound; leaflets oblong–obovate, glabrous; flowers creamy–white, showy in racemes; pods subtetragonous, beaked.

Cultivated as an ornamental around villages on slopes. Thakurwadi, Matheran.

Tender leaves, flowers and fruits eaten by local people. The leaves, flowers and fruits are cooked and eaten by local people. The juice of leaves and flowers is said to be effective against headache.

46. CAESALPINIACEAE

1a. Leaves simple, 1(2) – follolate, usually deeply cleft from the apex ... BAUHINIA 1

1b. Leaves compound, pinnate:

2a. Leaves 2 – pinnate:

3a. Flowers in racemes or panicles:

4a. Sepals imbricate; plants armed or unarmed :

5a. Pods not winged (except slightly in *Caesalpinia decapetala*); leaflets small ... CAESALPINIA 2

5b. Pods winged along upper suture; leaflets large ... MEZONEURON 3

4b. Sepals valvate; plants unarmed ... DELONIX 4

3b. Flowers in spikes ... MOULLAVA 5

2b. Leaves 1–pinnate:

6a. Petals absent ... SARACA 6

6b. Petals present:

7a. Petals 3; stamens 3, monadelphous, fertile; leaflets 12–24 ... TAMARINDUS 7

7b. Petals 5; stamens 10, free, all fertile or 3–5 reduced to staminodes; leaflets 4–60 ... CASSIA 8

1. BAUHINIA L.

1a. Woody climbers with circinate tendrils ... *B. vahlii* 1

1b. Trees or shrubs:

2a. Calyx spathaceous or 5–cleft:

3a. Style distinct, slender; calyx spathaceous:

4a. Tall trees with crooked bark and drooping branches; flowers upto 3 cm across in Pendulous racemes; pods indehiscent ... *B. racemosa* 2

4b. large shrubs or small trees with smooth, tomentose bark and zigzag branches; flowers 6 cm across, solitary or paired; pods dehiscent. ... *B. tomentosa* 3

3b. Style minute, thick, poorly developed; calyx lobed with 5–cleft or dentate:

5a. Leaves large, upto 18.4 x 17 cm, 15–17 nerved, minutely pitted between nerves beneath; pods twisted, red–tomentose, not reticulate ... *B. foveolata* 4

5b. Leaves small, upto 9.6 x 11.2 cm, 8–11 nerved, not pitted beneath; pods straight or slightly curved but not twisted,glabrous , reticulate ... *B. malabarica* 5

2b. Calyx not spathaceous, 2 – cleft to the base ... *B. purpurea* 6

1. **Bauhinia vahlii** Wight & Arn. Prodr. 297. 1834; Baker in Hook. f. Fl. Brit. India 2: 279. 1878; Cooke, Fl. Pres. Bombay 1: 461. 1958 (Repr.ed.). *B. racemosa* Vahl, Symb. Bot. 3: 56. t. 62. 1794 *non* Lam. (1784). *Phanera vahlii* (Wight & Arn.) Benth. in Miq. Pl. Jungh. 263. 1852.*Chambali, Chambil.*

Extensive, woody climbers; younger parts rusty tomentose; leaves suborbicular, densely tomentose beneath; flowers creamy–white in terminal, corymbose racemes; pods flat, woody, rusty downy, 6–12 seeded.

Fls. & Frts. : April – May.

In hilly forests, infrequent. Karnala ravines.

2. **Bauhinia racemosa** Lam. Encycl. 1: 390. 1783; Baker in Hook. f. Fl. Brit.India 2: 276. 1878; Cooke, Fl. Pres. Bombay 1: 459. 1958 (Repr. ed.). *Apta, Sona.*

Deciduous trees, 3–5 m; leaves suborbicular , bilobed, base cordate, grey–pubescent beneath, 2–6 x 3–7.1 cm; flowers pale to creamy yellow; pods flat or turgid, faintly veined, linear–oblong, brownish–black; seeds oblong, brown, smooth.

Fls. & Frts. : February–September.

In plain and hilly moist deciduous forests, frequent. Dasgaon; Karnala fort; Mahad to Nadgaon; Matheran.

3. **Bauhinia tomentosa** L. Sp. Pl. 375. 1753; Baker in Hook. f. Fl. Brit. India 2: 275. 1878; Cooke, Fl. Pres. Bombay 1: 459. 1958 (Repr.ed.). *Kanchan.*

Large shrubs or small trees, 90–150 cm; leaves broader than long, mucronate, hairy below, 4.9– 8 x 5–8.2 cm; flowers pale to bright yellow, odd petal with red patch inside; pods flat, linear–oblong, acute, tomentose; seeds 8–12, flat, brown, smooth.

Fls. & Frts. : August–October.

Infrequent, often planted. Matheran; Neral.

4. **Bauhinia foveolata** Dalz. in J. Linn. Soc. 13: 188. 1873; Cooke, Fl. Pres. Bombay 1 : 460. 1958 (Repr. ed.). *B. lawii* Benth. ex Baker in Hook. f. Fl. Brit. India 2: 277. 1878. *Piliostigma foveolatum* (Dalz.) Thoth. in Bull. Bot. Soc. Bengal 19: 131. 1965. *Chambel.*

Trees with horizontal branches from straight trunk, 10–20 m; leaves suborbicular, bilobed; lobes apiculate, rusty tomentose beneath; flowers white on 10–15 cm long racemes; pods linear–oblong, reddish tomentose, upto 22 x 2.2 cm.

Fls. & Frts. : September – May.

In hilly moist deciduous forests, frequent. Karnala fort; Matheran.

Leaves are used as wrapping material for 'Bidies' and also for thatching purposes.

5. **Bauhinia malabarica** Roxb. Fl. Ind. 2: 321. 1832; Baker in Hook. f. Fl. Brit. India 2: 277. 1878; Cooke, Fl. Pres. Bombay 1: 460. 1958 (Repr. ed.). *Piliostigma malabaricum* (Roxb.) Benth. in Miq. Pl. Jungh. 261. 1852. *Pachhava.*

Deciduous trees, 8–12 m; leaves nearly orbicular, bilobed, lobes rounded, more or less pubescent beneath; flowers white–reddish on 5–10 cm long racemes; pods green, red at length, upto 33.5 x 2.3 cm.

Fls. & Frts. : October–March.

In moist deciduous forests, frequent. Karnala spurs; Mahan and Ramraj forests, Alibag; Matheran.

The plant is used as fuel.

6. **Bauhinia purpurea** L. Sp. Pl. 375. 1753; Baker in Hook. f. Fl. Brit. India 2: 284. 1878; Cooke, Fl. Pres. Bombay 1: 461. 1958 (Repr. ed.). *Devakanchan; Rakta-Kanchan.*

Trees, 2–3 m; leaves orbicular, base cordate, pubescent when young, 6.5–15 x 4.7–12 cm; flowers fragrant, white, rosy or purple in terminal and axillary, corymbose racemes; pods flat, woody, 12–16 seeded.

Fls. & Frts. : September–November.

Usually planted, occasionally occur as an escape. Matheran.

Ornamental. The leaves, flower buds, flowers and young pods are edible as a vegetable. Gum is extracted from stem and fibre and tanning material from bark. Wood is used for agricultural implements and as fuel.

2. CAESALPINIA L.

1a.	Pods covered with wiry prickles	...	*C. bonduc* 1
1b.	Pods not covered with wiry prickles :		
	2a. Pods 6–8-seeded	...	*C. decapetala* 2
	2b. Pods 1-seeded	...	*C.crista* 3

1. **Caesalpinia bonduc** (L.) Roxb. Fl. Ind. 2: 362. 1832; Hattink in Reinwardtia 9: 17. 1974. *Guilandina bonduc* L. Sp. Pl. 381. 1753. *Caesalpinia bonducella* (L.) Fleming in As. Res. 11: 159. 1810; Baker in Hook. f. Fl. Brit. india 2: 254. 1878; Cooke, Fl. Pres. Bombay 1 : 427. 1958 (Repr. ed.). *Sagargota.*

Extensive climbing shrubs; leaves paripinnate; leaflets 4–8 pairs, elliptic –oblong, mucronate, puberulous beneath, 0.8–4.2 x 0.6–2.3 cm; flowers yellow in terminal and axillary racemes; pods ovoid–oblong, densely armed with sharp prickles; seeds 1–2, oblong, lead coloured, smooth.

Fls. & Frts. : August – October.

On hedges and road–sides, frequent. Kolad to Khamb village, Roha.

Seeds are used to cure fever by local people, hence popularly known as fever–nuts.

2. **Caesalpinia decapetala** (Roth) Alst. in Trim. Handb. Fl. Ceylon 6 (Suppl.): 89. 1931; Hattink in Reinwardtia 9: 24. 1974.

Reichardia decapetala Roth, Nov. Pl. Sp. 212. 1821. *Caesalpinia sepiaria* Roxb. Fl. Ind. 2: 360. 1832; Wight, Icon. t. 37. 1838; Baker in Hook. f. Fl. Brit. India 2: 256. 1876; Cooke, Fl. Pres. Bombay 1 : 439. 1958 (Repr. ed.). *Chilari.*

Scandent shrubs; leaflets 8–12, oblong, glabrescent above, hairy beneath, 1–2.2 x 0.6–0.9 cm; flowers yellow in terminal and axillary racemes; pods straight or curved, linear–oblong, beaked, narrowly winged, veined; seeds 6–8, greenish, mottled.

Fls. & Frts. : February – May

Along the coast, infrequent. Kolaba fort, Alibag.

3. **Caesalpinia crista** L. Sp. Pl. 380. 1753. *C. nuga* (L.) Ait. Hort. Kew. (ed. 2). 3: 32. 1811; Baker in Hook. f. Fl. Brit. India 2 : 255. 1878; Cooke, Fl. Pres. Bombay 1 : 438. 1958 (Repr.ed.). *Vakeri.*

Scandent shrubs; stem spiny; leaves 2 – pinnate, 4 –20 pairs; flowers yellow in terminal and axillary racemes; pods ovoid–oblong, flattened; seeds solitary, black, orbicular–ovoid.

Fls. & Frts. : September– January.

Near river banks, infrequent. Between Dasgaon and Mahad.

3. MEZONEURON Desf.

Mezoneuron cucullatum (Roxb.) Wight & Arn. Prodr. 283. 1834; Baker in Hook. f. Fl. Brit. India 2: 258. 1878; Cooke, Fl. Pres. Bombay 1: 441. 1958 (Repr. ed.). *Caesalpinia cucullata* Roxb. Fl. Ind. 2: 358. 1832. *Ragi.*

Large, woody climbers with hooked thorns; leaves pinnate; leaflets 8–10, elliptic–ovate, acuminate, glabrous, 3.4–8.2 x 2.3–3.1 cm; flowers bright yellow, streaked with red in terminal and axillary racemes; pods thin, reddish–brown, flat, winged on upper suture, 1–seeded.

Fls. & Frts. : December – March.

In hilly moist evergreen forests, infrequent. Matheran.

4. DELONIX Raf.

1a. Flowers reddish –orange to deep scarlet; leaves upto 34 cm; leaflets upto 0.8 x 0.2 cm ... *D. regia* 1

1b. Flowers creamy – white to golden – yellow; leaves upto 20 cm; leaflets upto 2.4 x 1.2 cm ... *D. elata* 2

1. **Delonix regia** (Bojer) Rafin. Fl. Tellur 2 : 92. 1836. *Poinciana regia* Bojer in Bot. Mag. 56. t. 2889. 1829; Baker in Hook. f. Fl. Brit. India 2: 260. 1878; Cooke, Fl. Pres. Bombay 1: 442. 1958. (Repr. ed.). *Gul Mohor.*

Large, deciduous trees, 8–15 m; leaves bipinnate; leaflets 10–30 pairs, oblong, glabrous; flowers in lax, terminal or axillary racemes; pods woody, compressed, thick, linear, dark brown, 20–30 seeded.

Fls. & Frts. : September–October.

Planted or as an escape, frequent. Kolad, Roha.

This beautiful avenue tree, a native of Madagaskar, is introduced in gardens and along road–sides for ornamental purpose.

2. **Delonix elata** (L.) Gamble, Fl. Pres. Madras 396. 1919 (1: 280. 1957. Repr. ed.). *Poinciana elata* L. Cent. Pl. 2: 16. 1756; Baker in Hook. f. Fl. Brit. India 2: 260. 1878; Cooke, Fl. Pres. Bombay 1: 441. 1958 (Repr. ed.).

Trees, 6–8 m; leaves bipinnate; leaflets linear–oblong, glabrous; flowers yellow in terminal, corymbose racemes; pods dark brown, linear–oblanceolate, reticulate, beaked, 4–8 seeded.

Fls. & Frts. : September–October.

Planted or as an escape. Mhasla.

The leaves are used medicinally to relieve from head–ache by local people. It is said that the touch of root removes the pain of 'Scorpian sting'. The wood is useful for cabinet work.

5. MOULLAVA Adans.

Moullava spicata (Dalz.) Nicols. in Manilal, Bot. Hist. Hort. Malab. 184. 1980. *Caesalpinia spicata* Dalz. in Hook. J. Bot. 3: 90. 1851. *Wagatea spicata* (Dalz.) Wight, Icon. t. 1995. 1853; Baker in Hook. f. Fl. Brit. India 2: 261. 1878; Cooke, Fl. Pres. Bombay 1: 443. 1958 (Repr. ed.). *Vagati.*

Stout, woody climbers, armed with prickles; leaves bipinnate; leaflets 5–7 pairs, oblong, ovate–elliptic, glabrous, 1.2 – 3.7 x 0.6 – 1.6 cm; flowers dark brown to orange–red; pods linear–oblong, reddish, constricted between seeds; seeds 3–5, oboviod – oblong, thick.

Fls. & Frts. : December–March.

In moist deciduous forests, frequent. Alibag; Karnala bird's sanctuary ; Matheran; Pen to Khopoli.

6. SARACA L.

Saraca asoca (Roxb.) de wilde in Blumea 15: 393. 1968. *Jonesia asoca* Roxb. in Asiat. Res. 4: 355. t. 1. 1799; Wight, Icon t. 206. 1839. *Saraca indica auct. non.* L. (1753); Baker in Hook. f. Fl. Brit. India. 2: 271. 1878; Cooke, Fl. Pres. Bombay 1: 456. 1958 (Repr. ed.). *Ashok.*

Evergreen trees with rough, grey–blackish bark; leaflets oblong–lanceolate, acute–acuminate, glabrous, upto 20 x 5.2 cm; flowers reddish–yellow to scarlet in dense corymbs on old wood; pods linear–oblong, flat, dark red, upto 23.2 x 4.7 cm; seeds 4–8, ellipsoid–oblong, brown.

Fls. & Frts. : December–June.

In hilly forests and also planted in gardens, frequent. Elephanta island; Matheran; Sudhagad.

The bark is used medicinally by local people for uterine diseases etc. The wood is useful in construction work.

7. TAMARINDUS L.

Tamarindus indica L. Sp. Pl. 34. 1753; Baker in Hook. f. Fl. Brit. India 2: 273. 1878; Cooke, Fl. Pres. Bombay 1: 457. 1958 (Repr. ed.). *Amli, Chinch.*

Large, unarmed, trees; leaves pinnate; leaflets linear–oblong, glabrous, 1–2 x 0.3–0.5 cm; flowers yellow in lax, terminal racemes; pods linear–oblong, subtorulose, falcate, rough with fibrous epicarp; seeds dark reddish–brown, polished, rhomboid.

Fls. & Frts. : May–October.

In deciduous forests, planted or self grown, frequent. Matheran; Neral; Ramraj forest, Alibag.

The young leaves and fruit–pulp are edible and used as spices. All plant parts viz. bark, leaves, fruit–pulp etc. have medicinal value.

8. CASSIA L.

1a. Trees :

2a. Fertile stamens 10; pods cylindric, 30–35 cm long	...	*C. fistula* 1
2b. Fertile stamens 6–7; pods linear–lanceolate, not more than 30 cm	...	*C. siamea* 2

1b. Shrubs, undershrubs or herbs:

3a. Fertile stamens 5–10, staminodes absent:

4a. Fertile stamens 5 :

5a. Leaflet pairs 2; petiolar gland absent ... *C. absus* 3

5b. Leaflet pairs 8–20; petiolar gland present :

6a. Terminal odd leaflet present ... *C. kolabensis* 4

6b. Terminal odd leaflet absent ... *C. pumila* 5

4b. Fertile stamens 10:

7a. Leaflet pairs 8–20; gland on petiole stalked ... *C. kleinii* 6

7b. Leaflet pairs 30–60; gland on petiole sessile ... *C. mimosoides* 7

3b. Fertile stamens 7, rest reduced to staminodes:

8a. Leaflet pairs 3; gland present between one or more pairs of leaflets:

9a. Plants fetid; gland present between two lowest pairs of leaflets; stalk of the pod 0.8–1 cm ... *C. tora* 8

9b. Plants not fetid; gland present between the lowest pair of leaflets; stalk of the pod 1–2.2 cm ... *C. obtusifolia* 9

8b. Leaflet pairs 3–5; solitary gland present on rachis but not between the pair of leaflets ... *C. occidentalis* 10

1. **Cassia fistula** L. Sp. Pl. 376. 1753; Baker in Hook. f. Fl. Brit. India 2: 261. 1878; Cooke, Fl. Pres. Bombay 1: 444. 1958 (Repr. ed.). *C rhombifolia* Roxb. Fl. Ind. 3: 334. 1832; Wight, Icon. t. 269. 1840. *Bava, Garmal.*

Trees with greenish–grey bark, 8–15 m; leaves compound; leaflets 3–8 pairs, elliptic–ovate, glabrous, 7–15.7 x 4.4–7.6 cm; flowers yellow in lax, terminal and axillary racemes; pods dark black or glossy brown, indehiscent; seeds 40–100, ellipsoid, smooth.

Fls. & Frts. : March – October.

Hills and plains of moist deciduous forests, frequent. Mahad ghat; Matheran; Murud; Ramraj, Alibag.

The tree is planted as an ornamental in gardens and along road–sides. The bark is used as tanning material and wood for various purposes. The pulp of fruit as purgative and other plant parts are useful in medicine.

2. **Cassia siamea** Lam. Encycl. 1 : 648. 1785; Baker in Hook. f. Fl. Brit. India 2: 264. 1878; Cooke, Fl. Pres. Bombay 1: 454. 1958 (Repr. ed.). *Kassod.*

Robust trees, 3–10m; bark dark brown; leaves paripinnate; leaflets elliptic–oblong or lanceolate, glabrous, 2.1 –5.4 x 1.7 – 2.2 cm; flowers yellow in terminal, branched racemes; pods blackish–brown, compressed, velvety, beaked, reticulately veined.

Fls. & Frts. : May–October.

As an escape, frequent. Survey forest near Kashid, Murud.

3. **Cassia absus** L. Sp. Pl. 376. 1753; Baker in Hook. f. Fl. Brit. India 2: 265. 1878; Cooke, Fl. Pres. Bombay 1: 451. 1958 (Repr. ed.). *Chikani.*

Herbs or undershrubs, 10–60 cm; leaflets 4, elliptic–oblong or elliptic–obovate, glabrescent, 1.3–3.1 x 0.7–1.8 cm; flowers reddish–yellow in terminal or leaf opposed racemes; pods flat, strap shaped, apiculate, hairy; seeds 4–8, black, shining, oblong.

Fls. & Frts. : September–January.

In moist deciduous forests, frequent. Alibag; Bhira; Dasgaon; Sanegaon.

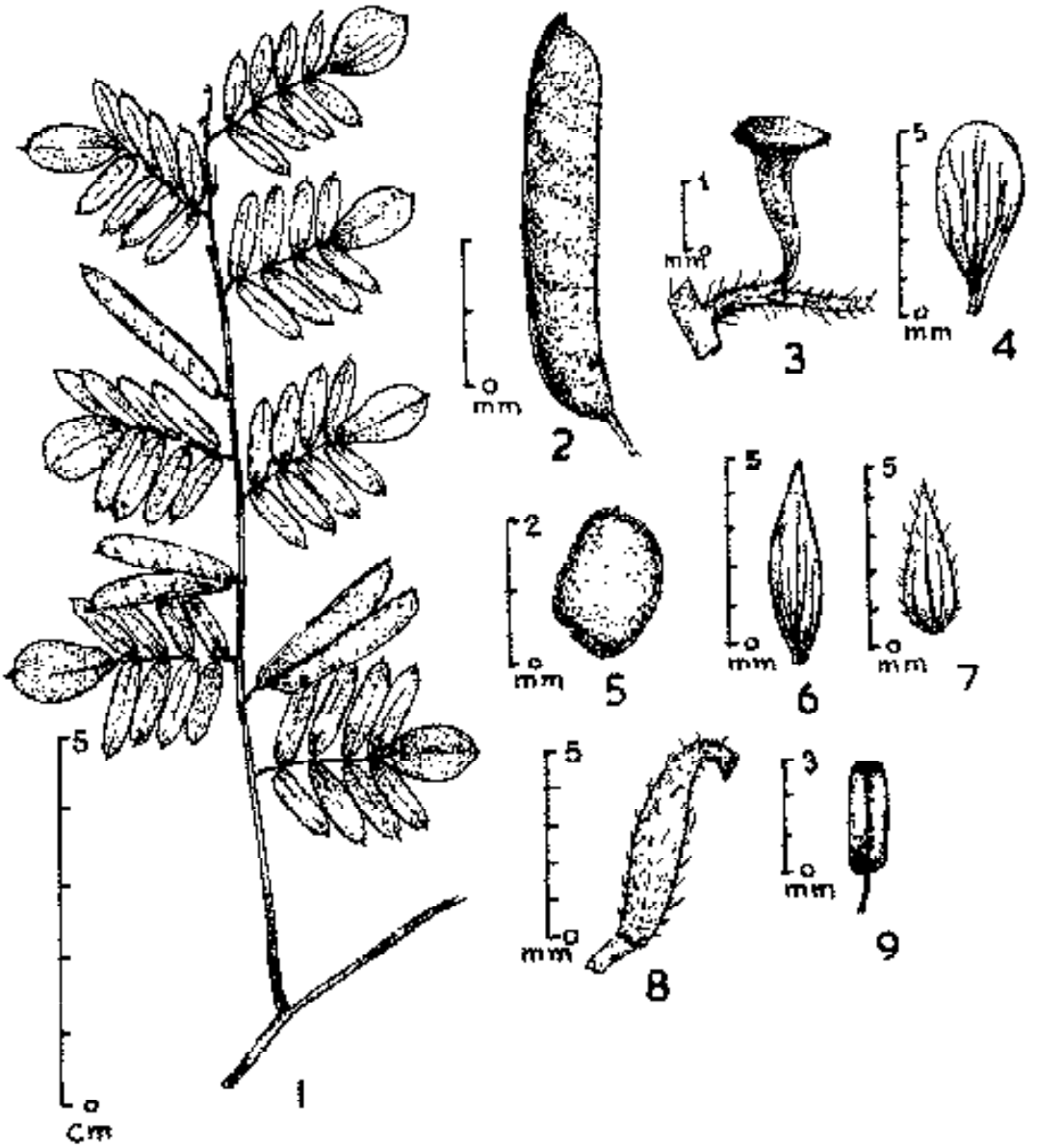
4. **Cassia kolabensis** Kothari, Moorthy *et* Nayar in Proc. Indian Acad. Sci. (Plant Sci.) 90: 199. ff. 1–9. 1981.

Herbs with reddish–brown, whitish, tomentose stem, 30–50 cm; leaves imparipinnate; leaflets 5–9, lateral leaflets 2–4 pairs, linear–oblong, apex obliquely rotundate, apiculate, base unequal and obliquely truncate, margin entire or sparsely minutely ciliate, glabrous above, sparsely ciliate on nerves beneath, 1–1.4 x 0.3 – 0.4 cm; terminal leaflet elliptic–oblong or obovate– oblong, apex apiculate, sparsely ciliate along the nerves beneath, 1.2–1.5 x 0.7–0.9 cm; flowers yellow, 2 to 3, rarely solitary, supra–axillary; pods compressed, pilose; seeds 4–8, compressed, subrhomboid, black, smooth.

Fls. & Frts. : August–October.

Among grasses in open as well as hilly forests and along road–sides, frequent. Matheran; Pejari forests, Alibag; Pen to Khopoli; Sanegaon forests, Roha; Sarasgad, Pali.

5. **Cassia pumila** Lam. Encycl. 1: 651. 1785; Baker in Hook. f. Fl. Brit. India 2: 266. 1878; Cooke, Fl. Pres. Bombay 1: 452. 1958 (Repr. ed.). *Sarmal.*



Cassia kolabensis Kothari, Moorthy et Nayar Sp. nov. 1. A twig of the plant. 2. Pod. 3 A stalked, peltate gland on petiole. 4. Petal. 5. Seed. 6. Sepal 7. Bracteole. 8. Pistil. 9. Stamen.

Suffruticose herbs or undershrubs, 20–90 cm; leaves paripinnate; leaflets 6–25 pairs, linear to linear–oblong, unequal sided, apiculate, glabrous, 0.5–1 x 0.1–0.2 cm; flowers yellow, solitary or in pairs, axillary; pods linear–oblong, brownish, pubescent, 2–4.3 cm; seeds 6–16, brownish, subquadrate, flat, smooth.

Fls. & Frts. : August – October.

Among grasses in moist deciduous forests, frequent. Alibag; Matheran; Sanegaon.

As it acts as a soil binder, it is planted between rows of other plants in some parts of the world to prevent soil erosion.

6. **Cassia kleinii** Wight & Arn. Prodr. 298. 1834; Baker in Hook. f. Fl. Brit. India 2: 266. 1878; Cooke, Fl. Pres. Bombay 1: 452. 1958 (Repr. ed.); Vartak in Ass. Threat. Pl. India (Ed. Jain & Rao). 173. 1983.

Robust hairy herbs or undershrubs, 60–120 cm; leaflets linear–oblong, subacute, glabrescent; flowers yellow, 1–3, axillary; pods linear–oblong, flat or slightly falcate; seeds 10–15, dark brown.

Fls. & Frts. : October.

In deciduous forests, occasional. Jambulpada; Karnala grove, *HMACS* 2822.

7. **Cassia mimosoides** L. Sp. Pl. 379. 1753; Baker in Hook. f. Fl. Brit. India 2: 266. 1878; Cooke, Fl. Pres. Bombay 1: 453. 1958 (Repr. ed.); Banerji in Rec. Bot. Surv. India 19 (2) : 39. 1966.

Diffuse, erect or suberect, hairy herbs; leaflets linear–oblong, glabrous, 0.4–0.8 x 0.1–0.2 cm; flowers yellow, 1–2, axillary; pods green–reddish, flat, linear, pubescent; seeds obovoid, brown.

Fls. & Frts. : September – December.

Among grasses in plains and hilly forests, frequent. Jambulpada; Karnala bird Sanctuary; Matheran; Pen; Poladpur; Sanegoan.

8. **Cassia tora** L. Sp. Pl. 376. 1753; Baker in Hook. f. Fl. Brit. India 2: 263. 1878; Cooke, Fl. Pres. Bombay 1: 447. 1958 (Repr. ed.). *Takla.*

Erect herbs, 30–90 cm; leaflets 3 pairs, obovate–oblong, glabrescent, equal sided, 0.6–4.5 x 0.4–2.3 cm; flowers yellow in pairs, axillary; pods subtetragonous, linear, falcate, beaked; seeds 20–30, rhomboidal, polished.

Fls. & Frts. : August–October.

As a weed among grasses in open forests and near sea–coast, frequent. Alibag; Karjat; Matheran; Sanegaon, Roha.

The leaves, pods and seeds are used medicinally for skin diseases etc. The whole plant is a source of green manure and fodder. Seeds yield a blue dye.

9. **Cassia obtusifolia** L. Sp. Pl. 377. 1753; Baker in Hook. f. Fl. Brit. India 2: 263. 1878; Cooke, Fl. Pres. Bombay 1: 447. 1958 (Repr. ed.).

Suffructicose herbs or undershrubs, 60–150 cm; leaflets 3 pairs, obovate–oblong, glabrous above, hairy below, 1.2–5.5 x 1–2.8 cm; flowers yellow, 1–2 in axillary or terminal clusters with long pedicels; pods linear, cylindric, beaked, faintly reticulated; seeds 20–40, oblong or rhomboid, shining.

Fls. & Frts. : May–November.

Among grasses in open forests, frequent. Matheran; Neral.

10. **Cassia occidentalis** L. Sp. Pl. 377. 1753; Baker in Hook. f. Fl. Brit. India 2: 262. 1878; Cooke, Fl. Pres. Bombay 1: 455. 1958 (Repr. ed.). *Kasivda, Ran–takla.*

Undershrubs, 1–2 m; leaflets ovate–lanceolate, acuminate, glabrous, pubescent when young, 2.5–7.7 x 1.3–2.6 cm; flowers yellow in terminal and axillary, short peduncled, corymbose racemes; pods linear–oblong, compressed, septate, slightly curved; seeds 20–30, greenish–brown, ovoid, shining.

Fls. & Frts. : September–March.

Near Sea–coast, frequent. Alibag; Murud.

The leaves, roots and seeds are used medicinally. The seeds are also used as a substitute for coffee.

Cultivated or introduced :

Peltophorum pterocarpum (DC.) Baker ex K. Heyne, Nutt. Pl. Ned. Ind. (ed. 2) 2 : 755. 1927. *Inga pterocarpa* DC. Prodr. 2 : 441. 1825. *Peltophorum ferrugineum* Benth. Fl. Austra. 2: 279. 1864.

Evergreen trees; leaves pinnate; leaflets 20–30 pairs, oblong, glabrous; flowers yellow in terminal and axillary panicles; pods reddish–brown, oblong, lanceolate, woody, flat; seeds 1–2, brown.

Planted on road sides, Janjira, near Murud.

Ornamental. The timber is useful for the cabinet work.

47. MIMOSACEAE

1a. Stamens indefinite, more than 10 :

2a. Mostly armed trees, shrubs or woody climbers; flowers yellow or creamy–white in spikes or heads; stamens free ... ACACIA 1

2b. Mostly unarmed trees; flowers greeish–white in globose heads; stamens monadelphous ... ALBIZIA 2

1b. Stamens definite, 5–10 :

3a. Flowers in globose heads ... XYLIA 3

3b. Flowers in elongated spikes:

4a. Large, tendril bearing, woody climbers ... ENTADA 4

4b. Trees or shrubs:

5a. Pods falcate or curved, linear, 7–10 mm broad ... ADENANTHERA 5

5b. Pods straight, flat, oblong or linear–oblong, 15–20 mm broad ... LEUCAENA 6

1. ACACIA Mill.

1a. Erect trees or shrubs; stem unarmed; stipular spines present; flowers in globose heads or elongated spikes:

2a. Stipular spines upto 3.5 cm, white; flowers in globose heads; pods grey downy, torulose : ... *A. nilotica ssp. indica* 1

2b. Stipular spines upto 0.6 cm, not white; flowers in globose heads; pods not torulose :

3a. Flowers in globose heads; leaflets tomentose ... *A. tomentosa* 2

3b. Flowers in spikes; leaflets not tomentose :

4a. Pinnae 10 –20 pairs; bark white or ash coloured ... *A. polyacantha* 3

4b. Pinnae 20 –40 pairs; bark dark–brown:

5a. Calyx and corolla villous ... *A. catechu* 4

5b. Calyx and corolla glabrous ... *A. chundra* 5

1b. Climbing shrubs, armed with prickles; stipular spines absent; flowers in globose heads:

6a. Leaflets 12 –30 pairs :

7a. Pods thick, fleshy, red, rugose, wrinkled when dry ... *A. rugata* 6

7b. Pods thin, strap shaped, brown, not wrinkled when dry ... *A. torta* 7

6b. Leaflet pairs 32–50 ... *A. pennata* 8

1. **Acacia nilotica** (L.) Willd. ex Del. ssp. **indica** (Benth.) Brenan in Kew Bull. 12: 84. 1957. *A. arabica* (Lam.) Willd. var. *indica* Benth. in Hook. London J. Bot. 1: 500. 1842. *A. arabica auct. non.* (Lam.) Willd. 1805; Baker in Hook. f. Fl. Brit. India 2: 293. 1878; Cooke, Fl. Pres. Bombay 1: 472. 1958 (Repr. ed.). *A. nilotica* (L.) Del. Fl. Aegypt. 111. 79. 1813. *Babhal, Babul.*

Trees, upto 12m; bark blackish–brown, longitudinally fissured; leaves pinnate; pinnae 4–8 pairs; leaflets 10–18 pairs, linear, glabrous, 5–8 x 0.5–1 mm; flowers white–yellowish in axillary pedunculate heads; pods moniliform, linear–oblong, straight or curved, reticulate; seeds blackish–brown, smooth.

Fls. & Frts. : May–February.

In deciduous forests and near sea–coast, frequent. Elephanta island; Revas, Alibag.

Gum extracted is used medicinally. The bark and pods yield tannin. Timber is used as fuel.

2. **Acacia tomentosa** (Roxb.) Willd. Sp. Pl. 4: 1087. 1806; Baker in Hook. f. Fl. Brit. India 2: 294. 1878; Cooke, Fl. Pres. Bombay 1: 475. 1958 (Repr. ed.). *Mimosa tomentosa* Roxb. Fl. Ind. 2: 558. 1832.

Armed trees with yellowish lenticular bark; leaves bipinnate, rachis densely pubescent; leaflets 10–22 pairs, linear–oblong, glabrous, 0.2–3.5 x 0.1–0.2 cm; flowers yellowish in heads; pods, flat, pubescent, greenish, upto 3.5 cm.

Fls. & Frts. : September–October.

In deciduous forests, infrequent. Alibag.

3. **Acacia polyacantha** Willd. Sp. Pl. 4: 1079. 1806; Brenan in Kew Bull. 1956: 195. 1957. *Mimosa suma* Roxb, Fl. Ind. 2 : 563. 1832. *Acacia suma* (Roxb.) Buch. – Ham. ex Voigt, Hort. Sub. Calc. 260. 1845; Baker in Hook. f. Fl. Brit. India 2: 294. 1878; Cooke, Fl. Pres. Bombay 1: 476. 1958 (Repr.ed.). *Shen–Khair, Sonkhairi.*

Trees; bark white–ash coloured, striate; leaves bipinnate, leaflets 30–40 pairs, linear–oblong, glabrous, 0.5–0.7 x 0.4–0.6 cm; flowers

creamy–white; pods flat, green at first, dark brown at length, reticulately veined.

Fls. & Frts. : September – October.

In deciduous forests, infrequent. Ramraj forests, Alibag.

4. **Acaia catechu** (L.f.) Willd. Sp. Pl. 4: 1079. 1806; Baker in Hook. f. Fl. Brit. India 2: 295. 1878; Cooke, Fl. Pres. Bombay 1: 476. 1958 (Repr. ed.). *Mimosa catechu* L.f. Suppl. 439. 1781. *Khair.*

Moderate sized trees with grey bark; leaves bipinnate, deciduous; leaflets 30–45 pairs, linear–oblong, 0.4–0.6 x 0.1–0.2 cm; flowers creamy–white in axillary, pedunculate spikes; pods flat, thin, brown, shining, beaked, stalked, 3–10 seeded.

Fls. & Frts. : May – September.

In deciduous forests, frequent. Matheran; Mhasla; Neral; Roha.

Kath, Katha or Catechu extracted from the wood is used for tanning, in Betel 'Pan' and in some medicines. Wood is used in making agricultural implements.

5. **Acacia chundra** (Roxb. ex Rottl.) Willd. Sp. Pl. 4 : 1078. 1806; Ragh. *et al* in Rec. Bot. surv. India 21: 32. 1981. *Mimosa chundra* Roxb. ex Rottl. in Ges. Naturf. Fr. Nueu Schr. 4 : 207. 1803. *Acacia catechu* Willd. var. *sundra* (DC.) Prain in J. As. Soc. Bengal 66: 508. 1898; Cooke, Fl. Pres. Bombay 1 : 476. 1958 (Repr.ed.).

Trees, 5–15 m; leaves bipinnate; leaflets 30–60 pairs, linear–oblong, 0.3–0.6 cm long ; flowers white in axillary spikes; pods pale–dark brown, lanceolate; seeds brown, ellipsoid – oblong.

Fls. & Frts. : May–September.

In deciduous forests, frequent. Alibag; Pali.

6. **Acacia rugata** (Lam.) Voigt, Hort. Sub. Cal. 263. 1845; Ohashi in En. Fl. Pl. Nepal 2: 104. 1979. *Mimosa rugata* Lam. Encycl. 1: 20. 1783. *M. concinna* Willd. Sp. Pl. 4: 1039. 1806. *Acacia concinna* (Willd.) DC. Prodr. 2: 464. 1825; Baker in Hook. f. Fl. Brit. India 2: 296. 1878; Cooke, Fl. Pres. Bombay 1: 439. 1958 (Repr. ed.). *Shikakai.*

Large, prickled, scandent shrubs with brownish bark; leaves bipinnate; leaflets linear, acute, glabrous, 6–10 mm long; flowers yellowish in spherical heads; pods flat, constricted between seeds upto 11.5 x 2.4 cm.

Fls. & Frts. : February–July.

In moist deciduous forests, frequent. Mahan forests, Alibag; Matheran.

Pods are commercially exploited to prepare 'Shikakai Soap' and used for washing hairs, silk and woolen fabrics.

7. **Acacia torta** (Roxb.) Craib in Kew Bull. 1915: 410. 1915. *Mimosa torta* Roxb. Fl. Ind. 2: 566. 1832. *Acacia intsia auct. non.* Willd. (1806); Baker in Hook. f. Fl. Brit. India 2: 297. 1878; Cooke, Fl. Pres. Bombay 1: 479. 1958 (Repr. ed.). *Chilar.*

Extensive, prickly, woody climbers with greyish–brown, lenticular bark; leaves bipinnate, pinnae 2–8 pairs; leaflets linear–oblong, pubescent, ciliate along margins, 5–10 x 2–4 mm; flower heads creamy–white in terminal panicles; pods reddish–brown, flat, strap shaped, *ca* 11.7 x 3.5 cm; seeds 8–12, brown, ellipsoid.

Fls. & Frts. : May–June.

In hills and plains of forests, frequent. Borgaon, Karjat.

8. **Acacia pennata** (L.) Willd. Sp. Pl. 4 : 1090. 1806; Baker in Hook. f. Fl. Brit. India 2 : 297. 1878; Cooke, Fl. Pres. Bombay 1 : 480. 1958 (Repr. ed.). *Mimosa pennata* L. Sp. Pl. 1507. 1753. *Chilaree.*

Large, prickly, woody climbers; leaves bipinnate; leaflets linear–oblong, acute, 2–5 x 1 mm; flower heads white, globose in terminal panicles; pods reddish–brown, flat, strap–shaped, beaked, 2.5–15.2 x 1.1–2.4 cm; seeds oblong, dark brown.

Fls. & Frts. : August – February.

In moist deciduous forests, frequent.Alibag; Panvel.

Bark is used in dyeing and for fisherman's nets.

2. ALBIZIA Durazz.

1a. Leaflets less than 1 cm broad; 6–20 pairs :

2a. Stipules foliose, large; heads of flowers panicled ... *A. chinensis* 1

2b. Stipules minute; heads of flowers not panicled ... *A. amara* 2

1b. Leaflets more than 1 cm broad; pinnae 2–4 (6) pairs :

3a. Flowers sessile; calyx less than 3 mm long; pods 10–20 x 1.3–3.5 cm :

4a. Leaflets obliquely ovate; calyx tubular, glabrous with distinct teeth ... *A. procera* 3

4b. Leaflets oblong; calyx campanulate, pubescent with obsolete teeth ... *A. ordoratissima* 4

3b. Flowers stalked; calyx 3–4 mm; pods 15–30 x 3–5.2 cm ... *A.lebbeck* 5

1. **Albizia chinensis** (Osb.) Merr. in Am. J. Bot.3: 575. 1916. *Mimosa chinensis* Osb. Dagbok Ostind. Resa 233. 1757. *Albizia stipulata* Boivin in Encycl. du 19 Siecle (ed.1) 2: 33. 1838; Baker in Hook. f. Fl. Brit. India 2: 300. 1878; Cooke, Fl. Pres. Bombay 1 : 483. 1958 (Repr. ed.). *Kajav, Phalara, Udal.*

Medium sized, deciduous trees; leaves bipinnate, large, sessile, gland on the petiole and smaller glands between each of 2–9 pairs of pinnae; leaflets 12–32 pairs, linear–oblong, pubescent beneath, 1.2–2.4 x 0.2–0.3 cm; flowers yellowish to creamy–white; pods reddish–brown, flat, reticulately veined, glabrous, 8–12 seeded.

Fls. & Frts. : April–October.

In deciduous forests, frequent. Matheran; Mhasla; Roha.

2. **Albizia amara** (Roxb.). Boivin in Encycl. du 19 Siecle (ed.1) 2 : 34. 1838; Baker in Hook. f. Fl. Brit. India 2: 301. 1878; Cooke, Fl. Pres. Bombay 1: 483. 1958 (Repr. ed.). *Mimosa amara* Roxb. Pl. Cor. t. 122. 1799. *Tugli.*

Unarmed trees with grey to brown bark; leaflets 15–30 pairs, linear–oblong, glabrous, ciliate on margins, 6–8 x 2–3 mm; flowers yellowish in axillary heads; pods flat, dark brown, linear, apiculate.

Fls. & Frts. : April– June.

In hilly forests, frequent. Matheran; Neral.

3. **Albizia procera** (Roxb.) Benth. in Hook. London J. Bot. 3 : 89. 1844; Baker in Hook. f. Fl. Brit. India 2 : 299. 1878; Cooke, Fl. Pres. Bombay 1: 482. 1958 (Repr. ed.). *Mimosa procera* Roxb. Pl. Cor. t. 121. 1798. *Kinhai.*

Large, deciduous trees with white bark; leaves bipinnate; leaflets 4–16 pairs, coriaceous, glaucous green, glabrous above, grey–pubescent beneath, 2.8–5.5 x 2.3–2.7 cm; flowers yellowish, many in peduncled heads, fascicled or in axillary or terminal panicles; pods orange–brown, faintly reticulate, stalked.

Fls. & Frts. : March–May.

In moist deciduous forests, frequent.

4. **Albizia odoratissima** (L.f.) Benth. in Hook. London J. Bot. 3: 88. 1844; Baker in Hook. f. Fl. Brit. India 2: 299. 1878; Cooke, Fl. Pres. Bombay 1: 482. 1958 (Repr. ed.). *Mimosa odoratissima* L. f. Suppl. 437. 1781. *Kala–Siras.*

Trees, 12–20 m; bark; greyish leaves alternate, rachis with a large, black gland near base; leaflets 6–9 pairs, oblong, glabrous, 1.7–3.8 x 1–1.6 cm; flowers white; pods flat, flexible, yellow, reticulately veined; seeds ovoid –ellipsoid, yellowish–brown, compressed.

Fls. & Frts. : April–October.

In moist deciduous forests, frequent. Dasgaon, Mahad.

5. **Albizia lebbeck** (L.) Benth. in Hook. f. Fl. Brit. India 2: 298. 1879; Cooke, Fl. Pres. Bombay 1: 481. 1958 (Repr. ed.). *Mimosa lebbeck* L. Sp. Pl. 516. 1753. *Farari, Sirish.*

Trees with blackish bark, 8–20 m;leaves bipinnate; leaflets 5–12 pairs, elliptic–oblong or obovate–oblong, glabrous above, pubescent beneath, 1.4–5.5 x 1–3 cm; flowers creamy–white, fragrant in pedunculate heads, solitary or fascicled; pods linear–oblong, straw coloured, flat; seeds yellowish–brown, ellipsoid.

Fls. & Frts. : March–May.

In deciduous forests, frequent. Ramraj forest, Alibag.

Wood is used for furniture and in the construction of houses.

3. XYLIA Benth.

Xylia xylocarpa (Roxb.) Taub. Bot. Cebtralbl. 47: 397. 1891. *Mimosa xylocarpa* Roxb. Pl. Cor. t. 100. 1798. *Xylia dolabriformis* Benth. in Hook. J. Bot. 4: 417. 1842; Baker in Hook. f. Fl. Brit. India 2: 286. 1878; Cooke, Fl. Pres. Bombay 1: 465. 1958 (Repr.ed.). *Jambha.*

Large trees, younger parts tomentose; leaflets oblong, oblong–lanceolate, acute, glabrous, 3.7–15 x 2.4–6.2 cm; flowers yellowish–white; pods falcate, woody, flat, rusty–tomentose; seeds 6 –10, ellipsoid.

Fls. & Frts. : March– June.

In deciduous forests, frequent. Bhisekhind, Roha; Mangaon; Murud; Parghat, Poladpur; Pen.

The wood is hard, durable and resistant to white ants. Hence it is used to prepare Railway sleepers and telegraph posts.

4. ENTADA Adans. *nom. cons.*

Entada rheedei Spreng. Syst. Veg. 2: 325. jan. – May 1825; Panigr. in Taxon 34: 714. 1985. *E. pursaetha* DC. Prodr. 2: 425. Nov. 1825; Brenan in Kew Bull. 1955: 164. 1955. *E. scandens auct. non* Benth. (1841); Baker in Hook f. Fl. Brit. India 2: 287. 1878 *pro parte;* Cooke, Fl. Pres. Bombay 1: 465. 1958 (Repr. ed.). *E. phaseoloides* (L.) Merr. Philipp. J. Sci. Bot. 9: 86. 1914. *Garambi.*

Gigantic woody climbers; leaves bipinnate, ultimate leaflets reduced to tendrils; flowers yellow in peduncled, axillary spikes; pods woody, dark grey, flat, sutures thick, indented between seeds, *ca.* 75 x 7 cm; seeds dark–red, orbicular, hard, compressed, *ca.* 4.3 cm across.

Fls. & Frts. : February–May.

In hilly forests, infrequent. Masadi forest, Roha; Sudhagad, Pali.

5. ADENANTHERA L.

Adenanthera pavonina L. Sp. Pl. 384. 1753; Baker in Hook. f. Fl. Brit. India 2 : 287. 1878; Cooke, Fl. Pres. Bombay 1 : 466. 1958 (Repr.ed.). *Ratangunj, Thorla Gunj.*

Deciduous trees, 7–15 m; leaves bipinnate; leaflets 4–15 pairs, alternate, membranous, obovate or elliptic–oblong, glabrous, 1.3–3.8 x 0.4 –2.5 cm; flowers pale yellow in axillary and terminal racemes; pods falcately curved; seeds many, dark red, spherical, glabrous.

Fls. & Frts. : March–May.

Rare as wild, often planted. Kolaba fort, Alibag.

The timber is used as a substitute for red sandalwood and seeds as weights.

6. LEUCAENA Benth.

Leucaena leucocephala (Lam.) De Wit in Taxon 10: 54. 1961. *Mimosa leucocephala* Lam. Encycl. 1: 12. 1783. *Leucaena glauca* Benth. in Hook. London J. Bot. 4: 416. 1842; Baker in Hook. f. Fl. Brit. India 2: 290. 1878; Cooke, Fl. Pres. Bombay 1: 469. 1958 (Repr. ed.).

Large shrubs or small trees, 3–8 m; leaves bipinnate; leaflets 10–15 pairs, linear–oblong, sparsely hairy beneath; flowers white in globose heads; pods green, flat, obliquely traingular at apex, dark brown.

Fls. & Frts. : August–October.

As an escape, often planted. Kolad to Khamb, Roha.

A native of America, usually planted in gardens. It is a good cattle fodder. Leaves are good source of protein and carotene. Wood is used as fuel.

Cultivated or introduced:

1. **Acacia auriculiformis** A. Cunn. ex Benth. in Hook. London J. Bot. 1 : 377. 1842.

Erect trees with drooping branches; leaves simple, phyllodes straight, falcate with 4–6 parallel nerves; flowers yellow in axillary panicled spikes at the tip of branches; pods green, spirally twisted.

A native of key Islands, New Guinea and Australia, planted for ornamental purpose. Sarasgad, Pali.

2. **Calliandra haematocephala** Hassk. in Retzia 216. 1855.

Erect shrubs, 2–3 m; leaves bipinnate; leaflets 4–8 pairs, ovate–lanceolate, ciliate on margins; flowers scarlet in axillary heads; stamens many; pods strap shaped, flat, slightly curved.

Native of tropical America, found as an escape or planted. Matheran.

3. **Pithecellobium dulce** (Roxb.) Benth. in Hook. London J. Bot. 3: 199. 1844; Baker in Hook. f. Fl. Brit. India 2: 302. 1878; Cooke, Fl. Pres. Bombay 1: 485. 1958 (Repr. ed.). *Vilayati–chinch.*

Moderate sized, armed trees; leaves bipinnate; leaflets ovate–oblong, glabrous; flowers greenish–white in globose heads; pods torulose, spirally twisted; seeds black, ovate, covered by red or greenish aril.

A native of Mexico, planted in gardens. Matheran.

The white or pink aril is edible and wood is useful for fuel.

48. ROSACEAE

COTONEASTER L.

Cotoneaster frigidus Wall. ex. Lindl. Bot. Reg. 15: t. 1239. 1829; Hook. f. Fl. Brit. India 2: 385. 1878; Cooke, Fl. Pres. Bombay 1: 492. 1958 (Repr. ed.).

Birdwood (1897) mentions with remark "found by J.C. Anderson, identified by G.M. Birdwood, we have not seen in the field"

Cooke (1958) states "*Cot. frigida* Wall. is mentioned by Birdwood as occuring above Rambag in Matheran. As this tree is an inhabitant of the central and eastern Himalayas and grows at a high altitude, it is scarcely possible that it could be indigenous at Matheran. It has not been found anywhere else in Bombay Presidency and there is apparently but one tree on the Matheran Hill"

There is no specimen in Blatter Herbarium. We could not locate this plant on the Matheran.

49. VAHLIACEAE

BISTELLA Adans.

Bistella digyna (Retz.) Bullock, Acta Bot. Neerl. 15: 84. 1966; Ragh. *et al.* in Rec. Bot. Surv. India 21: 33. 1981. *Oldenlandia digyna* Retz. Obs. 4: 23. 1786. *Vahlia viscosa* Roxb. Fl. Ind. 2: 89. 1832; Wight, Icon. t. 563. 1842; C.B. Cl. in Hook. f. Fl. Brit. India 2: 399. 1878; Cooke, Fl. Pres. Bombay 1: 493. 1958 (Repr.ed.).

Diffuse, glandular–pubescent herbs, 15–30 cm; leaves oblong–lanceolate, glabrescent, 0.7–1.4 x 0.3–0.4 cm; flowers white–yellowish, axillary, solitary or in pairs; capsules ellipsoid, glandular–pubescent; seeds many, brownish, ellipsoid.

Fls. & Frts. : March–May.

As a weed in drying moist ground, infrequent. Neral.

50. DROSERACEAE

DROSERA L.

Drosera indica L. Sp. Pl. 282. 1753; Wight, Ill. 1: t. 20. 1840; C.B. Cl. in Hook. f. Fl. Brit. India 2: 424. 1878; Cooke, Fl. Pres. Bombay 1: 499. 1958 (Repr. ed.).

Erect or suberect, glandular–pubescent, insectivorous herbs; leaves cauline, narrowly linear, circinate, the upper portion fringed with gland–tipped tentacles, the lower half (Petiole) glabrous; flowers pinkish in leaf opposed racemes; pedicels glandular hairy; capsules 3–valved; seeds minute, obovoid–oblong, reticulately veined.

Fls. & Frts. : September –October.

On hilly plateau, frequent. Garbat and Porcupine points, Matheran; Kalasgiri Hill, Roha.

51. CRASSULACEAE

KALANCHOE Adans.

Kalanchoe pinnata (Lam.) Pers. Syn. 446. 1805. *Cotyledon pinnata* Lam. Encycl. 2 : 141. 1786. *Bryophyllum calycinum* Salisb. Parad. London t. 3. 1805; C. B. Cl. in Hook. f. Fl. Brit. India 2 : 413. 1878; Cooke, Fl. Pres. Bombay 1 : 494. 1958 (Repr. ed.). *Ghaipat, Panphue.*

Succulent, glabrous herbs, 30–120 cm; leaves opposite, 3–5 foliolate; leaflets ovate, crenate; flowers reddish–purple, pendulous in large panicles; fruits enclosed in persistent, papery calyx and corolla; seeds ellipsoid.

Fls. & Frts. : January

In hilly forests, infrequent. Matheran.

52. RHIZOPHORACEAE

1a. Shrubs or small trees with coastal habitat (Mangrove); radicle large, germinating while the fruit is on the tree (vivipary) :

2a. Calyx 4-6 segmented, surrounded by connate bracteoles; petals not bifid :

3a. Leaves obtuse, slightly notched and much attenuated at base; sepals and petals 5-6; ovary 3 - celled ... CERIOPS 1

3b. Leaves acute or pointed, base not attenuated; sepals and petals 4; ovary 2 - celled ... RHIZOPHORA 2

2b. Calyx 8–14 segmented, without bracteoles; petals bifid ... BRUGUIERA 3

1b. Large trees with inland habitat; radicle small, not germinating while the fruit is on the tree ... CARALLIA 4

1. CERIOPS Arn.

Ceriops tagal (Perr.) Robins. in Philipp. J. Sci. Bot. 3 : 306. 1908. *Rhizophora tagal* Perr. Mem. Soc. Linn. Paris 3: 138. 1824. *Ceriops candolleana* Arn. in Ann. Nat. Hist. 1: 363. 1838; Henslow in Hook. f. Fl. Brit. India 2: 436. 1878; Cooke Fl. Pres. Bombay 1: 503. 1958. (Repr. ed.). *Chauri, Kissari.*

Shrubs with dark green coloured bark, 80–120 cm; leaves obovate– oblong, coriaceous, dark green, shining above, dull below; flowers white in axillary and terminal cymes; fruits ovoid with protruded radicle.

Fls. & Frts. : July–September.

In tidal swamps along the coast, infrequent. Elephanta island.

The bark supplies an excellent tannin material. The decoction of bark is used medicinally to stop haemorrhage and also used in ulcers.

2. RHIZOPHORA L.

Rhizophora mucronata Poir. in Lam. Tabl. Encycl. 1(2): t. 396. f. 2. 1793; Lam. Encyl. 6: 189. 1804; Henslow in Hook. f. Fl. Brit. India 2: 435. 1878; Cooke, Fl. Pres. Bombay 1 : 501. 1958 (Repr. ed.). *Kandal.* (PLATE 6 C)

Large shrubs or small trees, 90–180 cm; leaves elliptic, thick, coriaceous, glabrous, 4.5 –12.2 x 2.1 –6.4 cm; flowers white, buds green in pedunculate cymes; fruits with protruded, cylindric radicle upto 22.2 cm long.

Fls. & Frts. : August–March.

On way to Murud from Ghosale, Roha.

The bark is used for tanning.

3. BRUGUIERA Lam.

Bruguiera cylindrica (L.) Blume, Enum. Pl. Jav. 1 : 92. 1827; Kuttan, Fl. Uran (Ph. D. Thesis) 334. 1965; Kothari & Rao in Indian Bot. Cont. 8: 57. f. l. 1991. *Rhizophora cylindrica* L. Sp. Pl. 443. 1753. *Bruguiera caryophylloides* (Burm. f.) Blume, Enum. Pl. Jav. 1: 93. 1827; Henslow in Hook. f. Fl. Brit. India 2: 438. 1878; Cooke, Fl. Pres. Bombay 1: 505. 1958 (Repr. ed.).

Trees, 2–3 m high; twigs bronze coloured; leaves elliptic or elliptic–lanceolate, apex acute, base cuneate, glabrous; 6–10.5 x 2–4 cm; flowers greenish–white, 2–3 in axillary cymes; mature calyx lobes reflexed; fruits cylindrical– with ribbed hypocotyl:

Fls. & Frts. : August–October.

Along the tidal creeks, occasional. Danda, Uran, *Kuttan* 2161 A, 2162A, 965 (BLAT).

4. CARALLIA Roxb. *nom. cons.*

Carallia brachiata (Lour.) Merr. in Philipp. Journ. Sci. Bot. 15: 249. 1919. *Diatoma brachiata* Lour. Fl. Cochinch. 296. 1790. *Carallia integerrima* DC. Prodr. 3: 33. 1828; Henslow in Hook. f. Fl. Brit. India 2: 439. 1878; Cooke, Fl. Pres. Bombay 1: 506. 1958 (Repr. ed.). *Panschi, Phanasi.*

Evergreen trees with dark grey bark; leaves obovate–oblong, thick, leathery, shining, 5.3–10 x 2.7–6.5 cm; fruits ovoid– globose, red, fleshy.

Fls.& Frts. : November–March.

In hilly forests, frequent. Matheran; Mhasla.

Fruit is ovoid to globose, not filiform as mentioned by Cooke, *op. cit.* fruits are edible. Wood is used as a good source of timber and bark used medicinally for ulcers and boils.

53. COMBRETACEAE

1a. Climbing shrubs; petals present or absent :

- 2a. Terminal branches glabrous; petals 4 –5; fruits glabrous, 4–5 winged; calyx lobes not enlarged in fruits ... COMBRETUM 1
- 2b. Terminal branches densely pubescent; petals zero; fruits villous, 5–ribbed; calyx lobes enlarged in fruits ... CALYCOPTERIS 2

1b. Erect trees or shrubs, never climbing; petals absent :

- 3a. Bark greyish–white, inflorescence a globose head ... ANOGEISSUS 3
- 3b. Bark usually dark coloured; inflorescence simple or branched spikes ... TERMINALIA 4

1. COMBRETUM Loefl. *nom. cons.*

Combretum ovalifolium Roxb. Fl. Ind. 2: 226. 1832; C.B. Cl. in Hook. f. Fl. Brit. India 2: 458. 1878; Cooke, Fl. Pres. Bombay 1: 515. 1958 (Repr.ed.). *Madvel.*

Large, woody, climbing shrubs; leaves opposite, elliptic or elliptic–lanceolate, glabrous, 3–10.5 x 2.4–6.6 cm; flowers creamy–white to pale yellow in axillary spikes or terminal panicles; fruits 4 –winged, shining, pale golden yellow with red tinge, transversely straited.

Fls. & Frts. : January–May.

Elephanta island; Matheran; Mhasla ; Neral; Panvel.

The branches are used in making walking–sticks.

2. CALYCOPTERIS Lam.

Calycopteris floribunda (Roxb.) Poir. in Lam. Tabl. Encycl. 1 (2): 485. t. 357. 1793; C.B. Cl. in Hook. f. Fl. Brit. India 2: 449. 1878; Cooke, Fl. Pres. Bombay 1: 512. 1958 (Repr. ed.). *Getonia floribunda* Roxb. Pl. Cor. t. 87. 1789. *Ukshi.*

Scandent shrubs; leaves opposite, ovate–oblong or elliptic–oblong, pubescent and glandular punctate beneath, 2.6–10.5 x 1.4–6.5 cm; flowers yellowish–green in terminal, drooping panicles; fruits oblong or ellipsoid, tomentose.

Fls. & Frts. : February–May.

In deciduous forests, frequent.

Alibag; Elephanta island; Matheran; Neral; on way to Panvel.

Wood and leaves are burnt to prepare ash–manure locally known as 'Rab' for rice fields.

3. ANOGEISSUS Wall.

Anogeissus latifolia (Roxb. ex DC.) Wall. ex Guill. & Perr. Fl. Seneg. Tent. 1: 280. 1838; Scott. in Kew Bull. 33: 560. 1979; C.B.Cl. in Hook.f. Fl. Brit. India 2: 450. 1878; Cooke, Fl. Pres. Bombay 1: 512. 1958 (Repr. ed.). *Conocarpus latifolia* Roxb. ex. DC. Prodr. 3: 16. 1828; Wight, Icon, t. 994. 1845. *Dhavda.*

Large trees, 15–20; bark ash–coloured; leaves elliptic–oblong or obovate, glabrous, 3.7–12.7 x 2.8–8 cm; flowers greyish–white or creamy–white, sessile in dense, globose heads, on short axillary peduncles; fruits orbicular, greenish–yellow, 2–winged, glabrous, beaked; seeds solitary, ellipsoid, brownish.

Fls. & Frts. : September–March.

In hilly forests, frequent. Matheran; Mirya donger near Pen; Kalasgiri hill and Sanegaon forests in Roha; Sudhagad.

Wood is useful for agricultural implements, carts, fuel etc., yields a useful gum. Leaves used for leather tanning and as an antidote to snake–bites for cattle.

4. TERMINALIA L. *nom. cons.*

1a. Leaf margins more or less serrulate or crenate; fruits winged :

2a. Fruits equally 5 – winged:

3a. Bark smooth, light coloured; fruit with short, hard wings; veins of the wings curved upwards ... *T. arjuna* 1

3b. Bark rough, dark coloured; fruit with longer, papery wings; veins of wings horizontal and straight ... *T. crenulata* 2

2b. Fruits unequally 3–winged ... *T. paniculata* 3

1b. Leaf margins entire; fruits not winged:

4a. Leaves subopposite, not clustered at the end of branches; fruits glabrous with distinct angles ... *T. chebula* 4

4b. Leaves alternate, clustered at the end of branches; fruits pubescent, not angled ... *T. bellirica* 5

1. **Terminalia arjuna** (Roxb.) Wight & Arn. Prodr. 314. 1834; C.B. Cl. in Hook. f. Fl. Brit. India 2: 447. 1878; Cooke, Fl. Pres. Bombay 1: 509. 1958 (Repr. ed.). *Pentaptera arjuna* Roxb. Fl. Ind. 2: 438. 1832. *Arjun, Arjuna–sadra.*

Large trees, 15–30 m; bark greenish–white; leaves elliptic–oblong, leathery, glabrous, 12.5–20 x 5.7–6.8 cm; flowers white or yellowish in paniculate cymes; fruits brownish, ovoid–oblong, drooping.

In hilly forests, infrequent. Matheran.

Fls. & Frts. : February – June.

The powder of bark and leaves are used for healing wounds.

2. **Terminalia crenulata** Roth, Nov. Pl. Sp. 380. 1821. *Terminalia tomentosa* Wight & Arn. var. *crenulata* C.B. Cl. in Hook. f. Fl. Brit. India 2 : 447. 1878. *T. tomentosa* Wight & Arn. Prodr. 314. 1834; Cooke, Fl. Pres. Bombay 1 ; 510. 1958 (Repr.ed.). *Ain.*

Trees, 9–12 m; bark blackish, excorticating in rectangular flakes; leaves elliptic–oblong or obovate, tomentose when young, glabrous at length, 4–13.5 x 1.8–3.6 cm; flowers yellow in terminal panicles; fruits greenish–brownish, winged.

Fls. & Frts. : April–October.

In plains and hills of moist deciduous forests; frequent. Bhira; Karnala Bird Sanctuary; Matheran; Mhasla; Neral; Varandh ghat, Mahad.

The bark is used medicinally and wood for agricultural implements.

3. **Terminalia paniculata** Roth, Nov. Pl. Sp. 383. 1821; C.B. Cl. in Hook. f. Fl. Brit. India 2: 448. 1878; Cooke, Fl. Pres. Bombay 1: 510. 1958 (Repr. ed.). *Kinjal.*

Tall trees, 8–15 m; young branches rusty tomentose; leaves the upper alternate, lower subopposite, oblong, glabrous with 2 glands near the base on the midrib below; flower–buds green in terminal, branched panicles; fruits 3–winged, rusty tomentose.

Fls. & Frts. : August–October.

In hilly forests, frequent. Bhira; Poladpur.

4. **Terminalia chebula** Retz. Obs. 5: 31. 1789; C.B. Cl. in Hook. f. Fl. Brit. India 2: 446. 1878; Cooke, Fl. Pres. Bombay 1: 509. 1958 (Repr. ed.). *Hirda.*

Trees, 6–18 m; bark dark brown, fissured; leaves elliptic–oblong, glabrous 4.5–14.4 x 4.2–8.8 cm; flowers creamy–yellow in terminal spikes; fruits ellipsoid, green with yellow spots.

Fls. & Frts. : April–January.

In deciduous forests, frequent. Mangaon; Matheran; Roha; Varandh–ghat.

The dried fruits are known as 'Chebulic myrobalans, yields a valuable tanning material and yellow dye. The fruits are also useful medicinally.

5. **Terminalia bellirica** (Gaertn.) Roxb. Pl. Cor. 2: 54. t. 198. 1805, *'bellerica'*; C.B. Cl. in Hook. f. Fl. Brit. India 2: 445. 1878; Cooke, Fl. Pres. Bombay 1: 508. 1958 (Repr. ed.). *Myrobalanus bellirica* Gaertn. Fruct. 2: 90. t. 97. ff. a–d. 1791. *Yella.*

Moderate sized trees with grey–ash coloured bark; leaves obovate or oblong, glabrous, 6–19.3 x 3.7–9.7 cm; flowers creamy–white in axillary spikes; fruits brown, ellipsoid–spherical.

Fls. & Frts. : February–June.

In moist deciduous forests, frequent. Elephanta island; Mahad; Matheran; Tada forests, Mangaon.

The fruit is one of the components of 'Triphala' used medicinally. It is also used commercially for tanning and colouring leather.

Cultivated or introduced :

Quisqualis indica L. Sp. Pl. (ed.2.) 556. 1762; C.B. Cl. in Hook. f. Fl. Brit. India 2: 459. 1878; Cooke, Fl. Pres. Bombay 1: 517. 1958 (Repr.ed.). *Rangunacha–vel.*

Extensive, woody climbers; leaves ovate–elliptic, acuminate, glabrous; flowers rosy–pink or red, occasionally white, in terminal and axillary, drooping spikes.

This species is usually grown in gardens for ornamental purpose, seldom found as and escape. Matheran.

54. MYRTACEAE

SYZYGIUM Gaertn. *nom. cons.*

1a. Shrubs; cymes terminal or in the axils of the leaves ...*S. caryophyllatum* 1

1b. Trees; cymes in the axils of the fallen leaves ... *S. cumini* 2

1. **Syzygium caryophyllatum** (L.) Alst. in Trim. Handb. Fl. Ceyl. 6: 116. 1931. *Myrtus caryophyllata* L. Sp. Pl. 472. 1753. *Eugenia carophyllaea* Wight, Icon. t. 540. 1842; Duthie in Hook. f. Fl. Brit. India 2: 490. 1878. *E. corymbosa* Lam. Encycl. 3: 199. 1789; Cooke, Fl. Pres. Bombay 1: 522. 1958 (Repr. ed.).

Large shrubs; leaves obovate, rarely ovate–lanceolate, glabrous, 5–9 x 2.8–4.2 cm; flowers white; fruits dark purple or black, depressed to globose.

Fls. & Frts. : March – May.

In moist deciduous forests, infrequent. Dahen forest, Mhasla.

2. **Syzygium cumini** (L.) Skeels in U.S. Dept. Agric. Bur. Pl. Ind. Bull. 248: 25. 1912; Alst. in Trim. Handb. Fl. Ceyl. 6 : 116. 1931. *Myrtus cumini* L. Sp. Pl. 471. 1753. *Eugenia jambolana* Lam. Encycl. 3 : 198. 1789; Wight, Icon. t. 535. 1842; Duthie in Hook. f. Fl. Brit. India 2 : 499. 1879; Cooke, Fl. Pres. Bombay 1 : 523. 1958 (Repr. ed.).

Large trees, 9–15 m; bark grey–brown; leaves lanceolate, elliptic–oblong or broadly ovate, pellucid punctate, narrowed at base,

3.8–11.5 x 2.3–3.2 cm; flowers dirty white in paniculate cymes; fruits dark purple, ovoid–oblong, shining.

Fls. & Frts. : March–May.

In semi evergreen forests and also found along road–sides in villages, frequent. Karjat; Matheran; Varandh ghat.

Cultivated or introduced :

Callistemon speciosus DC. Prodr. 3 : 224. 1828.

Shrubs; leaves linear–lanceolate; flowers bright purple, stamens many.

Ornamental. Only one plant was observed along the bank of Kundlika river at Roha, probably planted.

55. BARRINGTONIACEAE

BARRINGTONIA J.R. & G. Forst. *nom. cons.*

Barringtonia acutangula (L.) Gaertn. Fruct. 2: 97. t. 101. 1791; C.B. Cl. in Hook. f. Fl. Brit. India 2: 508. 1879; Cooke, Fl. Pres. Bombay 1: 528. 1958 (Repr. ed.). *Eugenia acutangula* L. Sp. Pl. 471. 1753. *Injli. Tivar.*

Trees, 8–12 m; leaves obovate–oblong or elliptic–cuneate, apex rounded, base narrowed into petiole, 3.3–16.6 x 1.6–6.1 cm; flowers dark scarlet, fragrant in long, drooping spikes; fruits green, angled with apical crown of persistent calyx,

Fls. & Frts. : June–October.

Along the banks of creeks, frequent; in moist deciduous forests, occasional and also grown in gardens as ornamental. Indapur to Dasgaon; Mandatna to Pangloli, Mhasla; Mangaon; Nagothana; Shrivardhan.

Wood is used for boat building.

56. LECYTHIDACEAE

CAREYA Roxb. *nom. cons.*

Careya arborea Roxb. Pl. Cor. 3: 14. t. 218. 1811. & Fl. Ind. (ed.2) 2: 638. 1832; Wight Ill. t. 99 & 100. 1840; C.B.Cl. in Hook. f. Fl. Brit. India 2: 511. 1879; Cooke, Fl. Pres. Bombay 1: 528. 1958 (Repr. ed.). *Kumbha, Kumbhi.*

Trees, 8-16m; bark dark brown to blackish; leaves broadly obovate or oblong–obovate, acuminate, crenate–dentate, glabrous, 10.5–15 x 7–10.4 cm; flowers greenish–white; fruits globular, green, glabrous with a crown of persistent calyx and remains of styles in bunches of 3–4.

Fls. & Frts. : January–May.

In deciduous forests, frequent. On way to Bedesgaon, Neral; Indapur, Mangaon.

Bark, dry calyx (Vakumbha) and fruits are used medicinally for stomach disorders. Bark is also used for tanning and dyeing, leaves for bidis. Seeds are edible.

57. MELASTOMATACEAE

1a. Trees or shrubs; seeds solitary (rarely 2) ... MEMECYLON 1

1b. Herbs; seeds many:

2a. Petals 3; calyx and bracts not bristle ciliate ... SONERILA 2

2b. Petals 4–5; calyx and bracts bristle ciliate ... OSBECKIA 3

1. MEMECYLON L.

1a. Berries blackish ... *M. umbellatum* 1

1b. Berries bright–yellow ... *M. talbotianum* 2

1. **Memecylon umbellatum** Burm. f. Fl. Ind. 87. 1768; Bremer in Opera Bot. 50: 9. f. 3. 1979. *M. edule* Roxb. Pl. Cor. 1: 59. t. 82. 1795; C.B. Cl. in Hook. f. Fl. Brit. India 2: 553. 1879; Cooke, Fl. Pres. Bombay 1: 535. 1958 (Repr. ed.). *Anjan.*

Evergreen trees, 1–2 m; leaves elliptic–lanceolate, coriaceous, glabrous, 6.4 – 7.5 x 2.8 –3.9 cm; flowers blue to purple, many in the axils of fallen leaves on old wood; berries globose; seeds white, roundish.

Fls. & Frts. : May–February.

In semievergreen forests, frequent. Matheran; Phansad, Murud.

It is a source of good fuel and charcoal. The wood is also used for building purposes, house–posts etc.

2. **Memecylon talbotianum** Brandis in Talb. Trees Bombay ed. 2. 1902 (Appendix); & Indian Trees 336. 1906; Cooke, Fl. Pres. Bombay 1: 536. 1958 (Repr. ed.).

Large shrubs or small trees; leaves coriaceous, elliptic, shortly acuminate, glabrous, 4.6–10 x 2.5–4.8 cm; flowers small in compact clusters in axils of leaves; berries globose.

Fls. & Frts. : March–April.

In hilly forests, frequent. Varandh ghat, Mahad.

2. SONERILA Roxb. *nom. cons.*

Sonerila scapigera Hook. in London J. Bot. 7: 672. t. 23. 1848; C.B. Cl. in Hook. f. Fl. Brit. India 2: 538. 1879; Cooke, Fl. Pres. Bombay 1: 533. 1958 (Repr. ed.).

Small, stemless herbs, 7–10 cm; leaves radical, ovate, crenate–serrate, base cordate, 1.4–3 x 1–2.1 cm; flowers purple to pink–red, crowded in subumbellate cymes; flowering scapes 4–10 cm, long; capsules 2–4 mm.

Fls. & Frts. : July–October.

Among the rock crevices, frequent. Mahad ghat; Matheran.

3. OSBECKIA L.

Osbeckia muralis Naud. in Ann. Sci. Nat. Bot. Ser. 3, 14: 56. 1850; Hansen in Ginkoana 4: 41. ff. 2(5) & 9(10). tt. 6 (C & D). 1977. *O zeylanica* Steud. ex Naud. *op. cit.* (Pro Syn.) *O. truncata* D. Don ex Wight & Arn. Prodr. 332. 1834; C.B. Cl. in Hook. f. Fl. Brit. India 2: 514. 1879; Cooke, Fl. Pres. Bombay 1: 530. 1958 (Repr. ed.). *O. truncata* D. Don var. *kurzii* C.B. Cl. *op. cit.*

Erect herbs with 4–angular, hairy stem, 10–40 cm; leaves ovate–elliptic, densely pubescent with long hairs, 2–4 x 1–1.5 cm; flowers purplish in capitate heads; fruits ovoid, oblong, ribbed.

Fls. & Frts. : September–October.

Among grasses in moist deciduous forests, frequent. Jambulpada; Kalasgiri hill, Roha; Matheran; Pali.

58. LYTHRACEAE

1a. Aquatic or subaquatic herbs; calyx membranous :

2a. Flowers axillary, solitary or in spikes; fruits dehiscent into 2–5 valves ... ROTALA 1

2b. Flowers in axillary clusters or cymes; fruits dehiscent irregularly or circumscissile ... AMMANNIA 2

1b. Trees or shrubs; calyx coriaceous :

3a. Trees; leaves not gland dotted beneath; flowers not zygomorphic, whitish–pinkish; stamens numerous; capsules loculicidal, woody not covered by calyx; seeds winged near apex ... LAGERSTROEMIA 3

3b. Shrubs; leaves with black glandular dots beneath; flowers zygomorphic, scarlet; stamens 12; capsules irregularly bursting, covered by thin, membranous calyx; seeds wingless ... WOODFORDIA 4

1. ROTALA L.

1a. Leaves verticillate; flowers verticillate and enclosed in the dilated base of the leaf; petals absent ... *R. occultiflora* 1

1b. Leaves opposite, decussate; flowers neither verticillate nor enclosed in the dilated base of leaf; petals present:

2a. Calyx enclosing the fruit, campanulate; capsule 2–valved :

3a. Flowers in terminal, compact spikes ... *R. serpyllifolia* 2

3b. Flowers solitary in axils of bracts ... *R. indica* 3

2b. Calyx not enclosing the fruit, spherical; capsule 3–valved ... *R. densiflora* 4

1. **Rotala occultiflora** Koehne in Bot. Jahrb. 1: 152. 1880 & Engl. Pflanzenr. 17: 30. t. 2B. 1903; Blatt. & Hallb. in J. Bombay nat. Hist. Soc. 25: 705. 1918.

Small herbs, 5–10 cm; leaves narrowly linear, base expanded, 6–15x1–2 mm; flowers pale–yellow; capsules ellipsoid, 2–3 valved; seeds oblong, brown.

Fls. & Frts. : September–October.

In wet places on road–sides and in deciduous forests, frequent. Pen to Khopoli Road; Ramraj, Alibag.

2. **Rotala serpyllifolia** (Roth) Bremek. in Act. Bot. Neerl. 3: 149. 1954. *Micranthus serpyllifolius* Roth, Nov. Pl. Sp. 252. 1821. *Ameletia tenuis* Wight, Icon. t. 257 B. 1840. *Ammannia tenuis* C.B. Cl. in Hook. f. Fl. Brit. India 2: 567. 1879; Cooke, Fl. Pres. Bombay 1: 538. 1958 (Repr. ed.).

Erect, slender herbs with reddish stem rooting at nodes; leaves ovate–elliptic, glabrous, 0.5–0.8 x 0.2–0.3 cm; flowers minute, pink or purplish; capsules oblong–ellipsoid; seeds many, ellipsoid.

Fls. & Frts. : October–December.

In rock–crevices and river banks, infrequent. Matheran; Pen.

3. **Rotala indica** (Willd.) Koehne in Bot. Jahrb. 1: 172. 1880 & in Engl. Pflanzenr 17: 40. 1903. *Peplis indica* Willd. Sp. Pl. 2: 244. 1799. *Ammannia peploides* Sprang. Syst. Veg. 1: 444. 1825; C.B. Cl. in Hook. f. Fl. Brit. India 2: 566. 1879; Cooke, Fl. Pres. Bombay 1: 538. 1958 (Repr. ed.). *Ameletia indica* (Willd.) DC Prodr. 3: 76. 1828; Wight, Icon. t. 257 A. 1840.

Erect–decumbent herbs; stem trailing, rooting at lower nodes, 10–30 cm; leaves elliptic–obovate, linear–lanceolate or spathulate, glabrous, 1–2.7 x 0.6–1.2 cm; flowers small, 4–merous, pinkish, axillary, solitary or in spikes; capsules ellipsoid–oblong, many seeded.

Fls. & Frts. : September–November.

In moist and shady places, frequent. Matheran; Near Tata's Power Station, Bhira.

4. **Rotala densiflora** (Roth ex Roem. & Schult.) Koehne in Bot. Jahrb. 1: 164. 1880 & in Engl. Pflanzenr. 17: 35. f. 3c. 1903. *Ammannia densiflora* Roth ex Roem. & Schult. Syst. Veg. 3: 304. 1818. *Ammannia pentandra* Roxb. Fl. Ind. 1: 448. 1820; C. B. Cl. in Hook. f. Fl. Brit. India 2: 568. 1879; Cooke, Fl. Pres. Bombay 1: 539. 1958 (Repr. ed.). *Rotala roxburghiana* Wight, Icon. t. 260 B. 1840.

Slender, glabrous herbs, 10–25 cm; leaves oblong–lanceolate, glabrous, 8–17 x 2–6 mm; flowers red, axillary; capsules globose, reddish, many seeded.

Fls. & Frts. : August–October.

In moist rocky places, infrequent. Matheran; Poladpur to Wada.

2. AMMANNIA L.

1a. Leaves much narrowed or tapering towards base; cymes sessile or subsessile; petals absent; calyx not striate; style short, thick ... *A. baccifera* 1

1b. Leaves auriculate–subamplexicaul at base; cymes distinctly peduncled; petals present; calyx striate; style comparatively long, filiform ... *A. multiflora* 2

1. **Ammannia baccifera** L. Sp. Pl. (ed. 2) 195. 1762; C.B. Cl. in Hook. f. Fl. Brit. India 2: 569. 1879; Koehne in Engl. Pflanzenr. 17: 53. 1903; Cooke, Fl. Pres. Bombay 1: 541. 1958 (Repr. ed.). *Ammannia salicifolia* Hiern. in Oliv. Fl. Trop. Afr. 2: 278. 1871; C.B.Cl. *op. cit.*; Cooke, *op. cit.* 542.

Erect, glabrous herbs. 25–75 cm; leaves linear–oblong or oblong–lanceolate, glabrous, 2–5 x 0.4–11 cm; flowers reddish in dense, axillary clusters; capsules globose, red, not covered by calyx; seeds minute, brownish, obovoid.

Fls. & Frts. : September–October.

In moist places, frequent. Murud; Neral; Varandh ghat.

Fresh leaves are used for skin diseases.

2. **Ammannia multiflora** Roxb. Fl. Ind. 1: 447. 1820; C. B. Cl. in Hook. f. Fl. Brit. India 2: 570. 1879; Cooke, Fl. Pres. Bombay 1: 541. 1958 (Repr. ed.).

Erect, glabrous herbs, 20–40 cm; leaves opposite, linear–oblong or elliptic–oblong, sessile 1.2–3 x 0.1–0.8 cm; flowers red, small in 3–5 flowered, pedunculate, axillary cymes; capsules globose, deep red, glabrous; seeds many, minute, red.

Fls. & Frts. : September–November.

In ditches or moist places on road sides, frequent. Pen to Khopoli Road.

3. LAGERSTROEMIA L.

1a. Leaves usually glaucous beneath; flowers upto 1 cm across; calyx tubes smooth :

2a. Leaves sessile or petioles upto 3 mm; capsules with appressed calyx lobes; calyx tube with a ring inside ... *L. parviflora* 1

2b. Leaves petiolate upto 1.5 cm; capsules with spreading or reflexed lobes; calyx tube without a ring inside ... *L. microcarpa* 2

1b. Leaves not glaucous beneath; flowers upto 2.2 cm across; calyx tube ribbed ... *L. reginae* 3

1. **Lagerstroemia parviflora** Roxb. Pl. Cor. 1: 47. t. 66. 1795; Wight, Icon. t. 69. 1838; C.B. Cl. in Hook. f. Fl. Brit. India 2: 575. 1879; Cooke, Fl. Pres. Bombay 1: 545. 1958 (Repr. ed.); Furtado & Srisuko in Gard. Bull. (Singapore) 24: 195. f. 3 a & b. 1969. *Bondara, Bonga.*

Large trees, 10-20 m; bark ash coloured; leaves elliptic or ovate–lanceolate, glabrous, 2.8–11.5 x 1.7–6.2 cm; flowers white, fragrant in axillary and terminal panicles; capsules ovoid or ellipsoid, greenish–brown.

Fls. & Frts. : May–June.

In deciduous forests, frequent. Bedesgaon, Neral; Kalamb to Borgaon, Karjat; Nadgaon in Mahad; Vankad to Nagothana.

The wood is used as timber and the leaves as a food for silk–worms.

2. **Lagerstroemia microcarpa** Wight, Icon. t. 109. 1839; Furtado & Srisuko in Gard. Bull. (Singapore) 24: 192. f. 2a. & b. 1969. *L lanceolata* Wall. ex C.B. Cl. in Hook. f. Fl. Brit. India 2: 576. 1879; Cooke, Fl. Pres. Bombay 1: 545. 1958 (Repr. ed.). *Nana*.

Trees, 9-15 m; bark grey ash coloured; leaves elliptic–oblong or lanceolate, acute, glabrous above, greenish–hoary tomentose beneath, 4.5–11 x 3–7.5 cm; flowers creamy–white or greenish–white in terminal and axillary panicles; fruits ellipsoid, yellowish–green with red stripes.

Fls. & Frts. : March–October.

In plains and hilly deciduous forests, frequent. Karnala fort; Matheran; Nagothana; Pen.

The wood is used in the constructon of houses.

3. **Lagerstroemia reginae** Roxb. Pl. Cor. 1: 46. t. 65. 1795; Wight, Icon. t. 413. 1840; Furtado & Srisuko in Gard. Bull. (Singapore) 24: 261. f. 29B. 1969. *L. flos–reginae auct. non* Retz. (1789); C.B. Cl. in Hook. f. Fl. Brit. India 2: 577. 1879; Cooke, Fl. Pres. Bombay 1: 546. 1958 (Repr. ed.). *L. speciosa auct. non* Pers. (1807); Koehne in Engl. Pflanzenr. 17: 261. 1903; Banerjee in Rec. Bot. Surv. India 19: 46. 1966. *Taman*.

Tall, spreading, branched trees, 10–20 m; bark grey; leaves elliptic–oblong or lanceolate, glabrous, 7–20.2 x 4–7.8 cm; flowers bright pink–purple in large, terminal panicles; fruits green, ellipsoid, apiculate; seeds winged.

Fls. & Frts. : April–June.

Along the rivulets (nalas), river banks and valleys, frequent. Mahad; Mangaon; Mhasla; Nagothana.

Flowers of this plant are much attractive. Hence planted in many gardens for ornamental purpose. Wood used for structural work, flooring and fittings.

4. WOODFORDIA Salisb.

Woodfordia fruticosa (L.) Kurz in J. As. Soc. Bengal 40: 56.

1871; Koehne in Engl. Pflanzenr. 17: 79. 1903. *Lythrum fruticosum* L. Sp. Pl. (ed. 2) 641. 1762. *Woodfordia floribunda* Salisb. Parad. London t. 42. 1806; C.B. Cl. in Hook. f. Fl. Brit. India 2: 572. 1879 (Excl. syn. *Grislea uniflora* Rich. & *G. micropetala* Hochst. ex Steud.); Cooke, Fl. Pres. Bombay 1: 543. 1958 (Repr. ed.). *Dhayti.*

Deciduous, woody, branched shrubs, 1–2.5 m; leaves ovate to broadly lanceolate, hoary tomentose and nigro–punctate beneath, 2.8–8.6 x 1.4–2 cm; flowers deep red or scarlet in axillary or extra–axillary, fascicled cymes; capsules oblong, brown.

Fls. & Frts. : December–May.

Along the hill forests, frequent. Bedesgaon; Karnala fort; Matheran; Roha; Sudhagad; Varandh ghat.

Leaves and flowers largely used as tanning material. Flowers used for dyeing and its paste medicinally for injuries, dysentery etc. by local people.

Cultivated or introduced :

Lawsonia inermis L. Sp. Pl. 349. 1753; Cooke, Fl. Pres. Bombay 1: 544. 1958 (Repr. ed.). *L. alba* Lam. Encycl. 3: 106. 1789; Wight, Ill. t. 87. 1840; C.B.Cl. in Hook. f. Fl. Brit. India 2: 573. 1879.

Glabrous shrubs, 2–3 m; leaves elliptic–lanceolate, glabrous; flowers numerous, yellowish or white, fragrant in paniculate cymes; capsules globose; seeds minute, brown.

Usually planted as hedges, rarely as an escape. Kolaba Fort, Alibag.

Leaves yield a dye.

59. SONNERATIACEAE

SONNERATIA L. f.

1a. Calyx lobes 4–5; petals absent; stamens included or slightly exserted; style shorter than stamens; stigma umbrella shaped ... *S.apetala* 1

1b. Calyx lobes 6; petals 6 ; stamens much exserted; style longer than stamens ; stigma not umbrella shaped ... *S. caseolaris* 2

1. **Sonneratia apetala** Buch.–Ham. in Symes Embassy, Ava 3: 313. cum Tab. 25. 1800; C.B. Cl. in Hook. f. Fl. Brit. India 2: 579. 1879; Cooke, Fl. Pres. Bombay 1: 547. 1958 (Repr. ed.). (PLATE 11b)

Large trees, 7-12 m; branches slender, drooping; leaves obovate–lanceolate, glabrous, 2.7–12 x 1.8–3 cm; flowers solitary, *ca* 2 cm across; capsules depressed, globose.

Fls. & Frts. : February–August.

In salt marshes near muddy sea–shore, frequent. Elephanta; Khadi on way to Murud and Dharamtar Creek near Dabhod, Dasgaon.

2. **Sonneratia caseolaris** (L.) Engl. in Engl. & Prantl, Nachtr. 261. 1879 *emend.* Sm. in Rees. Cyclop. 33. 1819. *Rhizophora caseolaris* L. Amoen. Acad. 4: 123. 1759. *Sonneratia acida* L. f. Suppl. 252. 1781; C. B. Cl. in Hook. f. Fl. Brit. India 2: 579. 1879; Cooke, Fl. Pres. Bombay 1: 547. 1958 (Repr. ed.).

Trees *ca* 4.5 m; leaves opposite, obovate–oblong, thick, coriaceous, glabrous, 5.7–11.6 x 4.8–6.5 cm; flowers white, solitary, terminal, 4–6 cm across; capsules depressed globose with persistent calyx and pointed style.

Fls & Frts. : February–July.

In salt–marshes near tidal sea–shore, frequent. Creek on way to Murud from Ghosale.

The vertical aerial roots or pneumatophores used as a substitute for cork.

60. ONAGRACEAE

LUDWIGIA L.

1a. Stamens as many as sepals and petals; capsules terete, not enlarged in upper part ... *L. perennis* 1

1b. Stamens twice as many as sepals and petals; capsules subterete, enlarged in the upper 1/6 part ... *L. hyssopifolia* 2

1. **Ludwigia perennis** L. Sp. Pl. 119. 1753; Raven in Reinwardtia 6: 367. 1963. *L. parviflora* Roxb. Fl. Ind. 1: 440. 1820; Wight, Ill. 2: t. 101. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 2: 585. 1879; Cooke, Fl. Pres. Bombay 1: 550. 1958 (Repr. ed.).

Erect or diffuse, glabrous herbs, 20–60 cm; leaves variable, oblanceolate or oblong–lanceolate, glabrous, 2.4–7.5 x 0.8–2.3 cm; flowers yellow, axillary, solitary, 4–merous; capsules straw coloured, inflated from below to apex, truncate; seeds numerous, dark brown, ellipsoid, glabrous.

Fls. & Frts. : August–October.

In moist places, frequent. Matheran; Neral.

2. Ludwigia hyssopifolia (G. Don) Excell in Garcia de Orta 5: 571. & 574. t. 2. 1957; Raven in Reinwardtia 6: 385. 1963. *Jussia hyssopifolia* G. Don, Gen. Syst. 2: 693. 1832.

Small, well branched, suffruticose herbs; leaves lanceolate, cuneate, acute, 3.5–7.5 x 0.5–2.2 cm; flowers 4–merous, solitary, axillary; capsules cylindric; seeds ellipsoid, pluri–seriate and free in upper 1/4 th part of capsule.

Fls. & Frts. : August–October.

In moist places, infrequent. Mandatna to Pangloli Reserve Forests, Mhasla.

61. TRAPACEAE

TRAPA L.

Trapa natans L. Sp. Pl. 120. 1753; C.B. Cl. in Hook. f. Fl. Brit. India 2: 590. 1879; Daniel, Vajravelu & Thiagaraj in J. Econ. Tax. Bot. 4(2): 596. 1983. *T. natans* L. var. *bispinosa* (Roxb.) Makino in Inuma Somoku–Dzusetu (ed. 3) 1: 137. 1907. *T. bispinosa* Roxb. Pl. Cor. t. 234. 1819; C.B. Cl. in Hook. f. Fl. Brit. India 2: 590. 1879; Cooke, Fl. Pres. Bombay 1: 551. 1958 (Repr. ed.). *Kate–Singada*, *Shingada*.

Aquatic, floating herbs with trailing stem and numerous adventitious roots; leaves ovate–rhomboid, arranged in rosette, dark green above, reddish–purple and pubescent beneath, 2.4–3.2 x 2–3 cm; flowers white above water surface, axillary, solitary; nuts black, 4–angled, 1–seeded.

Fls. & Frts. : February–March.

In tanks, frequent. Gaval wadi, Karjat; Nagothana.

This species grows in Ponds, tanks or lakes, often cultivated for its edible seeds.

62. TURNERACEAE

TURNERA L.

Turnera ulmifolia L. Sp. Pl. 271. 1753; Baker in Fl. Males. I, 4:

237. f. 2. 1951; Brizicky in J. Arnold Arb. 42: 208. 1961. *T. ulmifolia* L. var. *angustifolia* (Mill.) Willd. ex Urb. Monogr. Turn. 141. 1883. *T. angustifolia* Mill. Gard.Dict. ed. 8. n. 2. 1768.

Erect, suffruticose herbs or undershrubs; leaves alternate, ovate, coarsely toothed, pubescent, 4.2–12.5 x 2.4–3 cm; flowers bright yellow in terminal cymes; capsules greyish, tomentose, ovoid; seeds minute.

Fls. & Frts. : March–October.

Along the coastal regions frequent. Around the Janjira fort in Murud; Kolaba fort, Alibag.

A weed of road sides and also cultivated in gardens for its bright yellow flowers.

63. CARICACEAE

CARICA L.

Carica papaya L. Sp. Pl. 1036. 1753; C.B. Cl. in Hook. f. Fl. Brit. India 2: 599. 1879; Cooke, Fl. Pres. Bombay 1: 557. 1958 (Repr. ed.). *Papaya*.

Soft wooded trees; leaves pinnatifid and palminerved, 30–60 cm across; flowers creamy–white, fragrant; males in drooping panicles and females in short clusters; fruits green–yellow with sweet yellow pulp and numerous black seeds.

A native of Tropical America, commonly cultivated in villages, on slopes in Matheran and other places in the district and occasionaly occur as an escape.

Fruit is edible. Milky juice of unripe fruits is used in chewing gum and medicinally as and anthelmintic.

64. CUCURBITACEAE

1a. Flowers white :

2a. Tendrils branched; petals fimbriate on margins; male flowers in racemes ... TRICHOSANTHES 1

2b. Tendrils simple; petals not fimbriate; male flowers mostly solitary ... COCCINIA 2

1b. Flowers yellow, creamy–white, greenish–yellow but not pure white :

3a. Petals free or connate at base :

4a. Male flowers solitary or fascicled; bracteate; stamens inserted below the mouth of calyx tube; anthers more or less cohering; berries papillose, tuberculate ... MOMORDICA 3

4b. Male flowers in racemes, ebracteate; stamens inserted at the mouth of calyx tube; anthers free; berries smooth, acutely ribbed or bristly ... LUFFA 4

3b. Petals united, campanulate:

5a. Tendrils branched; berries dark red with deep purple or bluish green streaks ... DIPLOCYCLOS 5

5b. Tendrils unbranched; berries not as above:

6a. Connectives crested, prolonged beyond anther lobes ... CUCUMIS 6

6b. Connectives not as above:

7a. Disk annular or cup-shaped at the base of style :

8a. Ovules and seeds horizontal ... MELOTHRIA 7

8b. Ovules and seeds erect ... DICAELOSPERMUM 8

7b. Disk absent or minute at the base of style ... KEDROSTIS 9

1. TRICHOSANTHES L.

1a. Leaves nigro-punctate beneath; male racemes with large foliaceous, ovato-obovate, serrate bracts; fruits globose, pulp green ... *T. bracteata* 1

1b. Leaves not nigro-punctate beneath; bracts minute or absent; fruits ovoid-fusiform, pulp red ... *T. cucumerina* 2

1. **Trichosanthes bracteata** (Lam.) Voigt, Hort. Suburb. Calc. 58. 1845; Chakravarty in Fasc. Fl. India 11: 109. 1982. *Modecca bracteata* Lam. Encycl. 4: 210. 1796. *Trichosanthes palmata* Roxb. Fl. Ind. 3: 704. 1832; Wight, Ill 2: tt. 104, 105. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 2: 606. 1879; Cooke, Fl. Pres. Bombay 1: 560. 1958 (Repr. ed.). *Kaundal, Kavandala.*

Extensive, robust, woody climber with 2–3 fid tendrils; leaves ovate or palmately 3–5 lobed, denticulate, glabrous; flowers white; male in 5–10-flowered in racemes; female ones axillary, solitary; fruits globose, red with orange streaks at maturity.

Fls. & Frts. : April–July.

Along the hills, infrequent. Chanera, Roha; Karnala fort.

The roots are used in carbuncles and said to be beneficial in the inflammation of the lungs and also as an antidote for snake–bites. The furits are poisonous, haemagglutinating and used to cure asthma.

2. **Trichosanthes cucumerina** L. Sp. Pl. (ed. 1) 1008. 1753; C.B. Cl. in Hook.f. Fl. Brit. India 2: 609. 1879; Cooke, Fl. Pres. Bombay 1: 560. 1958 (Repr. ed.); Chakravarty in Fasc. Fl. India 11: 112. 1982. *Jangli–Padval, Patola.*

Monoecious, slender climbers; leaves orbicular–reniform or broadly ovate, denticulate, 5–7 lobed, 6.5–9.6 x 7.8–11.5 cm; male flowers 8–15 in racemes; female ones solitary; fruits yellowish–green, ovoid–fusiform; seeds 8–10, ovoid–oblong, compressed.

Fls. & Frts. : July–October.

On hedges and low bushes in open deciduous forests, frequent. Alibag; Sarasgad, Pali; Shrivardhan.

The roots, leaves, seeds and fruits are used medicinally. The fruits are also cooked and used as vegetable by local people.

2. COCCINIA Wight & Arn.

Coccinia grandis (L.) Voigt, Hort. Suburb. Calc. 59. 1845; Chakravarty in Fasc. Fl. India 11: 24. 1982. *Bryonia grandis* L. Mant. Pl. 1: 126. 1767. *Coccinia indica* Wight & Arn. Prodr. 347. 1834; Wight, Ill. 2: t. 105. 1850; C.B. Cl. in Hook. f. Fl. Brit. India 2: 621. 1879; Cooke, Fl. Pres. Bombay 1: 572. 1958 (Repr. ed.). *Tondli.*

Prostrate or scandent herbs; leaves entire to 3–5 angled or lobed, obtuse or apiculate, denticulate, 3–6 x 4.2–7cm; flowers white; fruits fusiform, ellipsoid, immature green with white streaks; pulp red, juicy; seeds yellowish, oblong–obovoid.

Fls. & Frts. : August–September.

On hedges along the road–sides or near sea–coast, infrequent. Alibag.

Usually cultivated, occasionaly found as an escape. Tender shoots and fruits are used as vegetables. Roots, stem and leaves are used in medicine against skin diseases, bronchitis, diabetes etc.

3. MOMORDICA L.

1a. Plants dioecious; bracts of male flowers at the apex of the peduncle ... *M. dioica* 1

1b. Plants monoecious; bracts of the male flowers about the middle or below the middle of the peduncle ... *M. charantia* 2

1. **Momordica dioica** Roxb. ex Willd. Sp. Pl. 4: 605. 1805;Wight, Icon. tt. 505 & 506. 1841; C.B. Cl. in Hook. f. Fl. Brit. India 2: 617. 1879; Cooke, Fl. Pres. Bombay 1: 563. 1958 (Repr. ed.); Chakravarty in Fasc. Fl. India 11: 94. 1982. *Kartoli.*

Climbing herbs with tuberous roots; leaves ovate, mucronate, base emarginate, variously lobed, minutely denticulate and punctate beneath, 3.5–9.4 x 2.6–7.8 cm; flowers yellow, solitary, pedunculate; fruits ovoid, bright red at maturity; seeds yellow, ovoid, emarginate.

Fls. & Frts. : June–September.

In hilly forests, infrequent; also cultivated. Neral to Jummapatti and Thakurwadi in Matheran; *Irani* 4106, 4174 (**BLAT**).

The fruit is used as vegetable. The tuberous roots are used medicinally to cure piles and fevers.

2. **Momordica charantia** L. Sp. Pl. (ed.1) 1009. 1753; C.B. Cl. in Hook. f. Fl. Brit. India 2: 616. 1879; Cooke, Fl. Pres. Bombay 1: 562. 1958 (Repr. ed.). Chakravarty, in Fasc. Fl. India 89. ff. 8–10. 1982. *Karla.*

Slender, climbing herbs; leaves reniform or sub–orbicular, glabrous, 3–7 lobed, lobes ovate–oblong, mucronate, dentate; flowers white or creamy–white, axillary, solitary, pedunculate; fruits green–orange, oblong–fusiform, muricate–tuberculate, ribbed, 3–valved; seeds yellowish–brown, subtridentate, compressed.

Fls. & Frts. : March–August.

In forest outskirts as an escape or cultivated. Hatvane forest in Pen; Janjira fort, Murud.

The fruits edible as vegetable and also made into pickles. The roots and fruits are also used medicinally to cure rheumatism, gout, stomach diseases etc.

4. LUFFA Mill.

1a. Stamens 5; fruits not angular ... *L. cylindrica* 1

1b. Stamens 3; fruits acutely 10 angled ... *L. acutangula* 2

1. **Luffa cylindrica** (L.) M. Roem. Fam. 2: 63. 1846; Chakravarty

in Fasc. Fl. India 11: 70. 1982. *Momordica cylindrica* L. Sp. Pl. (ed.1) 1009. 1753. *Luffa aegyptiaca* Mill. Dict. (ed. 4) 500. 1785; C.B. Cl. in Hook. f. Fl. Brit. India 2: 619. 1879; Cooke, Fl. Pres. Bombay 1: 565. 1958 (Repr. ed.). *L. pentandra* Roxb. Fl. Ind. 3: 712. 1832; Wight, Icon. t. 499. 1841. *Gosale.*

Extensive climbers with angulate, glabrous stem; leaves orbicular, cordate, palmately 5–lobed, scabrous, 15–20 cm, as long as broad; flowers bright yellow; fruits fusiform or cylindric, obtuse, strongly fibrous inside; seeds ovoid, black, slightly winged.

Fls. & Frts. : August–November.

In hilly slopes, on low bushes or hedges, escape or cultivated. Jummapatti, Matheran, *Irani* 5473 (BLAT).

Fruits are used as vegetable. The fibrous network of dried fruits provide a good bath sponge.

2. **Luffa acutangula** (L.) Roxb. Fl. Ind. 3: 713. 1832; C.B. Cl. in Hook. f. Fl. Brit. India 2: 615. 1879; Cooke, Fl. Pres. Bombay 1: 566. 1958 (Repr. ed.); Chakravarty in Fasc. Fl. India 11: 67. ff. 1–7. 1982. *Cucumis acutangula* L. Sp. Pl. 1: 1011. 1753. *Turai.*

Scandent, glabrous herbs; leaves broadly ovate–cordate, 5–7 angled, glabrous, 5–7.5 x 4.4–10 cm; tendrils sub–hispid, 3–fid; flowers yellow, male and female in the same axil; fruits clavate–oblong or fusiform; seeds ovate, tuberculate, blackish.

Fls. & Frts. : September–October.

On hedges, low bushes or small trees in the forests, Pen to Khopoli Road; Raigad; Sarasgad, Pali.

Tender fruits are used as vegetable. The leaves and seeds are used medicinally.

5. DIPLOCYCLOS (Endl.) Post & Kuntze

Diplocyclos palmatus (L.) Jeffrey in Kew Bull. 15 (3): 352. 1962; Chakravarty in Fasc. Fl. India 11: 48. 1982. *Bryonia palmata* L. Sp. Pl. 1012. 1753. *B. laciniosa* L. Sp. Pl. 1013. 1753 *pro parte*; Wight, Icon. t. 500. 1841; C. B. Cl. in Hook. f. Fl. Brit. India 2: 622. 1879. *Bryonopsis laciniosa auct. non* (L.) Naud. (1862); Cooke, Fl. Pres. Bombay 1: 568. 1958 (Repr. ed.). *Shivlingi.*

Extensive tendril climbers, monoecious; leaves palmately 3–5

lobed, glabrous, 4–7 x 3.5–6 cm; flowers yellow or creamy–white in axillary fascicles; fruits globose–ovoid, green to pale yellow with white streaks; seeds ovoid, belted in the central portion.

Fls. & Frts. : September–October.

On hedges in moist deciduous forests, frequent. Ramraj forest, Alibag.

6. CUCUMIS L.

1a. Perennials; leaves deeply 5–7 lobed; male flowers usually solitary ... *C. callosus* 1

1b. Annuals; leaves angular or lobed; male flowers fascicled:

2a. Ovary hispidulous; young fruits tuberculate ... *C. sativus* 2

2b. Ovary softly hairy; young fruits not tuberculate ... *C. melo* var. *agrestis* 3

1. **Cucumis callosus** (Rottl.) Cogn. in Engl. Pflanzenr. 88: 129. 1924; Chakravarty in Fasc. Fl. India 11: 31. 1982. *Bryonia callosa (collosa)* Rottl. Neue Schrift. Ges. Nat. Freunde Zu Berlin 4 : 210. 1803. *Cucumis trigonus* Roxb. Fl. Ind. 2: 722. 1824; Wight, Icon. t. 497. 1841; C.B. Cl. in Hook. f. Fl. Brit. India 2: 619. 1879; Cooke, Fl. Pres. Bombay 1: 569. 1958 (Repr. ed.).

Prostrate or climbing herbs with scabrid stem; leaves suborbicular or ovate, cordate, 4–12 x 3.7–12 cm; flowers yellow, axillary, solitary; fruits obovoid, yellowish–green with 8–10 longitudinal, green stripes; seeds oblong, white.

Fls. & Frts. : July–January.

In hilly forests, infrequent. Matheran.

The pulp of fruit is bitter and purgative. The roots and seeds are used medicinally.

2. **Cucumis sativus** L. Sp. Pl. 1012. 1753; C.B. Cl. in Hook. f. Fl. Brit. India 2: 630. 1879; Cooke, Fl. Pres. Bombay 1: 570. 1958 (Repr. ed.); Chakravarty in Fasc. Fl. India 11: 36. 1982. *Kakdi.*

Annual herbs with hirsute stems; leaves broadly cordate–ovate, hispid, 3–5 lobed; flowers yellow; fruits oblong–cylindric, yellowish–green.

Fls. & Frts. : August–November.

Usually cultivated, at times escape. Matheran.

The fruits are edible. The seeds have cooling, tonic and diuretic properties.

3. **Cucumis melo** L. var. **agrestis** Naud. Ann. Sci. Nat. 4 (11): 73. 1859; Cooke, Fl. Pres. Bombay 1: 569. 1958 (Repr.ed.); Chakravarty in Fasc. Fl. India 11: 35. 1982. *Shinde, Takmak.*

Prostrate, monoecious herbs; leaves ovate–cordate, 3–7 lobed, lobes obtuse, hairy, 4–7.2 x 3.5–7 cm; flowers yellow; fruits *ca* 3.5 cm across, ellipsoid or turbinate, green with white streaks; seeds ovoid.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Rambag Point, Matheran.

The fruits are much smaller, bitter in taste, not edible, used medicinally by local people.

7. MELOTHRIA L.

1a. Plants monoecious; leaves not polymorphous:

2a. Leaves scabrous; seeds scrobiculate ...*M. maderaspatana* 1

2b. Leaves densely villose but not scabrous; seeds smooth on their faces ... *M. leiosperma* 2

1b. Plants dioecious; leaves polymorphous ... *M. heterophylla* 3

1. **Melothria maderaspatana** (L.) Cogn. in DC. Monogr. Phan. 3: 623. 1881; Cooke, Fl. pres. Bombay 1: 573. 1958 (Repr. ed); Chakravarty in Fasc. Fl. India 11: 83. 1982. *Cucumis maderaspatana* L. Sp. Pl. 1012. 1753. *Bryonia scabrella* L.f. Suppl. 424. 1781; Wight, Icon. t. 501. 1841. *Mukia scabrella* (L.f.) Arn. in Hook. J. Bot. 3: 276. 1851; C. B. Cl. in Hook. f. Fl. Brit. India 2: 623. 1879. *M. maderaspatana* (L.) M. Roem. Syn. Monogr. 247. 1846. *Chirati.*

Scabrous, scandent annuals; leaves membranous, ovate, entire, angulate or 3–5 shallowly lobed, acute, denticulate, 3.5–14 x 2.6–12.5 cm; flowers greenish to bright yellow, axillary; male stalked, female sessile; fruits brownish–yellow with green streaks, red at maturity, globose, shining or white, echinate; seeds ovoid.

Fls. & Frts. : August–October.

On hedges and low shrubs in deciduous forests, frequent. Alibag; Pachhad; Pen to Khopoli Road; Sanegaon, Roha.

The roots are masticated to relieve toothache. Tender shoots are used in Vertigo and Billiousness.

2. **Melothria leiosperma** (Wight & Arn.) Cogn. in DC. Mongr. Phan. 3: 622. 1881; Cooke, Fl. Pres. Bombay 1: 573. 1958 (Repr. ed.); Chakravarty in Fasc. Fl. India 11: 81. 1982. *Bryonia leiosperma* Wight & Arn. Prodr. 345. 1834. *Mukia leiosperma* Wight & Arn. in Ann. & Mag. Nat. Hist. 8: 268. 1842; C. B. Cl. in Hook. f. Fl. Brit. India 2: 623. 1879.

Hispid climbers; leaves broadly ovate, apex acute, base cordate; flowers axillary; fruits globose; seeds ellipsoid.

Fls. & Frts. : July–August.

In hilly forests, rare. Matheran.

3. **Melothria heterophylla** (Lour.) Cogn. in DC. Monogr. Phan. 3: 618. 1881; Cooke, Fl. Pres. Bombay 1: 575. 1958 (Repr. ed.); Chakravarty in Fasc. Fl. India 11: 79. 1982. *Solena heterophylla* Lour. Fl. Cochinch. 1: 514. 1790. *Zehneria umbellata* Thw. Enum. Pl. Zeyl. 125. 1853; C. B. Cl. in Hook. f. Fl. Brit. India 2: 625. 1879. *Gomata, Gometi.*

Glabrous climbers with tuberous roots; leaves variable, ovate–cordate, deltoid–ovate, suborbicular, undivided or variously lobed, acute or acuminate, denticulate; flowers pale yellow or creamy–yellow, axillary; male flowers subumbellate; females solitary; fruits ovoid–oblong, reddish–yellow.

Fls. & Frts. : July–October.

In hilly forests, frequent. Matheran; Parghat, Poladpur; Ramraj, Alibag; Shivthalgarh, Mahad; Songar Reserve Forest, Mhasla.

Fruits are eaten as a vegetable.

8. DICAELOSPERMUM C. B. Cl.

Dicaelospermum ritchiei C.B. Cl. in Hook. f. Fl. Brit. India 2 : 630. 1879; Cooke, Fl. Pres. Bombay 1: 580. 1958 (Repr. ed.); Chakravarty in Fasc. Fl. India 11: 47. 1982. *Gogara, Nareli.*

Scandent, grooved herbs with villous stem; leaves membranous, ovate–triangular, 3–lobed, hirsute, denticulate, 4–6 x 3.7–7.2 cm; flowers minute, yellow in axillary clusters; fruits green to reddish, globose, unilocular; seeds 3, whitish–brown, ovoid.

Fls. & Frts. : July–October.

In hilly forests, occasional. Matheran.

9. KEDROSTIS Medik.

Kedrostis foetidissima (Jacq.) Cogn. in DC. Monogr. Phan.3: 636. 1881. *Trichosanthes foetidissima* Jacq. Collect. 2: 341. 1789. *Kedrostis rostrata* (Rottl.) Cogn. in DC. Monogr. Phan. 3: 636. 1881; Cooke, Fl. Pres. Bombay 1: 577. 1958 (Repr. ed.); Chakravarty in Fasc. Fl. India 11: 64. 1982. *Bryonia rostrata* Rottl. Neue Schrift Ges. Freunde Berlin 4: 213. 1803. *Rhynchocarpa foetida sensu* C.B. Cl. in Hook. f. Fl. Brit. India 2: 627. 1879 *pro parte, non* Schrad. (1838).

Slender, hairy, climbing herbs; leaves alternate, cordate–suborbicular, 3–5 lobed, pubescent, 1.4–4 x 1.2–3.5 cm; flowers small, axillary, yellow; fruits green to red, ellipsoid–ovoid, beaked, bilocular; seeds 6–10, white, obovoid–ovoid, turgid.

Fls. & Frts. : September–November.

In deciduous forests, infrequent. Mirya dongar, Pen.

Leaves and fruits are used as vegetable.

Cultivated or introduced :

Lagenaria siceraria (Molina) Standl. in Publ. Field Mus. Nat. Hist. Chicago, Bor. Ser. 3: 435. 1930; Chakravarty in Fasc. Fl. India 11: 65. 1982. *Cucurbita siceraria* Molina, Sogg. Storia Nat. Chile 133. 1782. *Lagenaria vulgaris* Seringe in Mem. Soc. Phys. Hist. Nat. Geneve 3(1): 25. 1825; C.B. Cl. in Hook. f. Fl. Brit. India 2: 613. 1879; Cooke, Fl. Pres. Bombay 1: 581. 1958 (Repr. ed.). *Dudhi*.

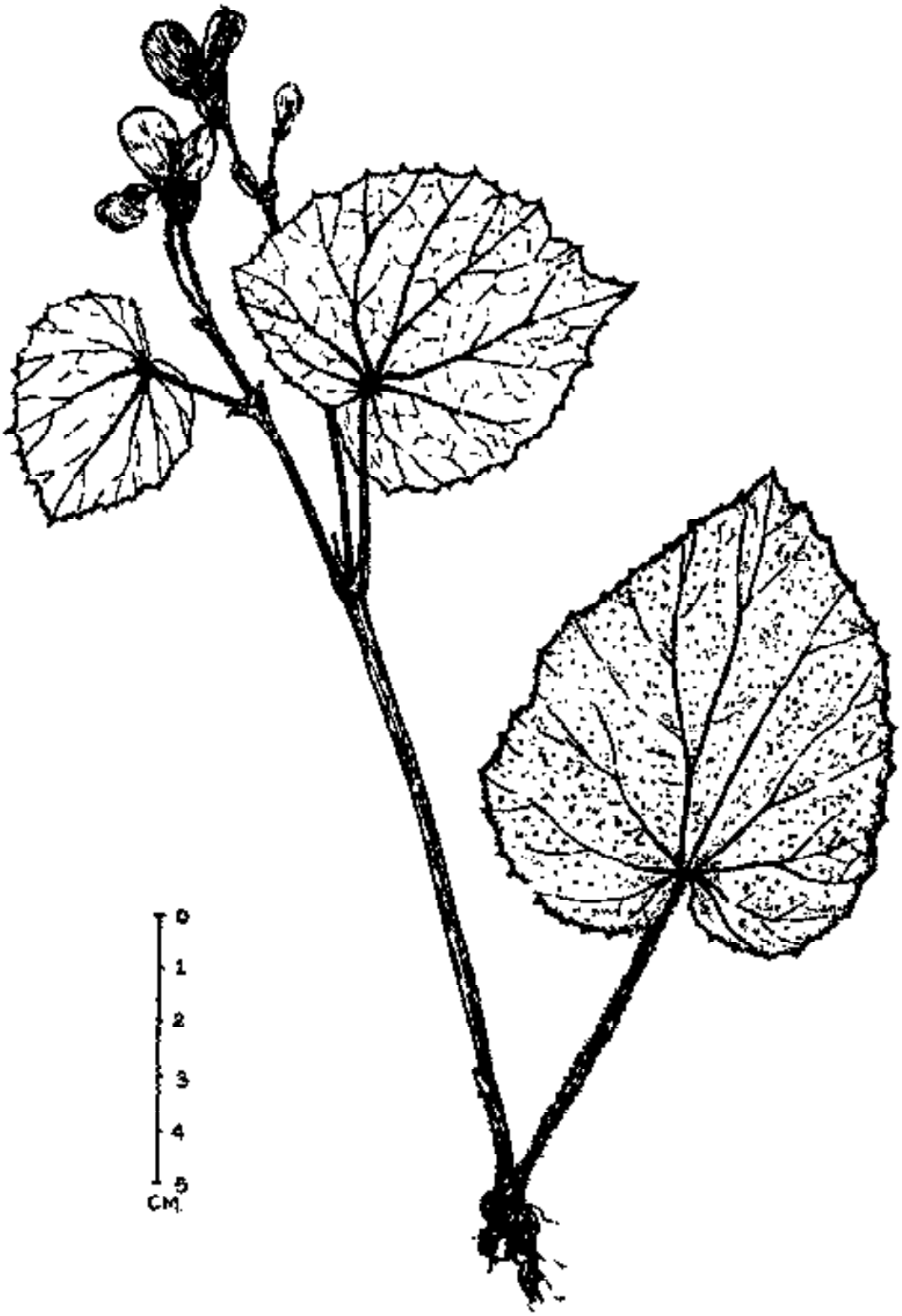
Herbs; leaves cordate–orbiculate; flowers white; fruits greenish–yellow, various in size and shape.

Cultivated throughout the district. The fruit is medicinal and also used as vegetable. The fruit shells are used for musical instruments by tribal people.

65. BEGONIACEAE

BEGONIA L.

1a. Placentae undivided; capsules 3–celled with 3 thin not very unequal wings, dehiscing by lines into 3 faces; peduncles long ... *B. concanensis* 1



Begonia concanensis A. DC.

1b. Placentae bifid; capsules 2–celled, papyraceous dehiscing by very thin faces and breaking up irregularly; peduncles short ... *B. crenata* 2

1. **Begonia concanensis** A. DC. Prodr. 15 (1): 314. 1864; C.B. Cl. in Hook. f. Fl. Brit. India 2: 653. 1879; Vartak in Ass. Threat. Pl. India (ed. Jain & Rao) 173. 1983.

Herbs with tuberous root–stocks upto 20 cm; leaves ovate–cordate, acute, serrate, glabrescent; flowers rose coloured; capsules winged; seeds ellipsoid.

Fls. & Frts. : September–October.

In sacred groves, infrequent. Karnala grove, Panvel, HMACS 3343.

2. **Begonia crenata** Dryand. in Trans. Linn. Soc. 162. t. 14. 1791; C.B. Cl. in Hook. f. Fl. Brit. India 2: 651. 1879; Cooke, Fl. Pres. Bombay 1: 584. 1958 (Repr. ed.).

Slender herbs, 8–15 cm; leaves ovate–suborbicular, crenate, apex acute, base obliquely cordate, glabrous (except nerves), 4.5–8 x 3–4 cm; flowers pinkish–white; fruits membranous, 3–winged, crowned by accrescent perianth; seeds minute, ellipsoid.

Fls. & Frts. : August–October.

In moist places, rock–crevices, hill slopes, forest under growth etc., frequent. Matheran; Neral to Matheran.

Juice of leaves after treating with cow's urine, applied on swellings etc.

66. DATISCACEAE

TETRAMELES R. Br.

Tetrameles nudiflora R. Br. in Benn. Pl. Java Rar. 79. t. 17. 1838; C.B. Cl. in Hook. f. Fl. Brit. India 2: 657. 1879; Cooke, Fl. Pres. Bombay 1: 586. 1958 (Repr. ed.). *T. grahamiana* Wight, Icon. t. 1956. 1853. *Bondsa, Ranbhend, Ugad.* (PLATE 3C)

Large, deciduous trees, 30–45 m; leaves broadly ovate, acuminate, irregularly serrate or dentate, glabrous above, hairy beneath, 10–15.2 x 8.5–13 cm; flowers yellow, many, males in pubescent panicles; females in pendulous racemes; capsules truncate, 8–ribbed, glandular.

Fls. & Frts. : February-March.

In valleys, frequent. Dahen, Mhasla; Parghat, Mahad.

67. CACTACEAE

OPUNTIA L.

Opuntia elatior Mill. Gard. Dict. (ed.8) no. 4. 1768. *O. dillenii* Grah. ex Dalz. & Gibs. Bombay Fl. 39. 1861; C.B. Cl. in Hook. f. Fl. Brit. India 2: 657. 1879. *O. nigricans* Woodrow in Rec. Bot. Surv. India 1: 89. 1895; Cooke, Fl. Pres. Bombay 1: 587. 1958 (Repr.ed.).

Much branched, straggling, succulent shrubs with jointed stem; joints leafless, spiny, ovate–oblong or obovate, glaucous–green; flowers yellow–pink, at length reddish–purple; fruits fleshy.

Fls. & Frts. : February–March.

As an escape or planted as a hedge along the cultivated fields. Bhisekhind, Roha.

Fruits are edible.

68. MOLLUGINACEAE

1a. Prostrate herbs; flowers in axillary clusters or fascicles; perianth lobes more than 2 mm long; seeds appendaged ... GLINUS 1

1b. Erect or diffuse herbs; flowers in terminal paniculate cymes; perianth lobes upto 2 mm long; seeds not appendaged ... MOLLUGO 2

1. GLINUS L.

1a. Glabrous herbs; leaves whorled, glabrous; stamens 3–4; capsules 3–4 valved, glabrous ... *G. oppositifolius* 1

1b. Stellately hairy herbs; leaves alternate, opposite or whorled, white–puboscent; stamens more than 10; capsules 5–valved, densely hairy ... *G. lotoides* 2

1. **Glinus oppositifolius** (L.) A. DC. in Bull. Herb. Boiss. Ser. 2, 1: 559. 1901. *Mollugo oppositifolia* L. Sp. Pl. 89. 1753; Cooke, Fl. Pres. Bombay 1: 593. 1958 (Repr. ed.). *M. spergula* L. Syst. (ed. 10) 881. 1759; C.B. Cl. in Hook. f. Fl. Brit. India 1: 662. 1879.

Diffuse herbs with radially spreading branches; leaves spathulate–elliptic, glabrous, 0.6–2 x 0.2–0.4 cm; flowers white; capsules ellipsoid,

enclosed in calyx lobes; seeds minute, numerous, dark brown, subreniform.

Fls. & Frts. : September–October.

On road–sides, occasional. Pen to Khopoli Road.

2. **Glinus lotoides** L. Sp. Pl. 463. 1753. *Mollugo hirta* Thunb. Prodr. Fl. Cap. 24. 1794; C.B. Cl. in Hook. f. Fl. Brit. India 2: 662. 1879; Cooke, Fl. Pres. Bombay 1: 593. 1958 (Repr. ed.). *Dasara–Sag.*

Prostrate, radially spreading herbs; leaves obovate, ovate or suborbicular, 0.5–1.5 x 0.2–1 cm; flowers whitish; capsules ovoid, enclosed in persistent calyx; seeds minute, black, tuberculate.

Fls. & Frts. : January–March.

In moist places and hilly forests, frequent. Chaul, Alibag; Karjat; Mahad; Neral to Matheran.

2. MOLLUGO L.

Mollugo pentaphylla L. Sp. Pl. 89. 1753; Cooke, Fl. Pres. Bombay 1: 594. 1958 (Repr. ed.). *M. stricta* sensu C.B. Cl. in Hook. f. Fl. Brit. India 2: 663. 1879 *pro parte. auct. non.* L. (1762).

Diffuse, dichotomously branched herbs with ribbed or angular stem; leaves radical and cauline, linear–lanceolate or oblong, glabrous, 1.1–3.6 x 0.1–0.5 cm; flowers minute, pale green to yellow in lax racemes; capsules ellipsoid; seeds many, dark brown.

Fls. & Frts. : March–October.

In moist places, river beds, hilly forests etc., frequent. Karjat; Mhasla; Neral to Matheran; Pen to Khopoli Road.

69. AIZOACEAE

SESUVIUM L.

Sesuvium portulacastrum (L.) L. Syst. (ed.10) 1058. 1759; C.B. Cl. in Hook. f. Fl. Brit. India 2: 659. 1879; Cooke, Fl. Pres. Bombay 1: 589. 1958 (Repr. ed.). *Portulaca portulacastrum* L. Sp. Pl. 446. 1753.

Fleshy, prostrate–ascending herbs; rooting at lower nodes; leaves linear–oblong or spathulate, glabrous, 1.5–4.2 x 0.4–0.8 cm; flowers pinkish–red or purple, axillary, solitary; capsules oblong, circumscissile; seeds many, minute, black, shining.

Fls. & Frts. : November–December.

Along the sea–coast, occasional. Revdanda, Alibag.

70. APIACEAE
(UMBELLIFERAE)

1a. Umbels simple ... CENTELLA 1

1b. Umbels compound:

2a. Fruits strongly dorsally flattened; mericarps winged on margins:

3a. Plants hairy; petals usually white, radiant; ovary puboscent :

4a. Bracts linear - lanceolate; bracteoles 5; commissure 6-vittate ... PIMPINELLA 2

4b. Bracts broadly ovate; bracteoles 3; commisure 2 - vittate ... HERACLEUM 3

3b. Plants glabrous; petals usually yellow, not radiant; ovary glabrous ... PEUCEDANUM 4

2b. fruits laterally flattened mericarps not winged on margins :

5a. Roots tuberous ... POLYZYGUS 5

5b. Roots fusiform, not tuboous :

6a. Leaves simple or pinnate; stem and leaves hairy; furrows on mericarp 2-3 vittate ... PIMPINELLA 6

6b. Leaves pinnate or decompound; stem and leaves glabrous; furrows on margins 1-vittate ... TRACHYSPERMUM 7

1. CENTELLA L.

Centella asiatica (L.) Urban in Mart. & Eichl. Fl. Bras. 11. 287. t. 78. f. 1. 1879. *Hydrocotyle asiatica* L. Sp. Pl. 234. 1753; Wight, Icon. t. 565. 1842; C. B. Cl. in Hook. f. Fl. Brit. India 2: 669. 1879; Cooke, Fl. Pres. Bombay 1: 598. 1958 (Repr. ed.). *Brahmi.*

Slender, radially creeping herbs, rooting at nodes; leaves suborbicular–reniform, glabrous, 1.8–6.7 x 2–6.5 cm; flowers pink–purplish or white in axillary fasciculate umbels; fruits ovoid–orbicular, wrinkled, primary and secondary ridges distinct.

Fls. & Frts. : Almost throughout the year.

In moist, shady places, frequent. Matheran; Roha.

The plant is used medicinally for skin diseases.

2. PINDA Mukh. & Const.

Pinda concanensis (Dalz.) Mukh. & Const. in Kew Bull. 41 (1) : 226. f. 1. 1986. *Heracleum concanense* Dalz. in Hook J. Bot. 2: 260. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 716. 1879; Cooke, Fl. Pres. Bombay 1: 608. 1958 (Repr. ed.).

Erect, hairy herbs with fusiform roots, 40–60 cm; leaves lower 2–ternate, upper reduced to sheaths, segments ovate, acute, cuneate, pubescent, 1–3.5 x 0.5–1.2 cm; flowers white or lilac in terminal, compound umbels; fruits ellipsoid, flattened, ribbed, glabrous.

Fls. & Frts. : July–October.

In hilly forests, infrequent. Matheran; *Irani* 4267–8, 433, 5102 **(BLAT).**

3. HERACLEUM L.

Heracleum pinda Dalz. & Gibs. Bombay Fl. 107. 1861; C.B. Cl. in Hook. f. Fl. Brit. India 2: 717. 1879; Cooke, Fl. Pres. Bombay 1: 608. 1958 (Repr. ed.). *Pinda.*

Erect, hairy herbs with fusiform, tuberous roots; leaves radical, 2–pinnate, ovate, cuneate, serrate, pubescent; flowers white in terminal umbels; fruits with 6 vittae on the back and two on the commisure.

Fls. & Frts. : July–October.

In hilly forests, infrquent. Matheran; Raigad.

4. PEUCEDANUM L.

1a. Leaflets with entire margins; fruits with commisural 2–vittae ... *P. dhana* 1

1b. Leaflets with serrate margins; fruits with commissural 4–vittae ... *P. grande* 2

1. **Peucedanum dhana** Wall. ex C.B. Cl. in Hook. f. Fl. Brit. India 2 : 709. 1879; Cooke, Fl. Pres. Bombay 1: 605. 1958 (Repr.ed.). *Koland.*

Glabrous herbs with fusiform roots, 15–20 cm; leaves radical, pinnate; leaflets 3–5 or more, commonly 2–3 lobed; the lobes obovate–oblong, mucronate; flowers yellow in umbels; fruits ellipsoid.

Fls. & Frts. : July–August.

In moist places, infrequent. Near Pen.

Pinda concanensis (Dalz.) Mukh. & Constance

The roots are said to be edible and has the taste and odour of a carrot.

2. **Peucedanum grande** (Dalz. & Gibs.) C.B. Cl. in Hook. f. Fl. Brit. India 2: 710. 1879; Cooke, Fl. Pres. Bombay 1 : 605. 1958 (Repr. ed.). *Pastinaca grandis* Dalz. & Gibs. Bombay Fl. 107. 1861.

Aromatic, well branched, succulent herbs with tuberous roots, upto 90 cm; leaves radical and cauline, 1–2 pinnate; each pinnae 3–5 foliolate; leaflets ovate–oblong, glabrous, 4.5–5 x 3–3.6 cm; flowers yellow in gregarious umbels; fruits narrowly winged with prominent ridges.

Fls. & Frts. : August–October.

In hilly forests, frequent. Karnala Fort; Matheran; Pen.

The roots are used for stomach disorders and rheumatic pains while fruit–paste is used for skin diseases.

5. Polyzygus Dalz.

Polyzygus tuberosus Dalz. ex Walp. Ann. Bot. Syst. 2: 715.1852; C. B. Cl. in Hool. f. Fl. Brit. India 2: 698. 1879; Cooke, Fl. Pres. Bombay 1: 603. 1958 (Repr. ed.); Mukh. in Kew Bull. 41 (1): 228. f. 2. 1986; Singh & Kulkarni in Red data book Ind. Pl. 3: 21. 1990. *Heracleum concanense* var. *stocksii* C. B. Cl. *op. cit.* 716.

Herbs, 20–50 cm high; stm erect, sparingly branched, angular with tuberous roots; leaves decompound, triternate, triagular–ovate or deltoid, hispidulous, ultimate leaflets pinnatisect; leaflets lanceolate–ovate, 1–4 x 0.5–3 cm; flowers many, white in terminal and axillary, compound umbels; fruits ellipsoid–ovoid, dorsally compressed, many–ribbed, shining

Fls. & frts. : June–October.

In hilly regions, rare. Matheran.

6. Pimpinella L.

1a. Fruits glabrous ... *P. heyneana* 1

1b. Fruits pilose, papillose or scabrid:

2a. Leaflets usually three, sharply, but regularly serrate; umbels large, upto 50 cm; flowers unisexual, monoecious ... *P. wallichiana* 2

2b. Leaflets 3 or more, sharply but irregularly serrate; umbels smaller, upto 20 cm; flowers bisexual ... *P. adscendens* 2

1. **Pimpinella heyneana** (Wall. ex DC.) Kurz in J. As. Soc. Bengal 46: 115. 1877; C.B. Cl. in Hook. f. Fl. Brit. India 2: 684. 1879; Cooke, Fl. Pres. Bombay 1: 601. 1958 (Repr. ed.). *Helosciadium heyneanum* Wall. ex DC. Prodr. 4: 106. 1830.

Herbs with fusiform roots, 40–90 cm; leaves 3–foliolate; leaflets entire or lobed; each lobe ovate–lanceolate, acute, sharply serrate, glabrescent, 1.7–4.5 x 0.8–1.8 cm; flowers white in 4–12 flowered umbels; fruits subglobose, glabrous.

Fls. & Frts. : August–October.

In hilly forests, frequent. Kalasgiri hill, Roha; Matheran.

2. **Pimpinella wallichiana** (Miq.) Gandhi in Saldanha & Nicols. Fl. Hassan 417. 1976. *Holosciarum wallichianum* Miq. Bot. Zeit. 7: 775. 1849. *Pimpinella monoica* Dalz. in Hook. J. Bot. 3: 212. 1851; C.B. Cl. in Hook. f. Fl. Brit. India 2: 687. 1879; Cooke, Fl. Pres. Bombay 1: 602. 1958 (Repr. ed.).

Erect, branched herbs with hollow, glabrous stems; leaves pinnately 3–foliolate; leaflets ovate–lanceolate, 2.6–8.5 x 1.8–4.3 cm; flowers creamy–white; fruits ovoid–subglobose.

Fls.& Frts. : October–November.

In hilly forests, infrequent. Mahad ghat.

3. **Pimpinella adscendens** Dalz. in Hook. J. Bot. 2: 261. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 2: 689. 1879; Cooke, Fl. Pres. Bombay 1: 603. 1958 (Repr. ed.).

Prostrately spreading or suberect herbs, 15–45 cm; leaves radical, pinnate; leaflets 4–8 pairs, round–ovate or obovate, 1.2–1.8 cm; cauline leaves few, upper ones pinnatisect; flowers white in terminal, compound umbels; fruits ovoid.

Fls. & Frts. : January–March.

In moist places and river banks, frequent. Chavani, Roha; Dhamni forest, Pen.

7. TRACHYSPERMUM Link *nom. cons.*

Trachyspermum stictocarpum (C.B. Cl.) Wolff, Pflanzenr. 43.

89. 1927 (*'Trachispermum'*) *emend* R.S. Rao & Hemadri in J. Bombay nat. Hist. Soc. 67(2): 356. 1970. *Carum stictocarpum* C.B. Cl. in Hook. f. Fl. Brit. India 2: 681. 1879; Cooke, Fl. Pres. Bombay 1: 600. 1958 (Repr.ed.). *Ran–Onva.*

Erect, branched herb,10–30 cm; roots fusiform; lower leaves bipinnate; leaflets linear–lanceolate, glabrescent; flowers white; fruits ovoid, brown.

Fls. & Frts. : August–February.

In hilly forests, frequent. Mangaon; Matheran.

71. ALANGIACEAE

ALANGIUM Lam. *nom. cons.*

Alangium salvifolium (L.f.) Wang. in Pflanzenr. 41 : 9. f. 2 A–E. 1910; Mukerjee in Bull. Bot. Surv. India 10 : 330. 1968. *Grewia salvifolia* L. f. Suppl. 409. 1781. *Alangium lamarckii* Thw. Enum. Pl. Zeyl. 133. 1859; C.B. Cl. in Hook. f. Fl. Brit. India 2: 741. 1879; Cooke, Fl. Pres. Bombay 2: 1. 1958 (Repr. ed.). *A. decapetalum* Lam. Encycl. 1: 174. 1783; Wight, Icon. t. 194. 1839. *Ankul, Ansaroli.*

Thorny trees, 3–10 m; bark rough, ash–coloured; leaves variable, elliptic–lanceolate, elliptic–oblong or lanceolate, pubescent on nerves beneath; flowers greenish–white, fascicled, axillary or on old wood; fruits ovoid–spherical, purple–red.

Fls. & Frts. : February–April.

In coastal region, frequent. Elephanta island.

The fruits are edible and wood is used as fuel.

72. RUBIACEAE

1a. Plants armed :

2a. Ovules more than 2 in each cell :

3a. Leaves sessile, borne along the branches; ovary 1–celled ... GARDENIA 1

3b. Leaves petiolate, fascicled at ends of branches; ovary 2–celled ... CATUNAREGAM 2

2b. Ovules solitary in each cell :

4a. Flowers and fruits in axillary, peduncled umb els; ovary 2–celled ... CANTHIUM 3

4b. Flowers and fruits not as above; ovary 3–5–celled ... MEYNA 4

1b. Plants unarmed :

5a. Flowers crowded in globose heads:

6a. Ovules more than 2 in each cell :

7a. Flowers white ... RANDIA 5

7b. Flowers yellow :

8a. Calyx limb 5–lobed; stigma not mitriform:

9a. Stigma clavate; stipules large, oblong, obtuse ... HALDINA 6

9b. Stigma fusiform; stipules small, lanceolate, acute ... ANTHOCEPHALUS 7

8b. Calyx limb entire, truncate; stigma mitriform ... MITRAGYNA 8

6b. Ovule one in each cell ... MORINDA 9

5b. Flowers in pendent, spicate panicles or solitary, axillary or corymbose cymes :

10a. Flowers in pendent spicate panicles; seeds winged ... HYMENODICTYON 10

10b. Flowers solitary, axillary or in corymbose cymes :

11a. Ovules more than 2 in each cell:

12a. Fruits a fleshy berries ... MUSSAENDA 11

12b. Fruits capsular :

13a. Creeping herbs; corolla with a tooth on each side; fruits indehiscent ... DENTELLA 12

13b. Erect or diffuse herbs; corolla without any tooth; fruits dehiscent :

14a. Seeds 2–few per locule, not angular ... NEANOTIS 13

14b. Seeds many per locule, angular ... OLDENLANDIA 14

11b. Ovules solitary in each cell:

15a. Herbs :

16a. Fruit of 2 cocci, one or both dehiscent septicidally ... BORRERIA 15

16b. Fruit of 2 cocci, indehiscent ... HYDROPHYLAX 16

15b. Trees or shrubs:

17a. Corolla lobes twisted; ovary 2–celled; fruit globose drupe with 1–2 seeded pyrenes:

18a. Exserted portion of style shorter than corolla lobes, 2–branched ... IXORA 17

18b. Exserted portion of style longer than corolla lobes, entire ... PAVETTA 18

17b. Corolla lobes valvate; ovary 3–5–celled; fruit a capsule ... SPERMADICTYON 19

1. GARDENIA L.

1a. Leaves sessile; calyx teeth minute; placentas 4–5 ... *G. gummifera* 1

1b. Leaves petioled; calyx teeth long, subulate, erect; placentas 2 ... *G. resinifera* 2

1. **Gardenia gummifera** L. f. Suppl. 164. 1781; Wight, Icon. t. 576. 1842; Hook. f. Fl. Brit. India 3: 116. 1880; Cooke, Fl. Pres. Bombay 2: 31. 1958 (Repr. ed.); Vartak in Ass. Threat. Pl. India (Ed. Jain & Rao) 174. 1983. *Dikemali, Kamarri.*

Shrubs, upto 150 cm; leaves elliptic–oblong or obovate–oblong, glabrous, 4–7 x 1.8–2.5 cm; flowers white, subsessile, 1–3 together; fruits oblong–ellipsoid, beaked.

Fls. & Frts. : August–September.

In hilly forests, infrequent. Karnala Bird Sanctuary.

2. **Gardenia resinifera** Roth, Nov. Pl. Sp. 150. 1821. *G. lucida* Roxb. Fl. Ind. 2: 553. 1824; Wight, Icon. t. 575. 1842; Hook. f. Fl. Brit. India 3: 115. 1880; Cooke, Fl. Pres. Bombay 2: 30. 1958 (Repr. ed.). *Dikemali.*

Shrubs or trees, upto 2–3 m; bark smooth, grey; leaves elliptic–oblong, glabrous, 8.5–21.2 x 4.8–9.4 cm; flowers white, fragrant, solitary, axillary; fruits ellipsoid, marked with longitudinal lines and crowned by persistent calyx limb.

Fls. & Frts. : March–September.

In hilly deciduous forests, frequent. Elephanta island; Karnala fort; Shriganchari, Alibag.

The species is a source of 'Dikemali' resin much used in medicines by natives.

2. CATUNAREGAM Adans. ex Wolf

1a. Branches terete; leaves elliptic or elliptic–obovate; flowers 1.5–2 cm across; corolla pubescent outside ... *C. spinosa* 1

1b. Branches subquadrangular or compressed; leaves obovate or obovate–oblong; flowers 4 cm across; corolla glabrous outside ... *C. nilotica* 2

1. **Catunaregam spinosa** (Thunb.) Tirven. in Taxon 27: 515. 1978. *Xeromphis spinosa* (Thunb.) keay in Bull. Jard. Bot. Brux. 28: 37. 1958. *Gardenia spinosa* Thunb. Diss. Gard. 7: 16. t. 2. f. 4. 1780. *Randia dumetorum* (Retz.) Lam. Encycl. 2: 227. 1794; Wight, Icon. t. 580. 1842; Hook. f. Fl. Brit. India 3: 110. 1880; Cooke, Fl. Pres. Bombay 2: 27. 1958 (Repr. ed.). *Gardenia dumetorum* Retz. Obs. Bot. 2: 14. 1781. *Gehela, Gel.*

Large, shrubs or small trees with rough bark; leaves fascicled at ends of branches, 2.7–7.3 x 1–3 cm; flowers creamy–white to yellow, fragrant; fruits ovoid–globose, woody, ribbed; seeds many, compressed, angular.

Fls. & Frts. : February–August.

In deciduous forests, frequent. Mangaon; Matheran; Mhasla; Murud.

Mature fruits are roasted and eaten. They are also used medicinally against body–ache and its paste applied on pimples. Fresh fruits used as fish–poison. Roots yield a dye and wood is used as fuel.

2. **Catunaregam nilotica** (Stapf) Tirven. in Taxon 27: 515; 1978. *Randia nilotica* Stapf in J. Linn. Soc. 37: 519. 1906. *Xeromphis uliginosa* (Retz.) Mahesh. in Bull. Bot. Surv. India 3(1): 92. 1961. *Gardenia uliginosa* Retz. Obs. Bot. 2: 14. 1781. *Randia uliginosa* DC. Prodr. 4: 386. 1830; Hook. f. Fl. Brit. India 3: 110. 1880; Cooke, Fl. Pres. Bombay 2: 27. 1958 (Repr. ed.). *Pandri.*

Small trees with 1–2 short, decussate pairs of spines and crooked stems upto 6 m; leaves obovate–oblong, glabrous, 9.5–20.2 x 3–6 cm; flowers white at length yellow, solitary or in 2–3, fascicled; fruits ovoid, yellowish.

Fls. & Frts. : September–October.

In hilly deciduous forests, infrequent. Varandh ghat.

3. CANTHIUM Lam.

Canthium dicoccum (Gaertn.) Teys. & Binn. Cat. Hort. Bog. 113. 1866. *Psydrax dicoccos* Gaertn. Fruct 1: 125. t. 26. f. 2. 1788. *Canthium didymum* Gaertn. f. Fruct. 3: 94. t. 196. 1806; Hook. f. Fl. Brit. India 3 : 132. 1880. *Plectronia wightii* T. Cooke, Fl. Pres. Bombay 1 : 606. 1903 (2: 34. 1958. Repr.ed.). *Arsul, Tupa.*

Moderate sized, unarmed trees; leaves elliptic–lanceolate, acute–acuminate, glabrous, 8.2–15 x 3.2–3.8 cm; flowers white in umbels; fruits obovoid, ellipsoid, dark green to black.

Fls.& Frts. : November–February.

In semievergreen forests, frequent. Matheran.

The plant is used for fencing. The ripe fruits are edible.

4. MEYNA Roxb. ex Link

Meyna spinosa Roxb. ex Link Jahrb. Gewachsk. 3: 32. 1820; Hara & Gould in En. Fl. Pl. Nepal 2: 204. 1979. *Vangueria spinosa* Roxb. Fl. Ind. 2: 172. 1824; Hook. f. Fl. Brit. India 3: 136. 1880; Cooke, Fl. Pres. Bombay 2: 36. 1958 (Repr. ed.). *Alu.*

Large shrubs or small trees with long spines; leaves ovate–elliptic or oblong, acuminate, glabrous, 3–11 x 2–6.5 cm; flowers greenish–white to yellow in globose heads; fruits drupaceous, fleshy, obovoid, distinctly ribbed.

Fls.& Frts. : January–May.

In deciduous forests, frequent. Matheran; Neral; Pen; Sanegaon, Roha; Shrivardhan; Sudhagad.

5. RANDIA L.

Randia rugulosa (Thw.) Hook. f. Fl. Brit. India 3: 113. 1880; Cooke, Fl. Pres. Bombay 2: 28. 1958 (Repr. ed.). *Griffithia rugulosa* Thw. Enum. Pl. Zeyl. 159. 1859.

Large, scandent shrubs with pendulous branches; leaves elliptic–oblong, acuminate, glabrous, 5–10.5 x 2.5–6 cm; flowers white, fragrant in leaf opposed, paniculate cymes; fruits globose.

Fls.& Frts. : January–March.

In hilly forest, infrequent. Near Simpson's tank and Chowk plateau, Matheran.

6. HALDINA Ridsd.

Haldina cordifolia (Roxb.) Ridsd. in Blumea 24: 361. 1978. *Nauclea cordifolia* Roxb. Pl. Cor. t. 53. 1795. *Adina cordifolia* (Roxb.) Hook. f. ex Brandis, For. Fl. 263. t. 33. 1874; Hook. f. Fl. Brit. India 3: 24. 1880; Cooke, Fl. Pres. Bombay 2: 7. 1958 (Repr. ed.). *Hed, Hedu.*

Trees, 10–20 m; leaves ovate–suborbicular, base cordate, appressed pubescent beneath, 4.2–18x 4–17.8 cm; flowers yellow in axillary, globose heads; capsules obconical, pubescent; seeds brown, oblong, winged.

Fls. & Frts. : May–September.

In deciduous forests, frequent. Hatvane near Pen; Karnala fort; Matheran; Tada forest, Mangaon.

The bark is used by local people for stomach disorders and leaf juice for snake bite. The timber is useful for furniture and agricultural implements.

7. ANTHOCEPHALUS A. Rich.

Anthocephalus cadamba (Roxb.) Miq. Fl. Ind. Bot. 2: 135. 1856. *Nauclea cadamba* Roxb. Fl. Ind. 2: 121. 1824. *Anthocephalus indicus* A. Rich in Mem. Soc. Hist. Nat. Paris 5 : 238. 1834; Hook. f. Fl. Brit. India 3: 23. 1880; Cooke, Fl. Pres. Bombay 2: 6. 1958 (Repr. ed.). *Kadam, Nlv.*

Large trees with horizontal branches; leaves elliptic–oblong, acuminate, pubescent beneath 14–20.5 x 6.6–10.5 cm; flowers fragrant in solitary, terminal, globose heads; fruits green to yellow.

Fls. & Frts. : October–February.

In deciduous forests, frequent. Dasgaon; Mhasla; Poladpur; Sav, Mahad.

Leaves are used as fodder. The wood is used for tea–chests and match flints.

8. MITRAGYNA Korth, *nom. cons.*

Mitragyna parvifolia (Roxb.) Korth. Obs. Naucl. Ind. 19. 1839; Cooke, Fl. Pres. Bombay 2: 8. 1958 (Repr. ed.). *Nauclea parvifolia* Roxb. Pl. Cor. t. 52. 1796. *Stephegyne parvifolia* Korth. Verh. Nat. Gesch. Bot. 161. 1840; Hook. f. Fl. Brit. India 3: 25. 1880. *Kadam, Kalam.*

Trees with grey–blackish bark; leaves obovate, elliptic– oblong, glabrous at the end of branches, 4–12.4 x 2–5.5 cm; flowers greenish–yellow or white–orange, fragrant in terminal heads; fruits oblong–cuneate, ribbed.

Fls. & Frts. : May–October.

In deciduous forests, frequent. Mirya dongar, Pen; Neral–Matheran; Wan–kalgar forest, Shrivardhan.

9. MORINDA L.

Morinda pubescens J. E. Smith in Rees, Cyclop. 24: n. 3. 1813; Verdc. in Kew Bull. 37: 543. 1983. *M. tomentosa* Heyne ex Roth, Nov. Pl. Sp. 147. 1821. *M. tinctoria* Roxb. var. *tomentosa* Hook. f. Fl. Brit. India 3: 156. 1880; Cooke, Fl. Pres. Bombay 2: 43. 1958 (Repr. ed.).

Medium sized trees; leaves elliptic–oblong, obovate, tomentose, 5.8–20.6 x 2.7–8.9 cm; flowers white in globose heads; fruits globose or ellipsoid, bright glaucous–green, fleshy.

Fls. & Frts. : March–October.

In dry deciduous forests, frequent. Bedesgaon, Neral; Dasgaon; Mahad to Nadgaon; Sanegaon, Roha.

Bark yields a dye. The juice of the leaves is used in intestinal disorders.

10. HYMENODICTYON Wall. *nom. cons.*

1a. Flowers pedicelled; capsules on decurved peduncles; seeds broadly winged, 10 –13 mm long ... *H. orixense* 1

1b. Flowers sessile; capsules on short, erect, pedicels; seeds narrowly winged, 5 – 8 mm long ... *H. obovatum* 2

1. **Hymenodictyon orixense** (Roxb.) Mabb. in Taxon 31: 66. 1982. *Cinchona orixensis* Roxb. Bot. Descr. Swietenia 21. 1793 *et* in Med Facts. Obs. 6: 152. 1795. *Hymenodictyon excelsum* (Roxb.) Wall. in Roxb. Fl. Ind. 2: 149. 1824; Wight, Icon. t. 79. 1838; Hook. f. Fl. Brit. India 3: 35. 1880; Cooke, Fl. Pres. Bombay 2: 9. 1958 (Repr. ed.). *Cinchona excelsa* Roxb. Pl. Cor. t. 106. 1799.

Deciduous trees, 9–12 m; leaves ovate–elliptic, pubescent, 4.5–7 x 2.4–4.3 cm; flowers greenish–white in terminal and axillary panicles; fruits ellipsoid, brown, yellow spotted; seeds brown, many, winged.

Fls. & Frts. : February–August.

Near sea–shores, infrequent. Elephanta island; Matheran.

2. **Hymenodictyon obovatum** Wall. in Roxb. Fl. Ind. 2: 153. 1824; Wight, Icon. t. 1159. 1846; Hook. f. Fl. Brit. India 3: 36. 1880; Cooke, Fl. Pres. Bombay 2: 10. 1958 (Repr. ed.). *Kadva–sirid.*

Trees, 10–15 m; leaves elliptic–obovate, acuminate, pubescent beneath, 4.6–10.5 x 2.2–5.4 cm; flowers greenish–white in terminal, paniculate spikes; capsules ellipsoid.

Fls.& Frts. : July–September.

In moist deciduous forests, frequent. Matheran.

11. MUSSAENDA L.

Mussaenda frondosa L. Sp. Pl. 177. 1753; Roxb. Fl. Ind. 2: 227. 1824; Hook. f. Fl. Brit. India 3: 89. 1880; Cooke, Fl. Pres. Bombay 2: 24. 1958 (Repr. ed.); Jayaweera in J. Arnold Arb. 44: 236. 1963.

Rambling shrubs with divaricate, flexuose branches; leaves ovate–elliptic, acuminate, pubescent on nerves beneath, 4–13.9 x 2.7–6.7 cm; flowers orange–red to yellow in terminal cymes; one of the calyx segment enlarged upto 10 x 6.2 cm, leaf–like, pale yellow to creamy–white, persistent; fruits subglobose, glabrous.

Fls.& Frts. : June–October.

In hilly forests, frequent. Dahen; Matheran; Parghat, Mahs Songar reserves forests.

The roots, bark, stem and flowers are said to be useful for asthma, cough etc.

12. DENTELLA Forst.

Dentella repens (L.) J. R. & G. Forst. Charact. 26. t. 13. 1776; Hook. f. Fl. Brit. India 3: 42 1880; Cooke, Fl. Pres. Bombay 2: 12. 1958 (Repr. ed.); Subr. & Sharma in Bull. Bot. Surv. India 10: 386. ff. 1–6. 1968. *Oldenlandia repens* L. Mant. Pl. 1: 40. 1767.

Much branched, prostrate herbs; leaves lanceolate, subglabrous, 2–11 mm; flowers white, minute; fruits densely villose, crowned by persistent calyx limb.

Fls. & Frts. : October–February.

In moist places, frequent. Dasgaon; Karjat; Mahad; Neral; on way to Panvel.

13. NEANOTIS W. H. Lewis

1a. Flowers in corymbose cymes; capsules not in heads :

2a. Perennial herbs with terete stems; capsules not much exserted; calyx teeth large, lanceolate ... *N. lancifolia* 1

2b. Annual herbs with quadrangular stems; capsules much protruded, globose; calyx teeth small:

3a. Seeds cup-shaped; leaves slightly hairy ... *N. rheedei* 2

3b. Seeds flat; leaves glabrous ... *N. calycina* 3

1b. Flowers in clustered cymes; capsules in clusters :

4a. Leaves ovate-lanceolate, branchlets hispid; calyx teeth bristle tipped ... *N. montholonii* 4

4b. Leaves linear; branchlets glabrous; calyx teeth not bristle tipped ... *N. hohenackerii* 5

1. **Neanotis lancifolia** (Hook. f.) Lewis in Ann Miss. Bot. Gard. 53: 39. 1966. *Hedyotas lancifolia* Dalz. in Hook. J. Bot. 2 : 135. 1850 *non* Schum. (1827). *Anotis lancifolia* Hook f. Fl. Brit. India 3:73. 1880. *Neanotis concanensis* Daniel & Vajravelu in J. Econ. Tax. Bot. 3: 675. 1982

Erect, glabrous herbs, 50–80 cm; leaves ovate–lanceolate, bright green and pubescent above, hairy on nerves beneath, 2.4–7 x 1.3–2.4 cm; flowers purple in terminal and subterminal, corymbose cymes; capsules 2–lobed at apex; seeds 4–6, ellipsoid, pitted, black, excavated ventrally.

Fls. & Frts. : September–October.

As an undergrowth in hilly forests, frequent. Matheran.

2. **Neanotis rheedei** (Wall. ex Wight & Arn.) Lewis in Ann. Miss. Bot. Gard. 53: 40. 1966. *Hedyotis rheedei* Wall. ex Wight & Arn. Prodr. 409. 1834. *Anotis rheedei* (Wall. ex Wight & Arn.) Hook. f. Fl. Brit. India 3: 73. 1880; Cooke, Fl. Pres. Bombay 2: 21. 1958 (Repr. ed.).

Slender, erect herbs with tetragonous stems; leaves lanceolate–ovate, dark green, sparsely hairy, 1.4–6.5 x 0.7 –2.8 cm; flowers small, dark green, sparsely hairy, 1.4–6.5 x 0.7–2.8 cm; flowers small, pinkish, few in axillary and terminal cymes; seeds 4–12, ventrally excavated, reticulately veined.

Fls. & Frts. : July–September.

In moist places in plains and hilly forests, frequent. Matheran; Pen; Roha.

3. **Neanotis calycina** (Wall. ex Hook. f.) Lewis in Ann. Miss. Bot. Gard. 53: 37. 1966. *Anotis calycina* Wall. ex Hook. f. Fl. Brit. India 3: 73. 1880.

Erect, glabrous or sparsely hairy herbs, 20–40 cm; leaves ovate–lanceolate, 1.3–8 x 0.6–1.5 cm; flowers pinkish to white; capsules broader than long; seeds many, reticulate with a shallow cavity.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran; on way to Raigad.

4. **Neanotis montholonii** (Hook. f.) Lewis in Ann. Miss. Bot. Gard. 53: 39. 1966. *Anotis montholonii* Hook. f. Fl. Brit. India 3: 73. 1880; Cooke, Fl. Pres. Bombay 2 : 22. 1958 (Repr. ed.).

Erect, sparingly branched herbs, 30–60 cm; leaves opposite, ovate–lanceolate, hairy, 3–6.5 x 1.1–2.4 cm; flowers pinkish–purple in terminal and axillary cymes; corolla funnel shaped, tube longer than lobes; capsules didymous, pubescent; seeds globose, pitted.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran; on way to Raigad.

5. **Neanotis hohenackerii** Daniel & Vajravelu in J. Econ. Tax. Bot. 3: 675. 1982. *N. foetida* (Hook. f.) Lewis in Ann. Misso. Bot. Gard. 53: 38. 1966. *Anotis foetida* (Dalz.) Hook. f. Fl. Brit. India 3: 74. 1880; Cooke, Fl. Pres. Bombay 2: 22. 1958 (Repr. ed.).

Erect, glabrous herbs, 5–20 cm; leaves linear, minutely hairy above, 1.2–2.6 x 0.2–0.4 cm; flowers pinkish–purple to white in compact, terminal cymes; capsules didymous, globose, sessile; seeds few, ellipsoid, punctate, ventrally grooved.

Fls. & Frts. : September–November.

On plateau in rocky habitat and among grasses in open forests, frequent. Jummapatti, Matheran; Mangaon; Mhasla.

14. OLDENLANDIA L.

1a. Calyx tube shorter than calyx teeth; corolla included in the calyx; fruiting calyx equalling the capsules ... *O. maheshwarii* 1

1b. Calyx tube as long as or longer than calyx teeth; corolla exserted; fruiting calyx shorter than capsule :

2a. Capsules terete; seeds minute, angular, testa reticulate:

3a. Leaves linear; bases of calyx teeth not touching in the fruit:

4a. Top of the capsule flat ... *O. corymbosa* 2

4b. Top of the capsule rounded, protruded ... *O. herbacea* 3

3b. Leaves elliptic; bases of calyx teeth touching in the fruit ... *O. pumila* 4

2b. Capsules 4–angled or winged; seeds scarcely angled, testa pitted ... *O. biflora* 5

1. **Oldenlandia maheshwarii** Sant. & Merchant in J. Ind. Bot. Soc. 42: 213. 1963.

Small, erect herbs, 4–8 cm; leaves linear–lanceolate, 0.8–1.5 cm; flowers white, solitary, axillary or terminal, pedicellate; capsules globose.

Fls. & Frts. : September–October.

In open rocky plateau among grasses, infrequent. Garbat point, Matheran.

2. **Oldenlandia corymbosa** L. Sp. Pl. 119. 1753; Hook. f. Fl. Brit. India 3: 64. 1880; Cooke, Fl. Pres. Bombay 2: 15. 1958 (Repr. ed.). *Hedyotis corymbosa* (L.) Lam. Encycl. 1 : 272. 1792; R. S. Rao & Hemadri in Indian Forester 99 : 375. 1973.

Erect or diffuse herbs; leaves linear, glabrous, 1–2.3 cm; flowers white in umbels; capsules globose, didymous, glabrous; seeds minute, angular, pale to dark brown.

Fls. & Frts. : September–February.

A weed among grasses along road–sides and in moist places, fairly frequent. Alibag; Dasgaon; Dharmtar Creek on way to Murud; Panvel; Roha.

3. **Oldenlandia herbacea** (L.) Roxb. Fl. Ind. 1: 423. 1820; Cooke, Fl. Pres. Bombay 2: 16. 1958 (Repr. ed.). *Hedyotis herbacea* L. Sp. Pl. 102. 1753; R. S. Rao & Hemadri in Indian Forester 99: 376. 1973. *Oldenlandia heynei* G. Don, Gen. Syst. 3: 531. 1834; Hook. f. Fl. Brit. India 3: 65. 1880.

Erect, slender, profusely branched herbs, 10–40 cm; leaves linear–lanceolate, glabrous, 1.1–3.8 x 0.3–0.5 cm; flowers white, solitary or binate on long, filiform peduncles or paniculate cymes; capsules subglobose, glabrous; seeds many, ellipsoid.

Fls. & Frts. : March–October.

Among grasses along road–sides and in wet places, frequent. Borgaon to Velam fata, Karjat; Matheran; Mirya dongar near Pen; Savitri river bank, Mahad to Nadgaon.

4. **Oldenlandia pumila** (L.f.) DC. Prodr. 4: 425. 1830. *Hedyotis pumila* L. f. Suppl. 119. 1781; R. S. Rao & Hemadri in Indian Forester 99: 376. 1973. *Oldenlandia crystallina* Roxb. Fl. Ind. 1: 422. 1820; Hook. f. Fl. Brit. India 3: 65. 1880; Cooke, Fl. Pres. Bombay 2: 16. 1958 (Repr. ed.).

Much branched, prostrate or diffuse herbs; leaves elliptic, or elliptic–lanceolate, 6–15 x 2–3 mm; flowers greenish–white, axillary, solitary or in pairs, pedicellate; capsules obovoid–pyriform, glabrous; seeds many, minute, brownish.

Fls. & Frts. : September–October.

Near sea shores, frequent. Kolaba fort, Alibag.

5. **Oldenlandia biflora** L. Sp. Pl. 119. 1753; Hook. f. Fl. Brit. India 3: 70. 1880; Kothari & Moorthy in J. Bombay nat. Hist. Soc. 80: 260. 1983. *Hedyotis biflora* (L.) Lam. Encycl. 1: 272. 1792. *Oldenlandia paniculata* L. Sp. Pl. (ed. 2) 1667. 1763; Hook. f. *op. cit.* 69.

Prostrately spreading, branched, succulent herbs; leaves elliptic–oblong or oblanceolate–cuneate, glabrous, 1–4 x 0.5–1.3 cm; flowers white; capsules green, included; seeds many, brownish–black, pitted.

Fls. & Frts. : September–October.

On moist moss–covered rocks near sea–shores, rare. Murud 147855.

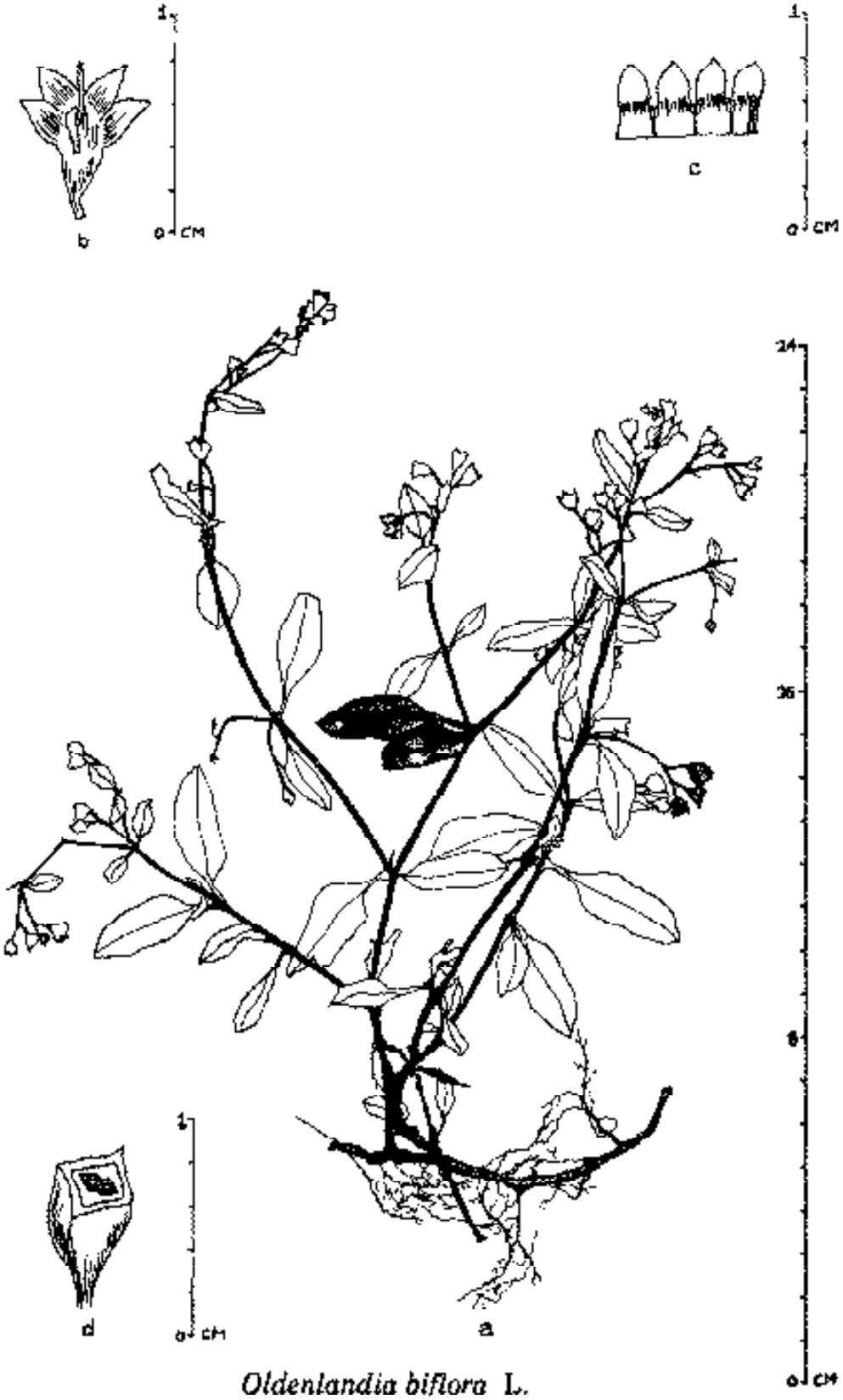
15. BORRERIA G.F.W. Meyer *nom. cons.*

1a. Stem procumbent or suberect; flowers rosy–purple or lilac; corolla tube with a ring of hairs within at base ... *B. articularis* 1

1b. Stem erect; flowers white; corolla tube without a ring of hairs ... *B. pusilla* 2

1. **Borreria articularis** (L. f.) F. N. Will. in Bull. Herb. Boiss. Ser. 2, 5: 956. 1905. *Spermacoce articularis* L. f. Suppl. 119. 1781. *S hispida* L. Sp. Pl. 102. 1753; Hook. f. Fl. Brit. India 3: 200. 1881; Cooke Fl. Pres. Bombay 2: 53. 1958 (Repr. ed.); Verdc. in Kew Bull. 30: 307. 1975. *Madanghanti.*

Procumbent or suberect herbs, hispid in younger parts; leaves obovate–oblong, pubescent, 1–3 x 0.6–1.4 cm; flowers 4–6 in a whorl within the stipular cup; capsules oblong, crowned by enlarged calyx; seeds ellipsoid, dark red.



Oldenlandia biflora L.
a) Entire plant, b) L. S. of flower, c) Corolla spread open with epipetalous stamens, d) T. S. of fruit.

Fls. & Frts. : September–October.

In forests along road–sides and coastal region, frequent. Alibag; Bhise–Khind, Roha; Pejari forests, Alibag.

The root used as a substitute of Sarasparilla as purgative and blood purifier. The seeds have cooling effect and are used as Coffee beans in dysentery and bladder disorders.

2. **Borreria pusilla** (Wall.) DC. Prodr. 4: 543. 1830. *Spermacoce stricta* L.f. Suppl. 120. 1781; Hook. f. Fl. Brit. India 3: 200. 1881; Cooke, Fl. Pres. Bombay 2: 52. 1958 (Repr. ed.). *S. pusilla* Wall. in Roxb. Fl. Ind. 1: 379. 1820.

Erect herbs, 10–30 cm; leaves linear–lanceolate, scabrid, 1.5–2.6 x 0.4–0.6 cm; flowers in globose, dense flowered heads, surrounded by whorl of 2–6 leaves; fruits oblong, apiculate, densely pubescent towards apex, crowned by calyx teeth; seeds reddish–brown, ellipsoid.

Fls.& Frts. : August–October.

In hilly forests and along road sides, frequent. Karlekhind and Kolaba fort, Alibag; Neral to Matheran; Wankalgar forest, Shrivardhan.

16. Hydrophylax L. f.

Hydrophylax maritima L. f. Suppl. 126. 1781; Wight, Icon. t. 760. 1844; Hook. f. Fl. Brit. India 3: 199. 1881; Cooke, Fl. Pres. Bombay 2: 51. 1958 (Repr. ed.).

Prostrate or creeping herbs; leaves ovate–oblong, fleshy, smooth or papillose, 0.8–1.3 x 0.5–0.7 cm; flowers purple, axillary, solitary; fruits ellipsoid, winged.

Fls. & Frts. : September–October.

Near sea–coast, infrequent. Uran.

17. Ixora L.

1a. Usually shrubs; flowers large, bright red; corolla tube 2.5 – 3.8 cm long ... *I. coccinea* 1

1b. Mostly trees; flowers small, white; corolla tube upto 1.2 cm:

2a. Leaves and inflorescence not turning black on drying :

3a. Flower buds round; style glabrous ... *I. brachiata* 2

3b. Flower buds ellipsoid, style hairy ... *I. arborea* 3

2b. Leaves and inflorescence turning black on drying ... *I. nigricans* 4

1. **Ixora coccinea** L. Sp. Pl. 110. 1753; Wight, Icon. t. 153. 1839; Hook. f. Fl. Brit. India 3: 145. 1880; Cooke, Fl. Pres. Bombay 2: 40. 1958 (Repr. ed.). *Bakora.*

Large shrubs, upto 150 cm; leaves obovate, elliptic–oblong, glabrous, 1.7–8.9 x 1.1–3.5 cm; flowers in terminal, paniculate cymes; fruits globose, purplish.

Fls. & Frts. : Almost throughout the year.

Along the hedges, road–sides, near river–banks and sea–shores, frequent. Alibag; Mahad to Nadgaon; Pen to Khopoli Road.

2. **Ixora brachiata** Roxb. ex DC. Prodr. 4: 488. 1830; Wight, Icon. t. 710. 1843; Hook. f. Fl. Brit. India 3: 142. 1880; Cooke, Fl. Pres. Bombay 2: 39. 1958 (Repr. ed.). *Gorbale.*

Evergreen trees, 3–5 m; leaves elliptic–oblong, obovate or lanceolate, dark green, glabrous, 5.8–11.6 x 2–5 cm; flowers in terminal panicles; fruits globose, fleshy, reddish–brown to black.

Fls. & Frts. : November–March.

In hilly forests, along river banks or sea–shores, frequent. Elephanta island; Matheran; Roha.

3. **Ixora arborea** Roxb. ex J.E. Sm. in Rees, Cyclop. 19: 5. 1811. *I. parviflora* Vahl, Symb. 3: 11. t. 52. 1794 *non* Lam. (1791); Hook. f. Fl. Brit. India 3: 142. 1880; Cooke, Fl. Pres. Bombay 2: 39. 1958 (Repr. ed.). *Rai–Kuda.*

Trees upto 4 m; leaves thickly coriaceous, elliptic–oblong, obtuse, glabrous, 4.3–15 x 3.6–7 cm; flowers in terminal, corymbose cymes; fruits globose.

Fls.& Frts. : January–May.

In deciduous forests and near sea–coasts, frequent. Elephanta island; Karnala fort; Kashid and Survey forests, Murud; Matheran.

Wood is used as fuel and leaves as fodder.

4. **Ixora nigricans** R. Br. ex Wight & Arn. Prodr. 428. 1834; Wight, Icon. t. 318. 1840; Hook. f. Fl. Brit. India 3: 148. 1880; Cooke, Fl. Pres. Bombay 2: 38. 1958 (Repr. ed). *Kat–kuda, Lokhandi.*

Large shrubs or small trees; leaves elliptic, oblong or lanceolate, glabrous; flowers in brachiate cymes; fruits globose, didynamous.

Fls. & Frts. : Almost throughout the year.

In thick forests, infrequent. Matheran; Mirya dongar near Pen.

18. PAVETTA L.

1a. Flowering shoots either consisting of a single internode or the lowest internode much longer than all the other nodes put together, calyx teeth triangular; leaves mostly obovate. ... *P. crassicaulis* 1

1b. Flowering shoots consisting of several internodes decreasing in length; calyx teeth minute; leaves mostly elliptic :

2a. Lamina pubescent on both surfaces; inflorescence pubescent ... *P. tomentosa* 2

2b. Lamina glabrous on both surfaces; inflorescence minutely puberulous ... *P. indica* 3

1. **Pavetta crassicaulis** Bremek. in Fedde, Repert. 37: 112. 1934 & 47: 25. 1939; Sant. & Merchant in Bull. Bot. Surv. India 3: 109. 1961.

Shrubs or trees, 2–3 m; branches quadrangular; leaves elliptic–oblong or obovate–oblong, sparingly hairy, 3–15.5 x 1.2–6 cm; flowers white, fragrant in terminal, corymbose cymes; fruits globose, green, turning black at maturity.

Fls. & Frts. : May–October.

In deciduous forests, frequent. Alibag; Bhira; Kalasgiri hill, Roha; Matheran; Pali to Nagothana.

2. **Pavetta tomentosa** Roxb. ex J.E.Sm. in Rees, Cyclop. 26: 2. 1819; Bremek. in Fedde, Repert. 37: 113. 1934. *P. indica* L. var. *tomentosa* (Roxb.) Hook. f. Fl. Brit. India 3: 150. 1880; Cooke, Fl. Pres. Bombay 2: 41. 1958 (Repr. ed.).

Shrubs, 60–120 cm; leaves elliptic–oblong; inflorescence dry, becoming dark brown or almost black; flowers white in cymes; fruits globose.

Fls. & Frts. : February–March.

In hilly forests, frequent. Matheran.

3. **Pavetta indica** L. Sp. Pl. 110. 1753; Wight, Icon. t. 148. 1839; Hook. f. Fl. Brit. India 3: 150. 1880; Cooke, Fl. Pres. Bombay 2: 41. 1958 (Repr. ed.). *Papat.*

Shrubs, 1–2 m; leaves oblong–obovate, glabrous, 6–12.5 x 2.2–5.7 cm; flowers white, showy, fragrant in corymbose cymes; fruits small, roundish, green–black.

Fls.& Frts. : March–October.

In open and hilly deciduous forests, frequent. Karnala Fort; Matheran; Raigad.

19. SPERMADICTYON Roxb.

Spermadictyon suaveolens Roxb. Pl. Cor. 3: 32. t. 236. 1815. *Hamiltonia suaveolens* Roxb. Fl. Ind. 2: 223. 1824; Hook. f. Fl. Brit. India 3: 197. 1881; Cooke, Fl. Pres. Bombay 2: 51. 1958 (Repr. ed.). *Gidesta*.

Erect, woody shrubs; leaves elliptic–lanceolate or ovate, glabrous or sparsely hairy, 8.5–16.6 x 3.8–7.5 cm; flowers pure white or whitish–blue, fragrant in axillary and terminal cymes; fruits ellipsoid, black.

Fls. & Frts. : September–February.

In hilly forests, frequent. Matheran.

The foul smelling roots are used medicinally to cure diarrhoea and cholera.

73. ASTERACEAE
(COMPOSITAE)

1a. Florets all ligulate; milky juice often present :

2a. Achenes columnar, truncate at both ends; heads cylindric ... LAUNAEA 1

2b. Achenes compressed at both ends; heads campanulate ... SONCHUS 2

1b. Florets not all ligulate; either all tubular or at least disc florets tubular; milky juice often absent :

3a. Fruits spinous :

4a. Achenes with a pair of horn like spines, stellately arranged ... ACANTHOSPERMUM 3

4b. Achenes 2, smooth enclosed in spinescent fruit; not stellately arranged ... XANTHIUM 4

3b. Fruits not spinous :

5a. Heads spinous:

6a. Leaves spinous, cottony–white tomentose beneath; heads globose, florets pale blue ... ECHINOPS 5

6b. Leaves not above; heads ovoid; florets bright purple ... Tricholepis 6

5b. Heads not spinous :

7a. Florets of one colour :

8a. Heads never yellow (except Artemisia nilagirica & Galinsoga parviflora where they are yellowish) :

9a. Florets white, creamy white, greenish, pale blue or purple:

10a. Heads compound, axillary with two large bracts; pappus of 2 scales ... CARSULIA 7

10b. Heads simple, not as above; pappus not of scales:

11a. Leaves alternate :

12a. Heads collected into globose or ovoid, terminal mass; stem winged ... SPHAERANTHUS 8

12b. Heads distinct, solitary, corymbose or paniculate:

13a. Pappus of scales or awns ... Parthenium 9

13b. Pappus zero ;

14a. Flower heads greenish, scented; herbs or undershrubs, 40–100 cm ... Artemisia 10

14b. Flower heads purple, not scented; small herbs, 7–20 cm ... EPALTES 11

11b. Leaves opposite:

15a. Heads homogamous; florets all tubular; anthers appendiculate at tip ... AGERATUM 12

15b. Heads heterogamous; outer florets ligulate, central tubular; ligule of ray floret small; anthers not as above :

16a. Pappus zero ... ECLIPTA 13

16b. Pappus of a few scarious, entire, awned or fimbriate scales ... GALINSOGA 14

9b. Flowers blue, bluish–purple, violet or brownish–red:

17a. Heads homogamous:

18a. Leaves cauline:

19a. Style arms ending in long, hairy appendages ... GYNURA 15

19b. Style arms not as above:

20a. Leaves white–tomentose beneath; heads terminal, solitary; pappus short, fugacious ... PHYLLOCEPHALUM 16

20b. Leaves not white–tomentose beneath; heads in paniculate cymes; pappus long, more or less persistent ... VERNONIA 17

18b. Leaves radical and cauline:

21a. Heads 2 – 5 clustered; each cluster subtended by a large, stiff, foliaceous bracts; anthers sagittate ... ELEPHANTOPUS 18

21b. Heads in open corymbs but not forming clusters; anther bases obtuse ... EMILIA 19

17b. Heads heterogamous ... CYATHOCLINE 20

8b. Heads yellow, orange–yellow or brownish–yellow or purplish:

22a. Leaves compound, variously lobed:

23a. Pappus of 2–4 retrorsely hispid, spreading awns; leaves opposite; leaf segments not filiform ... BIDENS 21

23b. Pappus of 3–10 unequal scales or bristles; leaves alternate or lower opposite; leaf segments filiform or narrowly linear ... TAGETES 22

22b. Leaves simple, undivided :

24a. Leaves lower or all opposite :

25a. Achenes of two types :

26a. Achenes of ray florets compressed, winged; wings lacerate ... SYNEDRELLA 23

26b. Achenes of ray florets cuneiform, triquetrous, not winged ... BLAINVILLEA 24

25b. Achenes of one type ... WEDELIA 25

24b. Leaves alternate :

27a. Pappus of ray florets absent ... PENTANEMA 26

27b. Pappus of ray florets present:

28a. Pappus minute ... GRANGEA 27

28b. Pappus well developed :

29a. Ray florets ligulate, large ... PULICARIA 28

29b. Ray florets filiform, small :

30a. Plants woolly, greyish white tomentose ... GNAPHALIUM 29

30b. Plants not as above:

31a. Leaves white tomentose beneath ... SENECIO 30

31b. Leaves not as above :

32a. Anthers tailed ... BLUMEA 31

32b. Anthers not tailed ... CONYZA 32

7b. Heads of two colours :

33a. Heads solitary on a very long peduncle; anthers sagittate; pappus paleaceous or plumose–ciliate ... TRIDAX 33

33b. Heads solitary or variously corymbose or panicled; anthers not sagittate; pappus of many long hairs ... ERIGERON 34

1. LAUNAEA Cass.

1a. Stems rooting at nodes; leaves only radical; heads upto 1.5 cm across ... *L. sarmentosa* 1

1b. Stems not rooting at nodes; leaves radical and cauline; heads 1.5 – 2 cm across ... *L. procumbens* 2

1. **Launaea sarmentosa** (Willd.) Sch.–Bip. ex Kuntze, Rev. Gen. Pl. 1: 350. 1891; Alst. in Trim. Handb. Fl. Ceylon 6: 173. 1931. *Prenanthes sarmantosa* Willd. Phytogr. 10. t. 6. f. 2. 1794 & Sp. Pl. 3: 1540. 1803. *Launaea pinnatifida* Cass. in Ann. Sci. Nat. Ser. 1, 23: 85. 1831; Hook. f. Fl. Brit. India 3: 416. 1881; Cooke, Fl. Pres. Bombay 2: 122. 1958 (Repr. ed.). *Pathari.*

Slender, procumbent herbs; leaves oblong–lyrate, pinnatifid, glabrous, rarely with cartilagenous teeth on margins, 2.3–7.5 x 0.6–1.7 cm; heads yellow, solitary or in clusters; achenes pale, obtusely 4–gonous.

Fls. & Frts. : October–December.

Along the sea–coast, infrequent. Revdanda; Shrivardhan.

The plant is given to Buffaloes for promoting secretion of milk and juice to children to make them to sleep.

2. **Launaea procumbens** (Roxb.) Ramayya & Rajgopal in Kew Bull. 23: 465. t. 1. 1969. *Prenanthes procumbens* Roxb. Fl. Ind. 3: 404. 1832. *Launaea nudicaulis* sensu Hook. f. Fl. Brit. India 3: 416. 1881 pro parte *non* Less. (1832); Cooke, Fl. Pres. Bombay 2: 122. 1958 (Repr. ed.). *Pathari.*

Prostrate or suberect, much branched, glabrous herbs; leaves obovate–oblong, sessile, lyrate, pinnatifid, runcinate, spinulose on margins with white cartilaginous teeth, 3.6–20 x 1.2–4.6 cm; heads

creamy–yellow, cylindric, subracemose or fascicled along the branches; achenes minute, brown, polymorphous.

Fls. & Frts. : March–September.

On sandy soil along the sea–coast, frequent. Alibag; Nagaon.

2. SONCHUS L.

Sonchus oleraceus L. Sp. Pl. 794. 1753; Hook. f. Fl. Brit. India 3: 414. 1881; Cooke, Fl. Pres. Bombay 2: 119. 1958 (Repr. ed.). *Mhatara.*

Erect, glabrous herbs, 60–90 cm; leaves oblong–obovate, entire or pinnatifid, auricled, glabrous, 5.6–12.5 x 2.3–5 cm; heads yellow with long, white pappus in umbellate cymes; achenes obovoid, brownish, ribbed, transversely muricate.

Fls. & Frts. : September–February.

In moist places, infrequent. Matheran.

3. ACANTHOSPERMUM Schrank.

Acanthospermum hispidum DC. Prodr 5: 222. 1836.

Erect, suffruticose herbs, 30–60 cm; leaves obovate–spathulate, subsessile, appressed–pubescent, 4–6.4 x 1.2–2.5 cm; flowers bright yellow, solitary, axillary or at the forks of branches; achenes obconical, stellately arranged, glabrous or with hooked spines.

Fls. & Frts. : September–October.

Moist places in deciduous forests and along road sides, frequent. Pen to Khopoli Road; Sanegaon, Roha.

4. XANTHIUM L.

Xanthium indicum Koen. in Roxb. Fl. Ind. 3: 601. 1832; Wight, Icon. t. 1104. 1846. *X. strumarium* L. Sp. Pl. 987. 1753 *pro parte;* Hook. f. Fl. Brit. India 3: 303. 1881; Cooke, Fl. Pres. Bombay 2: 94. 1958 (Repr. ed.). *Shankeshvar.*

Suffruticose, scabrous herbs or undershrubs, 30–120 cm; leaves ovate–triangular or suborbicular, acute, coarsely dentate, rough with pubescent, 4–12 x 3.4–10.5 cm; heads greenish–yellow in terminal and axillary racemes; involucre of fertile heads ovoid with hooked prickles; achenes oblong, glabrous.

Fls. & Frts. : October–March.

In moist places, frequent. Ramraj forests, Alibag; Roha to Kolad.

5. ECHINOPS L.

Echinops echinatus Roxb. Fl. Ind. 3: 447. 1832; Hook. f. Fl. Brit. India 3: 358. 1881; Cooke, Fl. Pres. Bombay 2: 112. 1958 (Repr. ed.).

Suffruticose, armed, cottony –white pubescent, branched herbs, 30–90 cm; leaves pinnatifid, white–woolly beneath, 1.2–10.5 x 0.8–2.5 cm; heads white, terminal; achenes obconical, densely hairy.

Fls. & Frts. : November–January.

In hilly forests, infrequent. Matheran.

6. TRICHOLEPIS DC.

Tricholepis glaberrima DC. Prodr. 6: 564. 1836; Hook. f. Fl. Brit. India 3: 381. 1881; Cooke, Fl. Pres. Bombay 2: 114. 1958 (Repr. ed.).

Erect, glabrous herbs, 60–150 cm; leaves linear–lanceolate, nigro–punctate, glabrous, 2.2–6.5 x 0.3–0.5 cm; heads pinkish–purple, terminal; achenes brown, oblong, ribbed.

Fls. & Frts. : September–January.

Among grasses in open, rocky areas, frequent. Karjat ghat; Matheran; Mazeri to Varandh ghat. Mahad.

7. CAESULIA Roxb.

Caesulia axillaris Roxb. Pl. Cor. 1: 64. t. 93. 1798; Wight, Icon. t. 1102. 1846; Hook. f. Fl. Brit. India 3: 291. 1881; Cooke, Fl. Pres. Bombay 2: 92. 1958 (Repr. ed).

Diffuse, succulent, glabrous herbs, 8–15 cm; leaves lanceolate, sessile, 3.4–10.5 x 0.5–2.3 cm; heads white or bluish, solitary, axillary, sessile; achenes obovoid, blackish, broadly winged on each side, apex notched with a few teeth on eitherside, ribbed.

Fl. & Frts. : May–October.

In moist places, frequent. Neral; Pachhad; Ramraj forests, Alibag.

8. SPHAERANTHUS L.

Sphaeranthus indicus L. Sp. Pl. 927. 1753; Hook. f. Fl. Brit. India 3: 275. 1881 *pro parte* ; Cooke, Fl. Pres. Bombay 2: 84. 1958 (Repr. ed.). *S. hirtus* Willd. Sp. Pl. 3: 2395. 1802; Wight, Icon. t. 1094. 1846.

Erect herbs, 20–40 cm; leaves obovate–oblong, glandular–pubescent, 1.5–7 x 0.6–1.4 cm; heads globose, reddish, brown–purple; achenes oblong, glabrous, stalked.

Fls. & Frts. : October–February.

In wet and shady places, frequent. Dasgaon; Karjat; Varandh ghat, Mahad.

9. PARTHENIUM L.

Parthenium hysterophorous L. Sp. Pl. 988. 1753; R. S. Rao in J. Bombay nat. Hist. Soc. 54: 218. 1956.

Suffruticose, hairy herbs or undershrubs, 30–60 cm; leaves pinnatifid to pinnatipartite appressed–pubescent; heads white in terminal, branched, paniculate cymes; achenes minute.

Fls.& Frts. : September–October.

Along the sea–coast, frequent. Alibag; Murud.

A pantropical weed, native of America.

10. ARTEMISIA L.

1a. Disc florets sterile; lower leaves cuneate, sessile ... *A. parviflora* 1

1b. Disc florets fertile; lower leaves ovate, petioled ... *A. nilagirica* 2

1. **Artemisia parviflora** Buch.–Ham. ex D. Don, Prodr. Fl. Nep. 181. 1825; Hook. f. Fl. Brit. India 3: 322. 1881; Cooke, Fl. Pres. Bombay 2: 104. 1958 (Repr. ed.). *A. glabrata* DC. in Wight, Contrib. 20. 1834; Wight, Icon. t. 1111. 1846. *Tel–Davana.*

Herbs or undershrubs; leaves obovate–cuneate, variously toothed at apex, sparsely hairy, 1.7–2.6 x 0.6–1 cm; heads greenish–white in drooping, paniculate racemes; achenes minute, ellipsoid, brown.

Fls. & Frts. : September–October.

In hilly forests, frequent. Varandh ghat, Mahad.

2. **Artemisia nilagirica** (C.B.Cl.) Pamp. Nuov. Giorn. Bot. Ital. 33: 452. 1926. *A. vulgaris* L. var. *nilagirica* C.B. Cl. Comp. Ind. 162. 1876. *A. indica sensu* Wight, Icon. t. 1112. 1846, *non* Willd. (1803). *A vulgaris auct. non* L. (1753); Hook. f. Fl. Brit. India 3: 325. 1881; Cooke, Fl. Pres. Bombay 2: 105. 1958 (Repr. ed.). *Dhor-davana.*

Shrubby, aromatic, hairy herbs; lower leaves deeply pinnatisect, pubescent above, white-tomentose beneath; heads ovoid; achenes minute, oblong-ellipsoid.

Fls. & Frts. : September–January.

In hilly forests, infrequent. Karjat ghat.

11. EPALTES Cass.

Epaltes divaricata (L.) Cass. in Bull. Soc. Philom. 139. 1818; Hook. f. Fl. Brit. india 3: 274. 1881; Cooke, Fl. Pres. Bombay 2: 83. 1958 (Repr. ed.). *Ethulia divaricata* L. Mant. Pl. 110. 1767.

Small, erect herbs with divaricate, winged branches; leaves linear-oblong, glabrous, 2.7–5.6 x 0.2–0.4 cm; heads purple; achenes obovoid.

Fls. & Frts. : October -January.

In moist places, frequent. Ramraj forest, Alibag; Savitri river bank, on way to Unhere, Mahad.

12. AGERATUM L.

Ageratum conyzoides L. Sp. Pl. 839. 1753; Hook. f. Fl. Brit. India 3: 243. 1881; Fyson, Fl. South Indian Hill St. 2: t. 256. 1932; Cooke, Fl. Pres. Bombay 2: 70. 1958 (Repr. ed.). *Bhamrut , Osadi.*

Erect, glandular-pubescent herbs, 30–90 cm; leaves broadly ovate, margins crenate, ciliate, hairy, 2.5–7.5x1.6–4.5 cm; flowers white or bulish in terminal heads; achenes black, cuneate sharply angular, glabrous or hairy at angles.

Fls. & Frts. : September–June.

In waste, moist places, along road sides and in open forests, frequent. Mahad; Matheran; Murud.

The crushed paste of leaves is applied on the wounds, cuts, etc. for healing by local people.

13. ECLIPTA L. *nom. cons.*

Eclipta prostrata (L.) L. Mant. Pl. 2: 286. 1771; Banerjee in Rec. Bot. Surv. India 19 (2): 54. 1966. *Verbesina prostrata* L. Sp. Pl. 902. 1753. *Eclipta erecta* L. Mant. Pl. 2: 286. 1771; Cooke, Fl. Pres. Bombay 2: 95. 1958 (Repr. ed.). *E. alba* (L.) Hassk. Pl. Jav. Rar. 528. 1848; Hook.f. Fl. Brit. India 3: 304. 1881.

Erect or prostrate, strigosely hairy herbs; leaves elliptic–lanceolate, hairy, 1.6–6.4 x 0.4–2.7 cm; heads white, terminal and axillary; achenes obconical, narrowly winged, compressed, dark brown.

Fls. & Frts. : September–May.

In moist places, frequent. Karjat; Matheran; Pon to Khopoli Road.

14. GALINSOGA Ruiz *et* Pav.

Galinsoga parviflora Cav. Icon. Descr. Pl 3 : 41. t. 281. 1795; Hook. f. Fl. Brit. India 3: 311. 1881.

Slender, glabrous herbs, 15–30 cm; stem rooting at nodes; leaves opposite, ovate–lanceolate, glabrous, 1.9–6.2 x 0.8–1.7 cm; heads yellowish, smaller than peduncles; achenes angled, obovate, black.

Fls. & Frts. : September–October.

In moist, shady places, rare. Matheran, 146527.

15. GYNURA Cass. *nom. cons.*

Gynura cusimbua (D. Don) Moore in J. Bot. 1: 212. 1912. *Cacalia cusimbua* D. Don, Prodr. Fl. Nep. 179. 1825. *Gynura angulosa* DC. Prodr. 6: 298. 1838; Hook. f. Fl. Brit. India 3: 334. 1881; Cooke, Fl. Pres. Bombay 2: 106. 1958 (Repr. ed.).

Erect, robust, glabrous herbs, 7–20 cm; leaves oblong–obovate, sinuate–toothed, glabrous, auricled and amplexicaul at base, 3.6–15.5 x 2.3–6.4 cm; heads deep orange in corymbose panicles; achenes oblong, ribbed.

Fls. & Frts. : August–October.

In hilly forests, infrequent. Matheran; Neral.

16. PHYLLOCEPHALUM Blume

Phyllocephalum phyllolaenum (DC.) Narayana in Curr. Sci. 51: 438. 1982; Rao *et al.*, Fl. Ind. Enum.–Asteraceae 57. 1988. *Decaneurum phyllolaenum* DC. Prodr. 7: 264. 1839. *Centratherum phyllolaenum* (DC.) Benth. ex C.B. Cl. Comp. Ind. 4. 1876; Hook. f. Fl. Brit. India 3: 228. 1881; Cooke, Fl. Pres. Bombay 2: 62. 1958 (Repr. ed.).

Erect herbs with purplish stem covered by minute, black bristles; leaves ovate–lanceolate or ovate–oblong, whitish woolly–tomentose beneath, 3.4–11.5 x 1.6–7.4 cm; heads purple, sessile, terminal and axillary; achenes brownish, ribbed.

Fls. & Frts. : September–October.

As an undergrowth in forests, frequent. Alibag; Matheran; Mhasla; Roha.

Roots are used medicinally by local people for stomach troubles.

17. VERNONIA Schreb. *nom. cons.*

1a. Herbs; leaves variable in shape; achenes upto 2 mm long, not ribbed ... *V. cinerea* 1

1b. Undershrubs or shrubs; leaves elliptic; achenes more than 2 mm long, ribbed ... *V. divergens* 2

1. **Vernonia cinerea** (L.) Less in Linnaea 4: 291. 1829; Hook. f. Fl. Brit. India 3: 233. 1881 *pro parte*; Cooke, Fl. Pres. Bombay 2: 65. 1958 (Repr. ed.). *Conyza cinerea* L. Sp. Pl. 862. 1753. *Sahadevi.*

Erect herbs, 15–60 cm; leaves elliptic–lanceolate, densely pubescent beneath, 0.5–4.2 x 0.2–3 cm; heads pinkish–purple in terminal cymes; achenes minute, brownish, angled, hairy.

Fls. & Frts. : September–March.

As a weed along road–sides, sea–shores and as an undergrowth in hilly forests, frequent. Mangaon; Matheran; Murud; Nagaon; Pen.

2. **Vernonia divergens** (Roxb.) Edgew. in J. Asiat. Soc. Bengal 21: 172. 1853; Hook. f. Fl. Brit. India 3: 234. 1881; Cooke, Fl. Pres. Bombay 2: 67. 1958 (Repr. ed.). *Eupatorium divergens* Roxb. Fl. Ind. 3: 414. 1832. *Decaneurum divergens* (Roxb.) DC. Prodr. 5: 68. 1836; Wight, Icon. t. 1084. 1846. *Bundar.*

Undershrubs or shrubs, 1–2 m; leaves scabrid above, tomentose

beneath, 2.4–6.5 x 1–3.5 cm; heads purple in terminal and axillary branched corymbs; achenes minute, 10– ribbed, glabrous.

Fls. & Frts. : December–March.

As an undergrowth in hilly forests, frequent. Karnala fort; Matheran.

18. ELEPHANTOPUS L.

Elephantopus scaber L. Sp. Pl. 814. 1753; Wight, Icon. t. 1086. 1846; Hook. f. Fl. Brit. India 3: 242. 1881; Cooke, Fl. Pres. Bombay 2: 68. 1958 (Repr. ed.). *Hastipata.*

Erect, pubescent herbs, 15–30 cm; leaves ovate–oblong, serrate–dentate, hairy, 6.4–18.5 x 1.2–4.7 cm; heads bluish–purple to deep violet in terminal, dichotomous cymes; achenes ribbed, pubescent.

Fls. & Frts. : September–January.

As forest undergrowth in moist, shady places, frequent. Nagothana to Pali; Neral to Matheran; 'Unhere' hot water springs, Mahad.

19. EMILIA Cass.

Emilia sonchifolia (L.) DC. in Wight, Contrib. 24. 1834; Hook. f. Fl. Brit. India 3: 336. 1881; Cooke, Fl. Pres. Bombay 2: 107. 1958 (Repr. ed.). *Cacalia sonchifolia* L. Sp. Pl. 835. 1753. *Sadamandi.*

Prostrate or suberect, scabrid or glabrescent herbs, 20–40 cm; leaves ovate, obovate–spathulate, pinnatifid or lyrate, amplexicaul and auricled, 3.5–13.7 x 0.6–2.5 cm; heads pinkish–purple in terminal panicles; achenes ribbed, brownish.

Fls. & Frts. : August–March.

In hilly forests and damp places, frequent. Karjat; Neral to Matheran; Pen; Varandh ghat.

20. CYATHOCLINE Cass.

Cyathocline purpurea (Buch.–Ham. ex D. Don) O. Ktze. Rev. Gen. Pl. 333. 1891. *Tanacetum purpureum* Buch.–Ham. ex D. Don, Prodr. Fl. Nep. 181. 1825. *Cyathocline lyrata* Cass. in Ann. Sci. Nat. Ser. 1, 17: 420. 1829; Wight, Icon. t. 1098. 1846; Hook. f. Fl. Brit. India 3: 246. 1881; Cooke, Fl. Pres. Bombay 2: 71. 1958 (Repr. ed.).

Suberect, tender herbs, 20–60 cm; leaves radical and cauline, pinnatifid, lobes toothed, hairy beneath, 2.5–6 x 0.3–1.4 cm; heads violet in terminal, corymbose panicles; achenes minute, brownish.

Fls. & Frts. : October–February.

Moist, shady places in hilly forests, frequent. Bhira; Matheran; on way to Raigad.

21. BIDENS L.

Bidens biternata (Lour.) Merr. & Sherff in Bot. Gaz. 88: 293. 1929. *Coreopsis biternata* Lour. Fl. Cochinch. 508. 1790. *Bidens pilosa auct. non* L. (1753); Hook. f. Fl. Brit. India 3: 309. 1881; Cooke, Fl. Pres. Bombay 2: 101. 1958 (Repr. ed.).

Erect, suffruticose herbs, 40–80 cm; leaves variable, 3 foliolate or with 2 subopposite pairs of leaflets, lobes bipinnatisect, glabrous; heads yellow–brown, solitary, terminal, pedunculate; achenes black, spindle shaped, 4–gonous with 4 retrorsely scabrid, brown awns.

Fls. & Frts. : September–October.

In hilly forests and near sea–coast, frequent. Kolaba fort, Alibag; Matheran.

22. TAGETES L.

Tagetes erecta L. Sp. Pl. 887. 1753; C. B. Cl. Comp. Ind. 143. 1876; Cooke, Fl. Pres. Bombay 2: 125. 1958 (Repr. ed.). *Galgota.*

Herbs; leaves pinnate with 11–15 segments, lanceolate, acute, serrate, glabrous; heads yellow, solitary, terminal.

Fls. & Frts. : September–November.

As an escape. Matheran.

23. SYNEDRELLA Gaertn.

Synedrella nodiflora (L.) Gaertn. Fruct. 2: 456. t. 171. f. 7. 1791; Hook. f. Fl. Brit. India 3: 308. 1881. *Verbesina nodiflora* L. Cent. Pl. 1: 28. 1755 & Amoen. Acad. 4: 290. 1759.

Erect herbs, 30–60 cm; leaves ovate–lanceolate, hispidly hairy on both surfaces, 1.4–8.5 x 0.8–4.2 cm; heads yellow; achenes of ray florets

compressed, ribbed, lacerate; achenes of disc florets triquetrous, tuberculate with 2–4 terminal awns.

Fls. & Frts. : September–February.

In moist places, frequent. Elephanta island; Pen.

24. BLAINVILLEA Cass.

Blainvillea acmella (L.) Philipson in Blumea 6: 350. 1950. *Verbesina acmella* L. Sp. Pl. 901. 1753. *Blainvillea latifolia* (L. f.) DC. in Wight, Contrib. 17. 1834; Hook. f. Fl. Brit. India 3: 305. 1881. *B rhomboidea* Cass. in F. Cuvier, Dict. Sci. Nat. 29: 494. 1823; Cooke, Fl. Pres. Bombay 2 : 97. 1958 (Repr. ed.).

Erect, scabrous herbs, 20–60 cm; leaves ovate–lanceolate or ovate–rhomboid, hairy, 2.5–5.1 x 1.2 cm; heads white or yellowish in axillary or terminal cymes; achenes triquetrous or laterally compressed.

Fls. & Frts. : September–October.

Along road sides, occasional. Pen to Khopoli.

25. WEDELIA Jacq. *nom. cons.*

Wedelia urticaefolia (Blume) DC. in Wight, Contrib. 18. 1834; Wight, Icon. t. 1106. 1846; Hook. f. Fl. Brit. India 3 : 306. 1881; Cooke, Fl. Pres. Bombay 2 : 98. 1958 (Repr. ed.). *Verbesina urticaefolia* Blume, Bijdr. 911. 1826.

Erect, scabrid herbs; leaves ovate–lanceolate, appressed, pubescent, 2.5–9.6 x 0.7–6.4 cm; heads yellow, axillary, solitary or in terminal racemes; achenes triquetrous, oblong, ribbed, blackish.

Fls. & Frts. : August–October.

Near sea–coast, frequent. Murud; Shrivardhan.

26. PENTANEMA Cass.

1a. Leaves petiolate, not auricled at base; ray florets with pappus ... *P. cernuum* 1

1b. Leaves sessile, auricled at base; ray florets without pappus *P. indicum* 2

1. **Pentanema cernuum** (Dalz.) Ling in Acta Phyt. Sin. 10: 180. 1965; Rao *et al.*, Fl. Ind. Enum–Asteraceae 56. 1988. *Vicoa cernua* Dalz. in Dalz. & Gibs. Bombay Fl. 126. & 314. 1861; Hook. f. Fl. Brit. India 3: 297. 1881; Cooke, Fl. Pres. Bombay 2: 89. 1958 (Repr. ed.).

Erect, pubescent herbs, 30–60 cm; leaves elliptic–lanceolate, appressed hairy, 3.5–14 x 1.2–5 cm; heads yellow in axillary and terminal racemes; achenes oblong, sparsely hairy.

Fls. & Frts. : September–February.

In hilly forests, frequent. Matheran; Pen; Raigad.

2. **Pentanema indicum** (L.) Ling in Acta Phyt. Sin. 10: 179. 1965; Rao *et al.*, Fl. Ind. Enum–Asteraceae 56. 1988. *Inula indica* L. Sp. Pl. (ed.2) 2: 1237. 1763. *Vicoa indica* (L.) DC. in Wight, Contrib. 10. 1834; Wight, Icon. t. 1148. 1846. *V. auriculata* Cass. in Ann. Sci. Nat. 17: 418. 1829; Hook. f. Fl. Brit. India 3: 297. 1881; Cooke, Fl. Pres. Bombay 2: 88. 1958 (Repr. ed.) *Sonkadi.*

Suffruticose herbs or undershrubs, 30–90 cm; leaves linear–lanceolate, appressed–hairy, 2.2–7 x 0.3–1.2 cm; heads yellow, solitary, axillary or in terminal cymes; achenes minute, brown.

Fls. & Frts. : October–November.

As forest undergrowth, infrequent. Palasdhari forest, Alibag.

27. GRANGEA Adans.

Grangea maderaspatana (L.) Poir. in Lam. Encycl. Suppl. 2: 825. 1812; Wight, Icon. t. 1097. 1846; Hook. f. Fl. Brit. India 3: 247. 1881; Cooke, Fl. Pres. Bombay 2: 72. 1958 (Repr. ed.). *Artemisia maderaspatana* L. Sp. Pl. 849. 1753.

Prostrate, densely glandular–pubescent herbs, 8–20 cm; leaves pinnatifid, hairy, 1.2–5 x 0.3–1 cm; heads yellow, globose, terminal, leaf–opposed on solitary or binate peduncles; achenes glandular–pubescent.

Fls. & Frts. : October–May.

As a weed in cultivated fields and wet places, Alibag; Karjat; Panvel.

28. PULICARIA Gaertn.

* **Pulicaria wightiana** (DC.) C.B. Cl. Comp. Ind. 128. 1876; Hook. f. Fl. Brit. India 3: 298. 1881; Cooke, Fl. Pres. Bombay 2: 90. 1958 (Repr. ed.). *Poloa wightiana* DC. in Guill. Arch. Bot. 2: 515. 1833. *Callisterphus wightianus* (DC.) DC. Prodr. 5: 275. 1836; Wight, Icon. t. 1089. 1846.

Erect, much branched herbs, 20–40 cm; leaves oblong, sessile, pubescent on both surfaces, 2.3–5.5 x 1.2–2.4 cm; heads solitary ; achenes oblong, brown.

Fls. & Frts. : September.

In hilly forests, infrequent. Matheran.

29. GNAPHALIUM L.

1a. Heads in leafless, terminal corymbs ... *G. luteo-album* 1

1b. Heads in leafy spikes ... *G. polycaulon* 2

1. **Gnaphalium luteo-album** L. Sp. Pl. 851. 1753; Hook. f. Fl. Brit. India 3: 288. 1881; Cooke, Fl. Pres. Bombay 2: 86. 1958 (Repr. ed.).

Woolly-tomentose herbs, branched at base, 10–30 cm; leaves linear-oblong or spathulate, 1.3–4.5 x 0.4–0.6 cm; heads bright yellow; achenes oblong, minute with few papillae.

Fls. & Frts. : February–March.

In hilly forests and damp places, frequent. Karjat; Matheran; Raigad.

2. **Gnaphalium polycaulon** Pers. Syn. 2 : 421. 1807; Grierson in Notes Roy. Bot. Gard. Edinb. 31 : 137. 1972.*G. indicum auct. non* L. (1753); Hook. f. Fl. Brit. India 3 : 289. 1881; Cooke, Fl. Pres. Bombay 2: 87. 1958 (Repr. ed.).

Erect or diffuse, much branched, white-pubescent herbs, 8–15 cm; leaves linear-obovate or spathulate, woolly, 1.2–4.7 x 0.3–0.8 cm; heads creamy-white to yellow; achenes oblong, minutely hairy.

Fls. & Frts. : December–May.

In hilly forests and moist places, frequent. Karjat; Matheran; Pen.

30. SENECIO L.

1a. Heads bracteate; pappus hairs paleaceous or slender:

2a. Pappus hairs slender; leaves linear-oblong ... *S. dalzellii* 1

2b. Pappus hairs paleaceous; leaves ovate ... *S. bombayensis* 2

1b. Heads ebracteate; pappus absent ... *S. belgaumensis* 3

1. **Senecio dalzellii** C.B. Cl. Comp. Ind. 201. 1876; Hook. f. Fl. Brit. India 3: 346. 1881; Cooke, Fl. Pres. Bombay 2: 110. 1958 (Repr. ed.).

Erect, branched herbs, 30–90 cm; leaves linear–oblong, white–woolly beneath, 3.4–7 x 0.4–1.2 cm; heads yellow, dichotomously branched; achenes scabrid–hairy.

Fls. & Frts. : November–December.

In hilly forests, infrequent. Matheran.

2. **Senecio bombayensis** Balakr. in J. Bombay Nat. Hist. Soc. 67: 61. 1970. *Doronicum reticulatum* Wight in Calc. J. Nat. Hist. 7: 156. 1847. *Senecio grahami* Hook. f. Fl. Brit. India 3: 347. 1881; Cooke, Fl. Pres. Bombay 2: 110. 1958 (Repr. ed.). *Sonki.*

Erect, stout, glabrous, branched herbs, 30–90 cm; leaves rhomboid–ovate, white–cottony between the nerves beneath, 3.4–7.5 x 1.5–4 cm; heads bright yellow in terminal paniculate cymes; achenes scabridly hairy.

Fls. & Frts. : August–September.

In hilly forests, frequent. Near Simpson tank, Matheran; Neral to Matheran.

3. **Senecio belgaumensis** (Wight) C.B. Cl. Comp. Ind. 200. 1876; Hook. f. Fl. Brit. India 3: 348. 1881; Cooke, Fl. Pres. Bombay 2: 111. 1958 (Repr. ed.). *Madacarpus belgaumensis* Wight in Calc. J. Nat. Hist. 7: 157. 1847.

Erect, hairy herbs; leaves rhomboid–ovate, coarsely toothed, white–tomentose on nerves beneath, 0.7–2 x 0.3–1.4 cm; heads small, yellow; achenes minute, ribbed, black.

Fls. & Frts. : August–September.

As forest undergrowth, infrequent. Mandatna to Pangloli reserve forests, Mhasla.

31. BLUMEA DC. *nom. cons.*

1a. Heads in spiciform cymes, panicles or in peduncled open corymbs:

2a. Heads in spiciform cymes or panicles:

3a. Corolla rosy–pink to purple; plants without terpentine smell ... *B. solidaginoides* 1

3b. Corolla yellow; plants with strong terpentine smell ... *B. lacera* 2

2b. Heads in peduncled, open corymbs:

4a. Plants quite glabrous ... *B. virens* 3

4b. Plants pubescent ... *B. membranacea* 4

1b. Heads few in axillary and terminal corymbs, often clustered; rarely solitary:

5a. Plants densely woolly ... *B. malcolmii* 5

5b. Plants not as above:

6a. Heads compact, globose in spicate panicles; achene ribbed ... *B. hieracifolia var. macrostachya*

6b. Heads and achenes not as above :

7a. Mostly prostrate or trailing herbs ... *B. oxyodonta* 7

7b. Mostly erect, robust herbs:

8a. Heads in peduncled cymes ... *B. eriantha* 8

8b. Heads axillary, sessile, solitary or clustered ... *B. belangeriana* 9

1. **Blumea solidaginoides** (Poir.) DC. Prodr. 5: 443. 1836; Cufod. in Bull. Jard. Bot. Brux. Suppl. 36(3): 1093. 1966. *Gnaphalium solidaginoides* Poir. Encycl. Suppl. 2: 805. 1811. *Blumea wightiana* DC. in Wight, Contrib. 14. 1834; Hook. f. Fl. Brit. India 3: 261. 1881; Cooke, Fl. Pres. Bombay 2: 75. 1958 (Repr. ed.).

Erect, hairy herbs, 15–60 cm; leaves obovate or elliptic–lanceolate, hairy, 2.5–5.3 x 1.7–2 cm; heads rosy–pink; achenes minute, angular.

Fls. & Frts. : December–March.

Frequent in hilly forests, occasionally near the sea–shores. Elephanta island; Matheran; Raigad.

2. **Blumea lacera** (Burm. f.) DC. in Wight, Contrib. 14. 1834; Hook. f. Fl. Brit. India 3: 263. 1881; Cooke, Fl.Pres. Bombay 2: 76. 1958 (Repr. ed.); Randeria in Blumea 10 : 258. 1960. *Conyza lacera* Burm. f. Fl. Ind. 180. t. 59. f. 1. 1768. *Burando.*

Erect, stiff, strongly aromatic and glandular–pubescent herbs, 20–40 cm; leaves elliptic–ovate or obovate, villous, 3–5.5 x 1.4–4.3 cm; heads yellow; achenes minute, subtetragonous, glabrous.

Fls. & Frts. : February–May.

In deciduous forests and along the sea–coast, frequent. Chavni and Dhamni forests, Pen; Nagaon beach, Alibag; Survey forest in Murud.

3. **Blumea virens** DC. in Wight, Contrib. 14. 1834; Hook. f. Fl. Brit. India 3: 264. 1881; Cooke, Fl. Pres. Bombay 2: 77. 1958 (Repr.ed.); Randeria in Blumea 10: 272. 1960.

Erect, much branched herbs, 30–90 cm; leaves obovate–oblong, dentate, 1.7–13.5 x 0.6–5 cm; heads yellow; achenes oblong, hairy, ribbed.

Fls. & Frts. : December–March.

As an undergrowth in forests, frequent. Karnala fort and Tadavli forests, Panvel; Matheran.

4. **Blumea membranacea** Willd. ex DC. Prodr. 5: 440. 1836; Hook. f. Fl. Brit. India 3: 265. 1881; Cooke, Fl. Pres. Bombay 2: 77. 1958 (Repr. ed.); Randeria in Blumea 10: 269. 1960. *Mharbir.*

Suffruticose, glandular–pubescent herbs or undershrubs, 40–120 cm; leaves lower lyrately pinnatifid, upper entire, elliptic–lanceolate, sparsely hairy, 3–12.5 x 1.4–4.8 cm; heads yellow; achenes minute, ribbed, brownish, hairy.

Fls. & Frts. : May–October.

Frequent as forest undergrowth, occasionally on old walls. Dahen forest, Mhasla; Raigad.

5. **Blumea malcolmii** (C.B. Cl.) Hook. f. Fl. Brit. India 3: 266. 1881; Cooke, Fl. Pres. Bombay 2: 78. 1958 (Repr. ed.); Randeria in Blumea 10: 278. 1960. *Pluchea malcolmii* C.B. Cl. Comp. Ind. 95. 1876.

Diffuse or ascending, aromatic, leafy stemmed herbs; leaves ovate, obovate–oblong, 1.6–3.5 x 0.5–2 cm; heads yellow; achenes dark brown, angled, sparsely hairy.

Fls. & Frts. : November–May.

Among grasses in hilly forests, frequent. Karnala fort; Matheran; Varandh ghat.

6. **Blumea hieraciifolia** (D.Don) DC. var. **macrostachya** (DC.) Hook. f. Fl. Brit. India 3: 363. 1881; Randeria in Blumea 10: 248. 1960; Naik & Bhogaonkar in J. Econ. Tax. Bot. 14(3): 732. 1990. *B macrostachya* DC. Prodr. 5: 442. 1846.

Erect or diffuse herbs, 1–2 m; stems and branches grey-tomentose;

leaves radical and cauline, elliptic, oblong or oblanceolate, shortly dentate–serrate, densely grey–tomentose beneath, 10–15 x 3–6 cm; heads yellow, 5–8 mm across, solitary or in cymose clusters; achenes minute, pilose.

Fls. & Frts. : December–February.

In fields, Common. Panvel.

7. **Blumea oxyodonta** DC. in Wight, Contrib. 15. 1834; Hook. f. Fl. Brit. India 3 : 266. 1881; Cooke, Fl. Pres. Bombay 2 : 77. 1958 (Repr. ed.); Randeria in Blumea 10: 280. 1960.

Prostrate or procumbent, dichotomously branched herbs, 8–20 cm; leaves elliptic–oblong or obovate–oblong, woolly–pubescent, spinous–toothed, 1–5.5 x 0.6–1.4 cm; heads yellow; achenes angular, hairy.

Fls. & Frts. : January–June.

Among grasses in forests, frequent. Karnala fort; Neral to Karjat; Raigad.

8. **Blumea eriantha** DC. in Wight Contrib. 15. 1834; Hook. f. Fl. Brit. India 3: 266. 1881; Cooke, Fl. Pres. Bombay 2: 78. 1958 (Repr. ed.).; Randeria in Blumea 10: 279. 1960. *Nimurdi.*

Erect, aromatic, dichotomously branched, variable herbs, 20–40 cm; leaves radical and cauline, elliptic–oblong, obovate–oblong or lyrately pinnatifid, silky–pubescent, 2.4–13.5 x 0.6–1 cm; heads yellow; achenes minute and angled.

Fls. & Frts. : December–February.

Among grasses in plains and hilly forests, road–sides etc., frequent. Karjat; Mahad; Matheran; Neral to Karjat; Panvel; Uran.

9. **Blumea belangeriana** DC. Prodr. 5: 444. 1836; Hook. f. Fl. Brit. India 3: 266. 1881; Cooke, Fl. Pres. Bombay 2: 78. 1958 (Repr. ed.); Randeria in Blumea 10: 277. 1960.

Erect, branched herbs, sparingly hispid at base, villous at apex; lower leaves obovate, upper ones elliptic–oblong, all closely dentate, sparingly hairy above, villous beneath; heads greenish–yellow; achenes terete, glabrous.

Fls. & Frts. : December–March.

In hilly forests, infrequent. Matheran; Matheran to Neral Road.

32. CONYZA Less

Conyza stricta Willd. Sp. Pl. 3: 1922. 1800; Hook. f. Fl. Brit. India 3: 258. 1881; Fyson, Fl. South Indian Hill. St. 2: t. 263. 1932; Cooke, Fl. Pres. Bombay 2: 73. 1958 (Repr. ed.).

Erect, hairy herbs, 15–30 cm; leaves linear–lanceolate, cuneate, appressed–pubescent, 1.3–2.5 x 0.2–0.4 cm; heads creamy–white to yellow in terminal corymbs; achenes ovoid, compressed, minutely hairy.

Fls. & Frts. : October–February.

In hilly forests, frequent. Matheran.

33. TRIDAX L.

Tridax procumbens L. Sp. Pl. 900. 1753; Hook. f. Fl. Brit. India 3: 311. 1881; Cooke, Fl. Pres. Bombay 2: 102. 1958 (Repr. ed.). *Buranda*.

Erect or procumbent herbs, 20–40 cm; leaves ovate–lanceolate, hairy, 1.2–5.5 x 0.4–2.3 cm; heads yellow, terminal; achenes brown, obovoid, ribbed.

Fls. & Frts. : Almost throughout the year.

In moist places, frequent. Alibag beach; Savitri river bank from Mahad to Nadgaon.

34. ERIGERON L.

Erigeron karvinskianus DC. Prodr. 5: 285. 1836. *Vittadinia australis* A. Rich. Ess. Nouv. Zel. 251. 1832; Cooke, Fl. Pres. Bombay 2: 123. 1958 (Repr. ed.).

Herbs upto 30 cm; branches decumbent and trailing; upper leaves oblong, lower ones obovate–cuneate, ciliate at base, 2–5 toothed at apex; heads on solitary peduncles; rays numerous, white with purple black, involucre, hirsute; achenes flattened.

Fls. & Frts. : May–June.

As an escape, infrequent. Matheran.

74. CAMPANULACEAE

1a. Flowers irregular; stamens united by anthers ... LOBELIA 1

1b. Flowers regular; stamens free ... WAHLENBERGIA 2

1. LOBELIA L.

1a. Plants robust; stems terete, hollow, not angled; flowers in long, terminal racemes ... *L. nicotianifolia* 1

1b. Plants slender; stems 2–3 angled; flowers solitary, axillary:

2a. Anthers of all stamens penicellate; seeds trigonous ... *L. alsinoides* 2

2b. Only 2 anterior anthers penicellate; seeds ellipsoid ... *L. heyneana* 3

1. **Lobelia nicotianifolia** Roth ex Roem. & Schult. in Roem. & Schult. Syst. Veg. 5: 47. 1819 (*'nicotianaefolia'*); Wight, Ill. 2: t. 135. ff. 1–10. 1850; C.B. Cl. in Hook. f. Fl.Brit. India 3: 427. 1881; Cooke, Fl. Pres. Bombay 2: 131. 1958 (Repr. ed.). *Dhaval, Dhotra.*

Tall herbs or undershrubs, 90–120 cm; leaves oblong–lanceolate, spirally arranged, glabrous, upto 17 x 2.7 cm; flowers white in 15 – 30 cm long terminal racemes; capsules cylindric–cupular, glabrous.

Fls. & Frts. : November–March.

In hilly forests, infrequent. Matheran; Raigad.

2. **Lobelia alsinoides** Lam. Encycl. 3: 588. 1791. *L. trigona* Roxb. Fl.Ind. 2: 111. 1824; Wight, Icon. t. 1170. 1848; C.B. Cl. in Hook. f. Fl. Brit. India 3: 425. 1881; Cooke, Fl. Pres. Bombay 2: 130. 1958 (Repr.ed.).

Small herbs; leaves ovate–oblong or cordate, sublanceolate, glabrous, 0.7–2 x 0.3–1 cm; flowers bluish–purple, axillary; capsules globose–ellipsoid; seeds many, brownish, tapering at ends.

Fls. & Frts. : September–October.

In damp places, frequent. Matheran; Neral.

3. **Lobelia heyneana** Schult. in Roem. & Schult. Syst. Veg. 5: 50. 1819. *L. trialata* Buch.–Ham. ex D.Don, Prodr. Fl. Nep. 157. 1825; C.B. Cl. in Hook. f. Fl. Brit. India 3: 425. 1881; Cooke, Fl. Pres. Bombay 2: 130. 1958 (Repr. ed.).

Erect herbs, stems winged; leaves rhomboid–ovate or lanceolate, deeply serrate, glabrous, 0.6–3.5 x 0.2–1.2 cm; flowers bluish–white; capsules oblong; seeds brown, ellipsoid.

Fls. & Frts. : September–October.

In wet places, infrequent. Savitri river bank near Sav village, Mahad.

2. WAHLENBERGIA Schrad. ex Roth *nom. cons.*

* **Wahlenbergia marginata** (Thunb.) A. DC. Monogr. Campanulaceae 143. 1830. *Campanula marginata* Thunb. Fl. Jap. 89. 1784. *Wahlenbergia gracilis* (Forst. f.) Schrad. ex A. DC. *op. cit.* 142; C.B. Cl. in Hook. f. Fl. Brit. India 3: 429. 1881; Cooke, Fl. pres. Bombay 2: 133. 1958 (Repr. ed.). *W. agrestis* A. DC. *op. cit.* 145; Wight, Icon. t. 1175. 1848.

Slender herbs, 30–60 cm; leaves linear–oblong or oblanceolate, appressed pubescent beneath; flowers bluish, solitary; capsules obconical, glabrous, 2–3–valved.

Fls. & Frts. : December–February.

In higher ghats, infrequent. Matheran.

75. SPHENOCLEACEAE

SPHENOCLEA Gaertn.

Sphenoclea zeylanica Gaertn. Fruct. 1: 113. t. 24. f. 5. 1788; C. B. Cl. in Hook. f. Fl. Brit. India 3: 437. 1881; Cooke, Fl. Pres. Bombay 2: 134. 1958 (Repr. ed.). *S. pongatium* DC. Prodr. 7: 548. 1839; Wight, Ill. 2: t. 138. 1850.

Erect, succulent, glabrous herbs, 20–40 cm; leaves lanceolate–oblong, 2.4–5 x 0.4–1.3 cm; flowers greenish–yellow in terminal spikes; capsules wedge shaped; seeds minute, oblong.

Fls. & Frts. : October–December.

In rice fields and wet places, infrequent. Nagothana to Pen.

76. PLUMBAGINACEAE

PLUMBAGO L.

Plumbago zeylanica L. Sp. Pl. 151. 1753; Wight, Ill. 2: t. 179. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 3 : 480. 1882; Cooke, Fl. Pres. Bombay 2: 136. 1958 (Repr. ed.). *Chitrak.*

Perennial, straggling or scandent herbs or undershrubs; leaves ovate, glabrous, 3.2–8.5 x 1.6–4.3 cm; flowers white; capsules oblong, enclosed in stalked, glandular, persistent calyx.

Fls. & Frts. : August–October.

In hilly forests, frequent. Matheran; Varandh ghat.

77. PRIMULACEAE

ANAGALLIS L.

1a. Corolla blue–purple, longer than calyx; filaments hairy; leaves opposite ... *A. arvensis* 1

1b. Corolla white, shorter than calyx; filaments glabrous; leaves alternate ... *A. pumila* 2

1. **Angallis arvensis** L. Sp. Pl. 148. 1753; Hook. f. Fl. Brit. India 3: 506. 1882; Cooke, Fl. Pres. Bombay 2: 139. 1958 (Repr. ed.). *A latifolia* L. Sp. Pl. 149. 1753; Wight, Icon. t. 1205. 1848.

Erect, slender, glabrous herbs, 10–20 cm; leaves ovate, acute, entire, 0.4–1.5 x 0.2–0.3 cm; flowers axillary, solitary; capsules globose with persistent style; seeds minute, trigonous, brownish.

Fls. & Frts. : September–October.

Moist places in plains and hills, frequent. Matheran; Neral; Neral to Matheran; Roha.

2. **Anagallis pumila** Sw. Prodr. Veg. Ind. Occ. 1: 40. 1788. *Centunculus tenellus* Duby in DC. Prodr. 8: 72. 1844; Wight, Icon. t. 2000. 1853; Hook. f. Fl. Brit. India 3: 506. 1882; Cooke, Fl. Pres. Bombay 2: 140. 1958 (Repr. ed.).

Small herbs, 8–15 cm; leaves ovate–obovate, glabrous, 3–5 x 2–3 mm; flowers axillary, solitary; capsules circumscissile; seeds many, trigonous, black.

Fls. & Frts. : August–September.

In hilly forests, infrequent. Kalasgiri hill, Roha.

78. MYRSINACEAE

1a. Erect shrubs or small trees along sea–shore (Mangrove); flowers in umbels; fruits cylindric, non–endospermic ... AEGICERAS 1

1b. Erect or scandent shrubs of inland habitat (not Mangrove); flowers in racemes, spikes or panicles; fruits globose, endospermic :

2a. Calyx thickened, enclosing the fruit; seeds numerous ... MAESA 2

2b. Calyx not thickened, free; seeds 1–2 ... EMBELIA 3

1. AEGICERAS Gaertn.

Aegiceras corniculatus (L.) Blanco Pl. Philip. (ed. 1) 79. 1837. *Rhizophora corniculata* L. in Stickm. Herb. Amb. 13. 1754 & Amoen. Acad. 4: 123. 1759. *Aegiceras majus* Gaertn. Fruct. 1: 216. t. 46. 1788; Wight, Ill. 2: t. 146. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 3: 515. 1882; Cooke, Fl. Pres. Bombay 2: 147. 1958 (Repr. ed.). *Kajla.*

Large shrubs or small trees, 90–150 cm; leaves obovate, obovate–oblong, thick, coriaceous, glabrous, 2.8–7.8 x 1.3–3.2 cm; flowers white, axillary; fruits cylindric–curved, sickle shaped, brown, glabrous.

Fls. & Frts. : August–March.

Along the sea–coast, frequent. Creek on way to Murud from Ghosale; Dasgaon creek; Nagothana to Pen.

This mangrove is found in association with *Acanthus ilicifolius, Avicennia marina, Rhizophora mucronata* etc.

2. MAESA Forssk.

Maesa indica (Roxb.) DC. Trans. Linn. Soc. London 17: 134. 1834. *Baeobotrys indica* Roxb. Fl. Ind. 2: 230. 1824. *Maesa dubia* (Wall.) DC. op. cit.; C.B. Cl. in Hook. f. Fl. Brit. India 3: 510. 1882; Cooke, Fl. Pres. Bombay 2: 141. 1958 (Repr. ed.). *Maesa indica* (Roxb.) DC. var. *perottetiana* (A. DC.) C. B. Cl. *op. cit.* 509. *Ataki.*

Large, much branched shrubs; leaves ovate–elliptic, serrate–dentate, glabrous, 4.7–12.5 x 1.7–6.4 cm; flowers white; berries creamy–white.

Fls. & Frts. : November–March.

In hilly forests, frequent. Parghat, Mahad.

3. EMBELIA Burm. f. *nom. cons.*

Embelia tsjeriam–cottam (Roem. & Schult.) A. DC. in Trans. Linn. Soc. London 17: 131. 1834 & in DC. Prodr. 8: 37. 1844; Wight, Icon. t. 1209. 1848. *Ardisia tsjeriam–cottam* Roem. & Schult. Syst. 4: 518. 1819. *Embelia robusta sensu* C.B. Cl. in Hook. f. Fl. Brit. India 3: 515. 1882 *non* Roxb. (1820); Cooke, Fl. Pres. Bombay 2: 144. 1958 (Repr. ed.). *Ambati.*

Moderate sized, scandent shrubs; leaves ovate–elliptic, acuminate, gland–dotted beneath, rusty–pubescent on nerves below, 2.5–11 x 1.4– 6

cm; flowers yellowish in axillary or extra-axillary short racemes; fruits green-red.

Fls. & Frts. : April–October.

In plain and hilly forests, frequent. Kalasgiri hill, Roha; Karle–Khind & Ramraj forests, Alibag; Matheran; Parghat & Varandh ghat, Mahad.

Fruits are edible. As they resemble with black-pepper, are used for adulteration. Roots are used as an antidote for snake and Scorpion bite.

79. SAPOTACEAE

1a. Armed trees or shrubs; leaves tomentose beneath; calyx lobes 1-seriate; stamens 5–6 ... XANTOLIS 1

1b. Unarmed trees; leaves glabrous below; calyx lobes 2-seriate; stamens more than 6 :

2a. Leaves clustered at the of branches; stamens 12 or more, all fertile ... MADHUCA 2

2b. Leaves not as above; stamens 6–8 with as many staminodes :

3a. Flowers 3-merous; staminodes bifid or denticulate at apex, glabrous ... MIMUSOPS 3

3b. Flowers 4-merous; staminodes lanceolate, acuminate, hairy ... MANILKARA 4

1. Xantolis Rafin.

Xantolis tomentosa Rafin. Sylv. Tell. 36. 1838; van Royen in Blumea 8: 226. 1957. *Sideroxylon tomentosum* Roxb. Pl. Cor. 1: t. 28. 1795 & Fl. Ind. 1: 602. 1832; C.B. Cl. in Hook. f. Fl. Brit. India 3:538. 1882; Cooke, Fl. Pres. Bombay 2: 150. 1958 (Repr. ed.). *Kate–Kumbal.*

Moderate-sized spiny trees; leaves obovate–oblong, tomentose when young, glabrous at length, 3–8.2 x 1.5–4.4 cm; flowers reddish–white in axillary clusters; berries ovoid–spherical, yellowish–green, tomentose.

Fls. & Frts. : September–March.

In moist deciduous and semievergreen forests, frequent. Matheran; Mhasla; on way to Nagothana.

2. MADHUCA J. F. Gmel.

Madhuca longifolia (Koen.) Macbr. var. **latifolia** (Roxb.) Chev. in

Rev. Bot. Appl. 23: 149. 1943; van Royen in Blumea 10: 55. 1960. *Bassia latifolia* Roxb. Pl. Cor. t. 19. 1795; C. B. Cl. in Hook. f. Fl. Brit. India 3: 544. 1882; Cooke, Fl. Pres. Bombay 2: 152. 1958 (Repr. ed.). *Moha.*

Large deciduous trees, 1–1.5 m; bark brownish–black, fissured; leaves obovate or elliptic–oblong, densely woolly when young, glabrous at maturity, 11–16 x 5.5–8.2 cm; flowers creamy–white in axillary clusters; fruits fleshy, ovoid, greenish with yellow, rusty powdery coating; seeds1–4, brownish–black.

Fls. & Frts. : January–May.

In deciduous forests, frequent. Matheran; on way to Vangani from Bedesgaon, Neral.

Flowers and fleshy pericarp are edible. Oil extracted from the seeds used in soap industry. Flowers also yeild a spirit. The sweet juice from petals is good tonic for health.

3. MIMUSOPS L.

Mimusops elengi L. Sp. Pl. 349. 1753; Wight, Icon. t. 1586. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 3: 548. 1882; Cooke, Fl. Pres. Bombay 2: 155. 1958 (Repr. ed.). *Bakuli, Borsali.*

Evergreen trees with ringed, grey, smooth bark, 1–2 m; leaves elliptic–lanceolate, glabrous, 5–11.2 x 2.3–5.7 cm; flowers white, fragrant, axillary, solitary or fascicled; fruits yellow, ovoid, fleshy; seeds brown.

Fls. & Frts. : January–March.

In hilly forests, frequent. Matheran.

Ripe fruits are edible. Bark is used in native medicines , wood for furniture and oil is extracted from seeds.

4. MANILKARA Adans. *nom. cons.*

Manilkara hexandra (Roxb.) Dub. in Ann. Mus. Coll. Marseille 3: 9. f. 2. 1915; P. Royen in Blumea 7: 408. 1953. *Mimusops hexandra* Roxb Pl. Cor. t. 15. 1795; C. B. Cl. in Hook. f. Fl. Brit. India 3 : 549. 1882; Cooke, Fl. Pres. Bombay 2: 155. 1958 (Repr. ed.).

Trees with dark brown rough bark; leaves obovate–oblong, coriaceous, glabrous; flowers whitish, axillary, solitary or in fascicles of 2–6; fruits ovoid, greenish, at length yellow.

Fls. & Frts. : May–November.

In moist deciduous forests, infrequent. Karle-khind, Alibag.

80. EBENACEAE

DIOSPYROS L.

1a. Seeds with ruminate endosperm:

2a. Leaves often subopposite; male corolla more or less tubular; fruiting calyx with recurved margin ... *D. melanoxylon* 1

2b. Leaves alternate; male corolla shortly urceolate; fruiting calyx forming woody cup with reflexed lobes ... *D. sylvatica* 2

1b. Seeds without ruminate endosperm :

3a. Flowers 3–merous; ovary 3–locular; staminodes absent; stamens 4–9 ... *D. nigrescens* 3

3b. Flowers 4–merous; ovary 8 – locular; staminodes 4; stamens 16 ... *D. montana* 4

1. **Diospyros melanoxylon** Roxb. Pl. Cor. 1: 36. t. 46. 1795; C. B. Cl. in Hook. f. Fl. Brit. India 3: 564. 1882; Cooke, Fl. Pres. Bombay 2: 159. 1958 (Repr. ed.). *D. dubia* Wall. ex A. DC. in DC. Prodr. 8: 223. 1844; Wight, Icon. t. 1233. 1848. *Temburni.*

Large shrubs or small trees, 1–5 m; leaves ovate–elliptic or ovate–lanceolate, 5–16.2 x 4–6.7 cm; male flowers in axillary, drooping cymes; female flowers solitary; fruits globose, yellow when ripe; seeds blackish.

Fls. &.Frts. : February–May.

In deciduous forests, frequent. Matheran.

Leaves are used as wrappers for bidis.

2. **Diospyros sylvatica** Roxb. Pl. Cor. 1: 37. t. 47. 1795; C.B. Cl. in Hook. f. Fl. Brit. India 3: 559. 1882; Cooke, Fl. Pres. Bombay 2: 160. 1958 (Repr. ed.). *Mada.*

Medium sized trees; leaves obovate–oblong or lanceolate, acute–acuminate, glabrous, 6.4–11.5 x 2.8–5 cm; male flowers in axillary, 6–10 flowered cymes; female flowers solitary; fruits globose, dark green, fruiting calyx enlarged, foliaceous.

Fls. & Frts. : September–February.

In moist deciduous and semievergreen forests, frequent. Matheran.

3. **Diospyros nigrescens** (Dalz.) Sald. in Sald. & Nicols. Fl. Hassan 197. 1976. *Maba nigrescens* Dalz. in Dalz. & Gibs. Bombay Fl. 142. 1861; C. B. Cl. in Hook. f. Fl. Brit. India 3: 551. 1882; Cooke, Fl. Pres. Bombay 2: 157. 1958 (Repr. ed.). *Goindu, Rakta-rora.*

Shrubs or small trees; leaves obovate–lanceolate, fulvous–hairy on midrib beneath; flowers solitary, in pairs or in short cymes; fruits ellipsoid.

Fls. & Frts. : November–February.

In hilly forests, infrequent. Matheran.

4. **Diospyros montana** Roxb. Pl. Cor. 1: 37. t. 48. 1795 & Fl. Ind. 2: 538. 1832; Wight, Icon. t. 1225. 1848; C B. Cl. in Hook. f. Fl. Brit. India 3: 555. 1882; Cooke, Fl. Pres. Bombay 2: 165. 1958 (Repr. ed.).

Armed, dedciduous trees; leaves ovate–oblong or obovate, glabrous, 6.4–16 x 3.8–7 cm; male flowers greenish–white in short, paniculate cymes; female ones solitary; fruits globular, greenish–yellow, glabrous.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Karnala Bird Sanctuary.

The wood is said to be useful commercially.

81. SYMPLOCACEAE

SYMPLOCOS Jacq.

Symplocos dryophila C. B. Cl. in Hook. f. Fl. Brit. India 3 : 578. 1882; Banerjee in Rec. Bot. Surv. India 19 (2) : 649. 1966. *S. spicata* Roxb. ex T. Cooke, Fl. Pres. Bombay; 2: 108. 1904 (2: 169. 1958. Repr. ed.). *S. spicata* Roxb. var. *laurina* (Retz.) C. B. Cl. in Hook. f. Fl. Brit. Inida 3: 573. 1882 *pro parte. Mirjoli.*

Large shrubs or small trees; leaves elliptic–lanceolate, coriaceous, glabrous; flowers yellowish–white in axillary spikes; fruits globose.

Fls. & Frts. : September–December.

In hilly forests, infrequent. Mahad ghat.

82. OLEACEAE

1a. Climbing shrubs; flowers in cymes; calyx lobes subulate; corolla lobes imbricate; fruit a berry ... JASMINUM 1

1b. Trees; flowers in panicles; calyx lobes not subulate; corolla lobes valvate; fruit a drupe. ... OLEA 2

1. JASMINUM L.

1a. Suberect shrubs ... *J. sambac* 1

1b. Climbing shrubs:

2a. Leaves glabrous; bracts linear–subulate ... *J. malabaricum* 2

2b. Leaves pubescent; bracts foliaceous ... *J. multiflorum* 3

1. **Jasminum sambac** (L.) Ait. Hort. Kew. 1: 8. 1789; Wight, Icon. t. 704. 1840; C.B. Cl. in Hook. f. Fl.Brit. India 3: 591. 1882; Cooke, Fl. Pres. Bombay 2: 172. 1958 (Repr. ed.). *Nyctanthes sambac* L. Sp. Pl. 6. 1753. *Bat–mogra.*

Suberect shrubs; leaves opposite, variable, glabrous; flowers white; fruits subglobose.

Fls. & Frts. : August–September.

Frequent in deciduous forests, often cultivated. Karle-khind, Alibag.

Oil extracted from its fragrant flowers is used as perfume.

2. **Jasminum malabaricum** Wight, Icon. t. 1250. 1848; C. B. Cl. in Hook. f. Fl. Brit. India 3: 594. 1882; Cooke, Fl. Pres. Bombay 2: 172. 1958 (Repr. ed.). *Kusar, Kusari.*

Large, climbing shrubs; leaves opposite, ovate–elliptic, base rounded or cordate, glabrous, 2.4–9.5 x 2.2–8 cm; flowers white in terminal trichotomous cymes; fruits ovoid or globose, green to dark purple, at length black.

Fls. & Frts. : February–May.

In moist deciduous and semi evergreen hilly forests, frequent. Bhira, Roha; Elephanta island; Mahad ghat; Matheran; Panvel; Ramraj forest, Alibag.

Flowers are fragrant and fruits edible. Oil extracted from dried fruits and seeds used by local people as a hair tonic.

3. **Jasminum multiflorum** (Burm. f.) Andr. Bot. Rep. 8. t. 496. 1807. *Nyctanthes multiflora* Burm. f. Fl. Ind. 5: t. 3. f. 1. 1768. *Jasminum pubescence* (Retz.) Willd. Sp. Pl. 1: 37. 1797; C. B. Cl. in Hook. f. Fl.Brit. India 3: 592. 1882; Cooke, Fl. Pres. Bombay 2: 173. 1958 (Repr. ed.). *J. bracteatum* Roxb. Fl. Ind. 1: 92. 1820; Wight, Icon. t. 1248. 1848. *Ran-mogra.*

Scandent shrubs with velvety pubescent branches; leaves ovate-elliptic, appressedly hairy, 2.5–8 x 1.7–3.6 cm; flowers white in terminal, axillary panicles; fruits globose, dark purple to blackish.

Fls. & Frts. : December–March.

In hilly forests, infrequent. Karnala fort.

In gardens, Matheran.

2. OLEA L.

Olea dioica Roxb. Fl. Ind. 1 : 105. 1820; Wight, Ill. 2 : t. 151. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 3: 612. 1882; Cooke, Fl. Pres. Bombay 2: 179. 1958 (Repr. ed.). *Parjambul.*

Evergreen trees, 8–12 m; leaves elliptic-lanceolate, glabrous, 4–15 x 2.4–5.2 cm; flowers creamy-yellow to reddish in axillary, compound panicles, polygamous-dioecious; fruits ellipsoid, purple-black.

Fls. & Frts. : January–May.

In hilly forests, frequent. Masadi round, Roha; Matheran; Parghat, Mahad.

Cultivated or introduced;

Jasminum grandiflorum L. Sp. Pl. (ed.2) 9. 1762; Wight, Icon. t. 1257. 1848; C. B. Cl. in Hook. f. Fl. Brit. India 3: 603. 1882; Cooke, Fl. Pres. Bombay 2: 176. 1958 (Repr. ed.). *Chameli.*

Herbs; leaves opposite, pinnate; leaflets rhomboid-oblong, acute; flowers white in 1–10 flowered terminal cymes; carpels ellipsoid.

In gardens, Matheran.

83. SALVADORACEAE

SALVADORA L.

Salvadora persica L. var. **wightiana** (Planch. ex Thw.) Verdc. in

Kew Bull. 19: 150. 1964. *S. wightiana* Planch. ex Thw. Enum. Pl. Zeyl. 190. 1860. *S. persica sensu* Roxb. Fl. Ind. 1: 389. 1832, *non.* L. (1753); C.B. Cl in Hook. f. Fl. Brit. India 3 : 619. 1882; Cooke, Fl. Pres. Bombay 2: 182. 1958 (Repr. ed.). *S. indica* Wight, Ill. 2: t. 181. 1850. *Khakan, Pilu, Pilva.*

Large shrubs or small trees with drooping branches and grey–white bark, 90–150 cm; leaves ovate–lanceolate, thick, glabrous, 2.3–5 x 1.2–2.4 cm; flowers greenish–yellow in large, terminal panicles; fruits globose, fleshy, green, violet–red when ripe.

Fls. & Frts. : November–March.

Along the coast, frequent. Alibag; Revas; Uran.

Leaves taste like mustard, eaten as vegetable. Leaf–paste is also applied for rheumatic pains by local people. The pungent shoots and leaves are used as an antidote for poison.

84. APOCYNACEAE

1a. Herbs or undershrubs; fruits drupaceous ... RAUVOLFIA 1

1b. Shrubs or trees; fruits not drupaceous :

2a. Scandent or climbing shrubs (if erect, then spinous); fruits berries or follicular mericarps:

3a. Armed with stout spines; berries 4–8 seeded; seeds without coma ... CARISSA 2

3b. Unarmed; follicles many seeded; seeds with coma :

4a. Flowers small, numerous in terminal and axillary paniculate cymes; stamens included below the middle of corolla tube ... ANODENDRON 3

4b. Flowers large (ca 7.5 cm across), few in terminal and pseudo–axillary cymes; stamens included at the top of the narrow portion of the tube ... CHONEMORPHA 4

2b. Erect, unarmed trees or shrubs, not climbing, fruits follicular :

5a. Anthers exserted; corolla with coronary scales; coma of seeds basal ... WRIGHTIA 5

5b. Anthers included; corolla without coronary scales; coma of seeds apical or absent :

6a. Evergreen; follicles curved, few seeded; seeds not comose but embedded in orange coloured aril ... TABERNEMONTANA 6

6b. Deciduous; follicles linear-cylindric, many seeded, comose :

7a. Shrubs or small trees; coma of the seeds at apex ... HOLARRHENA 7

7b. Huge trees; coma of seeds at both ends ... ALSTONIA 8

1. RAUVOLFIA L.

1a. Corolla tube long, slender, dilated a little above the middle; leaves in whorls of 3, lanceolate ... *R. serpentina* 1

1b. Corolla tube short, wide, dilated at top, just below the mouth; leaves in whorls of 3–4, oblanceolate to obovate ... *R. densiflora* 2

1. **Rauvolfia serpentina** (L.) Benth. ex Kurz, For. Fl. Brit. Burma 2: 171. 1877; Hook. f. Fl. Brit. India 3: 632. 1882; Cooke, Fl. Pres. Bombay 2: 188. 1958 (Repr. ed.). *Ophioxylon serpentinum* L. Sp. Pl. 1043. 1753; Wight, Icon. t. 849. 1844–1845. *Hadki, Sarpagandha.*

Suffruticose herbs or small shrubs upto 90 cm; leaves acute–acuminate, glabrous, 3–16.5 x 1.5–4.6 cm; flowers white with reddish–purple tinge in terminal, corymbose cymes; fruits green to purple–black at maturity.

Fls. & Frts. : March–October.

Moist shady places in forests, infrequent. Nagothana to Kolad; Ramraj forest, Alibag; Raigad; Wankalgar, Shrivardhan.

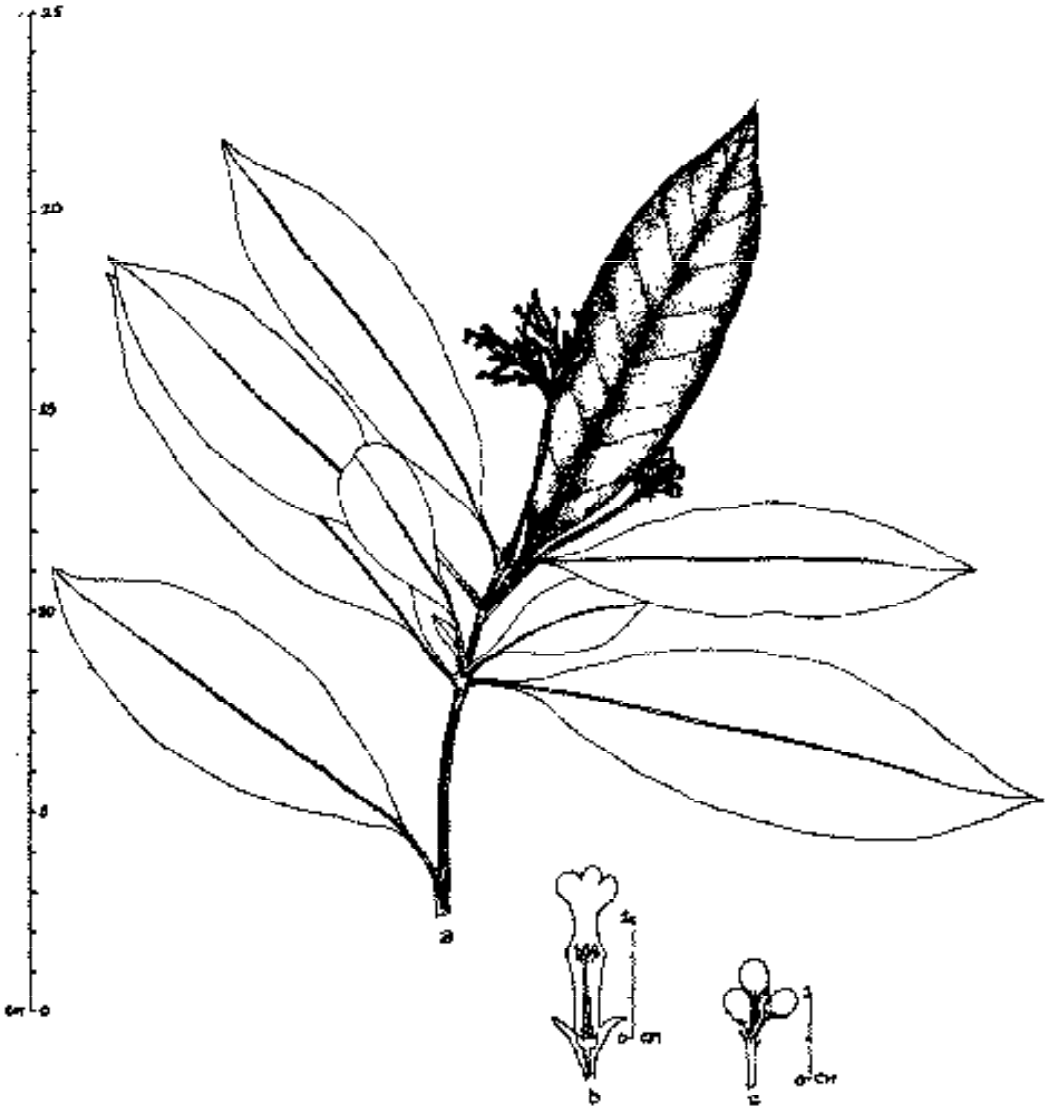
This speices is found scattered with very small populations in the district and becoming rare due to over–exploitation for its valuable roots which are used medicinally for reducing high blood–pressure.

2. **Rauvolfia densiflora** (Wall.) Benth. ex Hook. f. Fl. Brit. India 3: 633. 1882; Cooke, Fl. Pres. Bombay 2: 189. 1958 (Repr. ed.). *Tabernaemontana densiflora* Wall. in Edward's Bot. Reg. 15: t. 1273. 1829. *Ophioxylon neilgherrense* Wight, Icon. t. 1292. 1848. *Hadkij.*

Large shrubs or small trees with milky juice, 2–3 m; leaves variable in size, acuminate, glabrous; flowers white–pink in cymes; drupes single or in pairs, ellipsoid.

Fls. & Frts. : March–October.

In hilly forests, infrequent. Matheran; Poladpur to Mahabaleshwar Road.



Rauvolfia serpentina (L.) Benth.
a) Twig, b) L. S. of flower, c) Fruits.

2. CARISSA L. *nom. cons.*

Carissa congesta Wight, Icon. t. 1289. 1848. *C. carandas* L. var. *congesta* (Wight) Bedd. For. Man. Bot. 156. 1872; Hook. f. Fl. Brit. India 3: 631. 1882; Cooke, Fl. Pres. Bombay 2: 186. 1958 (Repr. ed.). *Karvand.*

Large, evergreen, spiny shrubs; leaves elliptic–oblong or obovate, glabrous, 3.5–7.7 x 2.2–3.3 cm; flowers white in terminal, paniculate cymes; fruits ellipsoid, reddish to dark black at maturity.

Fls. & Frts. : January–June.

In moist deciduous forests, frequent. Karle–khind, Alibag; Matheran; Neral; Parghat; Roha.

Fruits are edible. A good hedge plant.

3. ANODENDRON DC.

Anodendron paniculatum A. DC. in DC. Prodr. 8: 444. 1844; Hook. f. Fl. Brit. India 3: 668. 1882; Cooke, Fl.Pres. Bombay 2: 204. 1958 (Repr. ed.). *Echites paniculata* Roxb. Fl. Ind. 2: 17. 1832, *non* Poir. (1812); Wight, Icon. t. 396. 1840. *Kavalli, Lantani.*

Large, woody, scandent shrubs; leaves elliptic–oblong, acuminate, glabrous, 6.5–15.2 x 1.8–6.4 cm; flowers yellow; follicles woody, paired, upto 12 cm long; seeds 8–12, ellipsoid–lanceolate, compressed, reddish–brown with silky white coma.

Fls. & Frts. : September–March.

In hilly forests, frequent. Ghosale, Roha; Matheran.

Stem yields a strong fibre.

4. CHONEMORPHA G. Don

Chonemorpha fragrans (Moon) Alst. in Ann. Roy. Bot. Gard. (Peradeniya) 11: 203. 1929. *Echites fragrans* Moon, Cat. 20. 1824. *Chonemorpha macrophylla* (Roxb.) G. Don, Gen. Syst. 4: 76. 1837; Wight, Icon. t. 432. 1841; Hook. f. Fl. Brit. India 3: 661. 1882; Cooke, Fl. Pres. Bombay 2: 202. 1958 (Repr. ed.).

Large climbing shrubs; leaves elliptic–suborbicular, acuminate, glabrous above, tomentose beneath, base cordate, 15– 40 x 12.5 – 40 cm; flowers white in terminal racemose cymes; fruits 3–4–gonous, follicular, glabrous.

Fls. & Frts. : April–September.

In deciduous forests, infrequent. Shriganachari, Alibag.

Usually planted as an ornamental. Bark–fibre is used in making fishing nets.

5. WRIGHTIA R. Br.

1a. Leaves glabrous or scarcely puberulous beneath; coronary scales fimbriate; follicles smooth, not grooved at the junction of carpels, jointed at apex only ... *W. tinctoria* 1

1b. Leaves tomentose on both surfaces; coronary scales oblong, entire or lobed, not fimbriate; follicles rough with white tubercles, grooved at the junction of carpels, connate throughout ... *W. arborea* 2

1. **Wrightia tinctoria** (Roxb.) R. Br. in Mem. Wern. Soc. 1: 73. 1811; Wight, Icon. t. 444. 1841; Hook. f. Fl. Brit. India 3: 653. 1882; Cooke, Fl. Pres. Bombay 2: 200. 1958 (Repr. ed.). *Nerium tinctorium* Roxb. in Orient. Repert. 1: 39. cum tab. 1791. *Kala–Kuda, Kuda.* (PLATE 5b)

Large shrubs or small trees with greyish bark; leaves elliptic–lanceolate or oblong–lanceolate, acuminate, glabrous, 4–17 x 2–5 cm; flowers white in terminal, corymbose cymes; follicles linear–cylindrical, smooth, 10–60 cm long.

Fls. & Frts. : February–October.

In deciduous forests, frequent. Bhira; Elephanta island; Karjat; Karnala fort; Matheran.

Bark and seeds are used medicinally by tribal people for stomach disorders. Flowers and fruits yield a blue dye.

2. **Wrightia arborea** (Dennst.) Mabb. in Taxon 26: 533. 1977. *Periploca arborea* Dennst. Schluss. H. Malabar. 13: 23. & 25. 1818. *Wrightia tomentosa* Roem. & Schult. Syst. Veg. 4: 414. 1819; Wight, Icon. t. 443. 1841; Hook. f. Fl. Brit. India 3: 653. 1882; Cooke, Fl. Pres. Bombay 2: 199. 1958 (Repr. ed.). *Kala–indrajav, Tambda–Kuda.*

Trees with yellowish–grey bark; leaves ovate–elliptic or elliptic–lanceolate, acuminate, tomentose, 4.5–11 x 1.3–4.2 cm; flowers yellowish–white in terminal, corymbose, tomentose cymes; follicles cylindric.

Fls. & Frts. : April–June.

In deciduous forests, infrequent. Indapur, Mangaon.

Roots and seeds yield a yellow dye. Stem and root–bark regarded as an antidote to snake–bite and to the sting of scorpions.

6. TABERNEMONTANA Scop.

Tabernemontana heyneana Wall. in Edward's Bot. Reg. 15: t. 1273. 1829; Hook. f. Fl. Brit. India 3: 646. 1882. *Ervatamia heyneana* (Wall.) T. Cooke, Fl. Pres. Bombay 2: 134. 1904 (2: 196. 1958. Repr. ed.). *Nag–kuda.*

Large shrubs, or small trees; leaves oblong–lanceolate, acuminate, glabrous, 4.8–19 x 1.8–5.6 cm; flowers greenish–white in many flowered cymes; follicles paired, yellowish–green, boat–shaped with curved beak.

Fls. & Frts. : March–October.

In moist deciduous and semi–evergreen forests, frequent. Borgaon to Velamphata, Karjat; Matheran; Tada, Mangaon.

7. HOLARRHENA R. Br.

Holarrhena pubescens (Buch.–Ham.) Wall. ex G. don, Gen. Syst. 4: 78. 1837–38; Panigrahi in Taxon 36 (2): 466. 1987. *Echites pubescens* Buch.–Ham. in Trans. Linn. Soc. London 13 : 524. 1821. *Holarrhena codaga* G. Don, Gen. Syst. 4: 78. 1837–1838; Wight, Icon. t. 1297. 1848. *H. antidysenterica* Wall. ex A. DC. in DC. Prodr. 8: 413. 1844; Hook. f. Fl.Brit. India 3: 644. 1882; Cooke, Fl. Pres. Bombay 2: 195. 1958 (Repr. ed.). *Kuda, Pandhra–kuda.*

Large shrubs or small trees with dark brown, yellow spotted bark; leaves ovate–oblong, acuminate, glabrous, 5.4–17 x 2.3–8 cm; flowers white in terminal corymbose cymes; follicles cylindric, creamy–white, spotted, 11–30 cm long; seeds linear–oblong, compressed, brownish with silky–brown coma.

Fls. & Frts. : Almost throughout the year.

In moist deciduous forests, frequent. Bhira and Sanegaon, Roha; Karle–Khind, Alibag; Mahad; Matheran; Palasdhari, Karjat.

Bark and seeds are used in the preparation of valuable drugs for dysentery. The plant is much used in afforestation also.

8. ALSTONIA R. Br.

Alstonia scholaris (L.) R. Br. in Mem. Wern. Nat. Hist. Soc. 76. 1811; Wight, Icon. t. 422. 1841; Hook. f. Fl. Brit. India 3: 642. 1882; Cooke, Fl. Pres. Bombay 2: 194. 1958 (Repr. ed.). *Echites scholaris* L. Mant. Pl. 53. 1767. *Saitan, Satvin.*

Gigantic trees, 12–14 m; leaves 4–7, in whorl, elliptic–oblong, oblanceolate, glabrous; flowers greenish–white in umbellate cymes; follicles cylindric, pendulous, *ca* 15 cm; seeds papillose.

Fls. & Frts. : December–March.

Frequent near river banks, occasionally in hilly forests. Bhira; Bhogeshwari river near Pen; Matheran.

Cultivated or introduced:

1. **Catharanthus roseus** (L.) G. Don, Gen. Syst. 4: 95. 1837. *Vinca rosea* L. Syst. Nat. (ed. 10) 944. 1759; Hook. f. Fl. Brit. India 3: 640. 1882. *Lochnera rosea* (L.) Reichb. Consp. Reg. Veg. 134. 1828; Cooke, Fl. Pres. Bombay 2: 192. 1958 (Repr. ed.). *Sadaphuli.*

Undershrubs; leaves opposite, obovate–lanceolate, glabrous; flowers white; follicles green, linear in pairs.

Cultivated in gardens, Murud.

2. **Ervatamia divaricata** (L.) Burkill in Rec. Bot. Surv. India 10: 320. 1925. *Nerium divaricata* L. Sp. Pl. 209. 1753. *Tabernaemontana coronaria* Willd. Enum. Hort. Berol. 275. 1809; Hook. f. Fl. Brit. India 3: 646. 1882. *Ervatamia coronaria* Stapf in Fl. Trop. Afr. 4: 127. 1902; Cooke, Fl. Pres. Bombay 2: 197. 1958 (Repr. ed.).

Shrubs; leaves lanceolate or oblong, acuminate; flowers snow–white.

Cultivated in gardens, Matheran.

3. **Plumeria rubra** L. Sp. Pl. 209. 1753. Hook. f. Fl. Brit. India 3: 641. 1882; Cooke, Fl. Pres. Bombay 2: 205. 1958 (Repr. ed.).

Deciduous, branched trees; leaves oblong, glabrous; flowers red or white with yellow centre; fragrant.

Cultivated in gardens and near temples. Karnala fort; Sudhagad.

4. **Rauvolfia tetraphylla** L. Sp. Pl. (ed. 1) 208. 1753. *R canescens* L. Sp. Pl. (ed. 2) 303. 1762; Cooke, Fl. Pres. Bombay 2: 190. 1958 (Repr. ed.).

Undershrubs; leaves whorled, 4 in each node, oblong–lanceolate, glabrous; flowers white; fruits globose, green to reddish–purple.

Usually cultivated, found planted near temple in Kolaba fort, Alibag.

5. **Thevetia peruviana** (Pers.) Merr. Phil. J. Sci. Bot. 9: 130. 1914. *Cerbera peruviana* Pers. Syn. 1: 267. 1805. *Thevetia neriifolia* Juss. ex Steud. Nom. (ed. 2) 2: 680. 1841; Cooke, Fl. Pres. Bombay 2: 207. 1958 (Repr. ed.). *Pivla Kanher.*

Small trees; leaves linear–lanceolate, glabrous; flowers yellow, bell shaped in axillary cymes; drupes greenish–yellow, ellipsoid, 4–angled.

Usually planted. Near Bandhan village, Alibag.

Fruits are poisonous and bark is bitter and used as a febrifuge.

6. **Vallaris solanacea** (Roth) O. Ktze. Rev. Pl. 2: 417. 1891. *Peltanthera solanacea* Roth, Nov. Pl. Sp. 132. 1821. *Vallaris heynei* Spreng. Syst. 1: 35. 1824; Hook. f. Fl. Brit. India 3: 650. 1882; Cooke, Fl. Pres. Bombay 2: 199. 1958 (Repr. ed.).

Climbing shrubs; leaves elliptic–oblong, glabrous; flowers white in axillary cymes.

Planted near temple, Karjat.

The leaves are used medicinally by local people to cure a disease 'Naroo' (A kind of infectious thread worm). The paste of the leaves, is applied over swellings. The latex cures old wounds and sores.

85. ASCLEPIADACEAE

1a. Pendulous herbs; stem succulent ... FREREA 1

1b. Erect or twining herbs or undershrubs stem not as above

2a. Corrolla tubular, inflated near base; corolla lobes connate at tips ... CEROPEGIA 2

2b. Corolla not as above :

3a. Corona biseriate :

4a. Corona outer coronary, inner staminal; flowers greenish yellow ... LEPTADENIA 3

4b. Corona outer and inner staminal; flowers rosy–purple or reddish–purple within :

5a. Stem and leaves hispidulous; leaves ovate, deeply cordate; follicles echinate ... PERGULARIA 4

5b. Stem and leaves glabrous or nearly so; leaves linear to linear–lanceolate; follicles not echinate ... OXYSTELMA 5

3b. Corona uniseriate :

6a. Corona of 5 villous, fleshy, coronary lobes :

7a. Flowers solitary, umbel like; ridges of corona without fleshy processes not protruding beyond the mouth of corolla ... BIDARIA 6

7b. Flowers in corymbs; ridges of corona with fleshy processes protruding beyond the mouth of corolla ... GYMNEMA 7

6b. Corona staminal and not as above :

8a. Plants erect; stem and leaves cottony–hairy ... CALOTROPIS 8

8b. Plants twining or trailing; stem and leaves not cottony–hairy :

9a. Flowers purple or reddish–purple within :

10a. Pollinia pendulous; coronary rings fleshy; anthers with horny appendages; leaves broadly ovate–cordate ... HOLOSTEMMA 9

10b. Pollinia erect; corona with 5 distinct lobes or tubercles and entirely radiating from its base; anthers with membranous appendages; leaves not as above ... TYLOPHORA 10

9b. Flowers creamy–white or greenish–yellow:

11a. Corolla lobes contorted :

12a. Corolla greenish-yellow, coronary lobes fleshy, spreading, adnate only below to the staminal column, spiny at tip ... WATTAKAKA 11

12b. Corolla yellowish-green with purple spot; coronary lobes membranous, adnate to the length of staminal column, ending with crenulate tip ... COSMOSTIGMA 12

11b. Corolla lobes valvate :

13a. Corolla rotate; corona not cupular ... HOYA 13

13b. Corolla urceolate; corona cupular ... HETEROSTEMMA 14

1. FREREA Dalz.

Frerea indica Dalz. In J. Linn. Soc. 8: 10. t. 3. 1865; Hook. f. Fl. Brit. India 4: 76. 1883; Cooke, Fl. Pres. Bombay 2: 243. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4: 44. t. 7. 1962; Jain & Sastry in Threatened Plants India 41. t. 1990; Nayar & Satry, Red Data Book Ind. Pl. 1: 72. 1987. *Shindal-makudi*.

Perennial, succulent herbs, 10-15 cm; stem branched, glabrous, pale-green; leaves opposite, fleshy, elliptic-oblong, obtuse or subacute, subsessile, 1.4-4.2x 0.7-2.5 cm; corolla rotate, purple with pale-yellow spots in centre; follicles 2, terete, green, smooth; seeds comose.

Fls. & Frts. : September-October.

Along the rocky slopes, rare. On way to Shivthalgarh, Varandh ghat, Mahad, *Dr. C.H. Desai* (Botanic Garden, Fergusson College, Pune).

This species so far known from Junnar and Purander hills, Pune district, Maharashtra. Recently it was collected from Varandh ghat, Raigad district also. This species is included in Appendix I of CITES and declared as endangered by ICUN, hence go the Red Data category (Nayar & Sastry, *op. cit.*). This species has been introduced in Experimental Garden, Botanical Survey of India, Pune and is thriving well.

2. CEROPEGIA L.

1a. Stem erect; leaves linear–lanceolate, 0.5–1 cm broad, sessile; flowers solitary, axillary ... *C. attenuata* 1

1b. Stem twining; leaves not as above, over 1 cm; broad, petiolate, flowers many in peduncled, umbellate cymes:

2a. Leaves fleshy; flowers upto 2 cm; corolla tube not much inflated at base; peduncle glabrous ... *C. bulbosa* 2

2b. Leaves membranous; flowers upto 8 cm; corolla tube much inflated at base; peduncle scabridly hairy :

3a. Corolla lobes equal or longer than tube; tube completely hairly within ... *C. vincaefolia* 3

3b. Corolla lobes shorter than tube; tube glabrous within ... *C. oculata* 4

1. **Ceropegia attenuata** Hook. Icon. Pl. 2 : 5. t. 867. 1852; Hook. f. Fl. Brit. India 4: 67. 1883; Cooke, Fl. Pres. Bombay 2: 239. 1958 (Repr. ed.); Sant. & Irani, in Univ. Bombay Bot. Mem. 4: 26. t. 2. 1962; Ansari in Fasc. Fl. India 16: 9. t. 3 (9). f. 2. 1984. & in Red data book Ind. Pl. 1: 49. 1987. *Tilori.*

Erect herbs, 10–20 cm; roots with globular, tuberous, leaves glabrous, 4.5–12 x 0.3–0.8 cm; flowers solitary, corolla tube greenish–purple, striated, lobes 5, united at tip, purplish–hairy.

Fls. & Frts. : August–September.

Among grasses in hilly forests, infrequent. Matheran; Neral to Matheran Road.

The root tubers are edible and relished by local people.

2. **Ceropegia bulbosa** Roxb. Pl. Cor. 1: 11. t. 7. 1795; Wight, Icon. t. 845. 1844–1845; Hook. f. Fl. Brit. India 4: 67. 1883; Cooke, Fl. Pres. Bombay 2: 239. 1958 (Repr. ed.); Sant & Irani in Univ. Bombay Bot. Mem. 4 : 28. 1962; Ansari in Fasc. Fl. India 16: 10. f. 4. 1984.

Twiners; leaves petiolate, the lowest almost orbicular, the upper ones elliptic–oblong, glabrous; flowers dark–purple; follicles green, cylindrical; seeds flat, ovate–oblong with coma.

Fls. & Frts. : August–September.

On *Euphorbia* bushes, near sea–coast, occasional. Kolaba fort, Alibag.

* 3. **Ceropegia vincaefolia** Hook. Bot. Mag. t. 3740. 1839, *emend.* Ansari in Bull. Bot Surv. India 13 (3&4): 187. 1971 *et* in Fasc. Fl. India 16:31. t. 4(26). 1984 *et* in Red data book Ind. Pl. 2: 59. f. A-B. 1988. *C. stocksii* Hook. f. Fl. Brit. India 4: 74. 1883; Cooke, Fl. Pres. Bombay 2: 243. 1958 (Repr. ed.). *Khapar-khutti.*

Twiners; leaves ovate-oblong, apex acuminate base cordate, 5.5–6.6x2.2–2.5 cm; flowers infundibuliform, many in axillary cymes; corona biseriate; outer of 5 lobes entire, emarginate or shortly bifid, hairy, inner ligulate, oblanceolate, glabrous.

Fls. & Frts. : August–September.

Near sea–coast, infrequent. Uran (Cooke, *op. cit.*).

4. **Ceropegia oculata** Hook. Bot. Mag. t. 4093. 1844; Hook. f. Fl. Brit. India 4: 72. 1885; Cooke, Fl. Pres. Bombay 2: 242. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4: 33. 1962; Ansari in Fasc. Fl. India 16: 26. t. 4 (20). 1984. & in Red data book Ind. Pl. 1: 62. 1987.

Twiners; leaves ovate, acuminate, sparsely hairy beneath, ciliate on margins, 4.4–9.6 x 1.2–4.3 cm; flowers deep–violet in 4–8 flowered cymes; corolla long, swollen at base, lower shorter than tuber and united at the apex.

Fls. & Frts. : August–September.

In hilly forests, occasional. Matheran.

3. LEPTADENIA R. Br.

Leptadenia reticulata (Retz.) Wight & Arn. in Wight, Contrib.

47. 1834; Wight, Icon. t. 350. 1840; Hook. f. Fl. Brit. India 4 : 63. 1883; Cooke, Fl. Pres. Bombay 2: 237. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 60. 1962. *Cynanchum reticulatum* Retz. Obs. Bot. 2: 15. 1781. *Hirandodi, Khairhodi.*

Twining shrubs with watery sap and fissured bark; leaves ovate–elliptic, glabrescent, 2.7–6.2x1.4–3.3 cm; flowers yellow in axillary fascicles, gynostegium yellowish with white streaks.

Fls. & Frts. : April–October.

Near sea–coast, frequent. Shrivardhan.

4. PERGULARIA L.

Pergularia daemia (Forssk.) Chiov. in Result. Sci. Miss. Stefan.–Paoli Somali. Ital. 1: 115. 1916; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 74. 1962. *Asclepias daemia* Forssk. Fl. Aegypt.–Arab. 51. 1775. *Daemia extensa* (N. Jacq.) R. Br. in Mem. Wern. Soc. 1: 50. 1811; Wight, Icon. t. 596. 1842; Hook. f. Fl. Brit. India 4: 20. 1883; Cooke, Fl. Pres. Bombay 2: 219. 1958 (Repr. ed.). *Utarani.*

Herbaceous twiners with milky juice; leaves broadly ovate, densely hairy beneath, 2–7.3 x 1.5–8 cm; flowers greenish–creamy yellow, in lateral, corymbose cymes; follicles lanceolate, beaked, hairy, softly echinate.

Fls. & Frts. : August–January.

On bushes in hilly forests, frequent. Matheran.

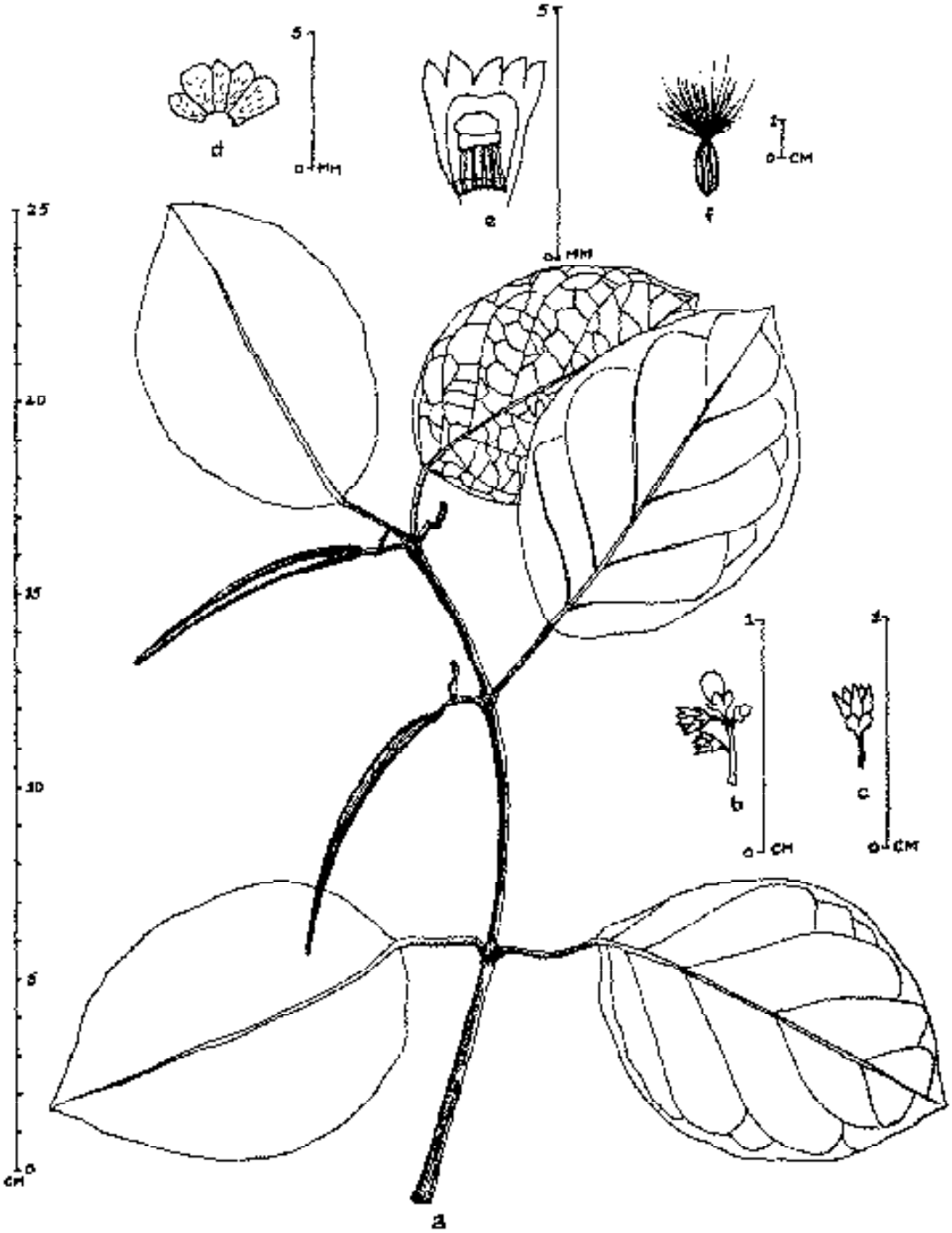
Stem yields a fine fibre used as a substitute of flax.

5. OXYSTELMA R. Br.

Oxystelma secamone (L.) Karst. Dent. Fl.1031. 1880–83; Sant. & Irani, in Univ. Bombay Bot. Mem. 4: 67. 1962. *Periploca secamone* L. Mant. Pl 2: 216. 1771. *Oxystelma esculentum* (L.f.) R. Br. in Mem. Wern. Soc. 1: 40. 1811; Hook. f. Fl. Brit. India 4: 17. 1883; Cooke, Fl. Pres. Bombay 2: 216. 1958 (Repr. ed.). *Dudhani.*

Twining herbs with wiry branched stem and milky latex; leaves linear–lanceolate, glabrous, 4–5.2 x 0.2–0.3 cm; flowers pinkish–purple, axillary in drooping, few flowered cymes; follicles ovate–lanceolate, glabrous.

Fls. & Frts. : May–June.



Bidaria khandalense (Sant.) Jagtap & Singh
a) Fruiting branch, b) Inflorescence, c) Flower, d) Corolla spread open, e) L. S. of flower, f) Seed.

Near river bank, occasional. Savitri river, Mahad.

The fruits are said to be edible.

6. BIDARIA (Endl.) Decne.

Bidaria khandalense (Sant.) Jagtap & Singh in Biovigyanum 16 (1): 62. 1990. *Gymnema khandalense* Sant. in Kew. Bull. 1948: 486. 1949; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 49. 1962; Kothari & Moorthy in J. Bombay nat. Hist. Soc. 80 (1): 259. 1983; Kothari in Red data book Ind. Pl. 3: 37. 1990.

Large woody climbers; leaves opposite, elliptic–oblong, fulvous–pubescent on nerves beneath, 7.5–12x6–9.3 cm. flowers yellow in lateral umbellate cymes; follicles cylindrical, straight or curved, greenish–brown, pubescent.

Fls. & Frts. : October–March.

In deciduous forests, rare. Masadi forest, Roha.

7. GYMNEMA R. Br.

Gymnema sylvestre (Retz.) R. Br. ex Schult. in Roem. & Schult. Syst. Veg. 6: 57. 1819; Wight, Icon. t. 349. 1840; Hook. f. Fl. Brit. India 4: 29. 1883; Cooke, Fl. Pres. Bombay 2: 224. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4: 47. 1962. *Periploca sylvestre* Retz. Obs. 2: 15. 1781.

Much branched, scandent shrubs; leaves ovate–elliptic or oblong, hairy, 2.5–6 x 2–3.4 cm; flowers minute, greenish–yellow in pedunculate or sessile, umbellate cymes; follicles terete, lanceolate, beaked.

Fls. & Frts. : April–May.

In hilly forests, occasional. Matheran.

The plant is said to be a good remedy for diabetes.

8. CALOTROPIS R. Br.

Calotropis gigantea (L.) R. Br. in Ait. Hort. Kew (ed. 2) 2: 78. 1811; Wight, Ill. 2: tt. 155. & 156A. 1850; Hook. f. Fl. Brit. India 4: 17. 1883; Cooke, Fl. Pres. Bombay 2: 214. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4: 17. 1962. *Asclepias gigantea* L. Sp. Pl. 214. 1753. *Rui.*

Large shrubs with milky latex; leaves ovate–oblong, subsessile, auricled, thick, glabrous or with white soft tomentum, 4.2–13.5 x 2.4–8.3 cm; flowers yellowish–white with gynostegium purple, shorter than corona; follicles paired, green, cottony.

Fls. & Frts. : Almost throughout the year.

Along the coastal area, road–sides and hills, frequent. Alibag; Janjira fort; Matheran; Neral to Karjat; Varandh ghat.

9. HOLOSTEMMA R. Br.

Holostemma ada-kodien Schult. in Roem. & Schult. Syst. 6: 95. 1820. *H. rheedii* Wall. Pl. Asiat. Rar. 2: 51. 1831; Wight, Icon. t. 597. 1842; Hook. f. Fl. Brit. India 4 : 21. 1883. *H. annulare* (Roxb.) K. Schum. in Engler & Prantl. Pflanzenf. 4(2): 250. t. 71. J–K. 1895; Sant. & Irani. in Univ. Bombay Bot. Mem. 4: 53. t. 8. 1962. *Asclepias annularis* Roxb. Fl. Ind. 2: 37. 1832. *Holostemma rheedianum* T. Cooke, Fl. Pres. Bombay 2: 156. 1904 (2: 220. 1958. Repr. ed.).

Extensive, scandent shrubs; leaves ovate, acuminate, cordate at base, glabrescent, 5–13 x 3.5–8 cm; flowers purple, axillary in umbellate cymes; follicles boat shaped, glabrous.

Fls. & Frts. : July–September.

Along the hedges, frequent. Kalasgiri hill and Kolad to Khamb village, Roha. Matheran.

Flowers and fruits are eaten by local people.

10. TYLOPHORA R. Br.

Tylophora dalzellii Hook. f. Fl. Brit. India 4 : 43. 1883; Cooke, Fl. Pres. Bombay 2: 227. 1958 (Repr.ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4: 87. t. 11. 1962.

Climbing herbs with stiff, hairy stem ; leaves ovate, ovate–oblong, acute–acuminate, glabrescent, 3.5–8.4 x 2.4–5.6 cm; flowers reddish–purple in axillary, umbellate cymes; follicles lanceolate, straight, tapering at apex.

Fls. & Frts. : May–October.

In hilly forests, frequent.

Karle–Khind, Alibag; Karnala fort; Matheran; Raigad and Parghat, Mahad.

11. WATTAKAKA Hassk.

Wattakaka volubilis (L.f.) Stapf in Curtis, Bot. Mag. Sub. t. 8976. 1923; Huber in Abeywickrama, Fl. Ceylon 1: 50. 1973. *Asclepias volubilis* L.f. Suppl. 170. 1781. *Dregea volubilis* (L.f.) Benth. ex Hook. f. Fl. Brit. India 4: 46. 1883; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 42. t. 6. 1962. *Marsdenia volubilis* (L. f.) T. Cooke, Fl. Pres. Bombay 2: 166. 1904 (2: 230. 1958. Repr. ed.). *Hoya viridiflora* R. Br. in Mem. Wern. Nat. Hist. Soc. 1: 27. 1811; Wight, Icon. t. 586. 1842. *Hirandodi*.

Extensive, woody twiners; leaves opposite, broadly ovate, acuminate, cordate, glabrous, 5–10.4 x 4.3–6.2 cm; flowers yellowish–green with reddish–brown tinge at corolla base, in umbellate cymes; follicles brown, tomentose.

Fls. & Frts. : April–October.

On hedges near coastal region, occasional. Near Koteshwar Naka, Murud.

12. COSMOSTIGMA Wight

Cosmostigma racemosum (Roxb.) Wight, Contrib. 42. 1834 & Icon. t. 591. 1842; Hook. f. Fl. Brit. India 4: 46. 1883; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 36. t. 5. 1962. *Asclepias racemosa* Roxb. Fl. Ind. 2: 32. 1832. *Jati*.

Large, woody climbers; leaves broadly ovate, cordate, acute–acuminate, glabrous, 5.7–9.4 x 3.6–5.7 cm; flowers greenish–yellow in axillary, corymbose racemes; follicles ovoid–oblong.

Fls. & Frts. : June–September.

In deciduous forests, occasional. Hatvane forest, Pen.

13. HOYA R. Br.

1a.	Corolla glabrous or minutely puberulous within	...	*H. wightii* 1
1b.	Corolla densely silky villous within	...	*H. alexicaca* 2

1. **Hoya wightii** Hook. f. Fl. Brit. India 4: 59. 1883; Cooke, Fl. Pres. Bombay 2: 234. 1958 (Repr. ed.). *H. pendula* Wight & Arn. in Wight, Contrib. 36. 1834 (excl. syn.; *non* Wight, Icon. t. 474. 1841.) Sant. & Irani in Univ. Bombay Bot. Mem. 4: 56. 1962. *Ambri*.

Stout, glabrous twiner, rooting at nodes; leaves thick, elliptic–lanceolate, acuminate, margins, recurved; flowers creamy–white in lateral umbels; follicles straight, cylindrical, tapering towards ends.

Fls. & Frts. : October–December.

In hilly forests, infrequent. Matheran; Nagothana.

* 2. **Hoya alexicaca** (N.J. Jacq.) Moon, Cat. Pl. Ceylon 21. 1824; Ragh. & Singh in Pl. Cons. Bull. 3: 7. 1983. *Asclepias alexicaca* N.J. Jacq. Coll. Bot. 2: 101. 1789. *Hoya iconum* Sant. in J. Bombay nat. Hist. Soc. 53: 504. 1956; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 58. 1962. *H. pendula* (Roxb.) Wight & Arn. in Wight, Contrib. 36. 1834; Wight, Icon. t. 474. 1841; Hook. f. Fl. Brit. India 4: 61. 1883; Cooke, Fl. Pres. Bombay 2 : 235. 1958 (Repr. ed.).

Twining shrubs; leaves ovate–oblong, acute–acuminate, thick, glabrous; flowers many in lateral, pedunculate umbels.

Fls. : July–November.

In hilly forests, rare. Near Nagothana, *Dalz. & Gibs.*; Hills of Kolaba dist., *Talb.*

14. HETEROSTEMMA Wight & Arn.

Heterostemma urceolatum Dalz. in Hook. J. Bot. 4: 295. 1852. *Oianthus urceolatus* Benth. in Hook. Icon. Pl. t. 1191. 1876; Hook. f. Fl. Brit. India 4: 49. 1883; Cooke. Fl. Pres. Bombay 2: 236. 1958 (Repr. ed); Sant. & Irani in Univ. Bombay Bot. Mem. 4: 65. 1962

Climbing undershrubs; leaves opposite, ovate or ovate–lanceolate, acute, sub–cordate; flowers purplish–red, few in dense cymes.

Fls. : July–August.

In hilly forests, rare. Revdanda, *Dalz.*

Cultivated or introduced:

Asclepias curasavica L. Sp. Pl. 215. 1753; Hook. f. Fl. Brit. India 4: 18. 1883; Cooke, Fl. Pres. Bombay 2: 245. 1958. (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4 : 15. 1962. *Kurki.*

Suffruticose herbs; leaves linear–lanceolate; flowers bright red, corona bright yellow; follicles ovate–lanceolate, beaked.

As an ornamental. Dahen Nursery, Mhasla.

86. PERIPLOCACEAE

1a. Flowers purplish–white or rosy, 4.8–7.5 cm long ... CRYPTOSTEGIA 1

1b. Flowers creamy–yellow or brownish–yellow, upto 2 cm long:

2a. Leaves with many lateral nerves united intra–marginally; corolla lobes contorted to right ... CRYPTOLEPIS 2

2b. Leaves with few lateral nerves, not united intra–marginally; corolla lobes valvate ... HEMIDESMUS 3

1. CRYPTOSTEGIA R. Br.

Cryptostegia grandiflora R. Br. ex Lindl. in Bot. Reg. 5: t. 435. 1820; Wight, Icon. t. 832. 1844; Hook. f. Fl. Brit. India 4: 6. 1883; Cooke, Fl. Pres. Bombay 2 : 245. 1958 (Repr. ed.); Sant. & Irani, in Univ. Bombay Bot. Mem. 4: 93. 1962. *Kavdi, Vilayati–Vakundi.*

Climbers or straggling shrubs; leaves elliptic–oblong, glabrous, 6.5–9 x 2.8–4.6 cm; flowers in 2 to 3–chotomous cymes; follicles green, woody, 3–winged, 10–15 cm long; seeds ovate, silky.

Fls. & Frts. : May–June.

On hedges or in open forests, frequent. Kolaba fort, Alibag; near Magti village, Indapur.

The latex yields a good quality of rubber.

2. CRYPTOLEPIS R. Br.

Cryptolepis buchananii Roem. & Schult. Syst. Veg. 4: 409. 1819; Wight, Icon. t. 494. 1841; Hook. f. Fl. Brit. india 4: 5. 1883; Cooke, Fl. Pres. Bombay 2: 210. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4: 91. 1962 (*'buchanani'*) *Karanta, Kavli.*

Climbing shrubs with latex and lenticelled stem; leaves elliptic–oblong or elliptic–lanceolate, acute–acuminate, glabrous, 3.5–14 x 1.3–5.6 cm; flowers in axillary and terminal cymes; follicles straight or curved, cylindric, triquetrous *ca* 9 cm long; seeds ovate–oblong with white–silky coma.

Fls. & Frts. : April–June.

In open and hilly deciduous forests, frequent, Elephanta island; Karle–khind; Matheran; Neral; Pacchad.

3. HEMIDESMUS R. Br.

Hemidesmus indicus (L.) R. Br. in Ait. Hort. Kew. (ed.2) 2: 75. 1811; Wight, Icon. t. 594. 1842; Hook. f. Fl. Brit. India 4: 5. 1883; Cooke,

Fl. Pres. Bombay 2: 210. 1958 (Repr. ed.). Sant. & Irani in Univ. Bombay Bot, Mem. 4: 96. 1962. *Periploca indica* L. Sp. Pl. 211. 1753. *Anantvel, Uparsul.*

Prostrate or twining shrubs with brownish bark and woody root–stock; leaves variable, linear–lanceolate or elliptic–oblong, acute or obtuse, glabrous, 3–9.4 x 0.8–3 cm; flowers few in axillary, sub–sessile, fascicled cymes; follicles cylindric, upto 15.2 cm long; seeds ovate–oblong, compressed with silky coma.

Fls. & Frts. : Greater part of the year.

In plain and hilly forests, frequent. Alibag; Karjat; Matheran; Mhasla; Neral; Roha.

Roots are used medicinally by local people for fever and stomach troubles.

87. BUDDLEJACEAE

BUDDLEJA Houst. ex. L.

* **Buddleja asiatica** Lour. Fl. Cochinch. 72. 1790; C. B. Cl. in Hook. f. Fl. Brit. India 4: 82. 1883; Cooke, Fl. Pres. Bombay 2: 248. 1958 (Repr. ed.). *B. discolor* Roth, Nov. Pl. Sp. 83. 1821; Wight, Icon. t. 894. 1845.

Large, evergreen, shrubs, 90–120 cm; leaves lanceolate, acute–acuminate, white or yellow, tomentose beneath; flowers white, odorous in terminal and axillary spikes; capsules ovoid or ellipsoid.

Fls. & Frts. : January–April.

In hilly forests, infrequent. Near Pen.

88. SPIGELIACEAE

MITREOLA L.

Mitreola petiolata (J. F. Gmel.) Torr. & A. Gray, Fl. North–Amer. 2: 45. 1845; Singh, Fl. Banswara 148. 1983. *Cynoctonum petiolatum* J.F. Gmel. Syst. Nat. (ed.13) 2: 443. 1791. *Mitreola paniculata* Wall. ex G. Don, Gard. Dict. 4: 171. 1837; Wight, Icon. t. 1600. 1850. *M Oldenlandioides* G. Don *op. cit.* 4: 172, *nom. illegit.*; C. B. Cl. in Hook. f. Fl. Brit. India 4: 79. 1883; Cooke, Fl. Pres. Bombay 2: 246. 1958 (Repr. ed.).

Slender, erect herbs, 10–40 cm; leaves opposite, ovate–elliptic or lanceolate, glabrous, 2.5–6.8 x 1.2–3 cm; flowers white in terminal and axillary, dichotomous cymes; capsules 2–horned or wedge–shaped, glabrous; seeds ellipsoid, 3–gonous, dark brown.

Fls. & Frts. : August–October.

As forest undergrowth and near sea–shore, frequent. Karnala fort; Mahad; Matheran; Pali; Uran.

89. LOGANIACEAE

STRYCHNOS L.

1a. Scandent or climbing shrubs ... *S. minor* 1

1b. Erect trees:

2a. Fruits large, orange, many seeded ... *S. nux–vomica* 2

2b. Fruits small, black, 1–2 seeded ... *S. potatorum* 3

1. **Strychnos minor** Dennst. Schluess. Hort. Ind. Malab. 33. 1818. *S. bicirrhosa* Lesch. ex Roxb. Fl. Ind. 2: 267. 1824. *S. colubrina sensu* C. B. Cl. in Hook. f. Fl. Brit. India 4: 87. 1883. *pro parte, non* L. (1753); Cooke, Fl. Pres. Bombay 2: 249. 1958 (Repr. ed.). *Kajra–vel, Kanal.*

Woody climbers with circinate, 1–2 tendrils at tip; leaves elliptic–lanceolate; flowers white in axillary cymes; berries crustaceous, 1–2–seeded.

Fls. & Frts. : October–January.

In hilly forests, infrequent. Matheran; Mirya dongar, Pen.

* 2. **Strychnos nux–vomica** L. Sp. Pl. 189. 1753; Bedd. Fl. Sylv. t. 243. 1872; C. B. Cl. in Hook. f. Fl. Brit. India 4: 90. 1883; Cooke, Fl. Pres. Bombay 2: 250. 1958 (Repr. ed.). *Kajra.*

Deciduous trees with grey, rough bark; leaves broadly elliptic, acuminate, glabrous; flowers many, greenish–white in terminal cymes; fruits globose; seeds many, discoid with grey–silky hairs radiating from centre.

Fls. & Frts. : March–April.

In hilly forests, infrequent. Konkan, (Gazetteer, Kolaba district, 1964).

* 3. **Strychnos potatorum** L.f. Suppl. Pl. 148. 1781; Wight, Ill. 2: t. 156. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 4: 90. 1883; Cooke, Fl. Pres. Bombay 2: 251. 1958 (Repr. ed.).

Moderate sized trees; leaves ovate–elliptic, glabrous; flowers white in axillary cymes; berries globose, smooth.

Fls. & Frts. : April–May.

In hilly forests, infrequent. Matheran.

90. GENTIANACEAE

1a. Ovary 2-celled; style filiform ... EXACUM 1

1b. Ovary 1-celled; style not filiform:

2a. Corolla lobes with one or two pits, depressions or glands at the base ... SWERTIA 2

2b. Corolla lobes without pits, depressions or glands at the base:

3a. Flowers regular ... CENTAURIUM 3

3b. Flowers irregular:

4a. Flowers yellow; stigma scarcely lobed, subentire ... HOPPEA 4

4b. Flowers pink or purplish, stigma deeply 2-lobed ... CANSCORA 5

1. EXACUM L.

1a. Plants small, upto 60 cm high; flowers ca 1.5 cm across:

2a. Leaves petiolate, lamina distinctly 5-nerved from base, upto 2.6 cm broad ... *E. petiolare* 1

2b. Leaves sessile; lamina obscurely 3-nerved from base, upto 1 cm broad :

3a. Pedicels stout; petals lanceolate, acute ... *E. pedunculatum* 2

3b. Pedicels filiform; petals suborbicular, obtuse ... *E. pumilum* 3

1b. Plants large upto 1.5 m high; flowers 3–5cm across ... *E. tetragonum* 4

1. **Exacum petiolare** Griseb. in DC. Prodr. 9: 46. 1845; Wight, Icon.t. 1324 (2). 1848; C. B. Cl. in Hook. f. Fl. Brit. India 4: 98. 1883. *E pedunculatum* L. var. *petiolare* Trim. Handb. Fl. Ceylon 3: 182. 1893; Cooke, Fl. Pres. Bombay 2: 253. 1958 (Repr. ed.).

Erect, glabrous herbs with distinct, quadrangular stem; leaves

ovate–elliptic, glabrous, 1.4–4.5 x 1–2.6 cm; flowers sky–blue in axillary, solitary and terminal cymes; capsules globose, shining.

Fls. & Frts. : September–October.

As an undergrowth in moist deciduous forests, frequent. Matheran.

2. **Exacum pedunculatum** L. Sp. Pl. 112. 1753 *("pedunculare");* Wight, Icon. t. 336. 1840; C. B. Cl. in Hook. f. Fl. Brit. India 4: 97. 1883; Cooke, Fl. Pres. Bombay 2: 253. 1958 (Repr. ed.).

Erect, branched herbs with trigonal stem; leaves elliptic–oblong or lanceolate, glabrous; flowers bluish to mauve in branched, terminal cymes; capsule globose, smooth.

Fls. & Frts. : November–December.

In moist places, infrequent. Karjat.

* 3. **Exacum pumilum** Griseb. in DC. Prodr. 9: 46. 1845; Wight, Icon. t. 1324 (3). 1848; C.B. Cl. in Hook. f. Fl. Brit. india 4: 98. 1883; Cooke, Fl. Pres. Bombay 2: 254. 1958 (Repr. ed.). *Jatali.*

Erect, slender herbs; leaves linear–lanceolate, glabrous; flowers bluish to bluish–purple in axillary or terminal cymes; capsules subglobose.

Fls. & Frts. : August–September.

Among grasses in hilly forests, infrequent. Matheran.

4. **Exacum tetragonum** Roxb. Fl. Ind. 1: 413. 1820; C.B. Cl. in Hook. f. Fl. Brit. India 4: 95. 1883; Klack. in Opera Bot. 84: 37. 1985. *E. bicolor* Roxb. Fl. Ind. 1: 413. 1820; Wight, Icon. t. 1321. 1848; C.B. Cl. in Hook. f. Fl. Brit. India 4: 96. 1883; Cooke, Fl. Pres. Bombay 2: 252. 1958 (Repr. ed.).

Glabrous herbs; leaves ovate–lanceolate; flowers white in dense, terminal cymes; capsules ellipsoid, shining, yellowish–brown.

Fls. & Frts. : August–November.

In pasture lands, infrequent. Panvel.

2. SWERTIA L.

Swertia minor (Griseb.) Knobl. in Bot. Centralbl. 60: 321. 1894; Cooke, Fl. Pres. Bombay 2: 259. 1958 (Repr. ed.). *Ophelia minor* Griseb.

in DC. Prodr. 9: 126. 1845; Wight, Icon. t. 1332. 1848. *Pleurogyne minor* (Geriseb.) Benth. in Benth. & Hook. f. Gen. Pl. 2: 816. 1876; C.B. Cl. in Hook. f. Fl. Brit. India 4: 120. 1883.

Erect, glabrous herbs with 4–gonous, winged stem; leaves ovate, acute, sessile, 0.5–1.4 x 0.4–0.9 cm; flowers bluish–purple in leafy, terminal, paniculate cymes; capsules ovoid.

Fls. & Frts. : July–September.

In hilly forests, frequent. Matheran.

3. CENTAURIUM Hill

Centaurium centaurioides (Roxb.) R. S. Rao & Hemadri in J. Bombay nat. Hist. Soc. 67: 357. 1970. *Chironia centauriordes* Roxb. Fl. Ind. 1: 584. 1832 ('*Centaureodes*'). *Erythrea roxburghii* D. Don in London Edinb. Philos. Mag. J. Sci. 8: 77. 1836; C.B. Cl. in Hook. f. Fl. Brit. India 4: 102. 1883; Cooke, Fl. Pres. Bombay 2: 255. 1958 (Repr. ed.). *Luntak.*

Slender, erect herbs with 4–angled or winged stem; leaves linear–oblong or ovate–oblong; flowers rosy in terminal, dichotomous cymes; capsules ellipsoid, glabrous; seeds numerous, small, reticulate.

Fls. & Frts. : December–April.

In moist places, frequent. Karjat; Pali to Nagothana; Pen.

4. HOPPEA Willd.

* **Hoppea dichotoma** Willd. in Ges. Naturf. Fr. Berlin Neue Schr. 3: 435. 1801; C. B. Cl. in Hook. f. Fl. Brit. India 4: 100. 1883; Cooke, Fl. Pres. Bombay 2: 256. 1958 (Repr. ed.).

Small, branched herbs with winged stem; leaves ovate, sessile, glabrous; flowers pale yellow, in 2–3–chotomous cymes; capsules ellipsoid, enclosed in persistent sepals; seeds minute, subglobose, many.

Fls. & Frts. : September–October.

In moist places, occasional. Uran.

5. CANSCORA Lam.

1a. Stem winged; calyx sharply quadrangular with keeled sepals ... *C. khandalensis* 1

1b. Stem not winged; calyx and sepals not as above ... *C. diffusa* 2

1. **Canscora khandalensis** Sant. in Kew Bull. 1948: 485. 1949.

Erect, slender herbs; leaves ovate–elliptic or lanceolate, glabrous, 1.7–4 x 0.8–2 cm; flowers pink in terminal dichotomous cymes; capsules cylindric, membranous.

Fls. & Frts. : September–October.

In hilly forests, frequent. Matheran; Raigad fort.

2. **Canscora diffusa** (Vahl) R. Br. ex Roem. & Schult. Syst. Veg. 3: 301. 1820; C.B. Cl. in Hook. f. Fl. Brit. India 4: 103. 1883; Cooke, Fl. Pres. Bombay 2: 257. 1958 (Repr. ed.). *Gentiana diffusa* Vahl, Symb. Bot. 3: 47. 1794.

Erect herbs with diffusely branched stem; leaves ovate–elliptic or lanceolate, 2.4–7.8 x 1.3–3 cm; flowers pinkish–purple in terminal, lax, dichotomous cymes; capsules cylindric–oblong, brown; seeds many, glabrous.

Fls. & Frts. : September–January.

In moist, hilly forests, frequent. Karjat; Karle–khind; Karnala fort; Mahad ghat; Matheran; Panvel.

91. MENYANTHACEAE

NYMPHOIDES Seguier.

1a. Corolla white with yellow centre, lobes fimbriate, densely papillose, not folded (crested) down the middle; seeds many, small, smooth or minutely tuberclod ... *N. indicum* 1

1b. Corolla white, lobes entire with a longitudinal fold (crest) down the middle; seeds a few, large with prominent glochidiate tubercles ... *N. hydrophylla* 2

1. **Nymphoides indicum** (L.) O. Ktze. Rev. Gen. Pl. 2: 429. 1891. *Menyanthes indica* L. Sp. Pl. 145. 1753. *Lymnanthemum indicum* (L.) Griseb. Gen. Sp. Gent. 343. 1839. *emend.* Thw. Enum. Pl. Zeyl. 205. 1860; C.B. Cl. in Hook. f. Fl. Brit. India 4: 131. 1883; Cooke, Fl. Pres. Bombay 2: 261. 1958 (Repr. ed.).

Floating, stoloniferous herbs with horizontal or oblique rhizomes; leaves orbicular, deeply cordate, fleshy, glabrous, 10.4 cm across; flowers pedicellate in axillary fascicles; capsules ellipsoid, straw coloured, glabrous; seeds many, yellow.

Fls. & Frts. : March.

In tanks and ponds, frequent. Matheran; on way to Panvel from Karjat.

2. **Nymphoides hydrophylla** (Lour.) O. Ktze. Rev. Gen. Pl. 2 : 429. 1891; Cramer in Dassanayake & Fosberg. Rev. Handb. Fl. Ceylon 3: 208. 1981. *Menyanthes hydrophylla* Lour. Fl. Cochinch. 1: 129. 1790 *M. cristata* Roxb. Pl. Cor. t. 105. 1798. *Limnanthemum cristatum* (Roxb.) Griseb. Gen. & Sp. Gent. 342. 1839; Wight, Ill. 2: t. 157. bis. f. 4. 1850; C.B. Cl. in Hook. f. Fl. Brit. India 4: 131. 1883; Cooke, Fl. Pres. Bombay 2: 261. 1958 (Repr. ed.). *Nymphoides cristatum* (Roxb.) O. Ktze. Rev. Gen. Pl. 429. 1891.

Small, aquatic herbs; leaves orbicular, deeply cordate, often purplish, glabrous, 3.7 cm across; flowers numerous, pedicellate in dense, axillary clusters; capsules broadly ovoid–ellipsoid, apiculate, glabrous.

Fls. & Frts. : December–March.

In ponds, frequent. Nagothana; On way to Panvel from Karjat.

92. HYDROPHYLLACEAE

HYDROLEA L. *nom. cons.*

Hydrolea zeylanica (L.) Vahl, Symb. 2: 46. 1791; Wight, Icon. t. 601. 1842; C. B. Cl. in Hook. f. Fl. Brit. India 4: 133. 1883; Cooke, Fl. Pres. Bombay 2: 263. 1958 (Repr. ed.). *Nama zeylanica* L. Sp. Pl. 226. 1753.

Prostrately spreading, gregarious herbs, often rooting at lower nodes; leaves alternate, linear–oblong or lanceolate, 3–6 x 0.8–1.4 cm; flowers deep blue or bluish–purple in condensed, hairy racemes; capsules ovoid, enclosed in persistent calyx.

Fls. & Frts. : November–December.

In moist places, frequent. Karjat; Mahad; Murud; Roha.

Tender plants are edible and used in curries. The leave used medicinally as poultice for callous ulcer.

93. BORAGINACEAE

1a. Prostrate herbs; leaves small, plicate or crisped; flowers mostly solitary, axillary; styles 2; fruits pyramidal, 4–lobed, beaked ... COLDENIA 1

1b. Erect herbs or shrubs, sometimes prostrate (*Heliotropium*); leaves not as above; flowers usually numerous; style 1; fruits of 4 nutlets:

2a. Leaves opposite, a few upper ones alternate; flowers conspicuous, calyx persistent, sagittate, enlarged in fruit; style sub–terminal ... TRICHODESMA 2

2b. Leaves alternate, flowers inconspicuous; calyx not as above; style terminal or gynobasic:

3a. Small herbs or undershrubs; ovary entire or shallowly lobed; style terminal ... HELIOTROPIUM 3

3b. Undershrubs; ovary deeply lobed; style gynobasic:

4a. Nutlets attached to the receptacle at conical apex, not or slightly margined flattened around carpophore ... CYNOGLOSSUM 4

4b. Nutlets attached to the receptacle by almost their inner surface, prominently margined; the margins recurved conically, attached, to the carpophore:

5a. Inflorescence on slender, long branches; anthers included in the tube; nutlets glochidiate ... ADELOCARYUM 5

5b. Inflorescence on thicker, short branches; anthers slightly exserted from the tube; nutlets not glochidiate .... PARACARYUM 6

1. COLDENIA L.

Coldenia procumbens L. Sp. Pl. 125. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4: 144. 1883; Cooke, Fl. Pres. Bombay 2: 271. 1958 (Repr. ed.). *Tripakshi.*

Branched, greenish, villous herbs; leaves obovate or elliptic–oblong, lobed, hairy, 0.7–1.4 x 0.3–0.4 cm; flowers yellowish–red; fruits conical, brownish, hairy.

Fls. & Frts. : May–February.

In moist places, frequent. Alibag; Neral; On way to Panvel.

Paste of the plant–ash mixed with castor oil is used medicinally for eczema by local people.

2. TRICHODESMA R. Br. *nom. cons.*

1a. Calyx at flowering time cordate or hastate at base:

2a. Basal lobes of the calyx spreading outwards ... *T. indicum var. amplexicaule* 1

2b. Basal lobes of the calyx involute ... *T. sedgwickianum* 2

1b. Calyx at flowering time rounded at base ... *T. zeylanicum* 3

1. **Trichodesma indicum** (L.) R. Br. var. **amplexicaule** (Roth) T. Cooke, Fl. Pres. Bombay 2: 215. 1904 (2: 282. 1958. Repr. ed. '*amplexicaulis*'); Banerjee in Bull. Bot. Soc. Bengal 16: 9. 1962. *Borago indica* L. Sp. Pl. 137. 1753. *Trichodesma amplexicaule* Roth, Nov. Pl. Sp. 104. 1821; C. B. Cl. in Hook. f. Fl. Brit. India 4: 153. 1883.

Erect, hispid, branched herbs, 10–20 cm; leaves variable, ovate–oblong or lanceolate, scabridly hairy amplexicaul at base; flowers few, bluish–purple in solitary, leaf opposed and terminal cymes; fruits pyramidal, 4–ribbed.

Fls. & Frts. : September–October.

In hilly forests, frequent. Kalasgiri hill, Roha; Neral to Matheran.

2. **Trichodesma sedgwickianum** Banerjee in Bull. Bot. Soc. Bengal 16: 10. 1962. *T. amplexicaule* DC. Prodr. 10: 172. 1846 (*non* Roth, 1821).

Erect, hispid herbs; leaves ovate–lanceolate or oblong–cordate, hispid; flowers white or bluish–white; fruits with 4–nutlets.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

* 3. **Trichodesma zeylanicum** (Burm.f.) R. Br. Prodr. 496. 1810; C.B. Cl. in Hook. f. Fl. Brit. India 4: 154. 1883; Cooke, Fl. Pres. Bombay 2: 282. 1958 (Repr. ed.). *Borago zeylanica* Burm. f. Fl. Ind. 41. f. 2. 1768.

Erect, strigose herbs, 30–60 cm; leaves oblong–lanceolate, subsessile, appressed–pubescent beneath; flowers light blue in terminal panicles; nutlets ovoid, subobtuse, faintly margined.

Fls. & Frts. : November–January.

In hilly forests, infrequent. Matheran.

3. HELIOTROPIUM L.

1a. Flowers white, seldom yellow; fruits of 2–4 nutlets, hairy, not beaked:

2a. Corolla lobes patent, caudate to acuminate; flowers yellow or greenish–yellow in 15–30 cm long spikes; plants usually erect ... *H. subulatum* 1

2b. Corolla lobes not as above; flowers white in spikes, not more than 15 cm long; plants usually prostrate or diffuse:

3a. Prostrate, villous herbs; nutlets enclosed in persistent calyx; spikes villous ... *H.supinum* 2

3b. Plants not as above; nutlets not covered by persistent calyx lobes; spikes not villous ... *H. ovalifolium* 3

1b. Flowers rosy-purple; fruits glabrous, mitriform, beaked ... *H. indicum* 4

1. **Heliotropium subulatum** (Hochst. ex DC.) Vatke in Oesterr. Bot. Z. 25: 166. 1875. *Tournefortia subulata* Hochst. ex DC. Prodr. 9: 528. 1845. *Heliotropium zeylanicum auct. non* (Burm. f.) Lam. 1789; Wight, Icon. t. 892. 1844–1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 148. 1883; Cooke, Fl. Pres. Bombay 2: 274. 1958 (Repr. ed.).

Erect, hairy herbs, 20–60 cm; leaves elliptic–lanceolate, densely hairy, 3–5 x 1.2–1.8 cm; flowers sessile in terminal, scorpioid cymes; fruits rugose, pitted, 2–seeded nutlets.

Fls. & Frts. : May–June.

In hilly forests, infrequent. Matheran.

2. **Heliotropium supinum** L. Sp. Pl. 130 1753; Wight, Icon. t. 1387. 1848; C.B.Cl. in Hook. f. Fl. Brit. India 4: 149. 1883; Cooke, Fl. Pres. Bombay 2: 275. 1958 (Repr. ed.).

Prostrate, villous herbs, 10–30 cm; leaves ovate–elliptic, appressed–pubescent, 1.2–3 x 0.8–1.3 cm; flowers white in terminal, forked cymes; fruits brownish.

Fls. & Frts. : February–March.

In hilly forests, infrequent. On way to Sudhagad from Nadsur village, Pali.

3. **Heliotropium ovalifolium** Forssk. Fl. Aegypt.–Arab. 38. 1775; C.B.Cl. in Hook. f. Fl. Brit. India 4: 150. 1883; Cooke, Fl. Pres. Bombay 2: 278. 1958 (Repr. ed.). *H. coromandelianum* Raddi ex DC. Prodr. 9: 533. 1845, *non* Retz. (1781); Wight, Icon. t. 1388. 1848.

Prostrate or subcerect, densely hairy herbs; leaves ovate–oblong or obovate, appressed–pubescent; flowers white in terminal spikes; fruits subglobose, hairy.

Fls. & Frts. : September–February.

In moist places, near ponds and ditches, frequent. Karjat; Matheran.

4. **Heliotropium indicum** L. Sp. Pl. 130. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 152. 1883; Cooke, Fl. Pres. Bombay 2: 273. 1958 (Repr. ed.). *Tiaridium indicum* (L.) Lehm. Pl. Asperif. Nucif. 14. 1818; Wight, Ill. 2: t. 171. 1850.

Erect, hairy herbs, 30–60 cm; leaves broadly ovate to elliptic, hairy, 2.2–8.5 x 1.8–5.6 cm; flowers purplish in extra–axillary or terminal, scorpioid spikes; fruits ovoid, lobed, beaked.

Fls. & Frts. : September–October.

As a weed in moist places and along road–sides, frequent. Mahad; Pen; Roha.

4. Cynoglossum L.

Cynoglossum zeylanicum (Vahl ex Hornem.) Thunb. ex Lehm. Neue Schrift. Naturf. Ges. Halle 3 (2): 20. 1817; Kazmi in J. Arnold Arb. 52: 344. 1971. *Anchusa zeylanica* Vahl ex Hornem. Enum. Hafn. 3. 1807. *Cynoglossum furcatum* Wall. ex Roxb. Fl. Ind. 2: 6. 1824; Wight, Icon. t. 1395. 1848. *C. denticulatum* A. DC. var. *zeylanicum* (Vahl ex Hornem.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 157. 1883; Cooke, Fl. Pres. Bombay 2: 284. 1958 (Repr. ed.).

Branched, hairy undershrubs, 0.7–1.2 m; leaves broadly ovate–oblong, appressed, white–pubescent, 3–9.2 x 1.4–3.1 cm; flowers white with bluish centre in terminal and axillary, simple or forked cymes; nutlets ovoid, glochidiate with small, decurved, hooked hairs.

Fls. & Frts. : October–November.

In hilly forests, infrequent. Varandh ghat, Mahad.

5. Adelocaryum Brand.

Adelocaryum coelestinum (Lindl.) Brand. Fedde Repert. 13: 549. 1915. *Cynoglossum coelestinum* Lindl. Bot. Reg. 25: t. 36. 1839. *Paracaryum coelestinum* Benth. & Hook. f. Gen. Pl. 2: 850. 1876; C.B.Cl. in Hook. f. Fl. Brit. India 4: 160. 1883; Cooke, Fl. Pres. Bombay 2: 285. 1958 (Repr. ed.).

Erect herbs with reddish stem and fusiform roots; leaves broadly ovate, cordate, glabrous, upto 19.5 x 16.2 cm; flowers white with blue tinge at centre; fruits green, pyramidal.

Fls. & Frts. : September–October.

As forest undergrowth, occasional. Neral to Matheran.

The root juice is used in native medicines to cure stomach disorders.

6. PARACARYUM Boiss.

Paracaryum lambartianum C.B.Cl. in Hook. f. Fl. Brit. India 4: 161. 1883; Cooke, Fl. Pres. Bombay 2: 287. 1958 (Repr. ed.).

Erect, suffruticose herbs with greenish stem; leaves ovate, acute, appressed–pubescent, upto 15 x 7.4 cm; flowers in forked, ebracteate racemes; fruits broadly ovate, flattened.

Fls. & Frts. : September–October.

In hilly tracts, infrequent. Raigad, Mahad.

94. CORDIACEAE

1a. Trees or rarely shrubs; flowers usually white in axillary, solitary or 2–3–fascicled, terminal cymes; stylar branches forked:

2a. Calyx accrescent in fruits; stamens 4–6 ... CORDIA 1

2b. Calyx not accrescent in fruits; stamens 5 ... EHRETIA 2

1b. Virgate shrubs; flowers pale to bright purple or rose coloured, 2–3 in short fascicled cymes; style 1, simple ... ROTULA 3

1. CORDIA L.

1a. Leaves hoary–tomentose beneath; calyx cup shaped, tomentose outside, ribbed in fruit, covering nearly half of the drupes ... *C. macleodii* 1

1b. Leaves not as above; calyx saucer shaped, glabrous outside, not ribbed in fruit, scarcely or not covering the drupes ... *C. dichotoma* 2

1. **Cordia macleodii** (Griff.) Hook. f. & Thoms. in J. Proc. Linn. Soc. Bot. 2: 128. 1858; C.B.Cl. in Hook. f. Fl. Brit. India 4: 139. 1883; Cooke, Fl. Pres. Bombay 2: 266. 1958 (Repr. ed.). *Hemigymnia macleodii* Griff. in Calcutta J. Nat. Hist. 3: 363. 1843.

Small trees upto 1.2 m; bark greyish, papery leaves broadly ovate, rugose above, densely tomentose beneath; flowers white in terminal and axillary, tomentose panicles; drupes ovoid, acute, smooth, brownish.

Fls. & Frts. : May–June.

In deciduous forests, infrequent. Parhur reserve forest, Alibag.

Bark is used in 'Jaundice'. It is mixed with fodder to feed the cattle for lactation and as a stimulant.

2. **Cordia dichotoma** Forst. f. Prodr. 18. 1786. *C. myxa auct. Plur. non* L. (1753); C.B.Cl. in Hook. f. Fl. Brit. India 4: 136. 1883; Cooke, Fl. Pres. Bombay 2: 265. 1958 (Repr. ed.). *Bhokar, Bokhar.*

Trees 1–1.5 m; bark, ash–blackish coloured leaves broadly ovato or elliptic–suborbicular, coriaceous, glabrous, 5.2–11 x 4.4–8.3 cm; flowers creamy–yellow or white in terminal and short, lateral branches; drupes green, ovoid, mucilaginous, yellowish at length.

Fls. & Frts. : May–June.

In deciduous forests, frequent. Karnala fort; on way to Janjira fort; Roha.

This species is also planted along road–sides near villages for its edible fruits and are also used in pickles.

2. EHRETIA L.

Ehretia laevis Roxb. Pl. Cor. 1: 42. t. 56. 1795; Wight, Icon. t. 1382. 1848; C.B.Cl. in Hook. f. Fl. Brit. India 4: 141. 1883; Cooke, Fl. Pres. Bombay 2: 269. 1958 (Repr. ed.). *E. laevis* Roxb. var. *floribunda* (Benth.) Brandis, For. Fl. 340. 1874; C.B.Cl. in Hook. f. Fl. Brit. India 4: 142. 1883; Kazmi in J. Arnold Arb. 51: 147. 1970.

Trees or shrubs, 90–120 cm; leaves ovate, acuminate, glabrous, 8–12.5 x 4.3–7.4 cm; flowers in subaxillary corymbs; drupes depressed, globose, distinctly 4–ribbed when dry.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Matheran.

3. ROTULA Lour.

Rotula aquatica Lour. Fl. Cochinch. 121. 1790. *Rhabdia lycioides* Mart. Nov. Gen. & Sp. 2: 137. t. 195. 1827; C.B.Cl. in Hook. f. Fl. Brit. India 4: 145. 1883; Cooke, Fl. Pres. Bombay 2: 272. 1958 (Repr. ed.). *Ehretia cuneata* Wight, Icon. t. 1385. 1848.

Bushy shrubs, 60–90 cm; bark reddish–purple, tinged brown; leaves obovate–elliptic or spathulate, glabrescent, 0.8–1.5 x 0.4–0.8 cm;

flowers pink in subterminal racemes; drupes subglobose, reddish-brown.

Fls. & Frts. : September–October.

In river beds, frequent. Karjat; Pali to Nagothana; Pen.

95. CONVOLVULACEAE

1a. Flowers in racemes or panicles; sepals much enlarged in fruits; capsules 1 seeded, indehiscent, rarely 2-valved ... PORANA 1

1b. Flowers in cymes; sepals not or slightly enlarged in fruits; capsules many seeded, dehiscing valvately opercular or irregularly:

2a. Corolla tube usually uniformly enlarged from base to apex:

3a. Styles 2, free or partly united below; stigmas 2; plants not twining:

4a. Erect herbs; leaves ovate-lanceolate, acute; flowers pinkish; pedicels very short; seed 1 ... CRESSA 2

4b. Prostrate herbs; leaves elliptic-oblong, obtuse; flowers sky-blue; pedicels long; seeds 4 ... EVOLVULUS 3

3b. Style one entire, stigmas usually 2; plants twining:

5a. Ovary 1-loculed; capsules 4-valved; corolla white or yellow with purple centre ... HEWITTIA 4

5b. Ovary 2(4)-loculed; capsules 4–8 valved; corolla not as above:

6a. Stigmas oblong, elliptic; capsules 8-valved ... JACQUEMONTIA 5

6b. Stigmas globose, capsules 4-valved ... MERREMIA 6

2b. Corolla tube not uniformly enlarged from base to apex:

7a. Fruits dehiscent, if indehiscent then with thin and fragile walled ... IPOMOEA 7

7b. Fruits indehiscent, woody, mealy or fleshy:

8a. Corolla salver-shaped or hypocrateriform; stigmas linear-oblong or elliptic-oblong; fruits woody ... RIVEA 8

8b. Corolla not as above; stigmas globose; fruits mealy or fleshy ... ARGYREIA 9

1. PORANA Burm. f.

Porana racemosa Roxb. Fl. Ind. 2: 41. 1824; van Ooststr. in Fl.

Males. Ser. 1, 4: 91. 1953. *P. malabarica* C.B. Cl. in Hook. f. Fl. Brit. India 4: 222. 1883; Cooke, Fl. Pres. Bombay 2: 294. 1958 (Repr. ed.). *Bhuari.*

Slender, herbaceous twiners; leaves ovate–elliptic, cordate, acuta–acuminate, glabrous, 2.2–4 x 1.3–2.5 cm; flowers whitish in axillary, paniculate cymes; sepals much enlarged, upto 2.2 cm in fruit; capsules sub–cylindric, seeds yellow.

Fls. & Frts. : September–October.

On low bushes, occasional. Pachhad.

2. CRESSA L.

Cressa cretica L. Sp. Pl. 223. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 225. 1883; Cooke, Fl. Pres. Bombay 2: 296. 1958 (Repr. ed.).

Erect, much branched, greyish hairy herbs, 10–20 cm; leaves many, ovate, acute, appressed–pubescent, 2–5 mm; flowers axillary in small clusters; capsules ovoid, apiculate, hairy near tip, 1–seeded.

Fls. & Frts. : February–March.

Near sea–coast, frequent. Nagaon beach, Alibag.

3. EVOLVULUS L.

Evolvulus alsinoides (L.) L. Sp. Pl. (ed. 2) 392. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 4: 220. 1883; Cooke, Fl. Pres. Bombay 2: 297. 1958 (Repr. ed.); van Ooststr. in Fl. Males. Ser. 1, 4: 395. 1953. *Convolvulus alsinoides* L. Sp. Pl. 157. 1753. *Shankhaveli.*

Prostrate or suberect, hairy herbs; leaves ovate–elliptic, appressed pubescent, 0.8–2.4 x 0.2–1 cm; flowers axillary, solitary; fruits rounded, glabrous; seeds ellipsoid, dark brown.

Fls. & Frts. : July–November.

Among grasses in deciduous forests, frequent. Ramraj, Alibag.

4. HEWITTIA Wight & Arn.

Hewittia sublobata (L.f.) O. Ktze. Rev. Gen. Pl. 441. 1891. *Convolvulus sublobatus* L. f. Suppl. 135. 1781. *Hewittia bicolor* (Vahl) Wight & Arn. in Madras J. Lit. Sci. 5: 22. 1837; Wight, Icon. t. 835. 1845; C.B. Cl. in Hook. f. Fl. Brit. India 4: 216. 1883; Cooke, Fl. Pres.

Bombay 2: 299. 1958 (Repr. ed.). *Convolvulus bicolor* Vahl, Symb. Bot. 3: 25. 1794.

Glabrous or pubescent twiners; leaves ovate, deltoid–cordate, entire or slightly lobed, apiculate, pubescent, 3.9–8.7 x 3–8 cm; flowers creamy–white to yellowish, axillary, solitary; capsules subglobose.

Fls. & Frts. : September–November.

Along the sea coast and in deciduous forests, frequent. Janjira fort, Murud; Pen.

5. JACQUEMONTIA Choisy

Jacquemontia paniculata (Burm. f.) Hall. f. in Engler Bot. Jahrb. 16: 541. 1893 & 18: 95. 1894; Cooke, Fl.Pres. Bombay 2 : 303. 1958 (Repr. ed.). *Ipomoea paniculata* Burm. f. Fl. Ind. 50. t. 21. f. 3. 1768. *Convolvulus parviflorus* Vahl. Symb. Bot. 3: 29. 1794; C.B. Cl. in Hook. f. Fl. Brit. India 4: 220. 1883.

Slender twiners with reddish–brown, appressed pubescent stem; leaves ovate, acute, glabrescent, 4–7 x 2.2–2.8 cm; flowers bluish–white in axillary, umbellate cymes; capsules globose, apiculate; seeds brownish, globular.

Fls. & Frts. : September–October.

On hedges and small bushes, frequent. Wankalgar forests, Shrivardhan.

6. MERREMIA Dennst. ex Hall. f.

1a. Leaves entire :

2a. Stem winged; capsule enclosed in enlarged sepals ... *M. turpethum* 1

2b. Stem not winged, capsule not enclosed in enlarged sepals:

3a. Leaves emarginate and 3–toothed at apex; flowers 1–3 on axillary peduncles; seeds glabrous ... *M.tridentata* 2

3b. Leaves not as above; flowers in compound umbellate cymes; seeds densely hairy ... *M.umbellata* 3

1b. Leaves 3–7 lobed ... *M.vitifolia* 4

1. **Merremia turpethum** (L.) Shah & Bhatt in Fl. Gujarat 1: 480. 1978. *Convolvulus turpethum* L. Sp. Pl. 155. 1753. *Ipomoea turpethum* (L.) R. Br. Prodr. 485. 1810; C.B. Cl. in Hook. f. Fl. Brit. India 4: 212. 1883. *Operculina turpethum* S. Monso, Enum. Subst. Braz. 16 & 49.

1836; Cooke, Fl. Pres. Bombay 2: 309. 1958 (Repr. ed.); van Ooststr. in Fl. Males. Ser. 1, 4: 456. f. 32 a–b. 1953.

Robust twiners with fleshy branched roots and 4–winged or angular, twisted stem; leaves broadly ovate–lanceolate, base cordate, hastate, apex obtuse to mucronate, glabrous to velvety, 4–7 x 2.8–4 cm; flowers snow–white or yellowish with reddish–green sepals; capsules globose; seeds black.

Fls. & Frts. : October–April.

On hedges and low shrubs, frequent. Janjira fort; Mirya dongar, Pen.

2. **Merremia tridentata** (L.) Hall. f. in Bot. Jahrb. Syst. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 306. 1958 (Repr. ed.). *Convolvulus tridentatus* L. Sp. Pl. 157. 1753; C.B. Cl. in Hook. f. Fl. Brit. India 4: 205. 1883. *Mogra*.

Prostrate herbs with woody root stock; leaves linear–hastate or obovate–oblong, glabrous; flowers yellowish; capsules globose; seeds 4, trigonous, dark brown.

Fls. & Frts. : August–October.

Near sea–coast, infrequent. Shriwardhan.

3. **Merremia umbellata** (L.) Hall. f. in Bot. Jahrb. Syst. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 305. 1958 (Repr. ed.). *Convolvulus umbellatus* L.Sp. Pl. 155. 1753. *Ipomoea cymosa* (Desr.) Roem. & Schult. Syst. 4: 241. 1819; C.B. Cl. in Hook. f. Fl. Brit. India 4: 211. 1883.

Slender twiners; leaves ovate–oblong or hastate, cordate, mucronate, glabrescent, 3.8–7 x 1.8–2.2 cm; flowers yellow in umbellate cymes; capsules subglobose; seeds densely hairy.

Fls. & Frts. : January–March.

In moist deciduous forests, infrequent. Mhasla.

4. **Merremia vitifolia** (Burm. f.) Hall. f. in Engler's Bot. Jahrb. 16 : 552. 1893; Cooke, Fl. Pres. Bombay 2: 307. 1958 (Repr. ed.). *Convolvulus vitifolius* Burm. f. Fl. Ind. 45. t. 18. f. 1. 1768; C.B.Cl. in Hook. f. Fl. Brit. India 4: 213. 1883.

Hairy twiners; leaves suborbicular, appressed–pubescent, 2–5.5 cm across; flowers few, yellow in axillary cymes; sepals purple, hairy; capsules subglobose; seeds blackish, glabrous.

Fls. & Frts. : February–March.

In plains and hilly forests, frequent. Dhamni, Pen; Varandh ghat.

7. IPOMOEA L.

1a. Leaves entire:

2a. Flowers white–pinkish or creamy–white (rarely bluish–purple within) :

3a. Capsules glabrous; seeds velvety, dark brown ... *I. obscura* 1

3b. Capsules hairy; seeds glabrous, not dark brown ... *I. eriocarpa* 2

2b. Flowers purple or pale–bright pink :

4a. Shrubs or woody climbers ... *I.carnea* ssp. *fistulosa* 3

4b. Prostrate or twining herbs :

5a. Plants aquatic; stem hollow ... *I. aquatica* 4

5b. Plants terrestrial; stem not hollow:

6a. Stem and branches tubercled or muricate; peduncle much enlarged ... *I. turbinata* 5

6b. Stem, branches and peduncle not as above :

7a. Sepals hispid; flowers enclosed in a perfoliate boat shaped bract ... *I.pileata* 6

7b. Sepals glabrous or slightly pubescent (*I. tuba*); flowers not enclosed in boat shaped bract :

8a. Slender climbers; stem glabrous; sepals obovtae, obtuse or slightly apiculate, glabrous ... *I. maxima* 7

8b. Stout, climbing shrubs; stem prickly; sepals ovate–oblong, cuspidate, slightly puberulous ... *I.tuba* 8

1b. leaves lobed :

9a. Flowers deep red or scarlet coloured :

10a. Leaves entire or shallowly 3–5–lobed ... *I.hederifolia* 9

10b. Leaves pinnatisect ... *I. quamoclit* 10

9b. Flowers pale deep purple, sometimes rosy :

11a. Plants prostrate; leaves deeply 2–lobed ... *I. pes-caprae* 11

11b. Plants twining; leaves not as above :

12a. Flowers many in capitate head; peduncle long, hairy ... *I. pes-tigridis* 12

12b. Flowers not arranged as above :

13a. Leaves shallow or deeply 3–5 lobed :

14a. Sepals ovate, obtuse–acute, 4–6 mm long ... *I. cairica* 13

14b. Sepals lanceolate with linear–lanceolate apices, 15–20 mm long ... *I. nil* 14

13b. Leaves deeply 5–7 lobed ... *I. mauritiana* 15

1. **Ipomoea obscura** (L.) Ker.–Gawl. in Bot. Reg. 3. t. 239. 1817; C.B.Cl. in Hook. f. Fl. Brit. India 4: 207. 1883; Cooke, Fl. Pres. Bombay 2: 317. 1958 (Repr. ed.). *Convolvulus obscurus* L. Sp. Pl. (ed. 2) 220. 1762.

Slender, glabrous or sparsely hairy twiners; leaves broadly ovate–suborbicular or cordate, acuminate, glabrous or sparsely hairy, 3–8.8 x 2.4–6 cm; flowers campanulate, axillary, solitary; capsules ovoid.

Fls. & Frts. : March- October.

On hedges and low shrubs, frequent. Kalasgiri hill, Roha; Khopoli; Pangloli forests, Mhasla.

2. **Ipomoea eriocarpa** R. Br. Prodr. 484. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 4: 204. 1883; Cooke, Fl. Pres. Bombay 2: 312. 1958 (Repr. ed.); van Ooststr. in Fl. Males. Ser. 1, 4: 462. 1953. *I. sessiliflora* Roth, Nov. Pl. Sp. 116. 1821; Wight, Icon. t. 169. 1839.

Slender, patently hairy, twining herbs; leaves ovate–oblong or lanceolate, appressed–pubescent, 2.8–6.8 x 1.2–4.6 cm; flowers pinkish in axillary, fascicled cymes; capsules ovoid–globular; seeds ellipsoid, glabrous, reticulated.

Fls. & Frts. : September–October.

Among grasses and on low shrubs, infrequent. Kolaba fort, Alibag.

3. **Ipomoea carnea** Jacq. ssp. **fistulosa** (Mart. ex Choisy) D. Austin in Taxon 26: 237. 1977. *I. fistulosa* Mart. ex. Choisy in DC. Prodr. 9: 349. 1845. *I. carnea sensu* Cooke, Fl. Pres. Bombay 2: 321. 1958 (Repr. ed.).

Shrubs, 1.5–2 m; branches terete, tomentose, fistulose; leaves ovate–lanceolate or oblong, acuminate, cordate, puberulous, 8–20 x 4.6–10.5 cm; flowers purplish in axillary, cymose–paniculate clusters; capsules ovoid–subglobose, brownish; seeds covered with brownish hairs.

Fls. & Frts. : May–June.

Along the road–sides in moist places, frequent. Neral to Bhadval.

4. **Ipomoea aquatica** Forssk. Fl. Aegypt.–Arab. 44. 1775; C.B.Cl. in Hook. f. Fl. Brit. India 4: 210. 1883; Cooke, Fl. Pres. Bombay 2: 315. 1958 (Repr. ed.); van Ooststr. in Blumea 3: 528. 1940 & in Fl. Males. Ser. 1, 4: 473. 1953.

Floating or trailing herbs, rooting at nodes; leaves ovate–traingular or lanceolate with cordate–hastate base, glabrous, 3.6–5.5 x 1.4–3 cm; flowers bluish–white or purple, solitary or few in cymes; capsules ovoid–globose; seeds pilose or glabrous.

Fls. & Frts. : August–October.

In shallow ditches, tanks or wet lands, frequent. Madh, Pen.

The plant is used as a pot herb and its juice as a laxative.

5. **Ipomoea turbinata** Lag. Gen. Sp. Pl. 10. 1816; Gunn in Brittonia 24: 163. 1972; Verdc. in Kew Bull. 33: 167. 1978. *Ipomoea muricata* (L.) Jacq. Hort. Schoenbr. 3: 40. t. 323. 1803. *non* Cav. (1799); C.B.Cl. in Hook. f. Fl. Brit. India 4: 197. 1883; Van Ooststr. in Fl. Males. Ser. 1, 4: 481. 1953. *Calonyction muricatum* (L.) Don, Gen. Syst. 4: 264. 1838; Cooke, Fl. Pres. Bombay 2: 322. 1958 (Repr. ed). *Gariya.*

Twiners; leaves broadly ovate–orbicular, cordate, acuminate, glabrous, 4.5–13.7 x 2.7–10 cm; flowers lavender to purplish in axillary cymes; capsules ovoid, apiculate, glabrous; seeds black, smooth.

Fls. & Frts. : September–October.

In deciduous forests, frequent. Kolaba fort, Alibag; Pen to Khopoli Road.

6. **Ipomoea pilcata** Roxb. Fl. Ind. 2: 94. 1824; Wight, Icon.t. 1363. 1848; C.B.Cl. in Hook. f. Fl. Brit. India 4: 203. 1883; van Ooststr. in Fl. Males. Ser. 1, 4: 507. 1953; Sant. & Patel in Agarkar Com. Vol. 14: 17. f. 1 A–D. 1961. *I. involucrata auct. non* P. Beauv. (1810); Cooke, Fl. Pres. Bombay 2: 314. 1958 (Repr. ed.).

Slender, pubescent twiners; leaves broadly ovate, acuminate, hairy, 3–5.5 x 2.3–5 cm; flowers pinkish, sessile, few in heads; capsules obovoid, papery, glabrous; seeds ovoid–subtrigonous, black, glabrous.

Fls. & Frts. : September–October.

In moist deciduous forests, rare. Dahen, Mhasla, 148004.

The occurrence of this species in 'Konkan' is doubted by Santapau & Patel (1961). The present collection from Raigad district confirms its occurrence in 'Konkan'.

7. **Ipomoea maxima** (L.f.) G. Don ex Sweet, Hort. Brit. (ed. 2) 372. 1830; van Ooststr. in Fl. Males. Ser. 1, 4: 525. 1953. *Convolvulus maximus* L.f. Suppl. 137. 1781. *Ipomoea sepiaria* Koenig ex Roxb. Fl. Ind. 2: 90. 1824; C.B.Cl. in Hook. f. Fl. Brit. India 4: 209. 1883; Cooke, Fl. Pres. Bombay 2: 315. 1958 (Repr. ed.).

Slender twiners; leaves ovate–cordate, variable, glabrous, 1.2–5.7 x 0.8–3.3 cm; flowers purplish in subumbellate cymes; capsules ovoid–globose, brownish; seeds subtrigonous, tomentose.

Fls. & Frts. : May–October.

On hedges and low bushes, frequent. Pen to Khopoli Road; Ramraj & Revas in Alibag.

8. **Ipomoea tuba** (Schl.) G. Don, Gen. Syst. 4: 271. 1837; van Ooststr. in Fl. Males. Ser. 1, 4: 487. 1953. *Convolvulus tuba* Schl. in Linnaea 6: 735. 1831. *Ipomoea longiflora auct. non* R. Br. (1810); Cooke, Fl. Pres. Bombay 2: 315. 1958 (Repr. ed.).

Large climbers with sub–spinous tubercles; leaves broadly ovate, cordate, acute–acuminate, glabrous; flowers solitary or 1–3 in axillary cymes; capsules ellipsoid, enclosed by enlarged sepals.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Mhasla.

9. **Ipomoea hederifolia** L. Syst. Nat. (ed. 10.) 925. 1759. *I coccinea auct. non* L. (1753); C.B.Cl. in Hook. f. Fl. Brit. India 4: 199. 1883. *I. angulata* Lam. Encycl. 1: 464. 1791; van Ooststr. in Fl. Males. Ser. 1, 4: 481. 1953. *Quamoclit coccinea auct. non* Moench. (1795); Cooke, Fl. Pres. Bombay 2 : 330. 1958 (Repr. ed.).

Slender climbers; leaves ovate–suborbicular, entire or 3–lobed, glabrous, 2.6–7.5 x 2.7–5.8 cm; flowers red to reddish–yellow in terminal, lax, umbellate cymes; capsules ovoid, glabrous; seeds dark brown or black.

Fls. & Frts. : September–March.

On low bushes in open forests and near sea–coasts, frequent. Bhira; Dasgaon; Janjira fort, Murud.

10. **Ipomoea quamoclit** L. Sp. Pl. 159. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 199. 1883; van Ooststr. in Fl. Males. Ser. 1, 4: 482. 1953. *Quamoclit vulgaris* Choisy in Mem. Soc. Phys. Genev. 6 : 434. 1834; Cooke, Fl. Pres. Bombay 2: 331. 1958 (Repr. ed.).

Twiners; leaves deeply pinnatisect with 9–19 linear–filiform segments, glabrous; flowers red, solitary or 2–3 in axillary cymes; capsules ovoid, brownish; seeds brownish, hairy.

Fls. & Frts. : September–October.

On hedges near sea–coast, frequent. Alibag.

11. **Ipomoea pes–caprae** (L.) R. Br. in Tuckey, Narr. Exped. Zaire 477. 1818; van Ooststr. in Fl. Males. Ser. 1, 4: 475. 1953. *Convolvulus pes–caprae* L. Sp. Pl. 159. 1753. *Ipomoea biloba* Forssk. Fl. Aegypt.–Arab. 44. 1775; C.B.Cl. in Hook. f. Fl. Brit. India 4: 212. 1883; Cooke, Fl. Pres. Bombay 2: 317. 1958 (Repr. ed.).

Trailing herbs, rooting at the nodes, glabrous; leaves ovate, obovate, attenuate or cordate, apically emarginate, fleshy, glabrous, conspicuously veined; flowers pink to purplish, solitary or 2–3 in axillary cymes; capsules ovoid; seeds black, tomentose.

Fls. & Frts. : September–March.

Along the sea coast, frequent. Alibag; Nagaon.

The plant is used medicinally. The leaves are applied externally in rheumatic pains.

12. **Ipomoea pes–tigridis** L. Sp. Pl. 162. 1753; Wight, Icon. t. 836. 1844–1845; C.B. Cl. in Hook. f. Fl. Brit. India 4: 204. 1883; Cooke, Fl. Pres. Bombay 2: 320. 1958 (Repr. ed.).

Annuals with patently hairy twining stem; leaves 5–9–lobed; lobes ovate–elliptic, densely hairy; flowers rosy–purple in involucrate cymes; capsules globose, papery, concealed in calyx; seeds grey–pubescent.

Fls. & Frts. : September–October.

On hedges, infrequent. Jambulpada; Shrivardhan.

13. **Ipomoea cairica** (L.) Sweet, Hort. Brit. 287. 1827. *I pulchella sensu* Wight, Icon. t. 156. 1839 *non* Roth (1821); van Ooststr. in Fl. Males. Ser. 1, 4: 478. 1953. *I. palmata* Forssk. Fl. Aegypt.–Arab. 43. 1775; C.B. Cl. in Hook. f. Fl. Brit. India 4: 214. 1883.

Perennial climbers with tuberous roots; leaves ovate–orbicular, palmately cut into 5–lobes; lobes ovate–lanceolate; flowers purple or white, 1 to few in cymes; capsules subglobose; seeds tomentose.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Matheran.

14. **Ipomoea nil** (L.) Roth, Cat. Bot. 1: 36. 1797; van Ooststr. in Fl. Males. Ser. 1, 4: 465. 1953. *Convolvulus nil* L. Sp. Pl. (ed.2) 1: 219. 1762. *Ipomoea hederacea auct. non* (L.) Jacq. 1787; C.B.Cl. in Hook. f. Fl. Brit. India 4: 199. 1883; Cooke, Fl. Pres. Bombay 2: 321. 1958 (Repr. ed.).

Slender, hairy climbers; leaves ovate–suborbicular, 3–5–lobed, hairy, 3.2–10 x 2.4–9.2 cm; flowers blue, throat white, solitary, axillary or a few in cymes; capsules globose, smooth; seeds dark brown, pyriform, densely pubescent.

Fls. & Frts. : September–October.

On hedges and low shrubs, frequent. Pachhad; Pali.

The seeds are used as a purgative by local people.

15. **Ipomoea mauritiana** Jacq. Coll. Bot. 4: 216. 1791 & Hort. Schoenbr. 2: 39. t. 200. 1797; Verdc. in Fl. Trop. E. Africa 135. 1963. *Convolvulus paniculatus* L. Sp. Pl. 156. 1753. *Ipomoea digitata auct. non* L. (1759); C.B. Cl. in Hook. f. Fl. Brit. India 4: 202. 1883; Cooke, Fl. Pres. Bombay 2 : 318. 1958 (Repr. ed.).

Large, woody twiners with tuberous roots; leaves palmately lobed; lobes elliptic–oblong or lanceolate, acute; flowers in axillary cymes; capsules ovoid; seeds blackish, hairy.

Fls. & Frts. : August–October.

In deciduous forests, frequent. Alibag; Mandatna to Pangloli, Mhasla.

8. RIVEA Choisy

Rivea hypocrateriformis (Desr.) Choisy in Mem. Soc. Phys. Geneva 6: 408. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 4: 184. 1883; Cooke, Fl. Pres. Bombay 2: 323. 1958 (Repr. ed.).*Convolvulus hypocrateriformis* Desr. in Lam. Encycl. 3: 561. 1792.

Extensive, white–tomentose lianas; leaves ovate–orbicular,

cordate, appressed–pubescent beneath, 3.5–8.8 x 3–7.4 cm; flowers white, fragrant in axillary cymes; capsules globose, brownish, glabrous; seeds brown.

Fls. & Frts. : September–October.

On hedges in deciduous forests, infrequent. Pejari near Bandhan village, Alibag.

9. ARGYREIA Lour.

1a. Leaves densely silky, white tomentose, shining beneath :

2a. Leaves glabrous above; plants escape or cultivated ... *A. nervosa* 1

2b. Leaves appressed–pubescent above; plants wild ... *A. sericea* 2

1b. Leaves not as above :

3a. Ovary 4–celled, 4 ovuled :

4a. Base of the lamina cordate; flowers in 20 cm long pedunculate cymes; peduncles glabrous; bracts linear–oblong, obtuse ... *A. hookeri* 3

4b. Base of the lamina much rounded or shallowly cordate or subrhomboid; flowers in subcapitate cymes; peduncles upto 10 cm long, hairy; bracts oblong–lanceolate, acute ... *A. involucrata* 4

3b. Ovary 2–celled, 4–ovuled :

5a. Corolla densely strigose; leaves broadly ovate, cordate; fruits red ... *A.strigosa* 5

5b. Corolla glabrous or nearly so; leaves elliptic–lanceolate; fruits orange ... *A.elliptica* 6

1. **Argyreia nervosa** (Burm.f.) Bojer, Hort. Maurit. 224. 1837; van Ooststr. in Fl. Males. Ser. 1, 4: 499. 1953. *Convolvulus nervosus* Burm. f. Fl. Ind. 48. t. 20. f. 1. 1768. *Argyreia speciosa* (L.f.) Sweet, Hort. Brit. 289. 1827; Wight, Icon. t. 851. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 185. 1883; Cooke, Fl. Pres. Bombay 2: 324. 1958 (Repr. ed.). *Samudrashok.*

Lianas with grey–white tomentose stems; leaves broadly ovate–oblong, cordate, acute to obtuse, upto 23.5 x 21.8 cm; flowers purplish–white in axillary, capitate cymes; fruits indehiscent, subglobose; seeds brown, glabrous.

Fls. & Frts. : February–March.

In deciduous forests, frequent. Karle–khind, Alibag.

The leaves are used as poultice for wounds and skin diseases.

2. **Argyreia sericea** Dalz. in Dalz. & Gibs. Bombay Fl. 169. 1861; C.B.Cl. in Hook. f. Fl. Brit. India 4: 188. 1883; Cooke, Fl. Pres. Bombay 2: 326. 1958 (Repr. ed.). *Gavel.*

Large, silky–pubescent climbers; leaves broadly ovate–cordate, acute, 5.3–12.5 x 4.2–9.5 cm; flowers pinkish–purple in axillary capitate cymes; berries globose, orange, pulpy.

Fls. & Frts. : September–October.

In deciduous forests, frequent. Alibag; Dasgaon; Karjat; Matheran.

3. **Argyreia hookeri** C.B. Cl. in Hook. f. Fl. Brit. India 4: 185. 1883; Cooke, Fl.Pres. Bombay 2: 325. 1958 (Repr. ed.).

Scandent shrubs; leaves broadly ovate–cordate, truncate or acute–acuminate, glabrescent, 11–13 x 8–9.4 cm; flowers white–pinkish with purple throat in dichotomous cymes; berries globose, dusky, succulent, 4–celled.

Fls. & Frts. : February–March.

In hilly tract, frequent. Ghosale fort, Roha.

4. **Argyreia involucrata** C.B.Cl. in Hook. f. Fl. Brit. India 4: 187. 1883; Cooke, Fl. Pres. Bombay 2: 325. 1958 (Repr. ed.).

Extensive twiners; leaves ovate, glabrous, upto 23.5 x 19 cm; flowers greenish–yellow in subcapitate cymes; fruits globose, yellow, at length black.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Varandh ghat, Mahad.

* 5. **Argyreia strigosa** (Roth) Roberty in Candollea 14: 44. 1952; Sant. & Patel in Trans. Bose Res. Instt. Calcutta 22: 41. 1958. *Ipomoea strigosa* Roth, Nov. Pl. Sp. 113. 1821. *Lettsomia setosa* Roxb. Fl. Ind. 1: 490. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 194. 1883; Cooke, Fl. Pres. Bombay 2: 330. 1958 (Repr. ed.). *Dudh–vel.*

Stout climbers, strigosely hairy in younger parts; leaves broadly ovate, cordate, glabrescent; flowers rosy in dense hairy, corymbose cymes; fruits ovoid, red.

Fls. & Frts. : September–December.

In hilly forests, infrequent. Matheran; Neral.

6. **Argyreia elliptica** (Roth) Choisy in Mem. Soc. Phys. Hist. Nat. Geneve 6: 417. 1833. *Ipomoea elliptica* Roth, Nov. Pl. Sp. 113. 1821. *Lettsomia elliptica* Wight, Icon. t. 1356. 1848; C.B. Cl. in Hook. f. Fl. Brit. India 4: 192. 1883; Cooke, Fl. Pres. Bombay 2: 329. 1958 (Repr. ed.). *Bondvel.*

Climbers; leaves ovate–elliptic, acute, glabrous above, sparsely hairy beneath, 5.5–13.5 x 4–8.2 cm; flowers pinkish–purple in lax, corymbose cymes; fruits depressed, globose.

Fls. & Frts. : September–October.

In hilly forest, infrequent. Varandh ghat, Mahad.

96. CUSCUTACEAE

CUSCUTA L.

1a. Flowers small, upto 2.4 mm; styles 2, long, slender; stigmas capitate or globose–peltate ... *C. chinensis* 1

1b. Flowers comparatively large, upto 5 mm; style one, short, stout; stigma thick, ovoid–conical ... *C. reflexa* 2

1. **Cuscuta chinensis** Lam. Encycl. 2: 229. 1876; Wight, Icon. t. 1373. 1848; C.B. Cl. in Hook. f. Fl. Brit. India 4: 226. 1883; Cooke, Fl. Pres. Bombay 2: 293. 1958 (Repr. ed.).

Twining, much branched herbs with filiform, glabrous stem forming a tangled mass; flowers sessile or with short pedicels, creamy–white or yellowish, scales at the base of filaments fimbriate, clustered; capsules globose.

Fls. & Frts. : February–March.

Parasitic on trees and bushes, infrequent. Pen.

2. **Cuscuta reflexa** Roxb. Pl. Cor. 2: 3. t. 104. 1798 & Fl. Ind. 1: 445. 1832; C. B. Cl. in Hook. f. Fl. Brit. India 4: 225. 1883; Cooke, Fl. Pres. Bombay 2: 292. 1958 (Repr. ed.); van Ooststr. in Fl. Males Ser. 1, 4: 394. f. 2. 1953.

Twiners with yellowish–green stems, branching, forming tangled mass on host plant; flowers white, solitary or in clustered cymes; capsules roundish, didymous.

Fls. & Frts. : February–March.

On low bushes in hilly forests and near sea–coasts, frequent. Alibag; Matheran.

97. SOLANACEAE

1a.	Flowers large; fruit a capsule	...	DATURA 1
1b.	Flowers small; fruit a berry :		
	2a. Fruiting calyx much enlarged, enveloping the fruit	...	PHYSALIS 2
	2b. Fruiting calyx not enlarged	...	SOLANUM 3

1. DATURA L.

1a.	Plants glabrous; capsules tuberculate	...	*D. metel* 1
1b.	Plants hairy or tomentose; capsules more or less spiny	...	*D. innoxia* 2

1. **Datura metel** L. Sp. Pl. 179. 1753; Blackslee, the genus *Datura* 33. f. 13. 1959; Wight, Icon. t. 1396. 1848; C.B.Cl. in Hook. f. Fl. Brit. India 4: 243. 1883. *D. fastuosa* L. Syst. Nat. (ed.10) 2: 832. 1759; C.B. Cl. *op. cit.* 242; Cooke, Fl. Pres. Bombay 2: 343. 1958 (Repr. ed.).

Undershrubs with spreading branches, 80–100 cm; leaves broadly ovate with shallow lobes, slightly oblique or cordate at base, puberulous beneath, 5.5–19.2 x 4.2–15 cm; flowers purplish, solitary, axillary; capsules globose, drooping; seeds trigonous.

Fls. & Frts. : September–October.

Near sea–coast, frequent. Alibag.

2. **Datura innoxia** Mill. Gard. Dict. (ed. 8) n. 5. 1768; Blackslee, the genus *Datura* 28. 9 B, 10, 1959. *Datura metel auct, non* L. (1753); Sims in Bot. Mag. t. 1440. 1812; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 243. 1883; Cooke, Fl. Pres. Bombay 2: 344. 1958 (Repr. ed.).

Suffruticose herbs or undershrubs; leaves ovate–elliptic or lanceolate, appressed–pubescent, 6–20 x 4.7–11.4 cm; flowers white, solitary, axillary; capsules globose–ovoid with slender spines; seeds brown, glabrous.

Fls. & Frts. : August–October.

In deciduous forests, infrequent. Alibag.

2. PHYSALIS L.

Physalis minima L. Sp. Pl. 183. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 238. 1883; Cooke, Fl. Pres. Bombay 2: 340. 1958 (Repr. ed.). *P. pubescence sensu* Wight, Ill. 2: t. 166 B. f. 6. 1850, *non* L. (1753). *Chirboti, Ran–popti.*

Erect herbs, 30–60 cm; leaves ovate, elliptic–oblong or lanceolate, entire or sinuate–toothed, glabrous, 3.6–8.5 x 2.2–5.3 cm; flowers yellow, axillary, solitary; berries ovoid–subglobose, orange, glabrous; seeds discoid, yellowish, muriculate.

Fls. & Frts. : September–October.

In deciduous forests, frequent. Karjat; Pachhad; Pen to Khopoli.

3. SOLANUM L.

1a. Unarmed herbs; stem herbaceous; flowers white in umbellate cymes ... *S. nigrum* 1

1b. Herbs or undershrubs, armed with prickles; stem more or less woody; flowers purplish–blue:

2a. Prostrate or procumbent herbs ... *S. surattense* 2

2b. Erect shrubs or undershrubs ... *S. anguivi* 3

1. **Solanum nigrum** L. Sp. Pl. 186. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 229. 1883; Cooke, Fl.Pres. Bombay 2: 332. 1958 (Repr. ed.). *S. rubrum* Mill. Gard. Dict. (ed. 8) n. 4. 1768, *non* L. (1767); Wight, Icon. t. 344. 1840. *Kangani.*

Erect, perennial herbs; leaves ovate–lanceolate, cuneate at base, sinuately lobed, 2.6–11.5 x 1.8–5.3 cm; flowers white, few, extra–axillary; berries globular, green to purple–black when ripe; seeds roundish, brown, glabrous.

Fls. & Frts. : September–October.

As a weed in moist places, frequent. Matheran; Murud.

The fruits are edible.

2. **Solanum surattense** Burm. f. Fl. Ind. 57. 1768. *S xanthocarpum* Schrad. & Wendl. in Schrad. Sert. Hannov. 1: 8. t. 2. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 4: 236. 1883; Cooke, Fl. Pres. Bombay 2: 335. 1958 (Repr. ed.). *S. jacquinii* Willd. Sp. Pl. 1: 1041. 1798; Wight, Icon. t. 1401. 1848. *Kateringani.*

Diffusely branched, stellately pubescent, woody herbs; leaves pinnatifid, ovate–elliptic, stellately hairy with yellow sharp prickles, 3 – 10.5 x 2 – 6.8 cm; flowers purple, solitary or few in extra–axillary cymes; berries globose, yellow, glabrous.

Fls. & Frts. : March–June.

In open deciduous forests and near sea–coasts, frequent. Elephanta island; Mahad to Nadgaon; Neral; Sanegaon, Roha.

The roots are used in cough, asthma and leaves for rheumatic pains. The smoke of dry fruits is said to be useful in killing dental germs.

3. **Solanum anguivi** Lam. Tabl. Encycl. 2: 23. 1794; Brummitt in Taxon 32: 279. 1983. *S. indicum auct. non* L. (1753); Wight, Icon. t. 346 1840; C.B.Cl. in Hook. f. Fl. Brit. India 4: 234. 1883; Cooke, Fl. Pres. Bombay 2: 336. 1958 (Repr. ed.). *Bhui–vangi.*

Erect, stellately hairy undershrubs, 60–120 cm; leaves ovate or elliptic–oblong, stellately pubescent beneath, 4.5 – 9 x 2.4 – 4.6 cm; flowers blue in extra–axillary racemose cymes; berries globose, yellow, glabrous.

Fls. & Frts. : May–October.

In hilly forests and near sea–coast, frequent. Alibag; Karjat; Matheran; Pali; Varandh ghat, Mahad.

The fruits are edible.

Cultivated or Introduced :

1. **Capsicum annuum** L. var. **acuminata** Fingerh. Mon. Gen. Caps. 13. t. 2. f. c. 1832; Cooke, Fl. Pres. Bombay 2: 347. 1958 (Repr. ed.). *C. frutescens* Roxb. Fl. Ind. 1: 574. 1832, *auct. non.* L. (1753); C.B.Cl. in Hook. f. Fl. Brit. India 4: 239. 1883. *Mirchi.*

Perennial herbs; leaves lanceolate; flowers white; berries green or red.

Native of South America, cultivated throughout the district for its edible fruits.

2. **Cestrum nocturnum** L. Sp. Pl. 191. 1753.

Erect undershrubs or shrubs; leaves ovate–lanceolate; flowers greenish–white in axillary and terminal cymes, combined into a leafy panicle.

Cultivated in gardens for ornamental purpose.

3. **Lycopersicon esculentum** Mill. Gard. Dict. (ed. 8) n. 2. 1768; C.B.Cl. in Hook. f. Fl. Brit. India 4: 237. 1883; Cooke, Fl. Pres. Bombay 2: 345. 1958 (Repr. ed.). *Vel–vangi.*

Herbs with yellow flowers and greenish–red, globose, edible fruits.

Native of South America, cultivated throughout the area, often found as an escape in Matheran.

4. **Nicotiana tabacum** L. Sp. Pl. 180. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 245. 1883; Cooke, Fl. Pres. Bombay 2: 346. 1958 (Repr.ed.).

Glandular–pubescent herbs; leaves elliptic–oblong; flowers pinkish; capsules ovoid.

The well–known tobacco plant, a native of S. America is cultivated for its leaves and fruits in Pen.

5. **Solanum melongena** L. Sp. Pl. 186. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 235. 1883; Cooke, Fl. Pres. Bombay 2 : 339. 1958 (Repr. ed.). *Vangi.*

Prickly herbs or undershrubs; leaves ovate, sinuate; flowers purple–violet; berries obovoid–globose, cylindric, purplish–black, white in centre.

The 'brinjal' or egg plant is cultivated throughout the district for its fruits.

98. SCROPHULARIACEAE

1a. Plants aquatic or marshy habitat; leaves heterophyllous i.e. submerged ones pinnatisect and those above water entire ... LIMNOPHILA 1

1b. Plants usually terrestrial; leaves not heterophyllous :

2a. Leaves all alternate ... VERBASCUM 2

2b. Leaves if not all, atleast basal ones opposite :

3a. Corolla bi–lipped; tube slender, elongate; stamens 4 or 2 :

4a. Corolla throat and lip with palate ... LINDENBERGIA 3

4b. Corolla throat and lip without palate :

5a. Calyx–lobes winged ... TORENIA 4

5b. Calyx–lobes not winged :

6a. Plants fleshy, herbaceous; leaves few, fleshy, upto 2 cm long ... DOPATRIUM 5

6b. Plants and leaves not as above ;

7a. Plants viscidly pubescent; seeds terete, reticulate ... STEMODIA 6

7b. Plants not viscid; seeds granular, muricate or rugose ... LINDERNIA 7

3b. Corolla bi-lipped or not; tube very short; stamens 2 :

8a. Calyx tubular or campanulate, 5-toothed or lobed, not spathaceous :

9a. Calyx tubular; leaves entire :

10a. Corolla bilabiate, white, yellow or purple; tube abruptly incurved, puberulous externally ... STRIGA 8

10b. Corolla not bilabiate, blue or bluish-purple; tube almost straight, glabrous externally ... BUCHNERA 9

9b. Calyx campanulate; leaves dissected :

11a. Flowers pink or pinkish-purple; anthers 2-celled ... SOPUBIA 10

11b. Flowers white, creamy-white or yellowish; anthers 1-celled ... RAMPHICARPA 11

8b Calyx neither tubular nor campanulate, but spathaceous :

12a. Plants scabrid-hispid; flowers large, sessile or subsessile, solitary ... CENTRANTHERA 12

12b. Plants glabrous; flowers small on long pedicels, many in axillary clusters ... SCOPARIA 13

1. LIMNOPHILA R. Br. *nom. cons.*

Limnophila indica (L.) Druce, Rep. Bot. Exch. Club. Soc. Brit. Isles 3: 420. 1914; Philcox in Kew Bull. 24: 115. 1970. *Hottonia indica* L. Syst. Nat. (ed. 10) 919. 1759. *Limnophila gratioloides* R. Br. Prodr. 442. 1810; Hook. f. Fl. Brit. India 4: 271. 1884; Cooke, Fl. Pres. Bombay 2: 362. 1958 (Repr. ed.). *L. racemosa* Benth. Scroph. Ind. 26. 1835; Wight, Icon. t. 861. 1844–1845.

Small herbs, rooting at nodes, 10–30 cm; emerged leaves linear-oblong, 3-nately whorled or opposite; submerged ones capillaceo-multifid, whorled, deflexed and root-like; flowers purple, axillary, solitary or in terminal racemes; capsules ovoid, 4-valved, enclosed in membranous calyx; seeds angular.

Fls. & Frts. : October–January.

Along margins of tanks, infrequent. Matheran; Pen.

2. VERBASCUM L.

Verbascum chinense (L.) Sant. Fl. Purandhar 90. 1958 & in Rec. Bot. Surv. India 16: 177. 1967. *Scrophularia chinensis* L. Mant. Pl. 2: 250. 1771. *Celsia coromandeliana* Vahl, Symb. Bot. 3: 79. 1794; Wight, Icon. t. 1406. 1849; Hook. f. Fl. Brit. India 4: 251. 1883; Cooke, Fl. Pres. Bombay 2: 352. 1958 (Repr. ed.).

Erect, glandular–pubescent, elegant herbs; radical leaves lyrate–pinnatifid, cauline ones elliptic–oblong, crenate–dentate, appressed–pubescent, 1.5–5 x 0.7–2 cm; flowers yellow in axillary, solitary and terminal racemes; capsules ovoid, dark brown.

Fls. & Frts. : January–June.

In plains and hilly forests, frequent. Pen; Raigad.

3. LINDENBERGIA Lehm.

Lindenbergia indica (L.) Vatke, Osterr. Bot. Zeitschr. 25: 10. 1875; Chatterjee & Bhardw. in Bull. Bot. Soc. Bengal 9(2): 139. 1956. *Dodartia indica* L. Sp. Pl. 633. 1753. *Lindenbergia urticifolia* Lehm. in Link. & Otto, Icon. Pl. Rar. Hort. Berol. 95. t. 31. 1828; Hook. f. Fl. Brit. India 4: 262. 1884; Cooke, Fl. Pres. Bombay 2: 379. 1958 (Repr. ed.). *Dhol.*

Erect, glandular–villous herbs; leaves opposite, ovate–elliptic, crenate–serrate, hairy, 1.4–3 x 0.6–1.5 cm; flowers yellow, solitary or 2–3 in axillary clusters; capsules ovoid, densely pilose; seeds ellipsoid.

Fls. & Frts. : September–November.

In hilly forests and near sea–coasts, infrequent. Raigad; Revadanda.

4. TORENIA L.

Torenia indica Sald. in Bull. Bot. Surv. India 8(2): 126, 127. t. 1. 1966. *T. cordifolia* Roxb. Pl. Cor. t. 161. 1798; Hook. f. Fl. Brit. India 4: 276. 1884; Cooke, Fl. Pres. Bombay 2: 364. 1958 (Repr. ed.).

Erect herbs with 4–angled stem, ciliate on angles; leaves ovate–lanceolate, serrate, acute, glabrous, 1.5–3 x 0.4–1.5 cm; flowers

bluish–purple, solitary, axillary or crowded in upper axils; capsules ellipsoid– oblong, enclosed by persistent calyx; seeds many, pitted.

Fls. & Frts. : September–October.

Along the road–sides and hill–tops, frequent. Kalasgiri hill, Roha; Neral– Matheran; Sanegaon; Sarasgad.

5. DOPATRIUM Buch.–Ham.

Dopatrium junceum (Roxb.) Buch.–Ham. ex Benth. Scroph. Ind. 31. 1835; Hook. f. Fl. Brit. India 4: 274. 1884; Cooke, Fl. Pres. Bombay 2: 363. 1958 (Repr. ed.). *Gratiola juncea* Roxb. Pl. Cor. t. 129. 1800.

Erect, glabrous herbs, 12–30 cm; leaves oblong–elliptic or obovate, glabrous, 0.5–1.5 x 0.2–0.7 cm; flowers pink, axillary; capsules globose; seeds oblong, tuberculate.

Fls. & Frts. : July–October.

In water logged, swampy locations, frequent. Karjat; Neral; Pen to Khopoli Road.

6. STEMODIA L. *nom. cons.*

1a. Flowers subsessile; corolla scarcely longer than the calyx ... *S. serrata* 1

1b. Flowers pedicelled; corolla twice as long as the calyx ... *S. viscosa* 2

1. **Stemodia serrata** Benth. in DC. Prodr. 10: 381. 1846; Hook. f. Fl. Brit. India 4: 265. 1884; Cooke, Fl. Pres. Bombay 2: 359. 1958 (Repr. ed.).

Erect, viscidly–pubescent herbs, 4–20 cm; leaves obovate–oblong, apex acute, base amplexicaul, serrulate at margins, 0.6–3.2 x 0.2–1 cm; flowers axillary, solitary; capsules linear–oblong; seeds minute, oblong–ellipsoid.

Fls. & Frts. : December–February.

In moist places, infrequent. Pen.

2. **Stemodia viscosa** Roxb. Pl. Cor. 2: 33. t. 163. 1802 & Fl. Ind. 3: 94. 1832; Wight, Icon. t. 1408. 1849; Hook. f. Fl. Brit. India 4: 265. 1884; Cooke, Fl. Pres. Bombay 2: 359. 1958 (Repr. ed.).

Diffusely branched, viscid–pubescent herbs, 30–90 cm; leaves elliptic–oblong, sessile, glabrescent, 0.6–1.7 x 0.2–0.7 cm; flowers

pink–violet, axillary and in terminal racemes; capsules ovoid–oblong, glabrous; seeds many, blackish.

Fls. & Frts. : February–September.

In moist and waste places, frequent. Karjat; Indapur; Neral; Neral–Matheran.

7. LINDERNIA All.

1a. Capsules linear cylindric, twice as long as the calyx lobes or longer :

2a. Stamens 4 :

3a. Flowers pedicillate; lower anther cells long tailed ... *L. anagallis* 1

3b. Flowers sessile; lower anther cells not tailed ... *L. sessiliflora* 2

2b. Stamens 2:

4a. Leaves penni–nerved :

5a. Leaves sharply serrate ... *L. ciliata* 3

5b. Leaves entire or shallowly serrate:

6a. Stems decumbent or creeping; capsules upto 1.5 cm long ... *L. antipoda* 4

6b. Stems erect; capsules upto 1 cm long ... *L. oppositifolia* 5

4b. Leaves parallel or palmi–nerved :

7a. Corolla 3–4 times longer than calyx; leaves usually ovate–lanceolate ... *L. hyssopioides* 6

7b. Corolla 2–2 1/2 times longer than calyx; leaves elliptic–oblong ... *L. parviflora* 7

1b. Capsules ovoid–spherical, about equalling the calyx or shorter :

8a. Nearly glabrous herbs; calyx cleft upto the middle or less; flowers bluish–violet ... *L. crustacea* 8

8b. Pubescent herbs; calyx divided to the base or nearly so; flowers white ... *L. viscosa* 9

1. **Lindernia anagallis** (Burm. f.) Pennel in J. Arnold Arb. 24 : 252. 1943; Mukerjee in J. Ind. Bot. Soc. 24: 133. 1945 (Excl. Syn.); Philcox in Kew Bull. 22(1) : 45. 1968. *Ruellia anagallis* Burm. f. Fl. Ind. 135. 1768. *Bonnaya veronicaefolia* (Retz.) Spring Syst. 1: 14. 1825; Hook. f. Fl. Brit. India 2: 285. 1884; Cooke, Fl. Pres. Bombay 2: 369. 1958 (Repr. ed.). *Vandellia pedunculata* Benth. Scroph. Ind. 37. 1835; Hook. f. *op. cit.* 282; Cooke, *op. cit.* 367. *Shewal.*

Suberect herbs with diffuse branches resting at nodes; leaves

elliptic–oblong, 1–2.4 x 0.4–0.8 cm; flowers light violet in axillary and terminal racemes; capsules narrowly oblong, upto 1.4 cm long.

Fls. & Frts. : October–March.

In moist places, frequent. Karjat; Pali to Nagothana; Varandh ghat, Mahad.

2. **Lindernia sessiliflora** (Benth.) Wettst. in Engl. & Prantl. Pflanzenfam. 4: 3b. 79. 1891; Mukerjee in J. Ind. Bot. Soc. 24: 132. 1940. *Vandellia sessiliflora* Benth. Scroph. Ind. 37. 1835; Hook. f. Fl. Brit. India 4: 282. 1884.

Suberect or diffuse herbs, pubescent at angles of branches; leaves broadly ovate–suborbicular, pubescent on nerves beneath, 0.8–2 x 0.4–1 cm; flowers white with upper lip brownish and lower with purple centre, 1–3 in axillary or terminal clusters; capsules ellipsoid, yellowish–brown; seeds minute, yellow, numerous.

Fls. & Frts. : September–October.

Among grasses in hilly forests, frequent. Karnala bird sanctuary; Matheran.

3. **Lindernia ciliata** (Colsm.) Pennel in Brittonia 2: 182. 1936 & Proc. Acad. Nat. Sci. Philad. Monogr. 5: 32. 1943. *Gratiola ciliata* Colsm. Prodr. Desc. Grat. 14. 1793. *Bonnaya brachiata* Link & Otto. Ic. Pl. Sel. Brol. 1: 25. t. 11. 1820; Hook. f. Fl. Brit. India 4: 284. 1884; Cooke, Fl. Pres. Bombay 2: 369. 1958 (Repr. ed.).

Erect, diffusely branched, glabrous herbs, 10–20 cm; leaves oblong–obovate, sessile, 0.5–3.8 x 0.4–0.8 cm; flowers pinkish–violet in terminal, lax racemes; capsules cylindric, glabrous; seeds minute, yellowish–brown, numerous.

Fls. & Frts. : September–November.

Among grasses in moist places and hilly forests, frequent. Alibag; Ghosale Fort; Jambulpada; Pali; Roha.

4. **Lindernia antipoda** (L.) Alst. in Trimen's Handb. Fl. Ceylon 6: 214. 1931; Philcox in Kew Bull. 17: 484. 1964 & 22: 57. 1968. *Ruellia antipoda* L. Sp. Pl. 635. 1753. *Bonnaya veronicaefolia* Spreng. var. *grandiflora* (Retz.) Hook. f. Fl. Brit. India 4: 285. 1884; Cooke, Fl. Pres. Bombay 2: 370. 1958 (Repr. ed.).

Glabrous herbs, rooting at nodes; leaves elliptic–lanceolate or obovate–lanceolate, penni–nerved, shallowly serrate, lower leaves

sub–entire, 2.2–4.5 x 0.5–1 cm; flowers bluish–purple in axillary and terminal, bracteate racemes; capsules narrowly oblong, glabrous.

Fls. & Frts. : September–October.

In moist places, frequent. Nagothana; Sav, Mahad.

5. **Lindernia oppositifolia** (Retz.) Mukerjee in J. Ind. Bot. Soc. 24: 134. 1945. *Gratiola oppositifolia* Retz. Obs. Bot. 4: 8. 1786. *Bonnaya oppositifolia* Spreng. Syst. Veg. 1: 41. 1825; Hook. f. Fl. Brit. India 4: 286. 1884; Cooke, Fl. Pres. Bombay 2: 370. 1958 (Repr. ed.).

Herbs, 10–20 cm; leaves linear–oblong, glabrous, 1.4–2 x 0.2–0.6 cm; flowers bluish–white with violet lip in solitary, axillary and terminal racemes; capsules brownish, linear.

Fls. & Frts. : August–September.

Among grasses in moist locations, frequent. Kolad to Khamb, Roha; Ramraj, Alibag.

6. **Lindernia hyssopioides** (L.) Haines, Bot. Bihar & Orissa 635. 1922 (2: 266. 1961. Repr. ed.). *Gratiola hyssopioides* L. Mant. Pl. 174. 1767. *Ilysanthes hyssopioides* (L.) Benth. in DC. Prodr. 10: 419. 1846; Hook. f. Fl. Brit. India 4: 283. 1884; Cooke, Fl. Pres. Bombay 2: 368. 1958 (Repr. ed.).

Erect, slender herbs, 8–20 cm; leaves 1–3–nerved, glabrous, 0.6–1.3 x 0.2–0.4 cm; flowers bluish, white or yellowish, solitary, axillary; capsules ellipsoid–oblong, glabrous; seeds minute, yellow.

Fls. & Frts. : May–October.

In moist places and hilly forests. Indapur, Mangaon; Neral; Pen.

7. **Lindernia parviflora** (Roxb.) Haines, Bot. Bihar & Orissa 635. 1922 (2: 665. 1961. Repr. ed.). *Gratiola parviflora* Roxb. Pl. Cor. 3: 3. t. 203. 1811. *Ilysanthes parviflora* Benth. in DC. Prodr. 10: 419. 1846; Hook. f. Fl. Brit. India 4 : 283. 1884; Cooke, Fl. Pres. Bombay 2: 368. 1958 (Repr. ed.). *Bonnaya hyssopioides sensu* Wight, Icon. t. 857. 1844–1845, *non* Benth. (1835).

Erect, glabrous herbs, 8–12 cm; leaves glabrous, 0.4–1.5 x 0.2–1 cm; flowers yellowish–pale violet in solitary, axillary and terminal racemes; capsules ovoid–oblong.

Fls. & Frts. : September–October.

In moist places, frequent. Kundlica river–bed, Roha.

8. **Lindernia crustacea** (L.) F. V. Muell. Syst. Cehs. Austral. Pl. 97. 1887. *Capraria crustacea* L. Mant. Pl. 1: 87. 1767. *Vandellia crustacea* (L.) Benth. Scroph. Ind. 35. 1835; Wight, Icon. t. 863. 1845; Hook. f. Fl. Brit. India 4: 279. 1884; Cooke, Fl. Pres. Bombay 2: 366. 1958 (Repr. ed.).

Prostrate herbs; leaves broadly ovate, glabrous, 0.8–2 x 0.5–1.1 cm; flowers in axillary, solitary and terminal racemes; capsules yellowish–brown, glabrous, 0.3–0.5 cm long.

Fls. & Frts. : July–October.

Among grasses on road–sides and damp places, frequent. Jambulpada, Pali; Kundlika river–bed, Roha; Matheran; Pen.

9. **Lindernia viscosa** (Hornem.) Boldingh, Zakfl. Landb. Java 165. 1916; Philcox in Kew Bull. 22 (1): 38. 1968. *Gratiola viscosa* Hornem. Enum. Pl. Hort. Hafn. 19. 1807. *Vandellia hirsuta* Buch.–Ham. ex Benth. Scroph. Ind. 36. 1835; Hook. f. Fl. Brit. India 4: 280. 1884; Cooke, Fl. Pres. Bombay 2: 367. 1958 (Repr. ed.).

Erect herbs, 8–15 cm; leaves ovate–oblong, serrate–dentate, hairy, 1.5–3.4 x 1–1.3 cm; flowers in axillary and terminal racemes; capsules subglobose, yellowish–green.

Fls. & Frts. : September–October.

In marshy places, frequent. Janjira fort, Murud; Pen.

8. STRIGA Lour.

1a. Plants glabrous; stem deep reddish–purple or blackish on drying; roots tuberous; leaves scaly; flowers rosy–purple ... *S. gesnerioides* 1

1b. Plants scabridly hairy; stem, roots and leaves not as above; flowers yellow or white :

2a. Calyx usually 10–nerved; flowers sulphur yellow ... *S. asiatica* 2

2b. Calyx usually 15–nerved; flowers white ... *S. angustifolia* 3

1. **Striga gesnerioides** (Willd.) Vatke in Oest. Bot. Zeit. 25: 11. 1875. ('*gesneroides*'). *Buchnera gesnerioides* Willd. Sp. Pl. 3: 338. 1800. *B. orobanchoides* R. Br. ex Endl. in Bot. Zeit. 2: 388. t. 2. 1832. *Striga orobanchioides* (R. Br. ex Endl.) Benth. in Hook. Comp. Mag. 1: 361. t. 19. 1836; Wight, Icon. t. 1414. 1849; Hook. f. Fl. Brit. India 4: 299. 1884; Cooke, Fl. Pres. Bombay 2: 374. 1958 (Repr. ed.). *Tambdi.*

Erect, root–parasitic herbs, 20–40 cm; leaves narrowly linear–

subulate, 5–7 mm long; flowers 1 to 3–nate in terminal spikes; capsules ovoid–ellipsoid; seeds minute, many.

Fls. & Frts. : September–October.

In open hilly plateau and as forest undergrowth, frequent. Matheran; Varandh ghat, Mahad.

This species is said to be used to cure diabetes and pimples.

2. **Striga asiatica** (L.) O. Ktze. Rev. Gen. & Sp. Pl. 1: 466. 1891; Hepper in Rhodora 76: 47. 1974. *Buchnera asiatica* L. Sp. Pl. 630. 1753. *Striga lutea* Lour. Fl. Cochinch. 1: 22. 1790; Hook. f. Fl. Brit. India 4: 299. 1844; Cooke, Fl. Pres. Bombay 2: 375. 1958 (Repr. ed.).

Erect herbs, 7–15 cm; leaves linear, sessile, scabridly hairy, 6–18 mm long; flowers solitary, axillary and in short terminal racemes; capsules ellipsoid; seeds minute, many.

Fls. & Frts. : September–October.

Among grasses in plains and hilly forests, frequent. karle Khind, Alibag; Matheran.

3. **Striga angustifolia** (D.Don) Sald. in Bull. Bot. Surv. India 5: 70. 1963. *Buchnera angustifolia* D. Don, Prodr. Fl. Nepal. 91. 1825. *Striga euphrasioides* (Benth.) Benth. in Hook. Comp. Bot. Mag. 1: 364. 1836; Wight, Icon. t. 855. 1844–1845; Hook. f. Fl. Brit. India 4: 299. 1884; Cooke, Fl.Pres. Bombay 2: 376. 1958 (Repr. ed.). (*non Buchnera euphrasioides* Vahl).

Erect, slender herbs, 10–40 cm; leaves sessile, linear–lanceolate, 1.5–4 x 0.2–0.4 cm; flowers axillary, solitary and in terminal spikes; capsules ellipsoid–oblong, glabrous; seeds black, minute, numerous.

Fls. & Frts. : September–October.

Among grasses in hilly forests, infrequent. Matheran, *Irani* 5626 (BLAT).

9. BUCHNERA L.

Buchnera hispida Buch.–Ham. ex D. Don, Prodr. Fl. Nepal. 91. 1825; Wight, Icon. t. 1413. 1849; Hook. f. Fl. Brit. India 4: 298. 1884; Cooke, Fl. Pres. Bombay 2: 373. 1958 (Repr. ed.).

Erect, scabridly hairy herbs, 20–40 cm; leaves subsessile, upper linear–lanceolate, lower ones oblong or obovate, 2.6–5.8 x 0.4–1.7 cm;

flowers in terminal spicate racemes; fruits ovoid; seeds reticulately veined.

Fls. & Frts. : September–October.

Among grasses in hill slopes, frequent. Kankneshwar, Alibag; Matheran; Sarasgad, Pali; Varandh ghat, Mahad.

10. SOPUBIA Buch.-Ham. ex D.Don

Sopubia delphinifolia (L.) G.Don, Gen. Syst. 4 : 560. 1837; Hook. f. Fl. Brit. India 4 : 302. 1884; Fyson, Fl. South Indian Hill St. 2: t. 372. 1932; Cooke, Fl. Pres. Bombay 2: 378.1958 (Repr. ed.). *Gerardia delphiniifolia* L. Cent. Pl. 2: 21. 1756. (*'delphinifolia'*).

Erect herbs with 4–angled stem; leaves pinnatisect; segments filiform, glabrous; flowers pink–purple, axillary, solitary and in terminal racemes; capsules blackish–brown, oblong; seeds minute, numerous.

Fls. & Frts. : August–October.

In hilly forests, frequent. Karjat; Matheran; Pali; Roha; Varandh ghat, Mahad.

11. RAMPHICARPA Benth.

Ramphicarpa longiflora (Arn.) Benth. in Comp. Bot. Mag. 1: 368. 1836 & in DC. Prodr. 10: 504. 1846; Hook. f. Fl. Brit. India 4: 300. 1884; Cooke, Fl. Pres. Bombay 2: 377. 1958 (Repr. ed.). *Buchnera longiflora* Arn. in Nov. Act. Curr. 18: 356. 1836.

Slender, erect herbs, 15–30 cm; leaves pinnatisect, 1.5–4 cm; segments linear or subulate, filiform; flowers white or pinkish, axillary, solitary; capsules ovoid, blackish; seeds brownish, minute, many.

Fls. & Frts. : September–November.

In marshy places, frequent. Jambulpada, Pali; Karjat; Matheran; Neral; Pejari, Alibag.

12. CENTRANTHERA R. Br.

Centranthera indica (L.) Gamble, Fl. Pres. Madras 971. 1924 (2: 683. 1957. Repr. ed.). *Rhinanthus indica* L. Sp. Pl. 603. 1753. *Centranthera hispida* R. Br. Prodr. 438. 1810; Hook. f. Fl. Brit. India 4: 301. 1884; Cooke, Fl.Pres. Bombay 2: 381. 1958 (Repr. ed.). *C. procum–*

bens Benth. in DC. Prodr. 10: 525. 1846; Hook. f. Fl. Brit. India 4: 301. 1884; Trim. Handb. Fl. Ceylon t. 68. 1895.

Erect, hispid herbs, 10–30 cm; leaves upper linear, lower oblong or obovate, hispid, 1–3 x 0.3–0.5 cm; flowers rosy in bracteate, spike–like cymes; capsules ovoid–ellipsoid, hairy; seeds oblong–cuneate, glabrous.

Fls. & Frts. : September–October.

In moist places, hill slopes, as forests undergrowth and along road–sides, frequent. Alibag; Bhise–Khind, Roha; Matheran; Sarasgad, Pali.

13. SCOPARIA L.

Scoparia dulcis L. Sp. Pl. 116. 1753; Hook. f. Fl. Brit. India 4: 289. 1884; Cooke, Fl. Pres. Bombay 2: 383. 1958 (Repr. ed.).

Erect, suffurticose herbs, 30–50 cm; leaves elliptic–lanceolate or rhomboid–spathulate, glabrous, 1.2–3.8 x 0.5–1.4 cm; flowers white or yellowish, axillary, solitary or few fascicled; capsules globose; seeds minute, obovoid, brownish.

Fls. & Frts. : September–October.

As a weed on road–sides, infrequent. Pen to Khopoli Road.

99. OROBANCHACEAE

1a. Calyx spathaceous, split nearly to the base ... AEGINETIA 1

1b. Calyx tubular–campanulate, 5–toothed or 5–lobed ... CHRISTISONIA 2

1. AEGINETIA L.

Aeginetia indica L. Sp. Pl. 632. 1753; Wight, Icon. t. 895. 1844–1845; Hook. f. Fl. Brit. India 4: 320. 1884; Cooke, Fl. Pres. Bombay 2: 384. 1958 (Repr. ed.).

Erect, leafless, scapigerous, purple, parasitic herbs with tuberous rhizomes, 10–40 cm; corolla purple with curved, inflated tube; capsules ovoid, beaked, enclosed in persistent calyx and corolla; seeds minute, numerous, brownish.

Fls. & Frts. : September–October.

In hilly forests, frequent. Alibag; Bhira; Karjat; Matheran; Neral; Roha.

2. CHRISTISONIA Gardn.

Christisonia calcarata Wight Icon. t. 1426. 1849; Hook. f. Fl. Brit. India 4: 322. 1884; Cooke, Fl. Pres. Bombay 2: 385. 1958 (Repr. ed.).

Low, parasitic herbs with deep, simple or tufted root–stocks; scales on the stems ovate, concave, not imbricating in upper parts; corolla tubular, pubescent, rosy–white with yellowish centre; capsules globose.

Fls. & Frts. : July–October.

In hilly forests, infrequent. Matheran.

100. LENTIBULARIACEAE

UTRICULARIA L.

1a. Leaves more or less linear; sepals nearly equal; seeds reticulate:

2a. Scapes erect, spur curved ... *U. caerulea* 1

2b. Scapes twining; spur conic, nearly straight ... *U. reticulata* 2

1b. Leaves orbicular or reniform; sepals unequal; seeds glochidiate ... *U. striatula* 3

1. **Utricularia caerulea** L. Sp. Pl. 18. 1753; Wight, Icon. t. 1583. 1850; C.B. Cl. in Hook. f. Fl. Brit. India 4: 331. 1884; Cooke, Fl. Pres. Bombay 2: 392. 1958 (Repr. ed.); Janarth. & Henry, Bladderwarts India 42. f. 9. t. 2A. 1992. *U. nivea* Vahl, Emum. Pl. 1: 203. 1804; Wight *op. cit.* t. 1582; Cooke, *op. cit.* 393.

Terrestrial herbs with globular bladders, scapes 5–15 cm; leaves few, linear, glabrous; flowers bluish–purple in terminal racemes; capsules obliquely ovoid, enclosed in enlarged sepals; seeds ellipsoid-obovoid.

Fls. & Frts. : September–October.

Among grasses in rocky substrata and marshy places, frequent. Matheran.

2. **Utricularia reticulata** J.E. Smith, Exot. Bot. 2: t. 119. 1805; Wight, Icon. t. 1571. f. 2. 1850; C.B. Cl. in Hook. f. Fl. Brit. India 4: 331. 1884 excl. var. *uliginosa;* Cooke, Fl. Pres. Bombay 2: 393. 1958 (Repr. ed.); Janarth. & Henry, Bladderworts India 91. f. 27. 1992.

Small, glabrous herbs; leafless when flowering; leaves narrowly

oblong, with many bladders; flowers purple, many in racemes; capsules ellipsoid; seeds obovoid, reticulate.

Fls. & Frts. : October–November.

In rice fields, infrequent. Mahad.

3. **Utricularia striatula** J. E.Smith in Rees. Cyclop. 37. no. 17. 1819; Cooke, Fl. Pres. Bombay 2: 393. 1958 (Repr. ed.); Janarth. & Henry, Bladderworts India 106. f. 32. 1992. *U. orbiculata* Wall. ex DC. Prodr. 8: 18. 1844; C.B.Cl. in Hook. f. Fl. Brit. India 4: 334. 1884.

Slender, stoloniferous herbs with globose–ovoid bladders; leaves in small rosettes at the base of scapes, persistent, 2–4 x 1–3 mm; flowers pink, white or bluish–purple in terminal racemes; capsules sub–globose; seeds clavate cylindrical or ellipsoid, brownish.

Fls. & Frts. : September.

In moist hill–slopes and mossy stones, frequent. Matheran; Varandh ghat, Mahad.

101. GESNERIACEAE

RHYNCHOGLOSSUM Blume

1a. Perfect stamens 4; calyx winged ... *R. notonianum* 1

1b. Perfect stamens 2; calyx not winged ... *R. obliquum* var. *parviflorum* 2

1. **Rhynchoglossum notonianum** (Wall.) Burtt in Notes Roy. Bot. Gard. Ediburgh 24: 170. 1962. *Wulfenia notoniana* Wall. Tent. Fl. Nepal. 46. 1826. *Klugia notoniana* (Wall.) A. DC. DC. Prodr. 9: 276. 1845; Wight, Icon. t. 1353. 1848; C.B. Cl. in Hook. f. Fl. Brit. India 4: 366. 1884; Cooke, Fl. Pres. Bombay 2: 397. 1958 (Repr. ed.).

Erect, succulent, glabrous or slightly hispid herbs, 30–75 cm; leaves ovate–oblong, acuminate at apex, semicordate or oblique at base, scabrous, 4.2–7.0 x 2–3 cm; flowers blue to bluish–purple, many in terminal racemes; capsules concealed in the calyx.

Fls. & Frts. : September–October.

In hilly forests, frequent. Raigad and Varandh ghat, Mahad.

2. **Rhynchoglossum obliquum** Blume var. **parviflorum** C.B. Cl. in DC. Prodr. Monogr. 5: 162. 1883 & in Hook. f. Fl. Brit. India 4:

367. 1884; Cooke, Fl. Pres. Bombay 2: 398. 1958 (Repr. ed.); Burtt in Notes Roy. Bot. Gard. Ediburgh 24: 167. 1962.

Erect, simple or branched, succulent herbs; leaves elliptic-oblong, semicordate, oblique, glabrous, 4.5–11.3 x 1.5–4.2 cm; flowers bluish in axillary and terminal racemes; capsules ovoid, enclosed in calyx.

Fls. & Frts. : September–October.

Along the elevated parts of hilly forests, frequent. Dasgaon; Matheran; Raigad.

102. BIGNONIACEAE

1a. Leaves simple; perfect stamens 4 ... TECOMELLA 1

1b. Leaves compound; perfect stamens 4–5 :

2a. Leaves large, 90–150 cm; perfect stamens 5; capsules flat, large, upto 54x10 cm ... OROXYLUM 2

2b. Leaves not so large; perfect stamens 4; capsules not as above :

3a. Leaflets obovate-orbicular; calyx spathaceous, split on one side; corolla–tube not ventricose ... DOLICHANDRONE 3

3b. Leaflets and calyx not as above; corolla–tube ventricose or inflated :

4a. Leaflets often densely tomentose below; capsules with a flat or angular septa ... HETEROPHRAGMA 4

4b. Leaflets usually glabrous; capsules with cylindric or spongy septa :

5a. Leaves large, upto 80 cm, 2–pinnate; panicles pubescent; ovules many seriate in each cell; seeds flat, not ridged ... RADERMACHERA 5

5b. Leaves small, 1–pinnate; panicles glabrous; ovules 2–seriate in each cell; seeds trigonous, ridged ... STEREOSPERMUM 6

1. TECOMELLA Seem.

Tecomella undulata (Sm.) Seem. in Ann. & Mag. Nat. Hist. Ser. 3, 10: 30. 1862; Cooke, Fl. Pres. Bombay 2: 402. 1958 (Repr. ed.). *Bignonia undulata* Sm. Exot. Bot. 1: 35. t. 19. 1805. *Tecoma undulata* G. Don, Syst. 4: 223. 1837; C.B. Cl. in Hook. f. Fl. Brit. India 4: 378. 1884. *Ragat-Rohida*.

Shrubs or small trees with greyish–brown bark; leaves narrowly oblong with undulate margins, glabrous, 4.5–12.0 x 1.8–3.0 cm; flowers reddish–yellow in corymbose racemes; capsules linear–oblong, glabrous.

Fls. & Frts. : February–March.

In deciduous forests, infrequent. Roha.

2. OROXYLUM VENT.

Oroxylum indicum (L.) Vent. Dec. Gen. Nov. Paris 8. 1808; C.B.Cl. in Hook. f. Fl. Brit. India 4: 378. 1884; Cooke, Fl.Pres. Bombay 2: 401. 1958 (Repr. ed.). *Bignonia indica* L. Sp. Pl. 871. 1753. *Calosanthes indica* (L.) Blume, Bijdr. 761. 1826; Wight, Icontt. 1337. & 1338. 1848. *Tetav, Tetu.*

Trees, branched at apex, 75–120 cm; leaflets 4–8, elliptic–oblong, acuminate, glabrous, 7.5–14.0 x 3.7–7.4 cm; flowers reddish–brown outside, purple–pink inside, in terminal racemes; capsules linear–oblong, straight, woody; seeds many, winged.

Fls. & Frts. : September–October.

In deciduous forests, frequent. Borgaon, Neral; Dasgaon.

Young floral buds, tender fruits and seeds are either eaten as a vegetable or pickled. Bark and fruits used for tanning and dyeing. Roots are used as an astringent and in the treatment of tuberculosis.

3. DOLICHANDRONE (Fenzl) Seem. *nom. cons.*

Dolichandrone falcata (Wall. ex DC.) Seem. in J. Bot. 8: 381. 1870; C.B. Cl. in Hook. f. Fl. Brit. India 4: 380. 1884; Cooke, Fl. Pres. Bombay 2 : 404. 1958 (Repr. ed.). *Spathodia falcata* Wall. ex DC. Prodr. 9: 206. 1845; Bedd. Fl. Sylv. t. 71. 1870. *Dolichandrone lawii* Seem. *op. cit.* 380; C.B. Cl. *op. cit.*

Trees, 4-8 m; bark blackish; leaves 1–pinnate; leaflets 2–3 pairs with a terminal one, glabrous, 2.0–4.2 x 1.0–3.5 cm; flowers white in terminal racemes; capsules flat, yellowish-brown, falcate upto 45 x 3 cm; seeds rectangular, winged.

Fls. & Frts. : March–June.

In deciduous forests, frequent. Nagothana; Pali; Pen.

Bark–paste in oil and leaf–paste is said to be applied on eczema and during stomach–pain, respectively.

4. HETEROPHRAGMA DC.

Heterophragma quadriloculare (Roxb.) K. Schum. in Engl. &

Prantl.Pflanzenf. 4(3b): 243. 1895. *Bignonia quadriloculare* Roxb. Pl. Cor. t. 145. 1798. *Heterophragma roxburghii* A. DC. Prodr. 9: 210. 1845; C.B. Cl. in Hook. f. Fl. Brit. India 4: 381. 1884; Cooke, Fl. Pres. Bomaby 2: 404. 1958 (Repr. ed.). *Varas.*

Trees, 8-20 m; stem soft wooded and barks greyish–white; leaflets ovate–elliptic or oblong, glabrescent, 5.5–8.0 x 3.0–4.5 cm; flowers white with pink margin in terminal, tomentose panicles; capsules linear–oblong, tapering at both ends, velvety when young, glabrous.

Fls. & Frts. : February–May.

Frequent in hilly forests, occasional near sea–coast. Elephanta island; Matheran.

Extract of wood is used in skin diseases. Roots are useful in snake bite.

5. RADERMACHERA Zoll. & Moritz.

Radermachera xylocarpa (Roxb.) K. Schum. in Engl. & Prantl. Pflanzenf. 4(3b): 243. 1895; Cooke, Fl. Pres. Bombay 2: 407. 1958 (Repr. ed). *Bignonia xylocarpa* Roxb. Fl. Ind. 3: 108. 1832. *Stereospermum xylocarpum* (Roxb.) Benth. & Hook. f. ex C.B. Cl. in Hook. f. Fl. Brit. India 4: 383. 1884. *Bignonia xylocarpa* Roxb. *op. cit*; Wight, Icon. tt. 1335 & 1336. 1848.

Trees, 10-20 m; bark greyish; leaflets elliptic–oblong, acuminate, glabrous, 3.6–7.0 x 2.6–5.2 cm; flowers fragrant in terminal panicles; pods linear–cylindric, woody, curved, tubercled, upto 1.5 m long.

Fls. & Frts. : April–May.

In deciduous forests, frequent. Nagothana; Roha.

Young fruits are used as vegetable.

6. STEREOSPERMUM Cham.

Stereospermum colais (Buch. –Ham. ex Dillw.) Mabb. in Taxon 27: 553. 1978. *Bignonia colais* Buch.–Ham. ex Dillw. Rev. Ref. Hort. Mal. 28. 1839. *Stereospermum personatum* (Hassk.) Chatt. in Bull. Bot. Soc. Bengal 2: 70. 1948. *Dipterosperma personatum* Hassk. in Fl. Beibl. 25 (2): 28. 1842. *Stereospermum chelonoides sensu* Wight, Icon. t. 1341. 1845, *non* DC. 1838; C.B. Cl. in Hook. f. Fl. Brit. India 4: 382. 1884; Cooke, Fl. Pres. Bombay 2: 405. 1958 (Repr. ed.). *Padal.*

Deciduous trees, 8-12 m; bark rough brownish; 8–12 m; leaflets 5–11, elliptic–oblong, acuminate, glabrous, 4.5–8 x 3.1–4.2 cm; flowers yellowish in drooping panicles; capsules cylindric, dark–brown with yellow specks, 30 – 40 cm long.

Fls. & Frts. : September–October.

In hilly forests, frequent. Varandhghat, Mahad.

Cultivated or introduced :

1. **Haplophragma adenophyllum** (Wall. ex Dalz. & Gibs.) P. Dop. in Bull. Soc. Bot. France 72: 890. 1925; Mahesh. Fl. Delhi 259. 1963. *Bignonia adenophyllum* Wall. ex Dalz. & Gibs. Bombay Fl. 56. 1861. *Heterophragma adenophyllum* Seem. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 381. 1884; Cooke, Fl. Pres. Bombay 2: 410. 1958 (Repr. ed.).

Deciduous trees with large leaves upto 20 x 12.2 cm; flowers brownish–yellow in panicles; capsules cylindric, twisted.

Planted. Matheran.

The wood is said to be good for cabinet work.

2. **Tecoma stans** (L.) Kunth in H.B. & K. Nov. Gen. & Sp. 3: 144. 1819. *Bignonia stans* L. Sp. Pl. (ed. 2) 871. 1763. *Stenolobium stans* Seem. in J. Bot. 1: 88. 1863; C.B.Cl. in Hook. f. Fl. Brit. India 4: 382. 1884; Cooke, Fl. Pres. Bombay 2: 410. 1958 (Repr. ed.).

Shrubs, 1–3 m; leaves imparipinnate; leaflets ovate–lanceolate, serrate; flowers yellow in racemes.

Native of America, usuallly planted in gardens; also found as an escape at Janjira fort in Murud.

103. PEDALIACEAE

1a. Flowers yellow; fruits 4–spined, indehiscent; seeds 2 or 1 in each cell ... PEDALIUM 1

1b. Flowers pink to purple; fruits spineless, dehiscent; seeds many in each cell ... SESAMUM 2

1. PEDALIUM L.

Pedalium murex L. Syst. Nat. (ed. 10). 1123. 1759; Wight, Icon. t. 1615. 1850; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 386. 1884; Cooke, Fl. Pres. Bombay 2: 412. 1958 (Repr. ed.).

Erect or diffuse, pubescent herbs, 20–40 cm; leaves ovate–oblong or suborbicular, coarsely crenate–serrate, glabrous; flowers axillary, solitary; drupes greenish, pyramidal–ovoid, 4–angled.

Fls. & Frts. : September–March.

In sandy sea–coast, frequent. Alibag; Murud; Shrivardhan.

Fresh leaves yields mucilaginous liquid. This liquid used as tonic and given in urinogenital diseases like Gonorrhoea and Dysuria. Leaves are also used on ulcers and as vegetable.

2. SESAMUM L.

Sesamum mulayanum Nair in Bull. Bot. Surv. India 5 : 251. 1963. *Ran–Til.*

Erect, glabrous, aromatic herbs; leaves variable from below to top, heteromorphic, opposite or alternate; flowers pale– violet; capsules quadrangular, acuminate with a short beak, pubescent; seeds brownish–black, reticulately rugose.

Fls. & Frts. : August–October.

In plains and hilly forests, infrequent. Matheran; Pen.

This species can be distinguished from *Sesamum indicum* L. by its characteristic reticulate rugose seeds.

Cultivated or introduced :

Sesamum Orientale L. Sp. Pl. 634.1753; Backer & Bakhuiz. Fl. Java 2:544.1965 *S. indicum* L. *op. cit;* Wight, Ill. 2: t. 163. 1850; C.B. Cl. in Hook. f. Fl. Brit. India 4: 387. 1884; Cooke, Fl. Pres. Bombay 2: 413. 1958 (Repr. ed.). *Til.*

Erect herbs; leaves linear–lanceolate; flowers rosy–white; fruits angular; seeds smooth, shining.

Cultivated in the district for its seeds. The plants were also found as an escape in Ramraj forest in Alibag and Raigad fort.

104. MARTYNIACEAE

MARTYNIA L.

Martynia annua L. Sp. Pl. 618. 1753. *M. diandra* Glox. Obs. Bot.

14. t. 1. 1785; C.B.Cl. in Hook. f. Fl. Brit. India 4: 386. 1884; Cooke, Fl. Pres. Bombay 2: 414. 1958 (Repr. ed.). *Vichuacha – Jhar.*

Robust, viscidly pubescent herbs, 40–120 cm; leaves broadly ovate–suborbicular, cordate, densely silky–pubescent, 2.7–15.0 x 3–17 cm; flowers rosy–purple in pendulous, lax racemes; fruits pubescent, beetle shaped with 2 sharp up–turned beaks; endocarp black, ribbed and hooked.

Fls. & Frts. : August–September.

Frequent as a weed in waste places, occasionally in hilly forests. Mangaon surroundings; Matheran; Pen to Khopoli Road.

105. THUNBERGIACEAE

THUNBERGIA Retz. *nom. cons.*

Thunbergia fragrans Roxb. Pl. Cor. 1:47 t. 67. 1796; C.B.Cl. in Hook. f. Fl. Brit. India 4: 390. 1884; Cooke, Fl. Pres. Bombay 2 : 417. 1958 (Repr. ed.). *T. fragrans* Roxb. var. *laevis* (Nees) C.B.Cl. *op. cit.* 391. *T. laevis* Nees in Wall. Pl. Asiat. Rar. 3: 77. 1832. *Chimine, Eri–yel.*

Slender twiners; leaves ovate–triangular or deltoid–ovate, often with 2 large apiculate lobes at base, 3.5–12.6 x 1.6–4.5 cm; flowers white, axillary, 1–2 on 2.2–3.6 cm long peduncles; capsules glabrous, basal part globose, beak dagger–shaped.

Fls. & Frts. : October–March.

In moist deciduous forests, frequent. Matheran; Mhasla; Roha.

Cultivated or introduced :

Thunbergia grandiflora (Roxb. ex Rottl.) Roxb. in Lodd. Bot. Cab. t. 324. 1819 & in Fl. Ind. 3: 34. 1832; Wight, Icon. t. 872. 1844–1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 392. 1884; Cooke, Fl. Pres. Bombay 2: 418. 1958 (Repr. ed.). *Flemingia grandiflora* Roxb. ex Rottl. in Ges. Naturf. Fr. Berlin Neue Schr. 4: 202. 1803.

Extensive woody climbers; leaves ovate or deltoid–ovate, dentate; flowers bluish–purple, in pendulous racemes.

A native of Eastern Bengal, found occasionally at Karnala Bird's Sanctuary, probably planted.

Leaves used as vegetable.

106. ACANTHACEAE

1a. Seeds not supported on hard retinacula; ovules superposed in two rows in each cell ... NELSONIA 1

1b. Seeds supported on hard retinacula; ovules two in each cell; if ovules more than 2, ovules in one row :

2a. Corolla without an upper lip; lower lip 3–lobed :

3a. Lower filaments with an excurrent process ... BLEPHARIS 2

3b. Lower filaments without an excurrent process ... ACANTHUS 3

2b. Corolla 2–lipped or with 5 subequal lobes :

4a. Corolla lobes twisted in bud :

5a. Ovules more than 2 in each cell; capsules 6 or more seeded :

6a. Corolla distinctly 2–lipped ... HYGROPHILA 4

6b. Corolla subequally 5–lobed :

7a. Inflorescence lax in heads, axillary cymes, sometimes in terminal panicles or spikes :

8a. Bracteoles large, usually exceeding the calyx; capsules with a solid base ... RUELLIA 5

8b. Bracteoles small, narrow, not exceeding the calyx; capsules seed -bearing throughout i.e. not solid at base ... HEMIGRAPHIS 6

7b. Inflorescence axillary; flowers solitary or 2 -3 together ... DIPTERACANTHUS 7

5b. Ovules 2 in each cell; capsules 4–or less seeded :

9a. Placentas separating elastically from the base of the ripe capsule; bracteoles absent; corolla very small ... PHAULOPSIS 8

9b. Placentas not separating elastically from the base of the ripe capsule; bracteoles present; corolla comparatively large :

10a. Bracts foliaceous, ovate, prominantly reticulately veined ... ERANTHEMUM 9

10b. Bracts not as above :

11a. Corolla distinctly 2–lipped ... CALACANTHUS 10

11b. Corolla subequally 5–lobed :

12a. Stamens 4; pollen grains globose, echinate or tuberculate ... THELEPAEPALE 11

12b. Stamens 6; pollen grains ellipsoid, longitudinally ribbed :

13a. Flowers ebracteolate ... CARVIA 12

13b. Flowers bracteolate :

14a. Capsules 2-seeded; petioles winged, the wings auricled at base; spikes viscous – hairy, strong smelling; corolla lobes emarginate ... MACKENZIEA 13

14b. Capsules usually 4-seeded; petioles and spikes not as above; corolla lobes not emarginate ... NILGIRIANTHUS 14

4b. Corolla lobes imbricate in bud :

15a. Ovules 9–10 in each ovary cell; capsules 6 or more seeded :

16a. Flowers in unilateral racemes or terminal panicles ... INDONEESIELLA 15

16b. Flowers clustered in midst of axillary cladodes ... HAPLANTHODES 16

15b. Ovules 2, rarely 1 in each ovary cell :

17a. Corolla lobes subequal :

18a. Calyx 2-lipped, 5-lobed ... NEUROCANTHUS 17

18b. Calyx 4–5-lobed, but not 2-lipped :

19a. Calyx 4-partite, two outer sepals larger than inner; fertile stamens 2 ... BARLERIA 18

19b. Calyx lobes 5, small, subequal; fertile stamens 4 or 2 :

20a. Stamens 2; corolla tube long, slender ... PSEUDERANTHEMUM 19

20b. Stamens 4; corolla tube inflated above ... ASYSTASIA 20

17b. Corolla distinctly 2-lipped :

21a. Stamens 4; bracts spinous tipped ... LEPIDAGATHIS 21

21b. Stamens 2; bracts not spinous-tipped:

22a. Anthers 1-celled ... HYPOESTES 22

22b. Anthers 2-celled :

23a. Placentas separating elastically from the valves :

24a. Flowers axillary, fascicled or in pedunculate cymes ... DICLIPTERA 23

24b. Flowers in unilateral spikes ... RUNGIA 24

23b. Placentas not seperating elastically from the valves:

25a. Anther - cells parallel, subequal; bracts large, imbricate ... ECBOLIUM 25

25b. Anther-cells one higher up than the other :

26a. Anther cells (at least the lower) with a white basal spur-like appendage; seeds rough or tuberculate ... JUSTICIA 26

26b. Anther cells not spurred at the base; seeds glabrous, minutely glandular–papillose ... PERISTROPHE 27

1. NELSONIA R. Br.

Nelsonia canescens (Lam.) Nees in DC. Prodr. 9: 67. 1845; Bremek. in Reinwardtia 3: 248. 1954–56. *Justicia canescens* Lam. Ill. 1: 40. & 41. 1791. *Nelsonia campestris* R. Br. Prodr. 481. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 4: 394. 1884; Cooke, Fl. Pres. Bombay 2: 420. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 11. 1952.

Diffuse, suffruticose, villous herbs; leaves elliptic–oblong, pubescent or canescent, upto 12.5 x 5.2 cm; flowers bluish–purple in axillary and terminal spikes; capsules ovoid, glabrous; seeds ellipsoid, brownish.

Fls. & Frts. : February–March.

In moist deciduous forests, infrequent. Mahan forests, Alibag.

2. BLEPHARIS Juss.

1a. Leaves in opposite pairs, petiolate, acute–acuminate, membranous; capsules not enclosed by calyx; seeds closely echinate with obtuse spines ... *B. asperrima* 1

1b. Leaves 4 in whorls, subsessile, thick, fleshy, obtuse; capsules enclosed by persistent calyx; seeds not echinate but hairy ... *B. repens* 2

1. **Blepharis asperrima** Nees in DC. Prodr. 11: 267. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 478. 1884; Cooke, Fl. Pres. Bombay 2: 424. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 14. 1952. *Akada, Dikna.*

Suberect or prostrate herbs, rooting at nodes, 15–30 cm; leaves ovate–lanceolate, entire or spinous–dentate, rough, hairy, 3.3–8.0 x 1.2–3.1 cm; flowers blue, solitary, sessile in upper axil or in short, terminal spikes; capsules oblong; seeds 2, ovoid.

Fls. & Frts. : September–November.

Frequent in hilly forests, occasional near sea–coast. Bhira; Ghosale Fort; Karnala Fort; Matheran; Revdanda; Varandh ghat, Mahad.

2. **Blepharis repens** (Vahl) Roth, Nov. Pl. Sp. 321. 1821. *Acanthus repens* Vahl, Symb. Bot. 2: 76. 1791. *Blepharis molluginifolia*

Pers. Syn. 2: 180. 1807; C.B. Cl. in Hook. f. Fl. Brit. India 4: 479. 1884; Cooke, Fl. Pres. Bombay 2: 425. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 16. 1952.

Prostrate, slender hairy herbs; leaves obovate–oblong or oblong–spathulate, scabrous hairy beneath, 1.5–3.0 x 0.7–1.2 cm; flowers bluish or creamy white, sessile, axillary, solitary; capsules compressed, ellipsoid; seeds 2, roundish, compressed.

Fls. & Frts. : September–October.

Near sea–coast, frequent. Alibag.

3. ACANTHUS L.

Acanthus ilicifolius L. Sp. Pl. 639. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 481. 1884; Cooke, Fl. Pres. Bombay 2: 427. 1958 (Repr. ed.); Sant. in Univ. in Bombay Bot. Mem. 2: 16. 1952. *Dilivaria ilicifolia* (L.) Juss. Gen. Pl. 103. 1789; Wight, Icon. t. 459. 1841.

Erect, suffruticose, simple or scarcely branched herbs; leaves elliptic–oblong, pinnatifid or toothed, acute or truncate at apex and sharp spinous teeth at margins, 7.0–12.5 x 4.2–6.0 cm; flowers bluish–purple, sessile in opposite pairs or in terminal spikes; capsules oblong, brownish.

Fls. & Frts. : February–March.

Along the sea–coasts, frequent. On way to Murud from Ghosale; Revas, Alibag.

4. HYGROPHILA R. Br.

1a. Erect herbs or undershrubs; leaves large; flowers in axillary whorls at each node :

2a. Leaves linear–oblong or lanceolate, usually in whorls of 6 with sharp axillary spines ... *H. auriculata* 1

2b. Leaves obovate or elliptic, inwhorls of 4–5, without spines ... *H. quadrivalvis* 2

1b. Prostrate or suberect herbs; leaves small, variable; flowers in terminal spikes or whorls of 1–3 together :

3a. Suberect, viscid herbs; leaves deeply pinnatifid ... *H. pinnatifida* 3

3b. Plants and leaves not as above :

4a. Leaves ovate to elliptic, sessile or subsessile ... *H. serpyllum* 4

4b. Leaves broadly ovate to orbicular, petiolate ... *H. serpyllum* var. *hookeriana* 5

1. **Hygrophila auriculata** (K.Schum.) Heine in Kew Bull. 16: 172. 1962; Srinivasan & Agarwal in Bull. Bot. Surv. India 5: 81. 1963. *Barleria auriculata* K. Schum. in K. Schum. & Thonn. Beskr. Guin. Pl. 285. 1827. *Hygrophila spinosa* T. Anders. in Thw. Enum. Pl. Zeyl. 225. 1860; C.B.Cl. in Hook. f. Fl. Brit. India 4: 408. 1884. *Asteracantha longifolia* Nees in Wall. Pl. As. Rar. 8: 90. 1832; Wight, Icon. t. 449. 1841; Cooke, Fl. Pres. Bombay 2: 428. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 17. 1952.

Armed herbs or undershrubs with subquadrangular stems and brown bark; leaves sessile, hispid, 2.7–10.0 x 0.8–1.8 cm; flowers bluish–purple; capsules linear–oblong, pointed; seeds 4–8, dark–brown, hairy.

Fls. & Frts. : May–January.

In damp places, frequent. Neral; Pen.

2. **Hygrophila quadrivalvis** (Buch.–Ham.) Nees in Wall. Pl. As. Rar. 3: 80. 1832 & in DC. Prodr. 11: 89. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 408. 1884; Sant. in Univ. Bombay Bot. Mem. 2: 21. 1952. *Ruellia quadrivalvis* Buch.–Ham. in Trans. Linn. Soc. London 14: 291. 1824. *Hygrophila obovata sensu* Wight, Icon. t. 1849.1852, *non* Nees (1832).

Suffruticose herbs with quadrangular stems, rooting at lower nodes; leaves glabrous; flowers purplish–blue in axillary clusters or whorls; capsules reddish, cylindric.

Fls. & Frts. : February–March.

As a weed along the river banks, infrequent. Kundalika river on way to Roha from Sanegaon.

3. **Hygrophila pinnatifida** (Dalz.) Sreem. in Bull. Bot. Surv. India 10 (2): 222. 1968. *Nomaphila pinnatifida* Dalz. in Hook J. Bot. 3: 38. 1851. *Cardanthera pinnatifida* Benth. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 405. 1884; Cooke, Fl. Pres. Bombay 2: 423. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 13. 1952.

Slender, aquatic, glandular–pubescent herbs, 20–40 cm; leaves oblong–lanceolate, 5.2–7.3 cm long; flowers purple–yellow, solitary in opposite axils; capsules narrowly oblong, pointed.

Fls. & Frts. : October–March.

In flowing streams on rocky substrata, infrequent. Dahen forests, Mhasla.

4. **Hygrophila serpyllum** (Nees) T. Anders. in J. Linn. Soc. 9: 456. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 406. 1884; Cooke, Fl. Pres. Bombay 2: 429. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 19. 1952. *Physichilus serpyllum* Nees in Hook. Comp. Bot. Mag. 2: 311. 1837; Wight, Icon. t. 1493. 1849.

Procumbent, unarmed herbs, 15–45 cm; leaves ovate–elliptic or suborbicular, hairy, 0.4–0.7 x 0.2–0.3 cm; flowers bluish–purple in terminal spikes; capsules linear–oblong, glabrescent; seeds 8–10, orbicular, hairy on margins.

Fls. & Frts. : February–June.

Near river banks, water streams and moist places, frequent. Karjat; Mhasla; Mangaon; Matheran; Pen.

5. **Hygrophila serpyllum** (Nees) T. Anders. var. **hookeriana** C.B.Cl. in Hook. f. Fl. Brit. India 4: 407. 1884; Cooke, Fl. Pres. Bombay 2: 430. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 20. 1952. *Ran-tewan.*

Comparatively large plants with orbicular, obtuse leaves; petioles with minute, white, bristly hairs; flowers in terminal, dense spikes; capsules linear–oblong.

Fls. & Frts. : May–June.

In moist places, infrequent. Near Simpson tank, Matheran.

5. RUELLIA L.

Ruellia tuberosa L. Sp. Pl. 635. 1753; Bremek. in Verh. Ned. Akad. Wet. II. 45(1): 11. 1948; Sant. in Univ. Bombay Bot. Mem. 2: 23. 1952.

Diffuse or suberect herbs with tuberous roots, 30–40 cm; leaves obovate or elliptic–oblong, glabrous, 2.5–5.2 x 1.3–2.4 cm; flowers deep–blue or bluish–purple in axillary cymes; capsules cylindric–oblong, glabrous, beaked, upto 2.5 cm long; seeds many, globose, densely hairy on margins.

Fls. & Frts. : April–October.

Frequent near sea–cosats, occasionally in hilly forests. Alibag; Chaul; Murud; Varandh ghat, Mahad.

6. HEMIGRAPHIS Nees *emend* T. Anders.

1a. Corolla limb ventricose, lower filaments hairy below; seeds 12 ... *H. hirta* 1

1b. Corolla limb not ventricose but funnel shaped; lower filaments densely bearded in their upper half; seeds 6 ... *H. latebrosa var. heyeana* 2

1. **Hemigraphis hirta** (Vahl) T. Anders. in J. Linn. Soc. 9: 462. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 422. 1884; Oza in J. Bombay nat. Hist. Soc. 71: 634. 1974 & in Ass. Threat. Pl. India 180. 1983. *Ruellia hirta* Vahl, Symb. Bot. t. 67. 1794.

Creeping, hairy herbs; leaves ovate, sessile, 1.3–2.8 x 0.8–1.2 cm; flowers bluish in condensed terminal heads; capsules linear–ovoid; seeds ellipsoid or suborbicular, yellowish–brown, hairy.

Fls. & Frts. : September–October.

In hilly tracts, infrequent. Near Tata's Power Station, Bhira, Roha.

2. **Hemigraphis latebrosa** (Heyne ex Roth) Nees var. ***heyneana*** Bremek. in Verh. Ned. Acad. Wet. II. 40 (1): 139. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 26. 1952. *Ruellia latebrosa* Heyne ex Roth, Nov. Pl. Sp. 307. 1821. *Hemigraphis latebrosa* (Heyne ex Roth) Nees in DC. Prodr. 11: 723. 1847; C.B.Cl. in Hook. f. Fl. Brit India 4:423 1884; Cooke, Fl. Pres. Bombay 2: 434. 1958 (Repr. ed.).

Slender, diffuse or suberect, hairy herbs, 30–50 cm; leaves ovate, acuminate, sparsely hairy, 2.4–10.0 x 1.1–7.5 cm; flowers white with blue mouth in terminal and axillary spikes; capsules linear–oblong, pubescent; seeds ellipsoid, hairy.

Fls. & Frts. : January–March.

Frequent in deciduous forests, occasionally near sea–coasts. Matheran; Panvel; Revdanda, Alibag.

7. DIPTERACANTHUS Nees

* **Dipteracanthus prostratus** (Poir.) Nees in Wall. Pl. As. Rar. 3. 31. 1832; Sant. in Univ. Bombay Bot. Mem. 2: 24. 1952. *Ruellia prostrata* Poir. in Lam. Encycl. 3: 347. 1804; Bedd. Icon. t. 282. 1868–1874. *R. prostrata* Poir. var. *dejecta* C.B.Cl. in Hook. f. Fl. Brit. India 4: 412. 1884; Cooke, Fl. Pres. Bombay 2: 431. 1958 (Repr. ed.).

Suberect herbs, 15–40 cm; leaves ovate–elliptic, appressed–pubescent, 2.0–7.1 x 1.8–2.5 cm; flowers pale to deep purple, sessile,

axillary, solitary or 2–3 together; capsules clavate, pointed, sparsely hairy; seeds flat, orbicular with hygroscopic, marginal hairs.

Fls. & Frts. : September–October.

As undergrowth in forests, frequent. Alibag.

8. PHAULOPSIS Willd. *emend.* Spreng.

Phaulopsis dorsiflora (Retz.) Sant. in Kew Bull. 1948: 276. 1948 & in Univ. Bombay Bot. Mem. 2: 30. 1952. *Ruellia dorsiflora* Retz. Obs. 6: 31. 1791. *Micranthus oppositifolius* Wendl. Bot. Boeb. 39. 1798; Cooke, Fl.Pres. Bombay 2: 436. 1958 (Repr. ed.). *Phaulopsis parviflora* Willd. Sp. Pl. 3: 342. 1800; C.B.Cl. in Hook. f. Fl. Brit. India 4: 417. 1884. *Waiti.*

Perennial herbs, 30–60 cm; leaves ovate, acuminate, entire or subcrenate, unequal sided, pubescent, variable in size; flowers white in bracteate, pubescent spikes; capsules clavate, pointed, pubescent at apex; seeds orbicular, dark–brown.

Fls. & Frts. : November–January.

In hilly forests, infrequent. Matheran.

9. ERANTHEMUM L.

1a. Bracts green, ovate–lanceolate, acuminate, ciliate at margins, upto 2.5 x 1 cm; spikes upto 8.5 cm long ... *E. purpurascens* 1

1b. Bracts white with green nerves, obovate, obtuse or mucronate, strigose, upto 2 x 1 cm; spikes upto 15 cm long *E. roseum* 2

1. **Eranthemum purpurascens** Nees in Wall. Pl. As. Rar. 3: 106. 1832; Sant. in Univ. Bombay Bot. Mem. 2: 35. 1952. *Daedalcanthus purpurascens* (Nees) T. Anders. in J. Linn. Soc. 9: 488. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 420. 1884; Cooke, Fl. Pres. Bombay 2: 440. 1958 (Repr. ed.). *Justicia pulchella* Roxb. Pl. Cor. t. 177. 1805. *Aboli, Gulsham.*

Suffruticose herbs or undershrubs, 90–120 cm; leaves ovate–elliptic, acuminate, 4.8–13.5 x 3.3–5.1 cm; flowers blue in axillary spikes or terminal panicles; capsules clavate–oblong, glabrous.

Fls. & Frts. : September–January.

In hilly forests, occasional. Matheran.

2. **Eranthemum roseum** (Vahl) R. Br. Prodr. 477. 1810; Sant. in Univ. Bombay Bot. Mem. 2: 34. 1952. *Justicia rosea* Vahl., Enum. 1: 165. 1804. *Daedalacanthus roseus* (Vahl) T. Anders. in J. Linn. Soc. 9: 487. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 419. 1884; Cooke, Fl.Pres. Bombay 2: 439. 1958 (Repr. ed.).

Herbs or undershrubs, 60–90 cm; leaves elliptic–lanceolate, acuminate, appressed–pubescent beneath, 7.4–13.5 x 3.3–5.1 cm; flowers sky blue to rosy, fading purple or brown in terminal spikes; capsules clavate, pointed, glabrescent; seeds roundish, hairy on margins.

Fls. & Frts. : September–January.

In forest undergrowth, along sea–coasts and hills, frequent. Matheran; Revdanda.

10. CALACANTHUS T. Anders. ex Benth. & Hook. f.

Calacanthus grandiflorus (Dalz.) Radlk. Sitz. Math.–Phys. Acad. Moench. 13: 279. 1883; Sant. in Univ. Bombay Bot. Mem. 2: 50. 1952. *Lepidagathis grandiflora* Dalz. in Hook Kew J. Bot. 2: 138. 1850. *Calacanthus dalzelliana* T. Anders. ex Benth. & Hook. Gen. Pl. 2: 1088. 1876; C.B. Cl. in Hook. f. Fl. Brit. India 4: 478. 1884; Cooke, Fl. Pres. Bombay 2: 450. 1958 (Repr. ed.).

Leafy, gregarious, elegant shrubs with quadrangular stems and blackish bark; leaves elliptic, acuminate. glabrescent; flowers purplish–blue, solitary, axillary or in terminal spikes; capsules obovoid.

Fls. & Frts. : October–December.

In hilly forests near damp places, frequent. Matheran.

This monotypic genus is endemic in Western India (Santapau, 1952).

11. THELEPAEPALE Bremek.

Thelepaepale ixiocephala (Benth.) Bremek. in Verh. Ned. Akad. Wet. II. 41: 188. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 48. 1952. *Strobilanthes ixiocephalus* Benth. in Flora 32: 557. 1849; C.B.Cl. in Hook. f. Fl. Brit. India 4: 444. 1884; Cooke, Fl. Pres. Bombay 2: 448. 1958 (Repr. ed.). *S. neesiana* Wight, Icon. t. 1523. 1850.

Small, bushy shrubs; leaves elliptic–lanceolate, hairy, 5.5–18.6 x 3.8–5.7 cm; flowers pinkish–white or bluish–purple in axillary spikes

and terminal fascicles; bracts reddish; capsules obovoid, hygroscopically hairy on margins.

Fls. & Frts. : November–March.

In hilly forests, frequent. Matheran; Sudhagad.

12. CARVIA Bremek.

Carvia callosa (Nees) Bremek. in Verh. Ned. Akad. Wet. (II) 41 : 187. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 46. 1952. *Strobilanthes callosus* Nees in Wall. Pl. As. Rar. 3: 85. 1832; C.B. Cl. in Hook. f. Fl. Brit. India 4: 451. 1884; Cooke, Fl. Pres. Bombay 2: 444. 1958 (Repr. ed.).

Large shrubs, 1–2 m; leaves elliptic–lanceolate, acuminate, hairy on nerves beneath, 4.2–30.0 x 2.0–11.5 cm; flowers bright blue or purple in 3–7 cm long, axillary spikes; capsules ovoid, compressed; seeds ovoid–ellipsoid, appressed hairy.

Fls. & Frts. : August–February.

In hilly forests, frequent. Karnala fort; Matheran.

Stem of this plant is utilized as partition walls of houses by tribals and sold in the market as fodder. Essential oil of commerce is also extracted from floral parts. Seeds are said to be a tonic.

13. MACKENZIEA Nees

Mackenziea integrifolia (Dalz.) Bremek. in Mat. Monogr. Strob. 182. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 43. 1952. *Endopogon integrifolius* Dalz. in Hook Kew J. Bot. 2: 342. 1850. *Strobilanthes perfoliatus* T. Anders. in J. Linn. Soc. 9: 471. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 458. 1885; Cooke, Fl. Pres. Bombay 2: 371. 1958 (Repr. ed.). *Waiti.*

Gregarious, branched shrubs, 90–120 cm; leaves elliptic–lanceolate, acuminate, steel grey beneath, 2.7–9.0 x 1.1–2.0 cm; flowers bluish–purple in axillary and terminal, simple and compound spikes; capsules obovoid, mucronate, yellowish, glabrous, 2–seeded.

Fls. & Frts. : December–March.

In hilly forests and valleys, frequent. Bhise–khind, Roha; Matheran; Mirya dongar near Pen.

14. NILGIRIANTHUS Bremek.

1a. Flowers ebracteolate ... *N. heyneanus* 1

1b. Flowers bracteolate:

2a. Seeds glabrous; leaves membranous, ruguloso, hairy ... *N. membranaceous* 2

2b. Seeds hygroscopically hairy; leaves not as above ... *N. asper* 3

1. **Nilgirianthus heyneanus** (Nees) Bremek. in Nat. Monogr. Strob. 173. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 40. 1952. *Strobilanthes heyneanus* Nees in Wall. Pl. As. Rar. 3: 85. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 443. 1884; Cooke, Fl. Pres. Bombay 2: 444. 1958 (Repr. ed.). *S. rugosus* Wight, Icon. t. 1619. 1850. *Akara, Itari.*

Suffrutescent, hairy herbs or undershrubs; leaves ovate, elliptic–oblong, acuminate, crenate–serrate, 3.5–11.6 x 3.0–5.5 cm; flowers bluish in axillary, simple or branched spikes; capsules oblong, subacute; seeds 4, ovoid, glabrous.

Fls. & Frts. : October–December.

In hilly forests, frequent. Matheran.

2. **Nilgirianthus membranaceous** (Talbot) Bremek. in Nat. Monogr. Strob. 280. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 43. 1952. *Strobilanthes membranaceous* Talbot, Trees & Shrubs, Bombay (ed. 2) 261. 1902; Cooke, Fl. Pres. Bombay 2: 449. 1958 (Repr. ed.).

Shrubs with glabrous or hairy branches; leaves elliptic–ovate, acuminate, oblique, crenate–serrate, hispid, 7–15 x 3–6 cm; flowers white, purple tinged in axillary and terminal spikes; capsules oblong, glabrous.

Fls. & Frts. : September–February.

In hilly forests, frequent. Matheran, *Irani* 2748, 4589 **(BLAT).**

This species is restricted to peninsular India.

3. **Nilgirianthus asper** Sant. in Univ. Bombay Bot. Mem. 2: 42. 1952. *Strobilanthes asper* Wight, Icon. t. 1518. 1850 *non* Decne (1834); C.B. Cl. in Hook. f. Fl. Brit. India 4: 452. 1885; Cooke, Fl. Pres. Bombay 2: 447. 1958 (Repr. ed.).

Shrubs, 60–120 cm; leaves ovate–acuminate at both ends; flowers in close panicles or subfasciculate; capsules oblong, 4–seeded.

Fls. & Frts. : December–May.

In hilly forests, frequent. Matheran.

15. INDONEESIELLA Sreem.

Indoneesiella echioides (L.) Sreem. in Phytologia 16: 466. 1968. *Justicia echioides* L. Sp. Pl. 16. 1753. *Andrographis echioides* (L.) Nees in Wall. Pl. As. Rar. 3: 117. 1832; Wight, Icon. t. 467. 1841; C.B.Cl. in Hook. f. Fl. Brit. India 4: 505. 1884; Sant. in Univ. Bombay Bot. Mem. 2: 51. 1952.

Erect herbs, 15–40 cm; leaves oblong, obtuse, sparsely hairy, ciliate on margins, 3.2–7.5 x 1.6–2.4 cm; flowers pink or white, many in axillary racemes; capsules ellipsoid–lanceolate, acute at both ends, hairy; seeds rugosely pitted.

Fls. & Frts. : August–September.

In hilly forests. Infrequent. Matheran.

16. HAPLANTHODES O. Ktze.

1a. Leaves ovate; inflorescence in whorls at the nodal regions of aerial branches; stems glandular hairy; cladodes stiff, stout, covered with glandular hairs and apex terminating in two spines:

2a. Cladodes upto 3.2 cm long; bracteoles longer than calyx; capsules glabrous ... *H. verticillata* 1

2b. Cladodes upto 2 cm long; bracteoles shorter than calyx; capsules pubescent ... *H. plumosa* 2

1b. Leaves obovate to elliptic–oblong; inflorescence terminating the apices of branches; stems glabrescent or villous; cladodes slender or filiform, smooth or shortly hairy, apex inconspicuously bifid:

3a. Leaves elliptic–oblong, acuminate; stems and branches glabrous; cladodes glandular, hairy ...*H. neilgherryensis* 3

3b. Leaves obovate, subacute; stems and branches villous; cladodes more or less glabrous ... *H. tentaculata* 4

1. **Haplanthodes verticillata** (Roxb.) Majumdar in Bull. Bot. Soc. Bengal 25 (1 & 2): 76. 1971; Panigrahi & Das in Bull. Bot. Surv. India 23 (3 & 4): 199. 1981. *Justicia verticillata* Roxb. Fl. Ind. 1: 135. 1820 *et* (ed.2) 1: 135. 1832. *Halpanthus verticillata* (Roxb.) Nees in DC. Prodr. 11: 513. 1847 ('*verticillaris*'); C.B. Cl. in Hook. f. Fl. Brit. India 4: 406. 1884; Cooke, Fl. Pres. Bombay 2: 452. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 51. 1952. *Jakara, Kateri.*

Erect, woody herbs, upto 90 cm; caldodes stout, quadrangular, glandular–pubescent; leaves pubescent above, glabrescent beneath, 2.5–15.0 x 1.0–7.3 cm; flowers dark lilac in whorls; capsules linear–cylindric, grooved; seeds 8, yellowish–brown, densely hairy when wet.

Fls. & Frts. : September–March.

In moist deciduous forests, frequent. Masadi forest, Roha; Matheran; Pen to Khopoli.

2. **Haplanthodes plumosa** (T.Anders.) Panigrahi *et* Das in Bull. Bot. Surv. India 23 (3 & 4): 200. 1981. *Haplanthus plumosus* T.Anders. in J. Linn. Soc. 9: 504. 1867. *H. tentaculatus* (L.) Nees var. *plumosa* (T. Anders.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 507. 1884; Sant. in Univ. Bombay Bot. Mem. 2: 53. 1952. *H. tentaculatus sensu* Cooke, Fl. Pres. Bombay 2: 453. 1958 (Repr. ed.).

Erect, woolly–tomentose herbs, 40–80 cm; cladodes quadrangular, ending in 2, indistinct spines; leaves acute–acuminate, appressed hairy beneath, 2–12 x 1.0–7.5 cm; flowers bluish–purple in axillary terminal spikes; capsules oblong, pointed; seeds 8.

Fls. & Frts. : November–March.

As forest undergrowth in hilly regions, frequent. Matheran; Sudhagad.

3. **Haplanthodes neilgherryensis** (Wight) Majumdar in Bull. Bot. Soc. Bengal 25 (1 & 2): 76. 1971; Panigrahi *et* Das in Bull. Bot. Surv. India 23 (3 & 4): 201. 1981. *Haplanthus neilgherryensis* Wight, Icon. t. 1556. 1850; Sant. in Univ. Bombay Bot. Mem. 2: 52. 1952. *H tentaculatus* (Wight) Nees in DC. Prodr. 11: 513. 1847 *pro parte.*; Cooke, Fl. Pres. Bombay 2: 453. 1958 (Repr. ed.). *H. tentaculatus* Nees var. *neilgherrensis* (Wight) C.B. Cl. in Hook. f. Fl. Brit. India 4: 507. 1884.

Erect herbs, 20-40 cm; branches at right angles to the stem, 20–40 cm; leaves villous above and glabrescent beneath, 2.4–10.8 x 1.1–6.0 cm; flowers bluish–white to purple in axils of bracts: capsules oblong, pointed, pubescent; seeds 6–16, yellowish–brown, rugose.

Fls. & Frts. : December–March.

In shady places of moist deciduous forests, frequent. Karjat; Matheran; Parhur Reserve forests, Alibag; Tadvali, Panvel.

4. **Haplanthodes tentaculata** (L.) Majumdar in Bull. Bot. Soc. Bengal 24 (1 & 2): 76. 1971; Panigrahi *et* Das in Bull. Bot. Surv. India

23: 201. 1981. *Ruellia tentaculata* L. in Tornes, Centuria II Pl. 22. 1756. *Haplanthus tentaculatus* (L.) Nees in DC. Prodr. 11: 513. 1847 *pro parte*.; C.B.Cl. in Hook. f. Fl. Brit. India 4: 507. 1884; Cooke, Fl.Pres. Bombay 2: 453. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 52. 1952.

Slender, tetragonous herbs; leaves pubescent, 1.2–5.3 x 0.8–2.5 cm; flowers white, purplish or lilac, axillary, sessile in midst of cladodes; capsules oblong, pubescent; seeds 8.

Fls. & Frts. : March–May.

Near sea–shores, frequent. Nagaon beach, Alibag.

17. NEURACANTHUS Nees

1a. Spikes condensed into globose head; corolla regular, entire, cup–like ... *N. sphaerostachyus* 1

1b. Spikes elongate, upto 15 cm; corolla 2–lipped ... *N. trinervius* 2

1. **Neuracanthus sphaerostachyus** (Nees) Dalz. in Hook Kew J. Bot. 2: 140. 1850; C.B. Cl. in Hook. f. Fl.Brit. India 4 : 491. 1884; Cooke, Fl. Pres. Bombay 2: 465. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 66. 1952. *Lepidagathis sphaerostachya* Nees in DC. Prodr. 11: 254. 1847.

Erect, woody herbs, 20–60 cm; leaves elliptic–oblong, ovate–elliptic or obovate–oblong, coriaceous, glabrous, 7.5–13.0 x 3.1–6.0 cm; flowers dark blue or bluish–purple in axillary, globose heads; capsules linear–cylindric, glabrous; seeds orbicular, compressed, densely silky hairy.

Fls. & Frts. : September–October.

In moist deciduous forests, froquent. Karjat; Karnala fort; Pen; Varandh ghat, Mahad; Uran.

2. **Neuracanthus trinervius** Wight, Icon. t. 1532. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 491. 1884; Cooke, Fl. Pres. Bombay 2: 465. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 66. 1952.

Suffruticose herbs, 30–60 cm; leaves elliptic–lanceolate or oblong, glabrous, 6.0–12.2 x 2.5–4.2 cm; flowers bluish–purple in axillary or terminal spikes; capsules oblong, quadrangular, glabrous; seeds 4, sphaerical, hairy.

Fls. & Frts. : December–March.

In hilly forests, frequent. Alibag; hills near Karnala bird's Sanctuary; Karjat; Matheran.

18. BARLERIA L.

1a. Plants armed; flowers yellow :

2a. Bracteoles linear–subulate ... *B. prionitis* 1

2b. Bracteoles absent or of few minute bristles ... *B. cuspidata* 2

1b. Plants unarmed; flowers not yellow:

3a. Outer sepals spinous-tipped : ... *B. cristata* var. *dichotoma* 3

3b. Outer sepals not spinous tipped :

4a. Flowers white ... *B. lawii* 4

4b. Flowers pink, blue or pale to deep–purple:

5a. Seeds hairy ... *B. terminalis* 5

5b. Seeds glabrous :

6a. Plants erect; leaves corieceous; flowers pink ... *B.gibsoni* 6

6b. Plants suberect or diffuse, leaves membranous, flowers bluish–purple ... *B. prattensis* 7

1. **Barleria prionitis** L. Sp. Pl. 636. 1753; Wight, Icon. t. 452. 1841; C.B.Cl. in Hook. f. Fl. Brit. India 4:482. 1884; Cooke, Fl. Pres. Bombay 2: 457. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 57. 1952. *Akhara, Kholeta.*

Much branched, bushy shrubs, 60–120 cm; leaves elliptic–lanceolate, lineolate, entire, bristle tipped, appressed hairy beneath, 4.5–10.2 x 1.7–4.0 cm; flowers in axillary, spike–like clusters and terminal spikes; capsules brownish, ovoid, beaked; seeds 2, orbicular, silky hairy.

Fls. & Frts. : October–March.

In hilly forests, and along sea–coast, frequent. Elephanta island; Matheran; Raigad; Mahad; Uran.

The leaf–juice with honey is used medicinally in catarrhal affections of children. Fresh leaves are chewed to relieve toothache.

2. **Barleria cuspidata** Heyne, ex Nees in Wall. Pl. As. Rar. 3: 93. 1832; Wight, Icon. t. 451. 1841; C.B. Cl. in Hook. f. Fl. Brit. India 4: 483. 1884; Cooke, Fl. Pres. Bombay 2: 458. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 58. 1952.

Shrubs; leaves oblong–lanceolate, acute, bristle tipped, entire, densely lineolate with divaricate, slender, axillary spines 2.8–6.0 x 1.2–1.7 cm; flowers solitary in opposite axils, spike–like at the ends of branches; capsules ovoid, beaked; seeds 2, compressed, silky–hairy.

Fls. & Frts. : September–October.

Near sea–coast, infrequent. Uran, *Santapau* 14839 (**BLAT**).

Decoction of roots is said to be used in rheumatic pains and pneumonia while infusion of plant is used for cough.

3. **Barleria cristata** L. var. **dichotoma** Prain, Bengal Pl. 812. 1903; Cooke, Fl. Pres. Bombay 2: 460. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 59. 1952.

Hairy herbs; leaves elliptic–oblong, acute–acuminate, hairy on both surfaces, 5.2–10.3 x 2.5–3.6 cm; flowers white in axillary and terminal spikes; capsules orbicular, silky hairy.

Fls. & Frts. : November–December.

In plains and near sea–coasts, infrequent. Pen; Uran.

4. **Barleria lawii** T. Anders. in J. Linn. Soc. 9: 492. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 486. 1884; Cooke, Fl. Pres. Bombay 2:460. 1958 (Repr. ed.); Sant. in Bot. Mem. 2: 59. 1952.

Erect,hairy shrubs; leaves elliptic–lanceolate, appressed–pubescent, 5.0–14.2 x 2.0–5.7 cm; flowers in axillary, solitary or few in terminal racemose panicles; capsules obovoid, compressed, pointed, narrowed at base; seeds silky hairy.

Fls. & Frts. : September–October.

In hilly forests, frequent. Matheran; Pali to Nagothana; Sudhagad, Pali.

5. **Barleria terminalis** Nees in DC. Prodr. 11: 225. 1847. *emend* Malhotra *et* Moorthy in Indian *Forester* 107 (7): 469. 1981. *B. strigosa* Willd. var. *terminalis* C.B.Cl. in Hook. f. Fl. Brit. India 4: 490. 1884; Cooke, Fl. Pres. Bombay 2: 462. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 61. 1952.

Shrubs, 90–120 cm; leaves elliptic–lanceolate, acuminate, strigosely hairy, 8.5–13.0 x 3.3–5.0 cm; flowers blue in terminal, strigosely hairy spikes, crowded at the top of the branches; capsules ellipsoid, glabrous; seeds 4, ellipsoid.

Fls. & Frts. : November–March.

In hilly forests, frequent. Matheran.

6. **Barleria gibsonii** Dalz. in Hook. Kew J. Bot. 2 : 339. 1850; C.B.Cl. in Hook f. Fl. Brit. India 4 : 487. 1884; Cooke, Fl. Pres. Bomay 2 : 464. 1958 (Repr.ed.); Sant. in Univ. Bombay Bot. Mem. 2: 62. 1952. *Gura.*

Suffruticose herbs or undershrubs, 60–90 cm; leaves elliptic, acuminate, glabrous, 8.5–12.0 x 4.6–9.5 cm; flowers solitary, axillary and in terminal spikes; capsules oblong, glabrous; seeds ellipsoid, blackish, glabrous.

Fls. & Frts. : September–November.

In hilly forests, infrequent. Karjat; Matheran.

7. **Barleria prattensis** Sant. in Kew Bull. 3: 487. 1949, *et* in Univ. Bombay Bot. Mem. 2:62. 1952.

Undershrubs with stems and branches quadrangular, glabrous; leaves ovate–elliptic, glabrous, 4.4–15.0 x 1.6–5.3 cm; flowers axillary, solitary and few in terminal cymes; capsules brownish, attenuated at apex, glabrous; seeds 4, blackish, orbicular, compressed.

Fls. & Frts. : September–October.

In hilly forests, frequent. Bhira and Kalasgiri hills, Roha; Matheran; Varandh ghat, Mahad.

19. PSEUDERANTHEMUM Radlk.

Pseuderanthemum malabaricum (C.B.Cl.) Gamble, Fl. Madras 1064. 1924; Sant. in Univ. Bombay Bot. Mem. 2: 70. 1952. *Eranthemum malabaricum* C.B.Cl. in Hook. f. Fl. Brit. India 4: 497. 1884; Cooke, Fl. Pres. Bombay 2: 468. 1958 (Repr. ed.).

Suffruticose herbs or undershrubs; leaves ovate–elliptic or lanceolate, glabrous, 6.5–11.4 x 2.7–3.2 cm; flowers white in opposite clusters of 1–3 on glandular, puberulous spikes; capsules cylindric–clavate, pointed, glandular–pubescent, constricted between seeds.

Fls. & Frts. : December–March.

In moist deciduous forests, infrequent. Dahen, Mhasla.

20. ASYSTASIA Blume

1a. Branches and leaves grey, pubescent; corolla 2.5–3.0 cm long ... *A. gangetica* 1

1b. Branches and leaves green, glabrescent; corolla 1.5–2.0 cm long ... *A. dalzelliana* 2

1. **Asystasia gangetica** (L.) T. Anders. in Thw. Enum. 235. 1859–64; Sant. in Univ. Bombay Bot. Mem. 2: 68. 1952. *Justicia gangetica* L. Amoen. Acad. 4: 299. 1759. *Asystasia coromandeliana* Wight ex Nees in Wall. Pl. As. Rar. 3: 89. 1832; C.B. Cl. in Hook. f. Fl. Brit. India 4: 493. 1884; Cooke, Fl. Pres. Bombay 2: 466. 1958 (Repr. ed.).

Erect, suffruticose or straggling herbs, 50–60 cm; leaves ovate–lanceolate, 2.0–3.2 x 1.1–1.5 cm; flowers bluish in unilateral, terminal, spike–like racemes; capsules clavate, pointed, constricted in the middle; seeds 4, tuberculated.

Fls. & Frts. : November–December.

In hilly forests, frequent. Alibag; Dahen, Mhasla; Matheran.

2. **Asystasia dalzelliana** Sant. in Kew Bull. 1948: 276. 1948; Sant. in Univ. Bombay Bot. Mem. 2: 69. 1952. A. violacea Dalz. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 494. 1884; Cooke, Fl. Pres. Bombay 2: 467. 1958 (Repr. ed.).

Erect herbs with acute, quadrangular stems; leaves elliptic–lanceolate, 3.6–16.5 x 2.5–7.6 cm; flowers purple–white in solitary or twin, spike–like, terminal racemes; capsules clavate–oblong, green–black, pointed, upper half constricted between seeds; seeds 4, suborbicular, tuberculate.

Fls. & Frts. : September–October.

In plains and hilly forests, frequent. Dahen, Mhasla; Matheran; Mirya dongar near Pen; Ramraj forest, Alibag.

21. LEPIDAGATHIS Willd.

1a. Seeds 4 ... *L. cuspidata* 1

1b. Seeds 2 :

2a. Erect, suffructicose herbs; bracts and bracteoles glabrous ... *L. trinervis* 2

2b. Prostrate, creeping undershrubs; bracts and bracteoles glandular hairy ... *L. prostrata* 3

1. **Lepidagathis cuspidata** Nees in Wall. Pl. As. Rar. 3: 97. 1832; Bedd. Icon. t. 227. 1868–1874; C.B. Cl. in Hook. f. Fl.Brit. India 4: 519. 1885; Cooke, Fl. Pres. Bombay 2: 474. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 73. 1952.

Erect undershrubs, 30-90cm; stems and branches, quadrangular; leaves oblong–lanceolate, acuminate or mucronate, glabrous, 5.2–10.3 x 2.0–4.3 cm; flowers yellow or creamy–white in terminal or axillary spikes; capsules ovoid–lanceolate, glabrous.

Fls. & Frts. : February–March.

Shady places in hilly forests, frequent. Matheran; Mirya donger near Pen.

2. **Lepidagathis trinervis** Wall. ex Nees in Wall. Pl. As. Rar. 3 ; 96. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 517. 1885; Cooke, Fl. Pres. Bombay 2: 471. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 72. 1952.

Herbs, 10–20 cm; leaves linear, 3–nerved, glabrous, 1.7–3.2 x 0.2–0.4 cm; flowers white with yellowish–brown or purple spots in sessile spikes, usually 2 or more together and forming globular heads; capsules compressed, ovoid–lanceolate; seeds oblong.

Fls. & Frts. : September–October.

Among grasses in sandy river bed or hilly region, frequent. Alibag; Karjat; Roha; Sarasgad, Pali.

3. **Lepidagathis prostrata** Dalz. in Hook. Kew. J. Bot. 2: 138. 1850; C.B. Cl. in Hook. f. Fl. Brit. India 4: 518. 1885; Cooke, Fl. Pres. Bombay 2: 473. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 73. 1952.

Undershrubs; leaves ovate or oblong–lanceolate, pubescent, 1.0–3.5 x 0.5–0.8 cm; leaf spines pointed, recurved; flowers rosy or yellowish–white in terminal, pubescent spikes; capsules ovoid–lanceolate, glabrous; seeds ovoid, hairy.

Fls. & Frts. : December–March.

In plains and hilly forests, frequent. Karjat; Matheran.

22. HYPOESTES Soland. ex R. Br.

* **Hypoestes lanata** Dalz. in Hook. Kew J. Bot. 2: 343. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 557. 1885; Cooke, Fl. Pres. Bombay

2: 477. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 76. 1952; Kothari in Red data book Ind. Pl. 3:2. 1990.

Undershrubs; leaves elliptic–lanceolate, acuminate, glabrous; flowers purplish, 1–3, in leaf–opposed clusters; capsules clavate, pointed, 2–seeded.

Fls. & Frts. : October–February.

Hills in the Konkan, rare. Roha (N.Konkan).

23. DICLIPTERA Juss.

Dicliptera foetida (Forssk.) Blatt. in Rec. Bot. Surv. India 8: 361. 1921; Wood *et. al.* in Kew Bull. 38: 453. 1983. *Justicia foetida* Forssk. Fl. Aeg.–Arab. 5. 1775. *Dicliptera zeylanica* Nees in DC. Prodr. 11: 474. 1847; C.B. Cl. in Hook. f. Fl. Brit. India 4: 552. 1885; Cooke, Fl. Pres. Bombay 2: 482. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 79. 1952. *D. bivalvis* Nees in DC. Prodr. 11: 475. 1847; Wight, Icon. t. 1551. 1850.

Prostrate or sub scandent, glabrescent herbs; leaves ovate–elliptic, scabrid above, hairy on nerves beneath, 2.8–10.3 x 2.0–4.8 cm; flowers rosy in axillary and terminal, umbellate cymes; capsules obovoid.

Fls. & Frts. : December–March.

In hilly forests, rare. Matheran.

24. RUNGIA Nees

1a. Bracts dimorphic; upper lip of corolla not emarginate or notched; seeds minutely echinuato, yellow ... *R. pectinata* 1

1b. Bracts uniform; upper lip of corolla notched or emarginate; seeds rugose with concentric furrows, pale brown ... *R. parviflora* 2

1. **Rungia pectinata** (L.) Nees in DC. Prodr. 11: 469. 1847 *pro parte*; Wight, Icon. t. 1547. 1850; Sant. in Univ. Bombay Bot. Mem. 2: 77. 1952. *Justicia pectinata* L. Amoen. Acad. 4: 299. 1759 & Sp. Pl. (ed.2) 22. 1763. *Rungia parviflora* Nees var. *pectinata* (L.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 550. 1885; Cooke, Fl. Pres. Bombay 2: 478. 1958 (Repr. ed.).

Suberect or straggling herbs; leaves elliptic–oblong or lanceolate, glabrescent, 1.8–9.5 x 0.7–3.8 cm; flowers blue in axillary and terminal, solitary or 2–3–fascicled spikes; capsules ovoid, pubescent at tip.

Fls. & Frts. : October–February.

As a weed on road–sides, shady and moist places in the forests, frequent. Elephanta island; Karnala fort; Matheran; Panvel; Savitri river bank near Mahad.

2. **Rungia parviflora** (Retz.) Nees in Wall. Pl. As. Rar. 3: 110. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 550. 1885; Sant. in Univ. Bombay Bot. Mem. 2: 76. 1952. *Justicia parviflora* Retz. Obs. Bot. Mem. 5: 9. 1788. *Rungia repens auct. non* Nees (1832); T. Anders. In J. Linn. Soc. Bot. 9 : 518. 1867; Cooke, Fl. Pres. Bombay 2: 480. 1958 (Repr. ed.).

Diffuse or suberect herbs; leaves elliptic–lanceolate or oblong, glabrescent, 2.2–4.5 x 1.3– 2 cm; flowers blue or violet in terminal spikes; capsules ovoid, compressed, hairy near tip.

Fls. & Frts. : November–January.

As a weed among grasses, frequent. Matheran.

25. ECBOLIUM Kurz

1a. Bracts acuminate with irregular dentate margins; leaves acuminate, glabrous	...	*E. viride var. dentata* 1
1b. Bracts acute or obtuse, margin entire; leaves obtuse, woolly tomentose beneath	...	*E. viride var. laetevirens* 2

1. **Ecbolium viride** (Forssk.) Alst. var. **dentata** (Klein ex Link) Raiz. in Indian Forester 84: 482. 1958; Sant. in Rec. Bot. Surv. India 16 (2): 185. 1960 *et* (ed. 3) 208. 1967. *Justicia dentata* Klein ex Link in Johrb. 1(3): 48. 1820. *J. livida* Nees in DC. Prodr. 11: 427. 1847; Wight, Icon. t. 1546. 1850. *Ecbolium linneanum* Kurz var. *dentata* (Klein ex Link) C.B.Cl. in Hook. f. Fl. Brit. India 4: 545. 1885; Cooke, Fl. Pres. Bombay 2: 484. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 82. 1952.

Erect, glabrous shrubs, sometimes subscandent; leaves lanceolate–elliptic, 3.5–15 x 1.8–4.2 cm; flowers greenish–yellow in dense, terminal spikes; capsules yellowish; seeds white, ovoid, tuberculate.

Fls. & Frts. : September–October.

In moist and shady places, frequent. Ramraj forests, Alibag; Pali to Nagothana; Sarasgad, Pali.

2. **Ecbolium viride** (Forssk.) Alst. var. **laetevirens** (Vahl) Raiz. in Indian Forestser 84: 482. 1950; Sant. in Rec. Bot. Surv. India 16(1):

195. 1960 *et* (ed.3) 208. 1967. *Justcia laetevirens* Vahl, Enum. Pl. 1: 118. 1804. *E. linneanum* Kurz var. *laetevirens* (Vahl) C.B.Cl. in Hook. f. Fl. Brit. India 4: 545. 1885; Cooke, Fl. Pres. Bombay 2:485. 1958 (Repr-ed); Sant. in Univ. Bombay Bot. Mem. 2: 82. 1952. *Dhakta-adulsa*.

Erect, glabrous shrubs; leaves elliptic-lanceolate, 3.0–6.7 x 1.5–3.2 cm; flowers bluish-green in terminal spikes; capsules pubescent; seeds white, ovoid, tuberculate.

Fls. & Frts. : October–May.

In plains and hilly forests, frequent. Chaul, Alibag; Karjat; Matheran.

Vollesen in Kew Bull. 44:651. 1989, treats the above two varieties of *Ecbolium viride* (Forssk.)Alst. under *E. ligustrinum* (Vahl) Vollesen.

26. JUSTICIA L.

1a. Anther cells (at least the lower) with white, basal spur-like appendage:

2a. Calyx lobes 5:

3a. Shrubs or undershrubs:

4a. Leaves upto 23.5 cm long; flowers upto 2.5 cm long or longer ... *J. santapaui* 1

4b. Leaves upto 8.5 cm long; flowers upto 1.5 cm long ... *J. betonica* 2

3b. Herbs ... *J. trinervia* 3

2b. Calyx lobes 4:

5a. Bracts and bracteoles linear-lanceolate, hairy ... *J. diffusa* 4

5b. Bracts elliptic-ovate; bracteoles narrower, though similar with glistening, jointed hairs ...*J. procumbens* var. *simplex* 5

1b. Anther cells not spurred at base ... *J. adhatoda* 6

1. **Jusicia Santapaui** Bennet in a J. Bombay nat. Hist. Soc. 67:358. 1970. *J. montana* (Nees) Wall. ex T. Anders. in J. Linn. Soc. 9: 509. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 525. 1885; Cooke, Fl. Pres. Bombay 2: 485. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 85. 1952.

Suffruticose, bushy shrubs, 40–90 cm; leaves elliptic-lanceolate, acute, glabrous, 13.0–23.5 x 3.5–7.0 cm; flowers white, clustered in long (upto 20 cm) terminal racemes or spikes; capsules clavate, pubescent; seeds 4, suborbicular, glabrous.

Fls. & Frts. : March–April.

In moist deciduous forests, frequent. Matheran; Pangloli, Mhasla.

2. **Justicia betonica** L. Sp. Pl. 15. 1753; Sant. in Univ. Bombay Bot. Mem. 2: 85. 1952. *J. betonica* L. var. *ramosissima* (Roxb.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 525. 1885; Cooke, Fl. Pres. Bombay 2: 486. 1958 (Repr. ed.).

Diffusely branched undershrubs or shrubs, 60–90 cm; leaves ovate, acuminate, glabrous, ciliate at margins, 2.6–8.5 x 1.1–4 cm; flowers white or pinkish in axillary and terminal, simple or branched spikes; capsules clavate, pubescent; seeds 4, suborbicular, tuberculately rugose.

Fls. & Frts. : September–November.

In hilly forests, frequent. Matheran; Wankalgar, Shriardhan.

3. **Justicia trinervia** Vahl, Enum. Pl. 1: 156. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 4: 526. 1885; Cooke, Fl. Pres. Bombay 2: 487. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 86. 1952. *Sut.*

Prostrate herbs with woody rootstock, 20–40 cm; leaves oblong, obtuse, 1.5–4 x 0.8–1.3 cm; flowers in lax spikes; capsules oblong–clavate, pubescent; seeds 4, densely covered with tubercles.

Fls. & Frts. : October–January.

In hilly forests, infrequent. Matheran.

4. **Justicia diffusia** Willd. Sp. Pl. 1: 87. 1797; C.B.Cl. in Hook. f. Fl. Brit. India 4: 538. 1885; Sant. in Univ. Bombay Bot. Mem. 2: 87. 1952; Cooke, Fl. Pres. Bombay 2: 491. 1958 (Repr. ed.). *Rostellularia diffusa* (Willd.) Nees in Wall. Pl. Asiat. Rar. 3: 100. 1832.

Slender, diffuse or suberect herbs; leaves ovate–elliptic or lanceolate, appressed pubescent, 1–5 x 0.6–1.5 cm; flowers rosy–purple in compact terminal spikes; capsules oblong, glabrous; seeds spherical, tuberculate.

Fls. & Frts. : September–October.

In hilly forests, frequent. Alibag; Bhira; Matheran; Varandh ghat, Mahad.

5. **Justicia procumbens** L. Sp. Pl. 15. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 539. 1885; Cooke, Fl. Pres. Bombay 2: 491. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 89. 1952. *Rostellularia procumbens* (L.) Nees in Wall. Pl. Asiat. Rar. 3: 101. 1832.

Diffuse or erect herbs, 15–40 cm; leaves ovate–oblong or elliptic–lanceolate, appressed hairy, 2.4–5.2 x 1.2–2.3 cm; flowers white or pale deep rosy purple in terminal and axillary spikes; capsules oblong, pubescent near tip; seeds brownish, spherical, rugose.

Fls. & Frts. : June–September.

In hilly forests, frequent. Alibag; Mandatna to Pangloli, Mhasla; Matheran; Phansad, Murud.

Bremekamp in Verh. Nederl. Akad. Wet. (II) 45 (2). 1948, has separated the species belonging to Sec. *Rostullularia* from the genus *Justicia* L. and treated them under a distinct genus *Rostullularia* Reichenb.

6. **Justicia adhatoda** L. Sp. Pl. 15. 1753; Roxb. Fl.Ind. 1: 127. 1820; Stern in J. Arnold Arb. 52: 640. 1971. *Adhatoda vasica* Nees in Wall. Pl. Asiat. Rar. 3: 103. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 540. 1885; Cooke, Fl. Pres. Bombay 2: 493. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 92. 1952. *Adulsa*.

Evergreen, branched shrubs, 90–120 cm; leaves elliptic–lanceolate, acuminate, glabrous, 8.0–15.5 x 3.0–4.6 cm; flowers white in short, dense, axillary, pedunculate spikes; capsules clavate; seeds orbicular–oblong, tubercular–verrucose, glabrous.

Fls. & Frts. : May–June.

On hedges, frequent. Janjira fort, Murud; Matheran.

Leaves and roots are used medicinally to cure cough and cold. The leaves are also a source of yellow dye.

27. PERISTROPHE Nees

Peristrophe paniculata (Forssk.) Brummit in Kew Bull. 38: 451. 1983. *Dianthera paniculata* Forssk. Fl. Aeg.–Arab. 7. 1775. *Peristrophe bicalyculata* (Retz.) Nees in Wall. Pl. Asiat. Rar. 3: 113. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 554. 1885; Cooke, Fl. Pres. Bombay 2: 495. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 93. 1952. *Dianthera bicalyculata* Retz. in Acta Holm. 297. t. 9. 1775.

Erect, 4–6–angled herbs with spreading or ascending branches; leaves ovate–elliptic, appressed hairy, 4.5–8.7 x 2.0–5.3 cm; flowers rose or purple coloured, in axillary or terminal, trichotomously branched panicles; capsules greenish, pubescent in upper half, beaked, 4–seeded.

Fls. & Frts. : September–October.

Near sea–coasts, frequent. Alibag.

Cultivated or Introduced:

Gendarussa vulgaris Nees in Wall. Pl. Asiat. Rar. 3: 104. 1832; *Justicia gendarussa* Burm. f. Fl. Ind. 10. 1768; C.B.Cl. in Hook. f. Fl. Brit. India 4: 532. 1885; Cooke, Fl. Pres. Bombay 2: 492. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 91. 1952. *Jagat–madan. Tev.*

Suffruticose herbs; leaves linear–lanceolate; flowers purple–white in terminal spikes.

Probably a native of China, often met in Bengal and occasionally found as an escape or planted. Near Vinayak temple, Chaul in Alibag.

107. AVICENNIACEAE

AVICENNIA L.

1a. Shrubs; leaves acute at apex; stamens included; style short ... *A. marina* 1

1b. Trees; leaves obtuse at apex; stamens exserted; style long ... *A. officinalis* 2

1. **Avicennia marina** (Forssk.) Vierh. in Denkschr. Kaiserl. Akad. Wiss. Math.–Nat. Kl. 71: 435. 1907. *Sceura marina* Forssk. Fl. Aegypt Arab. 37. 1775. *Avicennia alba auct non* Blume (1825); Cooke, Fl. Pres. Bombay 2: 517. 1958 (Repr. ed.). *Tivar.*

Bushy shrubs with pneumatophores; leaves coriaceous, lanceolate or ovate–lanceolate, glabrous above, white–tomentose beneath, 5.0–10.4 x 2.0–2.8 cm; flowers creamy–yellow, sessile in terminal heads; capsules apiculate, narrow, oblong, yellow, tomentose.

Fls. & Frts. : March–May.

In creeks along the sea–coast, frequent. Alibag; creek on way to Murud; Revas; Revdanda; Uran.

It is a good soil binder.

2. **Avicennia officinalis** L. Sp. Pl. 110. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 604. 1885; Cooke, Fl. Pres. Bombay 2: 516. 1958 (Repr. ed.). *A. tomentosa sensu* Wight, Icon. t. 1481. 1849, *non* Jacq. (1760).

Trees with blackish–brown bark; leaves elliptic–oblong or obovate–oblong, shining above, whitish–tomentose beneath; flowers yellow, sessile in terminal heads; capsules ovoid, compressed, beaked.

Fls. & Frts. : February–April.

In salt marshes along the sea–coast, frequent. Elephanta island.

Bark is used as a tanning material and leaves as cattle fodder.

108. VERBENACEAE

1a. Flowers in dense spikes or capitate heads:

2a. Fruits schizocarpic, dry, with four 1–seeded locules ... VERBENA 1

2b. Fruits dry or fleshy with two, 1–2 seeded pyrenes (or by abortion only 1):

3a. Fruits 1–loculed, 1–seeded pyrenes, separating or not:

4a. Creeping plants ... LIPPIA 2

4b. Erect plants:

5a. Shrubs; spikes capitate; fruits drupaceous, succulent ... LANTANA 3

5b. Herbs; spikes elongate; fruits separating into two 1–seeded pyrenes ... STACHYTARPHETA 4

3b. Fruits usually 2–loculed, 2–seeded pyrenes, not separating ... PRIVA 5

1b. Flowers in cymose panicles:

6a. Leaves compound, 3–5–foliolate ... VITEX 6

6b. Leaves simple:

7a. Corolla bilabiate; stamens didynamous:

8a. Drupes with one 4–celled pyrenes:

9a. Flowers large, upto 2.5 cm long ... GMELINA 7

9b. Flowers comparatively small ... PREMNA 8

8b. Drupes with four 1–celled pyrenes ... CLERODENDRUM 9

7b. Corolla not bilabiate; stamens equal:

10a. Large trees; fruits enclosed in persistent, enlarged calyx ... TECTONA 10

10b. Shrubs or small trees; at times straggling; fruits not as above :

11a. Leaves densely, stellately tomentose : beneath; flowers reddish–purple in divaricately branched cymes ... CALLICARPA 11

11b. Leaves and flowers not as above :

12a. Flowers bluish or bluish–purple in drooping spikes ... DURANTA 12

12b. Flowers white in capitate, pedunculate, star–shaped cymes ... SYMPHOREMA 13

1. VERBENA L.

Verbena tenuisecta Briq. in Ann. Conser. *et* Jard. Bot. Geneve 7 & 8: 294. 1904; Bailey, Man. Cult. Pl. (ed. 2) 841. 1949.

Perennial, erect or procumbent herbs, 20–30 cm; leaves sessile, tripinnnatisect with linear segments, appressed–pubescent beneath; flowers blue–purple; fruits pyrenes.

Fls. & Frts. : Almost throughout the year.

As an escape in hilly forests, infrequent. Upper Louisa road, Matheran, *Irani* 4967 (BLAT).

2. LIPPIA L.

Lippia nodiflora (L.) Rich. in Michx. Fl. Bor. Amer. 2: 15. 1803; Wight, Icon. t. 1463. 1849 *et* Ill. t. 173b. f. 2. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 563. 1885; Cooke, Fl. Pres. Bombay 2: 499. 1958 (Repr. ed.). *Verbena nodiflora* L. Sp. Pl. 20. 1753. *Phyla nodiflora* (L.) Greene in Pittonia 4: 46. 1899. *Ratoliya.*

Herbs with subquadrangular stems, rooting at nodes; leaves obovate–spathulate, appressed–pubescent, 1.1–2.0 x 0.4–0.7 cm; flowers white with pinkish–purple tinge in axillary and terminal heads, ultimately turning into cylindric spikes; drupes globose–oblong, brownish, glabrous.

Fls. & Frts. : February–March.

Among grasses near sea–coast, frequent. Alibag.

Leaves are edible.

3. LANTANA L.

Lantana camara L. var. **aculeata** (L.) Mold. in Torreya 34 : 9. 1934. *L. aculeata* L. Sp. Pl. 627. 1753. *L. camara auct. non* L. (1753); C.B.Cl. in Hook. f. Fl. Brit. India 4 : 562. 1885; Cooke, Fl. Pres. Bombay 2: 498. 1958 (Repr. ed.). *Tantani.*

Shrubs with yellowish bark and recurved prickles; leaves ovate,

scabrous, 2.2–8.6 x 1.8–6.4 cm; flowers red–orange or yellowish; pyrenes spherical, green–blackish.

Fls. & Frts. : Greater part of the year.

In dedciduous forests and along road sides as hedge plant, frequent. Karjat; Mahad.

4. STACHYTARPHETA Vahl

Stachytarpheta urticaefolia (Salisb.) Sims. in Bot. Mag. t. 1848. 1816. *Cymburus urticaefolius* Salisb. Parad. London t. 53. 1806. *Stachytarpheta indica auct. non* Vahl (1804); C.B.Cl. in Hook. f. Fl. Brit. India 4: 564. 1885; Cooke, Fl. Pres. Bombay 2: 501. 1958 (Repr. ed.).

Dichotomously branched, glabrous herbs, 20–40 cm; leaves elliptic, coarsely serrate, glabrescent, 2.0–5.5 x 1.0–3.4 cm; flowers deep blue or violet in sessile, glabrous, terminal spikes long upto 23 cm; drupes oblong, ribbed.

Fls. & Frts. : February–March.

In moist places, infrequent. Matheran.

5. PRIVA Adans.

Priva cordifolia (L.f.) Druce in Bot. Soc. Exch. Club Brit. Isles 4: 64. 1917. *Buchnera cordifolia* L. f. Suppl. Pl. 287. 1781. *Priva leptostachya* Juss. in Ann. Mus. Hist. Nat. 7: 70. 1806; C.B.Cl. in Hook. f. Fl.Brit. India 4: 565. 1885; Cooke, Fl. Pres. Bombay 2: 502. 1958 (Repr. ed.). *Streptium asperum* Roxb. Pl. Cor. t. 146. 1800.

Erect herbs, 60–90 cm; leaves ovate or ovate–elliptic, crenate–serrate, pubescent with hooked hairs, 2.0–7.0 x 1.5–2.4 cm; flowers white or bluish in spicate racemes; fruits obcordate, enclosed within inflated, persistent calyx.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

6. VITEX L.

1a. Flowers in terminal panicles; drupes upto 8 mm across, globose;

2a. Shrubs or small trees; leaves 3 and 3–5–foliolate; leaflets petiolulod; common petiole not winged:

3a. Leaves 3–5–foliolate; lateral leaflets petiolulled; lamina without serrate margin and comparatively larger in size ... *V. negundo* 1

3b. Leaves 3-foliolate; lateral leaflets without petiolules; lamina with serrate margin and smaller in size ... *V. negundo var. intermedia* 2

2b. Large trees; leaves 3–foliolate; leaflets sessile; common petiole winged;

4a. Petioles more or less winged;leaflets pubescent only on nerves beneath ... *V. altissima* 3

4b. Petioles always rather broadly winged; leaflets finely pubescent above, dense grey-pubescent beneath ... *V. altissima var. alata* 4

1b. Flowers in axillary panicles; drupes upto 22 mm across, ovoid or obovoid ... *V. leucoxylon* 5

1. **Vitex negundo** L. Sp. Pl. 638. 1753; Wight, Icon. t. 519. 1842; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 583. 1885; Cooke, Fl. Pres. Bombay 2: 508. 1958 (Repr. ed.). *Nirgudi, Nirgundi.*

Large shrubs or small trees; leaflets ovate–lanceolate, white–tomentose beneath, terminal ones 5.0–14.0 x 1.3–2.4 cm; flowers bluish–purple in terminal, pyramidal panicles; drupes purple to black, globose, glabrous.

Fls. & Frts. : May–October.

Along the hedges, road–sides and in moist places, frequent. Karjat; Neral; Pen to Khopoli.

Leaves are used in headache and its juice in rheumatic pains and as hair tonic. Roots are used as tonic, diuretic, dysentery and in fever. Seeds are cooked and eaten.

2. **Vitex negundo** L. var. **intermedia** (Pie) Mold. in Revist. Sudan Bot. 5: 3. 1937 & in Phytologia 6: 16. 1957. *V. negundo* f. *intermedia* Pie Nem. Su. Soc. China 1 (3): 105–106. 1932.

Shrubs, 90–120 cm; leaflets elliptic–lanceolate, irregularly serrate, blunt at apex, terminal ones 3.2–5.7 x 1.1–1.8 cm; flowers violet.

Fls. : May–June.

In hilly forests, frequent. Alibag; Matheran; Raigad.

3. **Vitex altissima** L.f. Suppl. Pl. 294. 1781; Wight, Icon. t. 1466. 1849; C.B.Cl. in Hook. f. Fl. Brit. India 4: 584. 1885; Cooke, Fl. Pres.

Bombay 2: 509. 1958 (Repr. ed.). *V. alata* Heyne ex Roth, Nov. Pl. Sp. 316. 1821; C.B. Cl. *op. cit. Balage.*

Gigantic, lofty trees with dense crown and drooping branches; leaflets lanceolate, acuminate, pubescent on nerves beneath, 5.0–16.4 x 2.3–5.2 cm; flowers white with blue tinge in pedunculate, sessile, fulvous–pubescent panicles; drupes globose.

Fls. & Frts. : May–September.

In hilly forests and ravines, frequent. Nagothana; Phansad forests, Murud.

The wood is used in boats, boards, railway sleepers, beams and other construction works.

4. **Vitex altissima** L. var. **alata** (willd.) Trim. Fl. Ceylon 3: 358. 1895; Cooke, Fl. Pres. Bombay 2: 510. 1958 (Repr. ed.). *V. alata* Willd. in Ges. Nat. Fr. Neue. Schr. 4: 203. 1803; C.B.Cl. in Hook. f. Fl. Brit. India 4: 584. 1885.

Trees; leaflets 3; wing of the petiole widened and cordate at base; flowers more laxly arranged.

Fls. : April–May.

Infrequent, Panvel (Cooke, *op. cit.*)

5. **Vitex leucoxylon** L.f. Suppl. Pl. 293. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 587. 1885; Cooke, Fl. Pres. Bombay 2: 510. 1958 (Repr. ed.). *Wallrothia leucoxylon* (L.f.) Roth. Nov. Pl. Sp. 391. 1821; Wight, Icon. t. 1467. 1849. *Sheras.*

Deciduous trees: leafets oblong, hairy beneath, terminal one largest; flowers fragrant; drupes succulent, dark purple.

Fls. & Frts. : February–April.

Along the banks of rivers, infrequent. Savitri river, Poladpur.

7. GMELINA L.

1a. Unarmed trees; leaves stellately fulvous tomentose beneath ... *G. arborea* 1

1b. Shrubs; often spinous; leaves glabrous and studded beneath with round glands ... *G. asiatica* 2

1. **Gmelina arborea** Roxb. Pl. Cor. 3: 41. t. 246. 1815; Wight, Icon. t. 1470. 1849; C.B.Cl. in Hook. f. Fl. Brit. India 4: 581. 1885; Cooke, Fl. Pres. Bombay 2: 504. 1958 (Repr. ed.). *Shivan.*

Trees, 8–18 m; leaves broadly ovate, 2.0–11.0 x 1.5–6.0 cm; flowers yellow in densely hairy, terminal panicles; drupes oblong or pyriform, orange–yellow.

Fls. & Frts. : February–March.

In deciduous forests, frequent. Birwadi, Mahad; Vakadin hill, Neral.

Wood is useful in paper industry and in ornamental work. Roots used as tonic and stomach diseases. Leaves are useful in ulcers and gonorrhoea. Fruits are edible.

2. **Gmelina asiatica** L. Sp. Pl. 626. 1753; Wight, Ill. 2: t. 174. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 582. 1885; Cooke, Fl. Pres. Bombay 2: 505. 1958 (Repr. ed.). *Kali–Shivan, Son–Champa.*

Much branched shrubs with creamy–white bark, 90–120 cm; leaves obovate–elliptic, glaucescent, 1.2–3.0 x 0.6–1.8 cm; flowers yellow in terminal, pubescent, paniculate racemes; drupes obovoid, yellow.

Fls. & Frts. : December–March.

In deciduous forests, infrequent. Nagothana to Pen; near Parli–Vaijnath, Karjat.

Ripe fruits are edible.

8. PREMNA L.

Premna coriacea C.B.Cl. in Hook. f. Fl. Brit. India 4: 573. 1885; Cooke, Fl. Pres. Bombay 2: 506. 1958 (Repr. ed.). *Ghodi–ghaneri, Rawan.*

Extensive climbing shrubs with corky, lenticellate bark; leaves ovate–elliptic, acuminate, coriaceous, glabrous, 6.0–14.0 x 4.2–5.8 cm; flowers yellowish to reddish–purple, numerous in large, terminal, pubescent, paniculate, corymbose cymes; drupes obovoid, blackish.

Fls. & Frts. : April–October.

In hilly forests and near sea–coasts, frequent. Alibag; Janjira fort, Murud; Matheran; Shrivardhan.

9. CLERODENDRUM L.

1a. Plants straggling or subscandent; inflorescence in few–flowered cymes ... *C. inerme* 1

1b. Plants erect; inflorescence in many flowered cymes:

2a. Calyx much enlarged in fruit, segments long, broadly lanceolate, silky pubescent. ... *C. viscosum* 2

2b. Calyx not enlarged in fruit, segments very short, broadly triangular, ciliolate ... *C. serratum* 3

1. **Clerodendrum inerme** (L.) Gaertn. Fruct. 1: 271. t. 75. f. 1. 1788; C.B.Cl. in Hook. f. Fl. Brit. India 4: 589. 1885; Cooke, Fl. Pres. Bombay 2: 511. 1958 (Repr. ed.). *Volkameria inermis* L. Sp. Pl. 889. 1753. *Vanjai.*

Much branched, glabrescent shrubs, 90–150 cm; leaves ovate–oblong or oblong–lanceolate, glabrous or puberulous beneath; flowers white in axillary cymes; drupes purple–black, enclosed in persistent calyx.

Fls. & Frts. : September–May.

Along the sea–coast and hedges of cultivated fields, frequent. Pen; Revas, Alibag; Uran.

2. **Clerodendrum viscosum** Vent. Jard. Malm. 1: t. 25. 1803. *C infortunatum auct. non* L. (1753); Wight, Icon. t. 1471. 1849 *(infortunata)*; C.B.Cl. in Hook. f. Fl. Brit. India 4: 594. 1885; Cooke, Fl. Pres. Bombay 2: 513. 1958 (Repr. ed.). *Bhandiara.*

Shrubs, 90-180 cm; branches quadrangular, yellowish, silky–pubescent; leaves broadly ovate, acute or acuminate, crenate, thinly hairy, 4.2–21.5 x 2.3–14.0 cm; flowers white, tinged with pink in stalked, large, pubescent panicles; drupes globose, black.

Fls. & Frts. : February–May.

In hilly forests, frequent. Matheran.

The leaves are used as a tonic and anti–periodic.

3. **Clerodendrum serratum** (L.) Moon, Cat. Pl. Ceylon 46. no. 382. 1824; Wight, Icon. t. 1472. 1849; C.B.Cl. in Hook. f. Fl. Brit. India 4: 592. 1885; Cooke, Fl. Pres. Bombay 2: 512. 1958 (Repr. ed.). *Volkemeria serrata* L. Mant. Pl. 1: 90. 1767. *Bharang.*

Glabrous shrubs, 1–2 m; leaves ovate, elliptic–oblong or obovate–oblong, coarsely and sharply serrate, glabrous, 5.5 –17.6 x 3.0–8.5 cm; flowers blue or bluish–purple in terminal, dichotomous, pyramidal, paniculate cymes; drupes obovoid, succulent, 4–lobed.

Fls. & Frts. : September–March.

In hilly forests, frequent. Kalasgiri hill, Roha; Karjat; Matheran; Mirya dongar, Pen; Pen to Khopoli.

10. TECTONA L.f. *nom. cons.*

Tectona grandis L. f. Suppl. Pl. 151. 1781; Bedd. Fl. Sylv. t. 250. 1872; C.B.Cl. in Hook. f. Fl. Brit. India 4: 570. 1885; Cooke, Fl. Pres. Bombay 2: 504. 1958 (Repr. ed.). *Sag.*

Large trees with quadrangular, tomentose branches; leaves elliptic–oblong, coriaceous, rough, stellately grey–tomentose beneath, 5–16 x 3.5–12.0 cm; flowers white in terminal panicles; drupes subglobose, stellately hairy.

Fls. & Frts. : May–October.

Hill–slopes in deciduous forests, frequent. Kalasgiri hill, Roha; Karjat–ghat; Matheran; Nadgaon, Mahad.

11. CALLICARPA L.

Callicarpa tomentosa (L.) Murr. Syst. Veg. (ed. 13) 130. 1774. *C. lanata* L. Mant. Pl. 2: 331. 1771; C.B.Cl. in Hook. f. Fl. Brit. India 4: 570. 1885; Cooke, Fl. Pres. Bombay 2: 502. 1958 (Repr. ed.). *C wallichiana* Walp. Rep. 4: 125. 1845; Wight, Icon. t. 1480. 1849. *Aisar, Patkuri.*

Large shrubs or small trees, 1-2 m; bark greyish, rough leaves ovate or elliptic–lanceolate, crowded at branch tips, 6–30 x 2.5–10.5 cm; drupes globose, black, shining.

Fls. & Frts. : October–May.

In hilly forests, frequent. Karnala fort; Matheran; Raigad and Varandh ghat, Mahad.

12. DURANTA L.

Duranta repens L. Sp. Pl. 637. 1753; Mold. in Ann. Miss. Bot. Gard. 60: 90. 1973. *D. plumieri* Jacq. Select. Strip. Amer. Hist. 186. t. 176. 1763; C.B.Cl. in Hook. f. Fl. Brit. India 4: 560. 1885; Cooke, Fl. Pres. Bombay 2: 518. 1958 (Repr. ed.).

Erect or subscandent, armed shrubs; leaves ovate–elliptic or oblong–lanceolate, acuminate, glabrous, 3.5–8.7 x 2.0–4.0 cm; flowers blue to bluish–purple in axillary and terminal, drooping spikes; drupes

orange or orange–yellow, beaked, enclosed by accrescent, persistent calyx.

Fls. & Frts. : September–October.

In hilly forests, frequent. Bhira, Roha; Matheran.

13. SYMPHOREMA Roxb.

Symphorema involucratum Roxb. Pl. Cor. 2:46 t. 186. 1798; C.B.Cl. in Hook. f. Fl. Brit. India 4: 599. 1885; Cooke, Fl. Pres. Bombay 2: 515. 1958 (Repr. ed.).

Scandent shrubs; leaves ovate–elliptic, white–tomentose beneath; flowers white in capitate, pedunulate, star-shaped cymes; fruits subglobose, glabrous.

Fls. & Frts. : March–May.

In deciduous forests, infrequent. Between Nagothana and Alibag.

109. LAMIACEAE
(LABIATAE)

1a. Perfect stamens 2 ... SALVIA 1

1b. Perfect stamens 4 :

2a. Stamens declinate, anther–cells confluent :

3a. Lower lip of corolla 3–fid; stamens included; basal scar of nutlets oblique; leaves pinnatisect ... LAVANDULA 2

3b. Lower lip of corolla entire; stamens exserted; basal scar of nutlets not oblique; leaves not pinnatisect :

4a. Lower lip of corolla concave or boat-shaped:

5a. Corolla 5-lobed, the lowest lobe shorter or equalling the others ... HYPTIS 3

5b. Corolla 2-lipped, the lower lip longer than the upper ... PLECTRANTHUS 4

4b. Lower lip of corolla flat or nearly so :

6a. Fruiting calyx deflexed, upper lobe recurved :

7a. Corolla tube shorter than calyx; stigma 2-fid ... OCIMUM 5

7b. Corolla tube longer than calyx; stigma entire ... ORTHOSIPHON 6

6b. Fruiting calyx suberect or declinate, upper lobe not recurved ... ACROCEPHALUS 7

2b. Stamens erect or spreading; anther-cells free:

8a. Corolla 2-lipped; stamens didynamous :

9a. Upper lip of corolla hooded, densely woolly; stamens included :

10a. Flowers scarlet-orange coloured, lower lip of corolla shorter than hood ... LEONOTIS 8

10b. Flowers white, lower lip of corolla longer than hood ... LEUCAS 9

9b. Upper lip of corolla not hooded but short, flat and glabrous; stamens exserted ... ANISOMELES 10

8b. Corolla lobes 4, equal or subequal, never bi-labiate; stamens equal or subequal :

11a. Calyx 5-partite, segments plumose; stamens included ... COLEBROOKEA 11

11b. Calyx 5-toothed; stamens exserted ... POGOSTEMON 12

1. SALVIA L.

Salvia plebeia R.Br. Prodr. 501. 1810; Hook. f. Fl. Brit. India 4: 655. 1885; Cooke, Fl. Pres. Bombay 2: 557. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 111. 1940.

Erect herbs, 10-30 cm; leaves ovate-oblong or oblong-lanceolate, appressed-puhescent, 3-6 x 1.2-2.2 cm; flowers white or bluish in terminal and axillary racemes; nutlets ovoid, smooth.

Fls. & Frts. : February-March.

In moist places, infrequent. Tadavali forest, Panvel.

2. LAVANDULA L.

Lavandula bipinnata (Roth) O. Ktze. Rev. Gen. Pl. 521. 1891; Mukerjee in Rec. Bot. Surv. India 14(1): 65. 1940. *Bisteropogon bipinnata* Roth, Nov. Pl. Sp. 255. 1821. *Lavandula burmanni* Benth. Lab. Gen. *et* Sp. 151. 1833 & in DC. Prodr. 12: 147. 1848; Hook. f. Fl. Brit. India 4: 631. 1885; Cooke, Fl. Pres. Bombay 2: 534. 1958 (Repr. ed.). *Ghodeghai.*

Erect, hoary-pubescent, leafy herbs; leaves sessile with segments linear, glabrescent above, appressed pubescent beneath, 3 10 cm long; flowers bluish in simple or branched, axillary and terminal spikes; nutlets ellipsoid, brownish-black.

Fls. & Frts. : October-May.

In hilly forests, frequent. Matheran.

3. HYPTIS N. J. Jacq. *nom. cons.*

Hyptis suaveolens (L.) Poit. in Ann. Mus. Paris 7: 472. t. 29. f. 2. 1806; Hook. f. Fl. Brit. India 4: 630. 1885; Cooke, Fl. Pres. Bombay 2: 560. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 63. 1940. *Ballota suaveolens* L. Syst. (ed. 10). 1100. 1759. *Sabda.*

Erect, aromatic, hairy herbs; leaves broadly ovate or elliptic, densely hirsute beneath, 1.0-5.5 x 0.5-4.0 cm; flowers bluish-purple in terminal and axillary spikes; nutlets 2, ovoid or oblong, 2 aborted and seen as rudimentary white structures at base, erect, basilar.

Fls. & Frts. : October-February.

In deciduous forests and sea-coast, frequent. Alibag; Borgaon, Karjat; Neral.

This plant is introduced from Tropical America and W. Indies, now naturalized and runs wild in the area. The calyx with long spinous teeth distinguishes the plant.

4. PLECTRANTHUS L'Herit.

1a. Flowers in long racemes often paniculately branched below; fruiting calyx distinctly 2-lipped; upper lip broad and rounded; calyx teeth large, aristate	...	*P. mollis* 1
1b. Flowers in branched cymes forming a large pyramidal panicles; fruiting calyx not 2-lipped; upper lip 5-toothed; calyx teeth short, not aristate	...	*P. stocksii* 2

1. **Plectranthus mollis** (Ait.) Spreng. Syst. Veg. 2: 690. 1825. *Ocimum molle* Ait. Hort. Kew. 2: 322. 1789. *Plectranthus incanus* Link, Enum. Hort. Berol. 2: 120. 1822; Hook. f. Fl. Brit. India 4: 621. 1885; Cooke, Fl. Pres. Bombay 2: 529. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 47. 1940.

Erect, stout, aromatic herbs, 20-60 cm; leaves broadly ovate, cordate, crenate-serrate, sparsely pubescent, 2.7-8.5 x 1.3-7.2 cm; flowers pink or lilac to bluish, whorled in terminal racemes; nutlets 4, ovoid, brownish.

Fls. & Frts. : September-October.

In hilly forests, infrequent. Varandh ghat, Mahad.

2. **Plectranthus stocksii** Hook. f. Fl. Brit. India 4: 618. 1885; Cooke, Fl. Pres. Bombay 2: 528. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 43. 1940.

Erect, slender, simple or branched herbs, 20-40 cm; leaves ovate, coarsely serrate, glabrous or sparsely hairy, 2.5-7.3 x 1.3-4.5 cm; flowers white with purple tinge, whorled; nutlets ellipsoid, yellowish-brown.

Fls. & Frts. : September-October.

On rocky plateau, infrequent. Raigad.

5. OCIMUM L.

1a. Calyx glabrous within ... *O. tenuiflorum* 1

1b. Calyx hairy within ... *O. americanum* 2

1. **Ocimum tenuiflorum** L. Sp. Pl. 597. 1753; H. Keng in Steenis, Fl. Males. Ser. 1. 8: 378. 1978. *O. sanctum* L. Mant. Pl. 1: 85. 1767; Hook. f. Fl. Brit. India 4: 609. 1885; Cooke, Fl. Pres. Bombay 2: 521. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 19. 1940.

Perennial, woody herbs, 30-60 cm; leaves ovate-oblong, hairy, 1.3-3.8 x 0.7-1.9 cm; flowers pinkish-white or purple in compact whorls in terminal and axillary racemes; nutlets ellipsoid, brown, smooth.

Fls. & Frts. : Throughout the year.

Often cultivated, also found as an escape. Alibag; Matheran.

2. **Ocimum americanum** L. Cent. Pl. 1: 15. 1755. *O. canum* Sims. in Bot. Mag. 51. t. 2452. 1823; Hook. f. Fl. Brit. India 4: 607. 1885; Cooke, Fl. Pres. Bombay 2: 521. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 17. 1940.

Aromatic herbs, 20-40 cm; leaves ovate-elliptic or elliptic-lanceolate, glabrescent, 1.2-6.5 x 0.5-2.0 cm; flowers white or pink in distant whorls on terminal racemes; nutlets oblong-ellipsoid, glabrous, blackish-brown.

Fls. & Frts. : May-October.

In plains and hilly regions, frequent. Neral to Matheran; Pen.

6. ORTHOSIPHON Benth.

1a. Corolla tube as long as the calyx ... *O. pallidus* 1

1b. Corolla tube much longer than the calyx ... *O. thymiflorus* 2

1. **Orthosiphon pallidus** Royle ex Benth. in Hook. Bot. Misc. 3: 370. 1833; Hook. f. Fl. Brit. India 4: 613. 1885; Cooke, Fl. Pres. Bombay 2: 523. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 23. 1940.

Suffruticose, hairy herbs or diffusely branched, undershrubs; leaves ovate-elliptic, glabrous, 1.3-3.2 x 0.5-1.1 cm; flowers white or pale lilac in 4.5-10.0 cm long, terminal racemes; nutlets subglobose, brownish, smooth.

Fls. & Frts. : August-September.

In deciduous forests, infrequent. Kolad to Khamb village, Roha.

2. **Orthosiphon thymiflorus** (Roth) V.D. Sleesen in Reinwardtia 5: 42. 1959; King in Gard. Bull. Straits Settlem. 24: 135. 1969. *Ocimum thymiflorum* Roth, Nov. Pl. Sp. 269. 1821. *Orthosiphon tomentosum* Benth. var. *glabrata* Hook. f. Fl. Brit. India 4: 614. 1885; Cooke, Fl. Pres. Bombay 2: 524. 1958 (Repr. ed.). *Ran-tulsi.*

Erect, stout, glabrous herbs. 15-20 cm; leaves ovate, serrate, glabrous, 3.2-8.3 x 1.8-5.0 cm; flowers white with pinkish-purple tinge in 8-22 cm long, terminal racemes; nutlets ellipsoid or subglobose, brown, minutely tuberculate, enclosed in enlarged, persistent calyx.

Fls. & Frts. : August-October.

In plains and hilly forests, fairly frequent. Bhira; Ghosale fort, Roha; Hatvane, Pen; Matheran; Neral; Pen to Khopoli.

7. ACROCEPHALUS Benth.

Acrocephalus hispidus (L.) Nicols. & Sadasivan in Taxon 29: 324. 1980. *Gomphrena hispida* L. Sp. Pl. ed. 2. 1: 326. 1762. *Acrocephalus capitatus* (Roth) Benth. in Edward's Bot. Reg. 15: Sub. t. 1282. 1829; Hook. f. Fl. Brit. India 4: 611. 1885; Cooke, Fl. Pres. Bombay 2: 525. 1958 (Repr. ed.). *A. indicus* (Burm. f.) O. Ktze. Rev. Gen. Pl. 2: 511. 1891; Mukerjee in Rec. Bot. Surv. Inida 14(1): 29. 1940.

Slender, glabrous herbs; leaves ovate-lanceolate, coarsely serrate, glabrous, 2.4-4.2 x 1.0-2.3 cm; flowers bluish-purple in terminal, globular heads; nutlets blackish, minute, oblong-ellipsoid.

Fls. & Frts. : September-October.

In hilly forests, frequent. Mirya dongar near Pen; Poladpur; Sarasgad, Pali.

The leaf-juice is said to be used in treatment of fevers.

8. LEONOTIS R. Br.

Leonotis nepetiifolia (L.) R. Br. Prodr. 504. 1810, *'nepetaefolia'*; Wight, Icon. t. 867. 1845; Hook. f. Fl. Brit. India 4: 691. 1885; Cooke, Fl. Pres. Bombay 2: 555. 1958 (Repr.ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 185. 1940. *Phlomis nepetiifolia* L. Sp. Pl. 586. 1753. *Dipmal.*

Erect, stout, pubescent herbs, 1.0-1.5 m; leaves ovate-lanceolate, crenate-serrate, acute, finely pubescent, 5.0-13.6 x 3.0-9.4 cm; flowers many in axillary, globose whorls; nutlets oblong-obovoid, brownish, margins ribbed.

Fls. & Frts. : September- December.

In hilly forests and near sea-coasts, frequent. Ghosale fort, Roha; Karjat ghat; Nagaon, Alibag; Shrivardhan.

Natives use the ash of the flower heads mixing with curds and apply to cure ring-worm.

9. LEUCAS R. Br.

1a. Calyx mouth oblique:

- 2a. Calyx smooth below, ribbed and hispid above ... *L. aspera* 1
- 2b. Calyx smooth throughout, not hispid or ribbed ... *L. indica* 2

1b. Calyx mouth straight or nearly so :

- 3a. Calyx teeth spreading; calyx densely pubescent outside ... *L. stelligera* 3
- 3b. Calyx-teeth erect; calyx glabrous outside ... *L. longifolia* 4

1. **Leucas aspera** (Willd.) Spreng. Syst. Veg 2: 743. 1825; Hook. f. Fl. Brit. India 4: 690. 1885; Cooke, Fl. Pres. Bombay 2: 548. 1958 (Repr. ed.). *Phlomis aspera* Willd. in Link, Enum. Hort. Berol. 2: 113. 1809.

Erect, branched, hispid herbs, 10-20 cm; leaves linear, elliptic-lanceolate, appressed-pubescent, 1.7-7.5 x 0.8-2.0 cm; flowers white, many in axillary and terminal globose whorls; nutlets oblong, blackish-brown, smooth.

Fls. & Frts. : September-October.

Along the sea-coast, frequent. Alibag; Murud; Shrivardhan.

2. **Leucas indica** (L.) R. Br. ex Vatke in Oesterr. B. Zeits. 25: 95. 1875. *Leonurus indicus* L. Syst. (ed.10) 1101. 1759. *Leucas lavandulaefolia* J.E. Sm. in Rees, Cyclop. 20: No. 2. 1819; Mukerjee in Rec. Bot. Surv. India 14(1): 167. 1940. *L. linifolia* Spreng. Syst. Veg. 2: 743. 1825; Hook. f. Fl. Brit. India 4: 690. 1885; Cooke, Fl. Pres. Bombay 2: 548. 1958 (Repr. ed.).

Erect, tomentose herbs, 20-40 cm; leaves linear-lanceolate, appressed-pubescent when young, glabrescent at maturity, 2.5-8.6 x 0.2-0.7 cm; flowers white in axillary and terminal whorls, towards branch tips; nutlets oblong, brown.

Fls. & Frts. : December-June.

In hilly forests and near river banks, frequent. Karjat to Panvel; Matheran; Savitri river bank between Mahad and Nadgaon.

3. **Leucas stelligera** Wall. ex Benth. in Wall. Pl. Asiat. Rar. 1: 61. 1830; Hook. f. Fl. Brit. India 4: 686. 1885; Cooke, Fl. Pres. Bombay 2: 553. 1958 (Repr. ed.); Mukerjee in Rec. Bot. surv. India 14(1): 177. 1940. *Burmbi, Goma.*

Erect, softly villous herbs, 40-60 cm; leaves elliptic-lanceolate, densely hairy, 1.8-7.0 x 0.4-1.2 cm; flowers white or creamy-white, many in terminal and axillary whorls; nutlets oblong-ovoid, smooth, dark brown.

Fls. & Frts. : September-March.

In hilly forests, frequent. Matheran; Raigad; Shivthalgarh and Varandh ghat, Mahad.

4. **Leucas longifolia** Benth. Lab. Gen. & Sp. 744. 1835; Hook. f. Fl. Brit. India 4: 684. 1885; Cooke, Fl. Pres. Bombay 2: 551. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 170. 1940. *Dudhani.*

Erect, stout, hispid herbs, 20-30 cm; leaves linear, appressed-pubescent, 1.5-5.2 x 0.1-0.2 cm; flowers white in axillary whorls, often approximated at top appear as leafy spike; nutlets obovoid-oblong, trigonous, yellowish-brown.

Fls. & Frts. : August-September.

In moist deciduous forests, frequent. Dasgaon; Ghosale fort, Roha; Songar reserve forests, Shrivardhan.

10. ANISOMELES R. Br.

1a. Flowers reddish-purple, many in sessile cymes; plants densely pubescent ... *A. indica* 1

1b. Flowers white or pale-yellow, few in pedunculate cymes; plants glabrous ... *A. heyneana* 2

1. **Anisomeles indica** (L.) O. Ktze. Rev. Gen. Pl. 512. 1891; Mukerjee in Rec. Bot. Surv. India 14(1): 152. 1940. *Nepeta indica* L. Sp. Pl. 571. 1753. *Anisomeless ovata* R. Br. in Ait. Hort. Kew (ed. 2.) 3: 364. 1811; Wight, Icon. t. 864. 1845; Hook. f. Fl. Brit. India 4: 672. 1885; Cooke, Fl. Pres. Bombay 2: 543. 1958 (Repr. ed.). *Gopali.*

Undershrubs or shrubs, 60-120 cm; leaves ovate, thick, softly pubescent with 1.5-2.0 cm long petioles, 1.2-5.5 x 0.5-2.4 cm; flowers in dense, spicate, axillary and terminal cymes; nutlets ovoid, angled, black, smooth.

Fls. & Frts. : August-February.

In plains and hilly forests, frequent. Matheran; Neral to Karjat; Varandh ghat, Mahad.

The plant has insecticidal properties and is good for skin diseases. Oil is used medicinally in uterine affections.

2. **Anisomeles heyneana** Benth. in Wall. Pl. Asiat. Rar. 1: 59. 1830; Hook. f. Fl. Brit. India 4: 672. 1885; Cooke, Fl. Pres. Bombay 2: 543. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 152. 1940. *Chandhara, Chodhara.*

Erect, suffruticose herbs or undershrubs, 90-120 cm; leaves ovate-lanceolate, acuminate, glabrous or sparsely hairy, 1.7-10.2 x 0.5-3.3 cm; flowers in axillary and terminal racemose cymes; nutlets ovoid-ellipsoid, obtuse, blackish-brown, smooth, shining.

Fls. & Frts. : September-January.

In hilly forests, frequent. Bhira; Karjat; Matheran.

11. COLEBROOKEA J. E. Sm.

Colebrookea oppositifolia J.E. Sm. Exot. Bot. 2: 111. t. 115. 1805; Hook. f. Fl. Brit. India 4: 642. 1885; Cooke, Fl. Pres. Bombay 2: 541. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 84. 1940 ('*Colebrookia*'). *C. ternifolia* Roxb. Pl. Cor. t. 245. 1815. *Bhaman.*

Much branched, grey-tomentose shrubs, 1.5-2.0 m; leaves opposite

or ternate, oblong-lanceolate, acute, softly pubescent, 4.0-16.8 x 1.3-6.0 cm; flowers white, minute, numerous in terminal and axillary, paniculate, 2-12 cm long spikes; nutlets oblong-obovoid, pubescent.

Fls. & Frts. : February–October.

In hilly forests, frequent. Matheran; Raigad; Sudhagad, Pali.

Leaves are antiseptic and applied to wounds and cuts.

12. POGOSTEMON Desf.

1a. Whorls forming usually continuous spikes :

2a. Stems glabrous, smooth, polished ... *P. parviflorus* 1

2b. Stems hoary-pubescent or villous, not polished :

3a. Calyx-teeth short ... *P. benghalense* 2

3b. Calyx-teeth nearly equalling the tube :

4a. Nutlets ovoid, black ... *P. purpurascens* 3

4b. Nutlets ellipsoid, yellowish-brown ... *P. deccanensis* 4

1b. Whorls usually seperate, forming interrupted spikes ... *P. heyneanus* 5

1. **Pogostemon parviflorus** Benth. in Wall. Pl. Asiat. Rar. 1: 31. 1830; Hook. f. Fl. Brit. India 4: 632. 1885; Cooke, Fl. Pres. Bombay 2: 536. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 68. 1940. *Pangli.*

Shrubs with pinkish–purple branches; leaves ovate, glabrous, 2.8–12.5 x 2.0–7.6 cm; flowers pink or purplish in axillary and terminal panicles; nutlets ellipsoid, trigonous, smooth.

Fls. & Frts. : December–May.

In plains and hilly forests, frequent. Janjira fort, Murud; Matheran; Neral; Roha.

The plant is a good source for honey and green manure. The leaves are said to be useful in snake–bite.

2. **Pogostemon benghalensis** (Burm.f.) O. Ktze. Rev. Gen. Pl. 529. 1891. *Origanum benghalense* Burm. f. Fl. Ind. 128. t. 38. f. 3. 1768. *Pogostemon plectranthoides* Desf. in Ann. Mus. Paris 2: 156. t. 6. 1808; Hook. f. Fl. Brit. India 4: 632. 1885; Cooke, Fl. Pres. Bombay 2: 536. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 69. 1940.

Suffruticose herbs or undershrubs, 90–120 cm; leaves ovate,

serrate, glabrescent, 1.7–5.5 x 0.8–2.8 cm; flowers white or pinkish in dense, hoary–pubescent, terminal and axillary paniculate spikes; nutlets ellipsoid, dark brown, shining.

Fls. & Frts. : December–June.

In hilly forests, frequent; near sea–shores, occasional. Alibag; Matheran; Matheran–Neral Road; Varandh ghat, Mahad.

Leaf–paste is utilized for healing wounds and juice for killing intestinal worms.

3. **Pogostemon purpurascens** Dalz. in Hook. Kew J. Bot. 2: 337. 1850; Hook. f. Fl. Brit. India 4: 632. 1885; Cooke, Fl. Pres. Bombay 2: 537. 1958 (Repr. ed.).

Erect, hairy herbs or undershrubs, 60–100 cm; leaves ovate–elliptic, hairy, 2.6–10.5 x 1.0–5.4 cm; flowers white, whorled in terminal, simple or compound, villous, upto 21.5 cm long spikes; nutlets blackish, ovoid, trigonous, smooth.

Fls. & Frts. : October–February.

In hilly forests, frequent. Matheran.

4. **Pogostemon deccanensis** (Panigr.) Press in Bull. Brit. Mus. (N.H.) Bot. 10(1): 73. 1982; Panigr. in J. Orissa Bot. Soc. 6(1): 50–56. 1984. *Eusteralis deccanensis* Panigr. in Phytologia 32: 475. 1976. *Dysophylla stellata auct. non* Lour. (1790); Benth. in Wall. Pl. Asiat. Rar. 1:30. 1830, *non* Benth (1828); Hook. f. Fl. Brit. India 4: 640. 1885; Cooke, Fl. Pres. Bombay 2: 540. 1958 (Repr. ed.).

Small, erect, branched, pubescent herbs, 5–15 cm; leaves many in whorls, linear, pubescent, 1.2–3.4 cm long; flowers bright–pink, sessile in 2.0–5.5 cm long, dense, tomentose spikes; staminal filaments purple hairy; nutlets ellipsoid, brownish.

Fls. & Frts. : September–October.

In moist places, frequent. Pachhad, Raigad.

5. **Pogostemon heyneanus** Benth. in Wall. Pl. Asiat. Rar. 1: 31. 1830 & in DC. Prodr. 12: 153. 1830; Wight, Icon. t. 1440. 1849; Hook. f. Fl. Brit. India 4: 633. 1885; Cooke, Fl. Pres. Bombay 2: 537. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14(1): 71. 1940. *Pach.*

Erect, hairy herbs; leaves ovate, acuminate, crenate, glabrescent; flowers very small in slender, paniculate spikes.

Fls. & Frts. : November–December.

Near sea–coast, infrequent. Alibag.

The dried leaves if kept in woollen clothes are said to keep off insects.

110. NYCTAGINACEAE

BOERHAVIA L.

Boerhavia diffusa L. Sp. Pl. 3. 1753; Cooke, Fl. Pres. Bombay 2: 563. 1958 (Repr.ed.). *B. repens* L. Sp. Pl. 3. 1753; Hook. f. Fl. Brit. India 4: 709. 1885. *Ghetali, Punarnava, Vasu.*

Diffuse, divaricately branched herbs with fusiform roots; leaves broadly ovate or elliptic–suborbicular, opposite pairs unequal, whitish–tomentose beneath, 1.0–4.2 x 0.7–3.4 cm; flowers pink, minute, sessile or subsessile in axillary and terminal umbels; fruits clavate, bluntly ribbed.

Fls. & Frts. : September– November.

As a weed along the road–sides, waste places, frequent. Occasionally near sea–coast. Alibag; Janjira fort, Murud; Karjat; Matheran; Pen.

The roots are purgative, diuretic and used for Asthma, Rheumatic pains, purification of blood and to improve digestion. Leaves are edible.

111. AMARANTHACEAE

1a. Leaves alternate(or fascicled or opposite and alternate mixed as in *Aerva sanguinolenta*) :

2a. Perianth lobes scarious; ovary 2–many ovulate; fruits many seeded ... CELOSIA 1

2b. Perianth lobes not scarious; ovary1–ovulate; fruits 1–seeded :

3a. Flowers white, woolly–tomentose; staminodes present; staminal filaments united ... AERVA 2

3b. Flowers not as above; staminodes absent; staminal filaments free ... AMARANTHUS 3

1b. Leaves opposite :

4a. Anthers 1–celled:

5a. Flowers in axillary clustered heads; stigma solitary, capitate ... ALTERNANTHERA 4

5b. Flowers in terminal heads; stigma bifid ... GOMPHRENA 5

4b. Anthers 2-celled :

6a. Flowers deflexed, spinescent in long, terminal, lax spikes ... ACHYRANTHES 6

6b. Flowers neither deflexed nor spinescent in compact, axillary spikes ... NOTHOSAERVA 7

1. CELOSIA L.

Celosia argentea L. Sp. Pl. 205. 1753; Wight, Icon. t. 1767. 1852; Hook. f. Fl. Brit. India 4: 714. 1885; Cooke, Fl. Pres. Bombay 2: 570. 1958 (Repr. ed.).

Erect, glabrous herbs, 20–60 cm; leaves linear–lanceolate, ovate–lanceolate or elliptic, glabrous, 1.6–7.5 x 0.7–3.6 cm; flowers pinkish–purple in upper half or completely glistening–white in spikes; utricles ellipsoid, greenish–brown; seeds black.

Fls. & Frts : August–November.

In hilly forests on sandy or rocky areas, frequent. Karjat to Khopoli ghat; Karnala fort; Matheran; Raigad.

2. AERVA Forssk. *nom. cons.*

1a. Spikes axillary and terminal :

2a. Plants erect; leaves alternate; flowers unisexual ... *A. javanica* 1

2b. Plants erect, suberect or climbing; leaves alternate and opposite; flowers bisexual ... *A. sanguinolenta* 2

1b. Spikes axillary ... *A. lanata* 3

1. **Aerva javanica** (Burm. f.) Juss. ex Schult. Syst. Veg. (ed. 15) 15: 565. 1819; Wight, Icon. t. 876. 1844–1845; Hook. f. Fl. Brit. India 4: 727. 1885; Cooke, Fl. Pres. Bombay 2: 577. 1958 (Repr. ed.). *Iresine javanica* Burm. f. Fl. Ind. 212. 1768.

Woody, hoary–tomentose undershrubs or shrubs, 60–90 cm; leaves linear–oblong to oblong–spathulate or ovate–lanceolate, densely greenish–white tomentose, 1.0–2.5 x 0.5–0.8 cm; flowers greenish–white in terminal, woolly, paniculate spikes; utricles orbicular–ovoid, thin; seeds minute, black, shining.

Fls. & Frts.: March–May.

In plains and hilly areas, frequent. Karle-Khind, Alibag; Karnala fort; Varanth Ghat, Mahad.

2. **Aerva sanguinolenta** (L.) Blume, Bijdr. 547. 1826. *Achyranthes sanguinolenta* L. Sp. Pl. (ed. 2) 1: 294. 1762. *Aerva scandens* (Roxb.) Wall. ex Moq. in DC. Prodr. 13(2): 302. 1849; Hook. f. Fl. Brit. India 4: 727. 1885; Cooke, Fl. Pres. Bombay 2: 577. 1958 (Repr. ed.).

Scandent herbs or undershrubs; leaves elliptic–lanceolate, appressed–pubescent, 2.5–6.0 x 1.0–2.7 cm; flowers silvery–white in axillary and terminal, spike–like pseudo–racemes.

Fls. & Frts. : December–March.

In hilly forests, frequent. Karle–khind, Alibag; Matheran to Neral.; Sudhagad, Pali.

3. **Aerva lanata** (L.) Juss. ex Schult. in Ann. Mus. Hist. Nat. 11: 131. 1808; Wight, Icon. t. 723. 1840; Hook. f. Fl. Brit. India 4:728. 1885; Cooke, Fl. Pres. Bombay 2: 578. 1958 (Repr. ed.). *Achyranthes lanata* L. Sp. Pl. 204. 1753.

Erect, diffusely branched, grey–tomentose herbs; leaves elliptic–obovate, appressedly white–pubescent beneath, 1.2–3.0 x 0.7–1.8 cm; flowers white; utricles minute, ovoid, black, smooth.

Fls. & Frts. : August–October.

Along the sea–coast, frequent. Alibag.

The roots are said to be used to cure Malaria fever.

3. AMARANTHUS L.

1a. Stamens 5; tepals 5; leaf axils with spines ... A. SPINOSUS 1

1b. Stamens 3; tepals 3; leaf axils spineless :

2a. Ripe utricle dehiscens circumscissile, a little below the middle; branches near the base of the stem ... *A. tricolor* 2

2b. Ripe utricle indehiscent; branching not near the base of the stem ... *A. viridis* 3

1. **Amaranthus spinosus** L. Sp. Pl. 991. 1753; Wight, Icon. t. 513. 1841; Hook. f. Fl. Brit. India 4: 718. 1885; Cooke, Fl. Pres. Bombay 2: 573. 1958 (Repr. ed.).

Erect or diffuse herbs, 20–40 cm; leaves elliptic–lanceolate or ovate–oblong, glabrous, 1.7–3.0 x 0.6–0.8 cm; spikes greenish in axillary, globose clusters and terminal one simple or branched; utricles ovoid, membranous, thickened at top, rugose.

Fls. & Frts. : September–March.

As a weed on road sides and waste places, frequent. Karjat; Pen to Khopoli.

2. **Amaranthus tricolor** L. Sp. Pl. 989. 1753. *A. mangostanus* L. Cent.Pl. 1: 32. 1755; Hook. f. Fl. Brit. India 4: 720. 1885; *A. gangeticus* L. Syst. Nat. (ed. 10) 2: 1268. 1759; Hook. f. *op. cit.* 719; Cooke, Fl. Pres. Bombay 2: 574. 1958 (Repr. ed.). *A. oleraceous* Burm. f. Fl. Ind. 198. 1768, *non* L. (1753); Wight, Icon. t. 715. 1843.

Erect herbs with prostrate branches; leaves lanceolate or rhomboid–ovate, apiculate, glabrescent, 1.5–8.0 x 0.7–3.5 cm; flowers fascicled in axillary and terminal, interrupted spikes; utricles ovoid, membranous, rugose; seeds black, shining.

Fls. & Frts. : September–October.

As a weed on road–sides, infrequent. Matheran; Pen to Khopoli.

3. **Amaranthus viridis** L. Sp. Pl. (ed. 2) 1405. 1763; Hook. f. Fl. Brit. India 4 : 720. 1885; Cooke, Fl.Pres. Bombay 2: 575. 1958 (Repr. ed.). *Euxolus caudatus* (Jacq.) Moq. in DC. Prodr. 13(2): 274. 1849; Wight, Icon. t. 1773. 1852.

Erect or diffuse herbs, 20–60 cm; leaves broadly ovate, elliptic or rhomboid, glabrous, 1.0–4.8 x 0.4–2.5 cm; flowers greenish in axillary and terminal spikes; utricles densely rugose.

Fls. & Frts. : August–September.

In moist places, infrequent. Matheran; on way to Madh from Pen.

4. ALTERNANTHERA Forssk.

1a. Bracts and tepals spinescent ... *A. pungens* 1

1b. Bracts and tepals not as above:

2a. Perianth parts 1–nerved; bracts not acuminate ... *A. sessilis* 2

2b. Perianth parts 3–nerved; bracts acuminate ... *A. tenella* 3

1. **Alternanthera pungens** Kunth in H.B. & K. Nov. Gen. Sp. Pl. 2: 206. 1817; Melville in Kew Bull. 13: 174. 1958. *A. repens* (L.) Link, Enum. Pl. Hort. Berol. 1: 154. 1821, *non* Gmel. (1791).

Prostrate or creeping, densely hairy herbs; leaves broadly obovate or nearly orbicular, alternate, subopposite or 2–3 together, pubescent beneath, 0.7–3.2 x 0.6–2.0 cm; spikes creamy–white, axillary; seeds orbicular, brown.

Fls. & Frts. : September–October.

In coastal area, infrequent. Murud.

2. **Alternanthera sessilis** (L.) R. Br. ex DC. Cat. Hort. Monsp. 4: 77. 1813; Wight, Icon. t. 727. 1840; Hook. f. Fl. Brit. India 4: 731. 1885; Melville in kew Bull. 13: 172-1958 *Gomphrena sessilis* L. Sp. Pl. 225. 1753. *Alternanthera triandra* Lam. Encycl. 1: 95. 1783; Cooke, Fl. Pres. Bombay 2: 584. 1958 (Repr. ed.).

Erect or prostrate herbs, rooting at nodes; leaves obovate–cuneate or oblanceolate, glabrous, 1.3–3.5 x 0.4–1.0 cm; flowers white in sessile, axillary heads; utricles ovoid–orbicular with thickened margins.

Fls. & Frts. : Throughout the year.

Moist places in plains and hilly forests, frequent. Karjat; Kolad, Roha; Matheran; Neral; on way to Madh from Pen.

Mears (1980) in Taxon 29 (1): 89, treats This plant as *Gomphrena sessilis* L.

3. **Alternanthera tenella** Colla, Mem. R. Acad. Sci. 33: 131. t.9. 1828; Veldk. in Taxon 27 (2/3): 313. 1978. *Resham kata.*

Erect or suberect, sparsely hairy or glabrous herbs; leaves oblong–lanceolate or oblong–obovate or spathulate from acute base, sessile, sparsely hairy, 1.7–7.8 x 0.7–3.4 cm; spikes white, axillary and terminal; fruits orbicular–obcordate.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Dahen forests, Mhasla.

Mears (1980) in Taxon 29 (1): 89, treats This plant as *Gomphrena ficoidea* L. and further states that there is, no need to reject the specific epithel *'ficoidea'* as proposed by Veldkamp *op. cit.* Pedesen also agrees with Mears and disagrees with Veldkamp.

5. GOMPHRENA L.

Gomphrena globosa L. Sp. Pl. 224. 1753; Wight, Icon. t. 1784. 1852; Hook. f. Fl. Brit. India 4: 732. 1885; Cooke, Fl. Pres. Bombay 2: 584. 1958 (Repr. ed.). *Jafri–Gundi.*

Branched herbs or undershrubs; leaves elliptic–oblong or obovate–oblong, hairy, 2.8–4.0 x 0.8–1.6 cm; flowers yellowish–white or crimson heads in terminal, globose spikes.

Fls. & Frts. : September–October.

Near sea–coasts, infrequent. Alibag.

Probably a native of Tropical America, found as an escape in the area.

6. ACHYRANTHES L.

1a. Annuals, less branched herbs, upto 60 cm:

2a. Leaves obovate–elliptic or sub–orbiculate, obtuse or abruptly acuminate, velvety tomentose, thick ... *A. aspera* 1

2b. Leaves elliptic–lanceolate, acuminate, glabrous or sharply pubescent, membranous ... *A. aspera var. porphyristachya* 2

1b. Perennials, profusely branched, woody shrubs upto 3.5 m ... *A. coynei* 3

1. **Achyranthes aspera** L. Sp. Pl. 204. 1753; Wight, Icon. t. 1777. 1852; Hook. f. Fl. Brit. India 4: 730. 1885; Cooke, Fl. Pres. Bombay 2: 580. 1958 (Repr. ed.). *Aghada.*

Erect, pubescent herbs, 20–60 cm; leaves leathery, 3–10 x 1.7–6.1 cm; flowers greenish–white or violet in terminal spikes; fruits yellowish–brown, oblong–cylindric, enclosed in hardened perianth.

Fls. & Frts. : Greater part of the year.

As forest undergrowth and along road–sides as weed, frequent. Alibag; Karjat; Pen.

It is stomachic, laxative, diuretic and used in piles, inflammation of internal organs and dropsy.

2. **Achyranthes aspera** L. var. **porphyristachya** (Wall. ex Moq.) Hook. f. Fl. Brit. India 4: 730. 1885. *A. porphyristachya* Wall. ex Moq. in DC. Prodr. 13(2): 316. 1849.

Erect herbs; leaves larger than the species proper i.e. upto 13.2 x 6.3 cm; flowers and fruits are about same in structure of that of species but slightly larger.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

3. **Achyranthes coynei** Sant. in Kew Bull. 1948: 488. 1949 & in Rec. Bot. surv. India (ed.3) 16 (1): 224. 1967; Sharma & Kulkarni in Red data book Ind. Pl. 2: 8.f.1.1988.

Much branched shrubs, 3.0–3.5 m; leaves elliptic–lanceolate, pubescent, upto 23.5 x 9.0 cm; flowers greenish, tinged with purple in erect, terminal spikes; fruits utricles.

Fls. & Frts. : November–February.

In hilly forests, rare. Rambag to one tree hill, Matheran, *Irani* 4811–12, 4859 (BLAT).

7. NOTHOSAERVA Wight

Nothosaerva brachiata (L.) Wight, Icon. 1776. B. 1852; Hook. f. Fl. Brit. India 4: 726. 1885; Cooke, Fl. Pres. Bombay 2: 580. 1958 (Repr. ed.). *Achyranthes brachiata* L. Mant. Pl. 1: 50. 1767.

Slender, erect herbs, 20–40 cm; leaves ovate or elliptic–lanceolate, glabrous, 1.3–5.2 x 0.7–2.4 cm; flowers creamy–white, sessile in small, axillary, cylindric spikes; utricles globose, smooth; seeds minute, black, shining.

Fls. & Frts. : October–December.

As an undergrowth in forest, frequent. Pali to Nagothana; Ramraj, Alibag.

112. CHENOPODIACEAE

1a. Leaves variable, oblong, rhombic-deltoid or lanceolate, not fleshy ... CHENOPODIUM 1

1b. Leaves terete or subterete, fleshy ... SUAEDA 2

1. CHENOPODIUM L.

1a. Plants strongly aromatic, glandular; margin of seeds obtuse ... *C. ambrosioides* 1

1b. Plants not aromatic, eglandular; margin of seeds acute ... *C. album* 2

* 1. **Chenopodium ambrosioides** L. Sp. Pl. 219. 1753; Wight, Icon. t. 1786. 1852; Hook. f. Fl. Brit. India 5: 4. 1886; Cooke, Fl. Pres. Bombay 2: 587. 1958 (Repr. ed.); Banerji in Rec. Bot. Surv. India 19 (2): 77. 1966. *Danni.*

Erect herbs; leaves oblong–lanceolate, glandular–pubescent; flowers minute in axillary and terminal spikes; utricles membranous.

Fls. & Frts. : August–April.

In hilly forests, infrequent. Matheran.

2. **Chenopodium album** L. Sp. Pl. 219. 1753; Hook. f. Fl. Brit. India 5: 3. 1886; Cooke, Fl. Pres. Bombay 2: 586. 1958 (Repr. ed.). *Chakvat.*

Erect herbs, 10–20 cm; leaves elliptic–lanceolate or rhomboid–oblong, glabrous, 1.5–3.2 x 0.3–1.2 cm; flowers minute, greenish, clustered in axillary and terminal, paniculate spikes; utricles membranous, enclosed by sepals; seeds orbicular, black, shining.

Fls. & Frts. : February–March.

Along the sea–coast, frequent. Nagaon beach, Alibag.

Leaves are used as a vegetable, cattle feed and also grown as a pot–herb in many houses.

2. SUAEDA Forssk.

* **Suaeda monoica** Forssk. Fl. Aegypt.–Arab. 70. 1775; Wight, Icon. t. 1792. 1852; Hook. f. Fl. Brit. India 5: 13. 1886; Cooke, Fl. Pres. Bombay 2: 591. 1958 (Repr. ed.).

Small, glabrous herbs; leaves sessile, linear, bright green; flowers polygamous in axillary clustered spikes; seeds ovoid, black, shining.

Fls. & Frts. : November–December.

In salt marshes, infrequent. Dharamtar; Uran.

113. POLYGONACEAE

1a. Flowers 3–merous; perianth 6–cleft, 3 inner segments accrescent in fruit; stigma fimbriate; fruit a small triquetrous nut .... RUMEX 1

1b. Flowers 3–5–merous; perianth 3-5-cleft, segments accrescent; stigma capitate; fruit compressed, rarely or not trigonous nut :

2a. Flowers axillary, solitary or in small clusters ... POLYGONUM 2

2b. Flowers in terminal racemes, spikes or heads ... PERSICARIA 3

1. RUMEX L.

Rumex vesicarius L. Sp. Pl. 336. 1753; Hook. f. Fl. Brit. India 5: 61. 1886; Cooke, Fl. Pres. Bombay 3: 10. 1958 (Repr. ed.). *Chuka.*

Erect, glabrous herbs; leaves elliptic–oblong or ovate, base cuneate, cordate or hastate; flowers monoecious,in axillary clusters or in whorls, arranged in simple or panicle racemes; nuts angled.

Fls. &Frts. : September–October.

In plains, infrequent. Panvel.

The plant is grown as a vegetable.

2. POLYGONUM L.

Polygonum plebeium R. Br. Prodr. 420. 1810, '*plebejum* '; Hook. f. Fl. Brit. India 5: 27. 1886; Cooke, Fl. Pres. Bombay 3: 4. 1958 (Repr. ed.). *P. indicum* Heyne ex Roth, Nov. Pl. Sp. 208. 1821; Wight, Icon. t. 1808. 1852.

Prostrate, glabrous herbs with radially spreading diffuse branches; leaves linear–oblong, obovate or spathulate, 3–5 x 1–2 cm; flowers pink; nuts trigonous, black, shining.

Fls. & Frts. : May–June.

In moist places, frequent. Indapur, Mangaon; on way to Panvel from Karjat.

3. PERSICARIA Mill.

1a. Flowers in pedunculate, compressed heads	...	*P. nepalensis* 1
1b. Flowers sessile or pedicellate, branched spikes or spike–like racemes :		
2a. Stipules and bracts ciliate; nuts trigonous	...	*P. barbata var. gracilis* 2
2b. Stipules and bracts ecliliate; nuts biconvex	...	*P. glabra* 3

* 1. **Persicaria nepalensis** (Meissn.) H. Gross. in B. Jahrb. 49: 277. 1913. *Polygonum nepalense* Meissn. Monogr. Polyg. 84. t. 7. f. 2. 1826. *P. alatum* Buch.–Ham. ex Spreng. Syst. Veg. Cur. Post. 154. 1827; Hook. f. Fl. Brit. India 5: 41. 1886; Cooke, Fl. Pres. Bombay 3: 8. 1958 (Repr. ed.).

Prostrate or suberect herbs, rooting at lower nodes; leaves deltoid–ovate, acute, cordate, petiole winged, amplexicaul at base; flowers with 4–fid lobes; nuts ovoid, black.

Fls. & Frts. : August–November.

In hilly forests, infrequent. Matheran.

2. **Persicaria barbata** (L.) Hara var. **gracilis** (Danser) Hara in En. Fl. Pl. Nepal 3: 175. 1982. *Polygonum barbatum* L. ssp. *gracile* Danser in Bull. Jard. Bot. Buitenz. Ser. 3, 8: 146. f. 2. 1927. *P. barbatum* L. Sp. Pl. 362. 1753; Hook. f. Fl. Brit. India 5: 37. 1886.

Erect, slender herbs or undershrubs; leaves linear-lanceolate, acute, appressed–pubescent; flowers white or pinkish; nuts blackish, smooth, acute at both ends.

Fls. & Frts. : May-June

In moist places, infrequent. Streamlets near Indapur, Mangoan.

3. **Persicaria glabra** (Willd.) Gomes de la Maza in Ann. Inst. Segunda Ensef. Habana 2: 278. 1896; Hara in En. Fl. Pl. Nepal 3: 176. 1982. *Polygonum glabrum* Willd. Sp. Pl. 2: 447. 1799; Wight, Icon. t. 1797. 1852; Hook. f. Fl. Brit. India 5: 34. 1886; Cooke, Fl. Pres. Bombay 3: 5. 1958 (Repr. ed.). *Sheral.*

Rigid, simple or branched herbs; leaves lanceolate, acuminate, glabrous, 5.5–17.4 x 0.7–2.3 cm; flowers pink in paniculate racemes; nuts black, shining, glabrous.

Fls. & Frts. : Throughout the year.

Along the river–banks and other moist places, frequent. Mahad to Nadgaon; Matheran; Pen; Roha.

The infusion of leaves is used in colic pains. The leaves after warming, utilised for curing diseases like 'Naroo'.

Cultivated and introduced:

Antigonon leptopus Hook. & Arn. Bor. Beech. Voy. 308. t. 69. 1841; Cooke, Fl. Pres. Bombay 3: 10. 1958 (Repr. ed.).

Large climbers; leaves cordate–deltoid; flowers white, turning pink in large panicles.

On hedges, frequent. Near Janjira's Nawab Palace, Murud.

This plant is usually grown in gardens as an ornamental.

114. PODOSTEMACEAE

DALZELLIA Wight

Dalzellia zeylanica (Gardn.) Wight var. **konkanica** (Willis)

Janard. in Bull. Bot. Surv. India 24: 207. 1982. *Lawia zeylanica* var. *konkanica* Willis in Ann. Roy. Bot. Gard. Perad. 1: 216. 1902; Cooke, Fl. Pres. Bombay 3: 13. 1958 (Repr. ed.). *Terniola zeylanica* (Gardn.) Tul. var. *konkanica* (Willis) Sant. in Rec. Bot. Surv. India 16(1): 256. 1953.

Plants spreading with flat, flabelliform, suborbicular lobes and crowded growing points; leaves reddish, minute, filiform in rosettes, *c a* 1 cm across; flowers at apices of lobes; capsules ellipsoid–ovoid, brownish, 9–ribbed, crowned with 3–recurved stigmas.

Fls. & Frts. : September–October.

On stones in flowing streams, rare. Matheran, *Irani* 4889 (**BLAT**); Sanegaon forests, Roha 155972.

115. ARISTOLOCHIACEAE

ARISTOLOCHIA L.

Aristolochia indica L. Sp. Pl. 960. 1753; Hook. f. Fl. Brit. India 5: 75. 1886; Cooke, Fl. Pres. Bombay 3: 16. 1958 (Repr. ed.). *A lanceolata* Wight, Icon. t. 1858. 1852.

Twining, woody, glabrous herbs; leaves linear–oblong, ovate–oblong or subpanduriform, glabrous, 6.7–13.1 x 2.8–5.3 cm; flowers yellow with reddish–purple tinge, few in axillary racemes; capsules pendulous, globose–oblong, 6–valved, black on drying; seeds deltoid–ovoid, flat, winged.

Fls. & Frts. : September–October.

On *Euphorbia* shrubs in moist deciduous forests, infrequent. Phansad forests, Murud.

Roots are said to be an antidote to snake–poison and used in leucoderma and as tonic.

116. PIPERACEAE

1a. Anther cells distinct; fruits comparatively large upto 5 mm across; stigmas not penicillate ... PIPER 1

1b. Anther cells confluent or indistinct; fruits minute; stigmas penicillate ... PEPEROMIA 2

1. PIPER L.

1a. Plants grey–hirsute; leaves sub–cordate at base ... *P. hookeri* 1

1b. Plants glabrous; leaves not as above:

2a. Leaves usually acute at base; spikes pubescent; fruits yellow ... *P. trichostachyon* 2

2b. Leaves usually rounded at base; spikes glabrous; fruits red ... *P. nigrum* 3

1. **Piper hookeri** Miq. in Hook. London J. Bot. 4: 437. 1845; Hook. f. Fl. Brit. India 5: 88. 1886; Cooke, Fl. Pres. Bombay 3: 19. 1958 (Repr. ed.).

Scandent shrubs; leaves ovate or oblong–lanceolate, acuminate, hairy beneath; flowers in slender spikes; fruits globose.

Fls. & Frts. : April–September.

In hilly forests, infrequent. Mahad; Matheran.

2. **Piper trichostachyon** (Miq.) Cass. in DC. Prodr. 16(1): 242. 1869; Hook. f. Fl. Brit. India 5: 80. 1886; Cooke, Fl. Pres. Bombay 3: 19. 1958 (Repr. ed.). *Muldera trichostachya* Miq. in Hook. London J. Bot. 5: 556. 1846; Wight, Icon. t. 1944. 1853.

Rigid, woody, branched climbers; leaves elliptic–lanceolate, glabrous, 6.3–11.5 x 2.5–3.4 cm; flowers in lax, interrupted spikes; fruits globose.

Fls. & Frts. : November–March.

In hilly forests, frequent. Matheran.

3. **Piper nigrum** L. Sp. Pl. 28. 1753; Hook. f. Fl. Brit. India 5: 90. 1886; Cooke, Fl. Pres. Bombay 3: 19. 1958 (Repr. ed.). *Kala–mirch, Mirvel.*

Stout, glabrous climbers; leaves broadly ovate, acuminate, glabrous, 5.6–12.7 x 3.2–6.5 cm; flowers greenish in interrupted spikes; fruits globose, red.

Fls. & Frts. : February–July.

In hilly forests, frequent. Matheran.

This species is largely cultivated in konkan for its fruits, used as spices. The leaves, roots and fruits are utilized medicinally for cough, fever and rheumatic pains.

2. PEPEROMIA Ruiz. & Pav.

Peperomia pellucida (L.) Kunth in H. B. & K. Nov. Gen. *et* Sp. 1:

64. 1815; Cooke, Fl. Pres. Bombay 3: 21. 1958 (Repr. ed.). *Piper pellucidum* L. Sp. Pl. 30. 1753. *Peperomia exigua* (Blume) Miq. Syst. Pip. 77. 1843; Hook. f. Fl. Brit. India 5: 997. 1886.

Slender, succulent, branched herbs, 15–40 cm; leaves broadly ovate, membranous, glabrous, 1.0–3.2 x 0.8–2.2 cm; flowers greenish–white, minute in leaf opposed or terminal spikes; nuts minute, black.

Fls. & Frts. : September–October.

In crevices of old walls, frequent. Alibag; Nawab's palace walls, Murud.

117. MYRISTICACEAE

KNEMA Lour.

Knema attenuata (Wall. ex Hook. f. & Thoms.) Warb. Monogr. Myristi. 590. 1897. *Myristica attenuata* Wall. ex Hook. f. & Thoms. Fl. Ind. 157. 1855 & in Hook. f. Fl. Brit. India 5: 110. 1886; Cooke, Fl. Pres. Bombay 3: 24. 1958 (Repr. ed.). *M. corticosa* Bedd. Fl. Sylv. t. 278. 1872. *Rakt–mara*.

Moderate sized, evergreen trees with outer scaly bark and inner bark with red juice; leaves coriaceous, elliptic–oblong or lanceolate, glabrous above, whitish–tomentose beneath, upto 21.5 x 6.2 cm; flowers unisexual in axillary umbels; fruits ellipsoid, rusty tomentose.

Fls. & Frts. : October–February.

In hilly forests, infrequent. Matheran.

Wood is used for match flints.

118. LAURACEAE

1a. Twining, parasitic herbs; leaves reduced to scales ... CASSYTHA 1

1b. Trees or shrubs; leaves normal, not reduced to scales :

2a. Flowers unisexual; anther–cells of all rows introrse, 4–celled:

3a. Leaves pseudo–verticillate; flowers not in umbellate heads; involucral bracts deciduous; fertile stamens 9 ... ACTINODAPHNE 2

3b. Leaves alternate or subopposite; flowers in umbellate heads; involucral bracts persistent; fertile stamens 9–14 :

4a. Leaves penni-nerved; perianth-segments incomplete or 6 ... LITSEA 3

4b. Leaves 3-nerved; perianth-segments usually 4, deciduous ... NEOLITSEA 4

2b. Flowers bisexual; anther-cells of 3rd row (if present) extrorse, 2-4-celled:

5a. Anthers 2-celled :

6a. Perianth tube turbinate or ovoid; lobes persistent; fruits drupaceous, enclosed by enlarged perianth tube ... CRYPTOCARYA 5

6b. Perianth tube short, lobes deciduous; fruits naked berries ... BEULSCHMIEDIA 6

5b. Anthers 4-celled :

7a. Fruiting perianth tube and pedicels enlarged ... ALSEODAPHNE 7

7b. Fruiting perianth tube and pedicels scarcely enlarged ... PERSEA 8

1. CASSYTHA L.

Cassytha filiformis L. Sp. Pl. 35. 1753; Wight, Icon. t. 1847. 1852; Hook. f. Fl. Brit. India 5: 188. 1886; Cooke, Fl. Pres. Bombay 3: 35. 1958 (Repr. ed.). *Amarvel, Garvel.*

Slender twiners with branched, filiform, greenish, pubescent stems; flowers small, yellowish-white; fruits globose, greenish-white, enclosed in perianth tube.

Fls. & Frts. : September-March.

Near sea-coasts, frequent. Occasionally in hilly forests. Alibag; Janjira fort, Murud; Karle-khind, Alibag; Shrivardhan.

2. ACTINODAPHNE Nees

Actinodaphne angustifolia Nees in Wall. Pl. Asiat. Rar. 3 : 31. 1832 *A. hookeri* Meissn. in DC. Prodr. 15 (1): 218.1864 (excl. var. *longifolia*); Hook. f. Fl. Brit. India 5: 149. 1886; Cooke, Fl. Pres. Bombay 3: 31. 1958 (Repr. ed.). *Pisa.*

Trees, 1.5-2.0 m; leaves coriaceous, elliptic-lanceolate, acuminate; young leaves densely silky, mature ones thinly white-tomentose beneath, 8.8-15.2 x 2.7-5.7 cm; flower buds rusty-tomentose; berries ellipsoid or top-shaped, greenish-red, 2-seeded.

Fls. & Frts. : October-May.

In hilly forests, frequent. On way to Panorama point, Matheran.

3. LITSEA Lam. *nom. cons.*

Litsea stocksii (Meissn.) Hook. f. Fl. Brit. India 5: 176. 1886; Cooke, Fl. Pres. Bombay 3: 33. 1958 (Repr.ed.). *Tetranthera oblanga* Nees var. *stocksii* Meissn. in DC. Prodr. 15(1): 205. 1864.

Small trees; leaves coriaceous, elliptic-oblong, glaucous beneath, upto 12.6 x 5.4 cm; flowers 4-8 in axillary racemose heads; fruits ellipsoid, green, white specked at first, dark purple at maturity.

Fls. & Frts. : January-March.

In hilly forests, infrequent. Matheran.

4. NEOLITSEA (Benth.) Merr. *nom. cons.*

Neolitsea cassia (L.) Kosterm. in J. Sci. Res. (Jakarta) 1: 85. 1952. *Laurus cassia* L. Sp. Pl. 369. 1753. *Neolitsea zeylanica* (Nees) Merr. Philipp. J. Sci. 1: Suppl. 57. 1906. *Litsea zeylanica* Nees in Amoen. Bot. Bonn. Fasc. 1: 58. t. 5. 1823; Bedd. Fl. Sylv. t. 294. 1873; Hook. f. Fl. Brit. India 5: 178. 1886; Cooke, Fl. Pres. Bombay 3: 34. 1958 (Repr. ed.). *Chirchira, Kanvel.*

Trees with greyish bark, 1.5-2.0 m; leaves elliptic-lanceolate, acuminate, glaucous beneath, 6.7-12.4 x 2.4-3.3 cm; flowers 4-5 in clustered umbels; fruits oblong-ellipsoid or globose, dark purple.

Fls. & Frts. : October-January.

In hilly forests, infrequent. Monkey point, Matheran.

5. CRYPTOCARYA R. Br.

Cryptocarya bourdillonii Gamble in Kew Bull. 1925: 127. 1925 & Fl. Pres. Madras 2: 853. 1957 (Repr. ed.). *C. wightiana sensu* Hook. f. Fl. Brit. India 5: 120. 1886 *pro parte*; *non* Thw. (1861); Cooke, Fl. Pres. Bombay 3: 26. 1958 (Repr. ed.). *Gulmur.*

Large trees; leaves elliptic-oblong, whitish beneath; flowers yellowish, numerous in axillary panicles; fruits subglobose, blackish.

Fls. & Frts. : December-May.

In hilly forests, infrequent. Matheran.

6. BEILSCHMIEDIA Nees

Beilschmiedia dalzellii (Meissn.) Kosterm. in Reinwardtia 6(3): 282. 1962. *B. fagifolia* Bedd. var. *dalzellii* Meissn. in DC. Prodr. 15(1): 64. 1864; Hook. f. Fl. Brit. India 5: 122. 1886; Cooke, Fl. Pres. Bombay 3: 27. 1958 (Repr. ed.). *Umberi.*

Large trees with grey, scaly bark; leaves elliptic–lanceolate or obovate–lanceolate, glabrous, 9.2–17.4 x 5.0–6.3 cm; flowers in short, axillary panicles; fruits ovoid–ellipsoid, dark brown when dry, upto 3.5 x 1.6 cm.

Fls. & Frts. : February–June.

In hilly forests, infrequent. Matheran.

7. ALSEODAPHNE Nees

Alseodaphne semecarpifolia Nees in Wall. Pl. Asiat. Rar. 2: 72. 1831; Wight, Icon. t. 1826. 1852; Hook. f. Fl. Brit. India 5: 144. 1886; Cooke, Fl. Pres. Bombay 3: 30. 1958 (Repr. ed.). *Phudgus.*

Much branched, medium or large sized trees; leaves coriaceous, aromatic, elliptic–oblong or obovate, shining above, glaucous beneath, 8.7–17.8 x 4.8–7.4 cm; flowers yellowish–green in umbellate, paniculate cymes; berries ellipsoid, smooth, green, turning black at maturity.

Fls. & Frts. : Greater part of the year.

In hilly forests, frequent. Matheran; Pangloli reserve forests, Mhasla.

8. PERSEA MILL.

Persea macrantha (Nees) Kosterm. in Reinwardtia 6: 193. 1962. *Machilus macrantha* Nees in Wall. Pl. Asiat. Rar. 2: 70. 1831; Wight, Icon. t. 1824. 1852; Hook. f. Fl. Brit. India 5: 140. 1886; Cooke, Fl. Pres. Bombay 3: 29. 1958 (Repr. ed.). *Gulum.*

Trees, 15–20m; leaves elliptic–oblong or elliptic–lanceolate, glabrous, 7.2–13.5 x 4.0–4.7 cm; flowers yellow–green in axillary and terminal panicles; fruits subglobose, green with white dots.

Fls. & Frts. : December–March.

In hilly forests, infrequent. Matheran.

119. THYMELAEACEAE

GNIDIA L.

Gnidia glauca (Fresen.) Gilg. Bot. Jahrb. Syst. 19: 265. 1894. *Lasiosiphon glaucus* Fresen. Flora 21: 603. 1838. *Gnidia eriocephala* Meissn. in Denkschr. Koenigl.–Baier. Bot. Ges. Regensburg 3: 292. 1841; Wight, Icon. t. 1859. 1852. *Lasiosiphon eriocephalus* (Meissn.) Decne. in Jacq. Voy. 148. 1844; Hook. f. Fl. Brit. India 5 : 197. 1886; Cooke, Fl. Pres. Bombay 3: 36. 1958 (Repr. ed.). *Rametha.*

Much branched shrubs, 90–120 cm; leaves subsessile, oblong–lanceolate, glaucous, silky–hairy beneath, 2.5–10.2 x 0.6–2.0 cm; flowers yellow, nearly sessile in dense, terminal heads, surrounded at base by an involucre of large, silky, villous bracts; fruits ellipsoid, pointed.

Fls. & Frts. : September–June.

In hilly forests, frequent. Matheran: Raigad and Varandh ghat, Mahad.

The bark of this species is used by natives for tying bundles. It is also used as fish–poison and paper making material.

120. ELAEAGNACEAE

ELAEAGNUS L.

Elaeagnus infundibularis Momiyama in J. Jap. Bot. 48: 262. f. 3. 1973; Momiyama & Hara in En. Fl. Pl. Nepal 3: 189. 1982. *E latifolia auct. non* L. (1753); Bedd. Fl. Sylv. t. 180. 1872; Hook. f. Fl. Brit. India 5: 202. 1886; Cooke, Fl. Pres. Bombay 3: 37. 1958 (Repr. ed.). *Ambgul.*

Large, scandent shrubs with spiny stems and branches; leaves elliptic–lanceolate, acute–acuminate, upper surface with small, whitish scales, lower surface silver–white, shining, 3.6–10.2 x 1.7–4.8 cm; flowers many, straw coloured; fruits ellipsoid, pinkish with whitish, scabrous spots.

Fls. & Frts. : November–January.

In hilly forests, infrequent. Mahad ghat; Matheran to Neral.

Fruits are edible and are sold in the market also.

121. LORANTHACEAE

1a. Branches flattened, jointed; leaves absent or reduced to minute scales; flowers unisexual ... VISCUM 1

1b. Branches not as above; leaves present, well developed; flowers bisexual:

2a. Flowers in groups of 5 or more; the bracts forming a large, cup-shaped, reddish-brown, 5-6-lobed, 2-3 cm long involucre, enclosing flowers and fruits ... TOLYPANTHUS 2

2b. Flowers and bracts not as above :

3a. Flowers 6-merous, subtended by 1 bract and 2 bracteoles enclosing the calyx; petals connate ... MACROSOLEN 3

3b. Flowers 5-merous, not subtended by a pair of bracteoles; petals connate or free:

4a. Leaves obovate and cuneate at base; flowers in pedunculate umbels or in axillary fascicles, irregular ... TAXILLUS 4

4b. Leaves oblong-lanceolate, rounded at base; flowers in unilateral racemes or spikes, almost regular ... DENDROPHTHOE 5

1. VISCUM L.

Viscum articulatum Burm. f. Fl. Ind. 311. 1768; Hook. f. Fl. Brit. India 5: 226. 1886; Cooke, Fl. Pres. Bombay 3: 47. 1958 (Repr. ed.); R.S. Rao in J. Ind. Bot. Soc. 36: 126. 1957. *V. nepalense* Spreng. Syst. Cur. Post. 4(2): 42. 1827; Danser in Blumea 4: 283. 1936.

Shrubby parasites; branches drooping, leafless, dichotomous, jointed, dark green; flowers minute, greenish-yellow; fruits greenish, globose.

Fls. & Frts. : February–August.

In deciduous forests, frequent. Elephanta island; Matheran; Neral; Roha; Tada, Mangaon.

2. TOLYPANTHUS Blume

Tolypanthus lageniferus (Wight) van Tiegh. in Bull. Soc. Bot. France 42: 249. 1895 ('*lageniferus*'); Danser in Bull. Jard. Bot. Buitenz. Ser. 3, 10: 355. 1929. *Loranthus lageniferous* Wight, Icon. t. 306. 1840; Hook. f. Fl. Brit. India 5: 218. 1886; Cooke, Fl. Pres. Bombay 3: 44. 1958 (Repr. ed.). *Bandguli.*

Branches woody, cylindric, rigid with rough, blackish, lenticillate

bark; leaves coriaceous, elliptic–suborbicular, glabrous, 2.7–8.2 x 2.0–5.7 cm; flowers greenish–red, subsessile in fascicles on old wood; fruits yellow–orange, ovoid–oblong.

Fls. & Frts. : February–August.

In hilly forests, frequent. Karnala fort; Matheran; Neral to Matheran road.

3. MACROSOLEN (Blume) Reichenb.

Macrosolen capitellatus (Wight & Arn.) Danser in Blumea 2:36. 1936. *Loranthus capitellatus* Wight & Arn. Prodr. 382. 1834; Hook. f. Fl. Brit. India 5: 221. 1886; Cooke, Fl. Pres. Bombay 3: 44.1958 (Repr. ed.).

Branched shrubs, 90–120 cm; leaves opposite, elliptic–lanceolate, acuminate, glabrous, shining, upto 12.7 x 10.4 cm; flowers in axillary clusters, pinkish–green, below, yellowish at middle and red above; berries ellipsoid, greenish–black, shining, capped with calyx–limb.

Fls. & Frts. : February–August.

In hilly forests, frequent. Karjat; Karnala fort; Matheran; Mhasla; on way to Shivathalgarh, Mahad.

4. TAXILLUS van Tiegh.

Taxillus cuneatus (Heyne ex Roth) Danser in Bull. Jard. Bot. Buitenz. Ser. 3, 10: 354. 1929. *Loranthus cuneatus* Heyne ex Roth, Nov. Pl. Sp. 193. 1821; Hook. f. Fl. Brit. India 5: 214. 1886; Fyson, Fl. South Indian Hill St. 2: t. 446. 1932; Cooke, Fl. Pres. Bombay 3: 42. 1958 (Repr. ed.).

Shrubby parasites with slender, numerous, rough, greyish branches; leaves alternate, subfleshy, glabrous, 1.7–5.0 x 0.5–2.6 cm; flowers greenish–yellow outside, orange inside; berries red, obconical.

Fls. & Frts. : April–May.

In hilly forests, infrequent. Matheran.

5. DENDROPHTHOE Mart.

1a. Flowers without bracteoles or involucral cup ... *D. falcata* 1

1b. Flowers with the bracts and bracteoles forming a shallow, oblique cup ... *D. trigona* 2

1. **Dendrophthoe falcata** (L.f.) Etting. in Denkscher. Akad. Wiss. Math. Nat. Kl. 32: 52, 53, 58. t. 13. f. 14. 1872. *Loranthus falcatus* L. f. Suppl. Pl. 211. 1781. *L. longiflorus* Desr. in Lam. Encycl. 3: 598. 1792; Hook. f. Fl. Brit. India 5: 214. 1886; Cooke, Fl. Pres. Bombay 3: 42. 1958 (Repr. ed.). *Bandgul.*

Dichotomously branched, glabrous, woody parasites; leaves thick, coriaceous, elliptic–oblong, ovate–lanceolate, 5–10 x 1.7–2.8 cm; flowers white, yellowish or pinkish–red in unilateral, axillary racemes or on old wood; fruits ovoid–oblong, reddish.

Fls. & Frts. : December–May.

In moist, deciduous forests, frequent. Karle–khind, Alibag; Matheran; Matheran to Neral; on way to Shivthalgarh, Mahad.

2. **Dendrophthoe trigona** (Wight & Arn.) Danser ex Sant. in Rec. Bot. Surv. India 16(1): 163. 1953. *Loranthus trigonous* Wight & Arn. Prodr. 386. 1834; Hook. f. Fl. Brit. India 5: 219. 1886; Cooke, Fl. Pres. Bombay 3: 42. 1958 (Repr. ed.). *Bandalki, Gonimaran.*

Stout, woody parasites; leaves thick, coriaceous, opposite or in whorls of 3, reddish when young, greyish–green at maturity, upto 14.6 x 11.5 cm; flowers pink to red in short, axillary racemes, often on old wood; fruits ellipsoid, light red.

Fls. & Frts. : February–May.

In hilly forests, infrequent. Jummapatti, on way to Matheran, *Irani* 4075 **(BLAT).**

122. SANTALACEAE

SANTALUM L.

Santalum album L. Sp. Pl. 349. 1753; Bedd. Fl. Sylv. t. 256. 1872; Hook. f. Fl. Brit. India 5: 231. 1886; Cooke, Fl. Pres. Bombay 3: 49. 1958 (Repr. ed.). *Chandan.*

Small trees with rough, blackish bark and drooping branches; leaves elliptic–lanceolate, 2.4–5.7 x 1.8–2.6 cm; flowers reddish–purple in terminal and axillary cymes; drupes subglobose, greenish–purple, glabrous.

Fls. & Frts. : March–October.

In deciduous forests, infrequent. Kalasgiri hill, Roha.

123. EUPHORBIACEAE

1a. Plants monoecious; male and female flowers much reduced and enclosed in calyx–like (cup–shaped) involucre ... EUPHORBIA 1

1b. Plants dioecious or monoecious; male and female flowers not as above:

2a. Stamens of the outer or only series opposite the sepals, or if the stamens in centre of the flower, 2–celled ovary with 2–ovules in each cell:

3a. Twining plants with stinging hairs ... TRAGIA 2

3b. Erect plants without stinging hairs:

4a. Leaves peltate:

5a. Leaves scarcely lobed, red–glandular beneath ... MACARANGA 3

5b. Leaves lobed, eglandular beneath:

6a. Petioles glandular at tip; leaf margin serrate; stamens many ... RICINUS 4

6b. Petioles eglandular at tip; leaf–margin entire; stamens few ... JATROPHA 5

4b. Leaves not peltate:

7a. Males in axillary fascicles or solitary, axillary:

8a. Corolla with scale–like petals:

9a. Ovary 2–celled; fruit a drupe ... BRIDELIA 6

9b. Ovary 3–celled; fruit a capsule ... CLEISTANTHUS 7

8b. Corolla absent in both sexes :

10a. Styles confluent in a long or short column or cone ... GLOCHIDION 8

10b. Styles seperate or if partly connate, the style–arms and stigma free:

11a. Disk absent in either sex; filaments united in a column ... BREYNIA 9

11b. Disk present in the female and often in male flowers; filaments free or united ... PHYLLANTHUS 10

7b. Males in axillary spikes, racemes or panicles:

12a. Ovary 1–celled; flowers of both sexes in slender racemes or spikes ... ANTIDESMA 11

12b. Ovary–2–celled; males in catkin–like spikes; females clustered ... APOROSA 12

2b. Stamens of the outer or only series alternate with the sepals, or if stamens all in the centre of the flower the 2–3–celled ovary each 1–ovulate:

13a. Petals present at least in male flowers:

14a. Seeds with white spongy cup ... CROTON 13

14b. Seeds not as above:

15a. Sepals of female flowers accrescent in fruit; females with petals; trees not hispid or stellately tomentose ... DIMORPHOCALYX 14

15b. Sepals of female flowers not accrescent in fruit; petals of female narrow or zero; hispid or stellately tomentose herbs ... CHROZOPHORA 15

13b. Petals absent in either sex:

16a. Male calyx imbricate with 4–6 sepals ... BALIOSPERMUM 16

16b. Male calyx valvately splitting into 3–5 sepals:

17a. Male calyx closed in bud:

18a. Filaments free :

19a. Anther cells united by their bases only; females with accrescent leafy bracts ... ACALYPHA 17

19b. Anther cells laterally attached by a narrow or broad connective; females without accrescent bracts :

20a. Leaves opposite; flowers large; anther cells oblong ... TREWIA 18

20b. Leaves alternate or opposite; flowers minute; anther cells globose ... MALLOTUS 19

18b. Filaments connate in bundles or branched ... HOMONOIA 20

17b. Male calyx open in bud:

21a. Calyx 2–3–lobed; fruits fleshy or pulpy ... SAPIUM 21

21b. Calyx deeply 5–partite; fruits crustaceous ... EXCOECARIA 22

1. EUPHORBIA L.

1a. Shrubs or small trees; stem and branches thick, fleshy, armed with stipular spines; leaves upto 20 cm long ... *E. neriifolia* 1

1b. Herbs with slender, erect, ascending or prostrate stems and branches, unarmed; leaves scarcely upto 9 cm long:

2a. Stems geniculate or zigzag when fresh; leaves alternate below and opposite above or all alternate; exstipulate :

3a. Leaves less than 5 cm long ... *E. heterophylla* 2

3b. Leaves more than 5 cm long ... *E. rothiana* 3

2b. Stems not as above; leaves always opposite, stipulate:

4a. Prostrate herbs with small wiry branches; leaves small upto 1 cm long:

5a. Stems, leaves and capsules glabrous; leaves entire ... *E. orbiculata* 4

5b. Stems, leaves and capsules hairy; leaves crenulate or denticulate ... *E. thymifolia* 5

4b. Erect herbs with larger, stouter branches; leaves well over 1 cm:

6a. Stems hispid with yellowish hairs; leaves acute or so, but not obtuse; involucral glands without a petaloid limb: ... *E. hirta* 6

6b. Stems glabrous or minutely whitish–grey pubescent; leaves usually obtuse; involucral glands with a conspicuous petaloid limb:

7a. Floral leaves distichously imbricating ... *E. zornioides* 7

7b. Floral leaves not distichously imbricating:

8a. Glabrous herbs with reddish–purple, polished stems, bulged at nodes; involucres solitary, axillary ... *E. erythroclada* 8

8b. Strigose–pubescent herbs, stems not as above, involucres in many –flowered cymes ... *E. parviflora* 9

1. **Euphorbia nerifolia** L. Sp. Pl. 451. 1753; Hook. f. Fl. Brit. India 5: 255. 1887; Cooke, Fl. Pres. Bombay 3: 59. 1958 (Repr. ed.). *Nurang.*

Large shrubs or small trees with succulent, verticillate, 5–angled, spiny branches; leaves fleshy, alternate, obovate–oblong, deciduous; involucres hemispheric, 3–nate with few flowered cymes; capsules obovoid, 3–gonous.

Fls. & Frts. : May–June.

As hedge plant, frequent. Mamdapur to Neral.

The juice of the plant is used for ear–ache. Juice mixed with neem–oil is used to cure rheumatic pains.

2. **Euphorbia heterophylla** L. Sp. Pl. 453. 1753. *E. geniculata* Ort. ex Boiss. in DC. Prodr. 15(2): 72. 1866; Hook. f. Fl. Brit. India 5: 239. 1882; Cooke, Fl. Pres. Bombay 3: 66. 1958 (Repr. ed.).

Erect herbs with glaucous, fistular stems; leaves elliptic or obovate, glabrous, 2.3–4.8 x 0.7–3.5 cm; flowers in terminal, branched cymes; capsules 3–lobed; seeds obovoid, black.

Fls. & Frts. : October–March.

Frequent. Dahen, Mhasla.

A native of Tropical America now naturalized and often occur as road–side weed.

3. **Euphorbia rothiana** Spreng. Syst. Veg. 3: 796. 1826; Wight, Icon. t. 1864. 1852; Hook. f. Fl. Brit. India 5: 263. 1887; Cooke, Fl. Pres. Bombay 3: 59. 1958 (Repr. ed.). *Dudhi.*

Erect, glabrous, branched herbs, 30–60 cm; leaves linear–oblong, glabrous, 6–10 x 0.8–1.0 cm; involucres solitary, axillary in upper axils and terminal, campanulate, glabrous; lobes ciliate, gland with 2 decurved horns; capsules glabrous.

Fls. & Frts. : September–November.

In moist deciduous forests, infrequent. Dasgaon; Mahad ghat.

4. **Euphorbia orbiculata** H.B. & K. Nov. Gen. *et* Sp. 2: 52. 1817; Rajgopal & Panigrahi in Taxon 17: 547. 1969. *E. microphylla* Heyne ex Roth, Nov. Pl. Sp. 227. 1821 *non* Lam. (1786); Hook. f. Fl. Brit. India 5: 252. 1887; Cooke, Fl. Pres. Bombay 3: 65. 1958 (Repr. ed.).

Prostrate, radially spreading, branched herbs; leaves opposite, oblong–orbicular; flowers greenish–yellow, solitary or 2–3–fascicled; capsules minute, yellowish–brown, keeled, glabrous; seeds greyish–brown, smooth.

Fls. & Frts. : June–October.

In moist places, frequent. Dasgaon, Mahad; Indapur, Mangaon.

5. **Euphorbia thymifolia** L. Sp. Pl. 454. 1753; Hook. f. Fl. Brit. India 5: 252. 1887; Cooke, Fl. Pres. Bombay 3: 64. 1958 (Repr. ed.). *Dhakti–dudhi.*

Prostrate herbs with radially spreading branches; leaves opposite, elliptic–oblong, oblique, sparsely appressed–pubescent beneath, 3–5 x 2–3 mm; flowers greenish–white in axillary, clustered cymes; capsules keeled; seeds minute, reddish–brown.

Fls. & Frts. : Almost throughout the year.

Along the river banks, road–sides and moist places, frequent. Mahad to Nadgaon; Mangaon; Matheran; Neral; Raigad; Roha.

The plant juice is applied to cure ringworm. It also yeilds an essential oil with pungent odour.

6. **Euphorbia hirta** L. Sp. Pl. 454. 1753. *E. pilulifera sensu* Hook. f. Fl. Brit. India 5: 250. 1887, *non* L. (1753); Cooke, Fl. Pres. Bombay 3: 64. 1958 (Repr. ed.). *Dudhi.*

Slender herbs, 10–60 cm; leaves oblong–lanceolate or ovate–obovate, 1.7–3.0 x 0.5–1.2 cm; flowers greenish–yellow, numerous in dense, axillary cymes; capsules 3–lobed, hairy.

Fls. & Frts. : September–October.

Along the sea–coasts, frequent. Alibag; Elephanta island.

The leaves of the plant are eaten as vegetable and its latex is used to cure warts. The liquid extract is useful in the treatment of cough and cold.

7. **Euphorbia zornioides** Boiss. in DC. Prodr. 15 (2): 19. 1862; Hook. f. Fl. Brit. India 5: 246. 1887; Cooke, Fl. Pres. Bombay 3: 60. 1958 (Repr. ed.).

Erect, glabrous herbs, 30–60 cm; leaves elliptic–oblong, 1.0–4.5 x 0.8–1.5 cm; involucres glabrous, with 4 pinkish–white, unequal, petaloid limbs; capsules glabrous.

Fls. & Frts. : September–October.

In hilly regions, infrequent. On way to Raigad, Mahad.

8. **Euphorbia erythroclada** Boiss. in DC. Prodr. 15(2): 25. 1862; Hook. f. Fl. Brit. India 5: 247. 1887; Cooke, Fl. Pres. Bombay 3: 63. 1958 (Repr. ed.); Billore in Indian Forester 95 (8): 576. 1969.

Erect, slender herbs, 15–60 cm; leaves obliquely oblong or obovate, serrulate, 0.6–2.7 x 0.3–0.8 cm; involucres reddish, turbinate, campanulate, axillary; capsules 3–lobed, cocci acutely keeled and sparsely hairy along the keel.

Fls. & Frts. : September–October.

In hilly forests, frequent. Alibag; Bhise–khind and Sanegaon, Roha.

9. **Euphorbia parviflora** L. Syst. (ed.10) 2: 1047. 1759. *E*

hypericifolia auct. non L. (1753); Hook. f. Fl. Brit. India 5: 249. 1887; Cooke, Fl. Pres. Bombay 3: 63. 1958 (Repr. ed.).

Erect or suberect herbs, 10–40 cm; leaves elliptic–oblong or obovate, unequal sided, glabrous, 1.2–2.5 x 0.5–1.0 cm; flowers greenish–white in axillary, corymbose cymes; capsules subglobose; seeds yellowish–brown.

Fls. & Frts. : August–October.

As undergrowth in hilly forests, frequent. Dasgaon; Karjat; Neral to Matheran; Ramraj, Alibag; Roha.

2. TRAGIA L.

Tragia involucrata L. Sp. Pl. 980. 1753; Hook. f. Fl. Brit. India 5: 465. 1888; Cooke, Fl. Pres. Bombay 3: 119. 1958 (Repr. ed.).

Climbers with scattered stinging hairs; leaves ovate or oblong–lanceolate, serrate–dentate, acuminate, setosely hairy, 1.5–12.0 x 1.0–6.2 cm; flowers yellow in leaf opposed, spicate cymes; capsules green, at length reddish–brown, 3–lobed, hispid.

Fls. & Frts. : September–December.

In hilly forests, frequent. Matheran; on way to Raigad, Mahad.

3. MACARANGA Thouars.

Macaranga peltata (Roxb.) Muell. – Arg. in DC. Prodr. 15(2): 1010. 1866. *Osyris peltata* Roxb. Fl. Ind. 3: 755. 1832. *Macaranga roxburghii* Wight, Icon. t. 1949. f. 4. 1853; Hook. f. Fl. Brit. India 5: 448. 1887. *M. tomentosa* Wight *op. cit.* f. 1; Cooke, Fl. Pres. Bombay 3: 117. 1958 (Repr. ed.). *Chandada.*

Large trees with flat spreading canopy; leaves elliptic–suborbicular or deltoid–ovate, petioled, 5.2–14.0 x 4.7– 9.5 cm; flowers yellowish in axillary, rusty–tomentose panicles; capsules spherical, densely clothed with waxy glands.

Fls. & Frts. : February–March.

In moist deciduous forests, frequent. Matheran; Murud.

4. RICINUS L.

Ricinus communis L. Sp. Pl. 1007. 1753; Hook. f. Fl. Brit. India 5: 457. 1887; Cooke, Fl. Pres. Bombay 3 : 125. 1958 (Repr. ed.). *Erand.*

Shrubs; leaves palmately 5–9–lobed, peltate, glabrous; flowers yellow in terminal racemes; fruits 3–5–furrowed, indehiscent; seeds oblong, brownish, mottled white–creamy to dark brown.

Fls. & Frts. : March–October.

Found as an escape. Alibag; Sanegaon forest, Roha.

Oil extracted from seeds is largely used for burning and also in medicines.

5. JATROPHA L.

1a. Flowers yellowish–green ... *J. curcas* 1

1b. Flowers red ... *J. gossypifolia* 2

1. **Jatropha curcas** L. Sp. Pl. 1006. 1753; Hook. f. Fl. Brit. India 5: 383. 1887; Cooke, Fl. Pres. Bombay 3: 95. 1958 (Repr. ed.). *Moglai–Eranda* .

Soft–wooded, deciduous shrubs or small trees; leaves broadly ovate–suborbicular, entire or 3–5–lobed, 4.5–8.0 x 4.0–9.5 cm; flowers in terminal or extra–axillary cymes; capsules yellow, ovoid–globular.

Fls. & Frts. : May–June.

In waste places, frequent. Janjira fort, Murud; Mahad; Neral.

Seeds are used as a purgative by natives and yields an oil for illumination.

2. **Jatropha gossypifolia** L. Sp. Pl. 1006. 1753; Hook. f. Fl. Brit. India 5: 383. 1887; Cooke, Fl. Pres. Bombay 3: 94. 1958 (Repr. ed.).

Shrubs; leaves palmately 3–5–lobed, brownish–green; flowers in terminal, trichotomous cymes; capsules greenish–yellow, 3–lobed.

Fls. & Frts. : Almost throughout the year.

Along the sea–coast, frequent. Alibag.

6. BRIDELIA Willd.

1a. Straggling or scandent shrubs:

2a. Branches with deflexed spines; leaves elliptic–oblong or obovate but never rhomboid, main nerves 8–12 pairs; calyx glabrous ... *B. stipularis* 1

2b. Branches non–spiny; leaves elliptic–rhomboid or obovate – oblong, main nerves 5 – 9 pairs; calyx hairy ... *B. hamiltoniana* 2

1b. Trees :

3a. Plants monoecious; flowers in spikes on leafless branches ... *B. retusa* 3

3b. Plants dioecious; flowers in leaf axils ... *B. squamosa* 4

1. **Bridelia scandens** (Roxb.) Willd. Sp. Pl. 4 : 979. 1805. *Clutia scandens* Roxb. Pl. Cor. t. 173. 1802. *Bridelia stipularis sensu* Hook. f. Fl.Brit. India 5: 270. 1887, non Blume (1825); Cooke, Fl. Pres. Bombay 3: 68. 1958 (Repr. ed.). *Patharpoda*

Scandent shrubs; leaves puberulous beneath, 3.0–12.5 x 1.5–6.5 cm; flowers minute,yellowish in axillary clusters, often with stipular, hairy, lanceolate bracts; fruits green to purple, black at maturity.

Fls. & Frts. : September –March.

In moist deciduous forests, frequent. Alibag; Karnala bird Sanctuary; Mahad; Matheran; Mhasla; Nagothana; Roha.

2. **Bridelia hamiltoniana** Wall. ex Muell.–Arg. in Linnaea 34: 77. 1805–1806; Hook. f. Fl. Brit. Inida 5: 271. 1887; Cooke, Fl.Pres. Bombay 3: 69. 1958 (Repr. ed.). *Chiknee.*

Deciduous, glabrous shrubs; leaves obtuse, entire or slightly crenulate, glabrous, 2.5–10.3 x 1.0–6.5 cm; flowers greenish–yellow in axillary, spicate, sessile clusters; drupes purple–black, globose.

Fls. & Frts. : August–January.

Frequent in hilly forests, occasionally near sea–coasts. Alibag; Ghosale, Roha; Neral to Matheran; Pali; Shrivardhan.

3. **Bridelia retusa** (L.) Spreng. Syst. Veg. 3: 48. 1826; Bedd. Fl. Sylv. t. 260. 1872; Hook. f. Fl. Brit. India 5: 268. 1887 *pro parte*; Cooke, Fl.Pres. Bombay 3: 68. 1958 (Repr. ed.). *Clutia retusa* L. Sp. Pl. 1042. 1753. *Asana.*

Moderate sized trees with grey–brown bark; leaves elliptic–oblong, glabrous, occasionally tomentose beneath, 7.4–19.0 x 3.0–10.5 cm; flowers yellowish; drupes ellipsoid, green to deep purple, smooth.

Fls. & Frts. : May–October.

In moist deciduous forests, frequent. Elephanta island; Karnala fort; Mangaon; Matheran; Pen to Khopoli; Vankad, Nagothana.

The ripe drupes are eaten by tribal people. The bark powdered and mixed with water given to cattle after over exhaustion.

4. **Bridelia squamosa** (Lam.) Gehram, in Engl. Bot. Jahrab. 41. Beibl. 95: 30. 1908. *Clutia squamosa* Lam. Encycl. 5(2): 54. 1790.

Moderate sized trees; leaves ovate or elliptic–oblong, glabrous, 5.8–13.5 x 2.3–4.8 cm; flowers in axillary clusters; drupes green with yellow tinge, glabrous.

Fls. & Frts. : May–September.

In deciduous forests, frequent. Matheran; Sudhagad, Pali.

7. CLEISTANTHUS Hook. f.

Cleistanthus malabaricus Muell.–Arg. in DC. Prodr. 15(2) : 508. 1866; Hook. f. Fl. Brit. India 5: 276. 1887; Cooke, Fl. Pres. Bombay 3: 70. 1958 (Repr. ed.).

Large shrubs or small trees: leaves elliptic–oblong or obovate–lanceolate, sparsely fulvous–hairy above, glaucous and thinly hairy beneath, 3-8.5 x 2.2 3.4 cm; flowers few in axillary clusters; capsules subglobose, sparsely fulvous hairy.

Fls. & Frts. : November–January.

In moist deciduous forests, infrequent. Likhot forests, Murud.

8. GLOCHIDION Forst.

Glochidion ellipticum Wight, Icon. t. 1906. 1852; Hook. f. Fl. Brit. India 5: 321. 1887.*G. hohenackeri* Bedd. Fl. Sylv. t. 193. 1873; Hook. f. Fl. Brit. India 5: 314. 1887; Cooke, Fl. Pres. Bombay 3: 75. 1958 (Repr. ed.).

Moderate sized trees; leaves elliptic–lanceolate, obtuse–emarginate, glabrous, 3.5–15.5 x 1.4–5.2 cm; flowers greenish–yellow in axillary fascicles; capsules 3–5–locular, green–black, glabrous; seeds red, 2 in each cell.

Fls. & Frts. : October – May.

In hilly forests, frequent. Alibag; Kajat; Matheran; Mhasla; Raigad; Varnadh ghat, Mahad.

9. BREYNIA J. R. & G. Forst. *nom. cons.*

Breynia retusa (Dennst.) Alst. in Ann. Roy. Bot. Gard. (Peradeniya) 11: 204. 1929 & in Trim. Hanb. Fl. Ceylon 6: 261. 1931 & Fl. Kandy 22. f. 107. 1938. *Phyllanthus retusus* Dennst. Schluess. Hort. Malab. 24. 1818. *P. patens* Roxb. Fl. Ind. 3: 667. 1832. *Breynia patens* (Roxb.) Rolfe in J. Bot. 11: 359. 1882; Hook. f. Fl. Brit. India 5: 329. 1887; Cooke, Fl. Pres. Bombay 3: 79. 1958 (Repr. ed.). *Melanthesa turbinata* Wight, Icon. t. 1897. 1852. *Kangli.*

Large shrubs or small trees; leaves pinnate; leaflets broadly elliptic, glabrous, glaucous beneath, 1.1–3.0 x 0.8–1.7 cm; flowers greenish–yellow, axillary, drooping, fascicled (male) or solitary (female); drupes globular, green, turning orange–red at maturity.

Fls. & Frts. : March–September.

In hilly forests, frequent. Matheran; Mhasla; Poladpur; Raigad.

10. PHYLLANTHUS L.

1a. Anthers erect; slits vertical :

2a. Trees; fruits large, fleshy with 3 bony, 2–valved cocci, not echinate ... *P. emblica* 1

2b. Herbs; fruits comparatively small, capsular, echinate, not fleshy ... *P. urinaria* 2

1b. Anthers didymous or reniform; slits usually transeverse;

3a. Stipules peltate ... *P. virgatus* 3

3b. Stipules simple, not peltate ... *P. fraternus* 4

1. **Phyllanthus emblica** L. Sp. Pl. 982. 1753; Hook. f. Fl. Brit. India 5: 289. 1887; Cooke, Fl. Pres. Bombay 3: 81. 1958 (Repr. ed.). *Emblica officinalis* Gaertn. Fruct. 2: 122. 1791; Wight, Icon. t. 1896. 1852. *Aula.*

Trees; leaves 2–pinnate; leaflets linear–oblong, glabrous, 0.5–1.8 x 0.2–0.3 cm; flowers greenish–yellow, minute, numerous; fruits globose, greenish–yellow, smooth.

Fls. & Frts. : March–October.

In deciduous forests, frequent. Karnala fort; Mahad; Matheran; Pen.

Fruits are rich in natural source of vitamin 'C'. They are also used for preparing writing inks and hair dyes. Seeds are used in treatment of

asthma, bronchitis etc. Wood is used for making agricultural implements.

2. **Phyllanthus urinaria** L. Sp. Pl. 982. 1753; Hook. f. Fl. Brit. India 5: 293. 1887; Cooke, Fl. Pres. Bombay 3: 83. 1958 (Repr. ed.). *P. leprocarpus* Wight, Icon. t. 1895. f. 4. 1852.

Branched herbs, 20–40 cm; leaves elliptic–oblong or obovate, 0.5–1.8 x 0.2–0.6 cm; flowers minute, axillary, solitary, creamy–white or yellowish; capsules yellowish–brown; seeds blackish, trigonous.

Fls. & Frts. : August–September.

In hilly forests, frequent. Matheran; Pen to Khopoli.

3. **Phyllanthus virgatus** G. Forst. Fl. Ins. Austr. Prodr. 65. 1786; Rau in Bull. Bot. Surv. India 10 (Suppl.2): 72. 1969. *P. simplex* Retz. Obs. 29. 1789; Hook. f. Fl. Brit. India 5: 295. 1887; Cooke, Fl. Pres. Bombay 3: 83. 1958 (Repr. ed.). *Macraea oblongifolia* Wight, Icon. t. 1902. f. 1. 1852.

Erect or diffuse, simple or branched herbs, 30–60 cm; leaves linear–oblong, glabrous, 0.6–3.0 x 0.3–0.8 cm; flowers greenish–white, axillary, solitary; capsules globose, minutely verrucose.

Fls. & Frts. : June–October.

In moist deciduous forests, frequent. Mahad; Matheran.

4. **Phyllanthus fraternus** Webster, Contr. Gray Herb. 176: 53. 1955 & in J. Arnold Arb. 38: 309. 1957. *P. niruri auct. non.* L.(1753); Hook. f. Fl. Brit. India 5: 295. 1887; Cooke, Fl. Pres. Bombay 3: 84. 1958 (Repr. ed.). *Bhuivali.*

Erect herbs, 20–40 cm; leaves elliptic–oblong or obovate, obtuse, distichous, 0.3–1.5 x 0.2–0.6 cm; flowers whitish, axillary; capsules globose, glabrous.

Fls. & Frts. : August–October.

As a weed in cultivated fields and moist places, frequent. Alibag; Neral; Pali; Roha.

11. ANTIDESMA L.

Antidesma acidum Retz. Obs. Bot. 5: 30. 1788; Fischer in Kew Bull. 1932: 65. 1932. *A. diandrum* Roth, Nov. Pl. Sp. 369. 1821; Hook. f. Fl. Brit. India 5: 361. 1887; Cooke, Fl. Pres. Bombay 3: 90. 1958 (Repr. ed.). *Stilago diandra* Roxb. Pl. Cor. t. 166. 1802.

Large shrubs or small trees, 90–150 cm; leaves elliptic–lanceolate, obovate or obovate–lanceolate, sparsely hairy beneath, 3–13 x 1.5–4.3 cm; flowers androgynous, yellowish–green in 3.5–7.0 cm long racemes; fruits purple–red.

Fls. & Frts. : July–September.

In moist deciduous forests, frequent. Hatvane, Pen; Mandatna to Pangloli reserve forests, Mhasla.

Fruits and leaves are said to be edible.

12. APOROSA Blume

Aporosa lindleyana (Wight) Baill. Etud. Gen. Euphorb. 645. 1858; Hook. f. Fl. Brit. India 5: 349. 1887; Cooke, Fl. Pres. Bombay 3: 91. 1958 (Repr. ed.). *Scepa lindleyana* Wight, Icon. t. 361. 1840. *Sali, Ukveti.*

Trees, 1.2–1.5 m; leaves elliptic–oblong, acuminate, glabrous, 8–14 x 3.8–4.5 cm; male flowers sessile in dense spikes; females in short, hairy, clustered racemes; fruits globose, green at first, turning yellow on ripening; seeds solitary, ovoid.

Fls. & Frts. : September–October.

In semievergreen forests, infrequent. Phansad forests, Murud.

13. CROTON L.

Croton zeylanicus Muell.–Arg. in Linnaea 34: 107. 1865. *C reticulatus* Heyne ex Muell.–Arg. in DC. Prodr. 15(2) : 580. 1866; Hook. f. Fl. Brit. India 5: 386. 1887; Cooke, Fl. Pres Bombay 3: 96. 1958 (Repr. ed.). *Pandri.*

Large shrubs or small trees, 90–120 cm; leaves elliptic–lanceolate, acute or acuminate, silvery scales beneath, base with a pair of stipitate glands; flowers clothed with silvery scales in terminal racemes; capsules ovoid–oblong, 3–lobed.

Fls. & Frts. : October–January.

In hilly forests, infrequent. Matheran.

14. DIMORPHOCALYX Thw.

Dimorphocalyx lawianus Hook. f. Fl. Brit. India 5: 404. 1887; Cooke, Fl. Pres. Bombay 3: 101. 1958 (Repr. ed.).

Trees, 1.2–1.5 m; leaves ovate–oblong or elliptic–oblong, wavy, acute–emarginate, 3–12 x 2.2–4.3 cm; flowers white–yellowish; capsules globose, hairy, 3–lobed; seeds ellipsoid, yellowish, mottled with brown.

Fls. & Frts. : May–February.

In hilly forests, infrequent. Matheran.

15. CHROZOPHORA Neck.

1a. Prostrate plants, diffusely branched from the base	...	*C. prostrata* 1
1b. Erect plants, lower part of stem not branched	...	*C. rottleri* 2

1. **Chrozophora prostrata** Dalz. in Dalz. & Gibs. Bombay Fl. 233. 1861; Hook. f. Fl. Brit. Inida 5: 410. 1887; Cooke, Fl. Pres. Bombay 3: 105. 1958 (Repr. ed.).

Procumbent, stellately woolly herbs; leaves broadly ovate, elliptic–oblong or suborbicular, deeply bullate, stellate–pubescent above, woolly beneath, 0.8–2.5 x 0.5–2.0 cm; flowers pale yellow in terminal and axillary, few flowered racemes; capsules densely stellate–woolly; seeds brownish–black.

Fls. & Frts. : May–June.

In deciduous forests, infrequent. Indapur, Mangaon.

Leaves used as fodder for cattle.

2. **Chrozophora rottleri** (Geisel.) A. Juss. ex Spreng. Syst. Veg. 3: 850. 1826. *Croton rottleri* Geisel. Crot. Monogr. 54. 1807. *Chrozophora plicata* Voigt, Hort. Sub. Calc. 156. 1846; Hook. f. Fl. Brit. India 5 : 409. 1887; Cooke, Fl. Pres. Bombay 3: 104. 1958 (Repr. ed.),*non* A. Juss. (1824). *Suryavarti.*

Suffruticose, hoary–tomentose herbs, 30–60 cm; leaves ovate–suborbicular, sinuate–crenate, cordate–cuneate, scabrid, 2.2–5.1 x 1.4–3.3 cm; flowers yellow in axillary and terminal spikes; capsules ovoid or spherical, greenish–red, densely hairy.

Fls. & Frts. : February–May.

As a weed along road–sides and railway lines. Karjat; Neral.

It yields a dye. Root ashes used in cough and seeds as purgative.

16. BALIOSPERMUM Blume

Baliospermum montanum (Willd.) Muell.–Arg. in DC. Prodr. 15 (2): 1125. 1866. *Jatropha montana* Willd. Sp. Pl. 4: 563. 1805. *Baliospermum axillare* Blume, Bijdr. 604. 1826; Hook. f. Fl. Brit. India 5: 461. 1887; Cooke, Fl. Pres. Bombay 3: 106. 1958 (Repr. ed.). *B polyandrum* Wight, Icon. t. 1885. 1852. *Jamalgota.*

Suffruticose herbs or undershrubs, 90–120 cm; leaves broadly ovate or ovate–lanceolate, entire or 3–5–lobed, 3–21 x 1.0–15.2 cm; flowers greenish–yellow in axillary, 1–7 cm long racemes; capsules green, obovoid, hairy, 3–lobed; seeds ellipsoid, creamy–white, sparsely mottled with black.

Fls. & Frts. : September–March.

Frequent in hilly forests, occasionally near sea–coasts. Bhira; Karnala birds sanctuary; Roha; Uran.

The roots are used in jaundice. Seeds are said to be strong, effective purgative and seed oil is useful in rheumatic pains.

17. ACALYPHA L.

1a. Bracts bordered with gland–tipped hairs; capsules glabrous, not concealed by bracts ... *A. malabarica* 1

1b. Bracts not produced with gland–tipped hairs; capsules hispid, concealed by bracts ... *A. indica* 2

1. **Acalypha malabarica** Muell.–Arg. in Linnaea 34: 42. 1865; Hook. f. Fl. Brit. India 5: 416. 1887; Cooke, Fl. Pres. Bombay 3: 109. 1958 (Repr. ed.).

Suffruticose herbs, 15–30 cm; leaves ovate or elliptic–lanceolate, subserrate, 1.2–4.7 x 0.8–2.5 cm; flowers androgynous, minute, yellowish in axillary and terminal spikes; capsules glabrous; seeds globose, pale brown, smooth.

Fls. & Frts. : August – October.

Frequent as forest undergrowth, occasionally along the coast. Kolaba fort, Alibag; Pen; Roha.

2. **Acalypha indica** L. Sp. Pl. 1003. 1753; Wight, Icon. t. 877. 1844–1845; Hook. f. Fl.Brit. India 5: 416. 1887; Cooke, Fl. Pres. Bombay 3: 108. 1958 (Repr. ed.). *Kupi.*

Erect herbs with angular, pubescent branches; leaves ovate–

obovate or ovate–rhomboid, crenate–serrate, glabrous, 1.8–5.2 x 1.2–3.5 cm; flowers androgynous, greenish– yellow in lax, axillary spikes; capsules greyish; seeds solitary, ovoid, brownish.

Fls. & Frts. : September–March.

Among grasses as forest undergrowth and along road–sides, frequent. Janjira fort, Murud; on way to Murud from Ghosale.

18. TREWIA L.

Trewia nudiflora L. Sp. Pl. 1193. 1753; Wight, Icon. t. 1870. 1852; Hook. f. Fl. Brit. India 5: 423. 1887; Cooke, Fl. Pres. Bombay 3: 111. 1958 (Repr. ed.).; Airy Shaw in Kew Bull. 26 (2): 343. 1972. *Petari.*

Trees with grey–white bark; leaves broadly ovate, acuminate, cordate, woolly–tomentose when young, glabrous at length, 9.0–23.2 x 6.5–12.0 cm; flowers in pendulous racemes (males) or in axillary, 1–3 fascicled (females); fruits ellipsoid, green, tomentose.

Fls. & Frts. : September–April.

In moist deciduous forests, frequent. Matheran; Roha; Sarasgad, Pali.

19. MALLOTUS LOUR.

1a. Trees; capsules covered with a red resinous powder ... *M. philippensis* 1

1b. Erect or climbing shrubs; capsules not covered with red resinous powder:

2a. Erect shrubs; leaves opposite; capsules 3–coccous, echinate ... *M. stenanthus* 2

2b. Climbing shrubs; leaves alternate; capsules 2–coccous, stellately fulvous–tomentose ... *M. repandus* 3

1. **Mallotus philippensis** (Lam.) Muell.–Arg. in Linnaea 34: 196. 1865; Bedd. Fl. Sylv. t. 289. 1873; Hook. f. Fl. Brit. India 5: 442. 1887 '*philippinensis*' , Cooke, Fl. Pres. Bombay 3: 113. 1958 (Repr. ed.). *Croton philippense* Lam. Encycl. 2: 206. 1786. *Shendri.*

Dioecious trees with grey bark, young shoots fulvous–tomentose; leaves ovate–oblong, subcoriaceous, acuminate, pubescent, 7.0–15.3 x 3–8 cm; flowers brownish in axillary spikes; capsules 3–lobed; seeds subglobose, black.

Fls. & Frts. : February–March.

In hilly forests, frequent. Matheran.

The red powdery cover on the capsules yield a valuable dye for colouring silk and woollen fabrics. Seeds oil is used in paints, varnish, ointments etc.

2. **Mallotus stenanthus** Muell.-Arg. in Linnaea 34: 191. 1865; Hook. f. Fl. Brit. India 5: 437. 1887; Cooke, Fl. Pres. Bombay 3: 114. 1958 (Repr. ed.).

Large shrubs, 90–120 cm; leaves ovate–lanceolate or obovate, 4.6–13.0 x 2.0–4.5 cm; flowers greenish–yellow in axillary racemes; fruits tridymous, covered with yellow resinous glands and conical spines.

Fls. & Frts. : September–May.

In hilly forests, frequent. Matheran.

3. **Mallotus repandus** (Willd.) Muell.-Arg. in Linnaea 34: 197. 1865; Hook. f. Fl. Brit. India 5: 442. 1887; Cooke, Fl. Pres. Bombay 3: 115. 1958 (Repr. ed.). *Croton repandus* Willd. in Ges. Naturf. Freun. Berlin Neue Schrift. 4: 206. 1803.

Large climbing or straggling shrubs, fulvous–tomentose on young shoots; leaves broadly deltoid–ovate or rhomboid–ovate, acuminate, sinuate toothed with blackish scattered glands beneath, 3.0–9.5 x 2.2–7.6 cm; flowers in simple or branched racemes; capsules didymous.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Dahen forests, Mhasla.

20. Homonoia Lour.

Homonoia riparia Lour. Fl. Cochinch. 2: 637. 1790; Hook. f. Fl. Brit. India 5: 455. 1887; Cooke, Fl. Pres. Bombay 3: 118. 1958 (Repr. ed.). *Adelia neriifolia* Heyne ex Roth, Nov. Pl. Sp. 375. 1821; Wight, Icon. t. 1868. 1852. *Serni.*

Shrubs with reddish–brown bark; leaves linear–oblong or linear–lanceolate with minute, orbicular scales beneath, 8–16 x 1.5–2.7 cm; flowers reddish in axillary spikes; capsules globose, tomentose.

Fls. & Frts. : February–May.

Along the river banks, frequent. Alibag; Karjat; Mahad.

21. SAPIUM R. Br.

Sapium insigne (Royle) Benth. in Benth. & Hook. f. Gen. Pl. 3: 335. 1880;Hook. f. Fl. Brit. India 5: 471. 1888; Cooke, Fl. Pres. Bombay 3: 121. 1958 (Repr.ed.). *Falconeria insignis* Royle, Ill. Bot. Him. 354. t. 98. f. 2. 1839. *Ura.*

Trees with milky latex, 1.2–1.5 m; leaves elliptic–lanceolate or oblong–lanceolate, acuminate, glabrous, crowded at tips of branches, 10–17 x 5.0–5.4 cm; flowers in erect spikes; capsules globose, dark green with brownish tinge.

Fls. & Frts. : December–March.

In deciduous forests, infrequent. Bhise khind, Roha; Kashid forests, Murud.

22. EXCOECARIA L.

Excoecaria agallocha L. Syst. (ed. 10) 1288. 1759; Wight, Icon. t. 1865. B. 1852; Hook. f. Fl. Brit. India 5: 472. 1888; Cooke, Fl. Pres. Bombay 3: 122. 1958 (Repr. ed.). *Geva, Phungali, Surund.*

Trees, 1.2–1.5 m; leaves alternate, coriaceous, elliptic, acuminate, glabrous, 3.3–5.8 x 1.0–2.6 cm; flowers minute, greenish–yellow; males sessile in drooping spikes; females in pedicellate racemes; capsule 3–lobed; seeds ellipsoid, grey–brown.

Fls. & Frts. : July–August.

Along the sea–coast, frequent. Dasgaon creek, Mahad.

Wood yields a good charcoal and alcohol. Its latex is used to clean ulcers, in skin affections and as an arrow poison.

Cultivated and introduced :

Euphorbia tirucalli L. Sp. Pl. 452. 1753; Hook. f. Fl. Brit. India 5: 254. 1887; Cooke, Fl. Pres. Bombay 3: 66. 1958 (Repr. ed.).

Succulent, dichotomously branched shrubs with milky latex; leaves minute, deciduous.

A native of Africa often found planted as hedge plant along cultivated fields of Revas and Shrivardhan.

The white latex is said to be used as fish poison.

124. URTICACEAE

1a. Plants with stinging hairs:

2a. Slender annuals; flowers in small clustered cymes ... LAPORTEA 1

2b. Robust perennials; flowers in peduncled, racemose cymes ... GIRARDINIA 2

1b. Plants without stinging hairs:

3a. Herbs:

4a. Female perianth 3–5–partite; receptacle fleshy ... LECANTHUS 3

4b. Female perianth tubular; receptacle not fleshy ... POUZOLZIA 4

3b. Shrubs or undershrubs ... BOEHMERIA 5

1. LAPORTEA Gaud. *nom. cons.*

Laportea interrupta (L.) Chew in Gard. Bull. Singapore 19: 200. 1965; Raizada in Indian Forester 94 (6): 445. 1968. *Urtica interrupta* L. Sp. Pl. 985. 1753. *Fleurya interrupta* (L.) Gaud. in Uranie Voy. Bot. 12: 497. t. 8.1830; Wight, Icon. t. 1975. 1853; Hook. f. Fl. Brit. India 5: 548. 1888; Cooke, Fl. Pres. Bombay 3: 131. 1958 (Repr. ed.).

Erect, densely hairy herbs, 60–90 cm; leaves ovate, coarsely crenate–serrate, acuminate, hairy, 4.2–6.0 x 2.5–3.0 cm; flowers greenish–yellow; achenes obovoid, compressed.

Fls. & Frts. : September–October.

In deciduous forests, frequent. Bhira; Roha; Hatvane, Pen; Karnala birds sanctuary; Matheran.

2. GIRARDINIA Gaud.

Girardinia diversifolia (Link) Friis in Kew Bull. 36: 145. f. 3. 1981. *Utrica diversifolia* Link, Enum. Pl. Hort. Berol 2: 385. 1822. *Girardinia heterophylla* Decne. var. *zeylanica* (Decne.) Hook. f. Fl. Brit. India 5: 551. 1888. *G. zeylanica* Decne. in Jacq. Voy. 152. 1844; Cooke, Fl. Pres. Bombay 3: 132. 1958 (Repr. ed.). *Kolith, Motha Khajoti.*

Suffruticose herbs, 90–120 cm; leaves variously lobed, coarsely serrate, pubescent; flowers white; males in lower and females in upper axils; achenes obliquely ovate.

Fls. & Frts. : September – March.

In hilly forests, frequent. Mahan, Alibag; Matheran; on way to Raigad.

3. LECANTHUS Wedd.

Lecanthus peduncularis (Wall.ex Royle) Wedd. in DC. Prodr. 16(1): 164.1869. *Procris peduncularis* Wall. ex Royle, Ill. Bot. Him. t. 83. f. 2. 1836. *P. obtusa* Royle, *op. cit.* f. 3. *Lecanthus wightii* Wedd. in Ann. Sci. Nat. Ser. 4, 1: 187. 1854, *nom. illegit.*; Hook. f. Fl. Brit. India 5: 559. 1888; Cooke, Fl. Pres. Bombay 3: 133. 1958 (Repr. ed.). *Elatostema ovatum* Wight, Icon. t. 1985. 1853. (' *ovata*').

Herbs, 2.5–10 cm; leaves ovate–lanceolate, sparsely hairy above, glabrous beneath, 1.2–4.0 x 0.5–1.5 cm; flowers unisexual, 3–merous; achenes oblong, red.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

4. POUZOLZIA Gaud.

Pouzolzia zeylanica (L.) Bennett, Pl. Jav. Rar. 1: 67. 1838. *Parietaria zeylanica* L. Sp. Pl. 1052. 1753. *Pouzolzia indica* (L.) Gaud. in UranieVoy. Bot. 12: 503. 1830; Wight, Icon. t. 1980. f. 1. & 2100. f. 40. 1853; Hook. f. Fl. Brit. India 5: 581. 1888; Cooke, Fl. Pres. Bombay 3: 137. 1958 (Repr. ed.).

Slender, glabrous or hoary–pubescent herbs, 10–40 cm; leaves ovate–lanceolate, acute–acuminate, entire, hairy, 1.0–5.6 x 0.4–2.5 cm; flowers greenish–white in small, axillary, androgynous clusters; achenes ovoid, acute, shining.

Fls. & Frts. : September–October.

As a weed along road–sides and as forest undergrowth, frequent. Karnala bird sanctuary; Matheran; Raigad.

5. BOEHMERIA Jacq.

Boehmeria macrophylla Hornem. Hort. Bot. Hafn. 2: 890. 1815; Friis & Marais in Kew Bull. 37: 164. 1982. *B. platyphylla* D.Don, Prodr. Fl. Nepal. 60. 1825; Hook. f. Fl. Brit. India 5: 578. 1888. *B. scabrella* Gaud. in Uranie Voy. Bot. 12: 500. 1830 *nom. nud.*; Cooke, Fl. Pres. Bombay 3: 135. 1958 (Repr. ed).

Shrubs, 90-120 cm; branches strigosely hairy; leaves broadly ovate, acuminate, sharply serrate, glabrous or pubescent, wrinkled, with 3 main nerves from base, 3–16 x 1.8–9.7 cm; flowers in pisiform clusters on 4–22 cm long spikes; achenes shining, compressed.

Fls. & Frts. : April–October.

In hilly forests, frequent. Kalasgiri hill, Roha; Matheran; Mhasla; Mirya dongar, Pen.

Cultivated or introduced :

Pilea microphylla (L.) Liebm. in Vidensk. Solsk. Skr. Ser. 5, 2: 296. 1851; Hook. f. Fl. Brit. India 5: 551. 1888; Cooke, Fl. Pres. Bombay 3: 160. 1958 (Repr. ed.). *Parietaria microphylla* L. Syst. (ed. 10) 1308. 1759.

Prostrate, tiny herbs; leaves elliptic–suborbicular or obovate–spathulate, glabrous, 2–8 x 1–5 mm; flowers greenish–white or yellowish, minute in axillary clusters.

Grown in gardens, occasionally as an escape. Jijamata Samadhi, Pachhad; opposite forest hut, Murud.

125. ULMACEAE

1a. Fruits dry, winged; leaves deciduous ... HOLOPTELEA 1

1b. Fruit a drupe; leaves persistent :

2a. Perianth lobes in males imbricate; fruits 3–5–angled ... CELTIS 2

2b. Perianth lobes in males induplicate–valvate; fruits 2–angled ... TREMA 3

1. HOLOPTELEA Planch.

Holoptelea integrifolia (Roxb.) Planch. in Ann. Sci. Nat. Bot. Ser. 3, 10: 259. 1848; Wight, Icon. t. 1968, 1853; Hook. f. Fl. Brit. India 5: 481. 1888; Cooke, Fl. Pres. Bombay 3: 127. 1958 (Repr.ed). *Ulmus integrifolia* Roxb. Pl. Cor. 1: 56. t. 78. 1798 & in Willd. Sp. Pl. 2: 1326. 1798. *Vavli.*

Trees, 1.2-1.5 m, bark greyish–white; leaves elliptic–oblong, coriaceous, dark green on both sides, 6.5–12.0 x 5.4–7.2 cm; flowers minute, greenish–yellow; fruits flat, oblong–orbicular, notched at apex.

Fls. & Frts. : February–March.

In deciduous forests, frequent. Kolad; Tharbat forest and on way to Murud, Roha.

2. CELTIS L.

1a. Leaves with strong primary nerves above the basal ribs, nearly entire, equal sided ... *C. tetrandra* 1

1b. Leaves without strong primary nerves, crenate or serrate, unequal sided ... *C. timorensis* 2

1. **Celtis tetrandra** Roxb. Fl. Ind. (ed. 2) 2: 63. 1832; Hook. f. Fl. Brit. India 5: 482. 1888. *C. serratina* Planch. in Ann. Sci. Nat. Bot. Ser. 3, 10: 301. 1848; Wight, Icon. t. 1570. 1850.

Medium sized trees with grey bark; leaves ovate–lanceolate, acuminate; flowers in paniculate cymes; drupes subglobose or ovoid, solitary or binate.

Fls. & Frts. : February–March.

In hilly forests, infrequent. Matheran.

2. **Celtis timorensis** Span. in Linnaea 15: 343. 1841; M.C. Tebbs in Hara, En. Fl. Pl. Nepal 3: 207. 1982. *C. cinnamomea* Lindl. ex Planch. in Ann. Sci. Nat. Ser. 3, 10: 303. 1848; Hook. f. Fl. Brit. India 5: 482. 1888; Cooke, Fl. Pres. Bombay 3: 128. 1958 (Repr. ed.). *C. trinervia* Bedd. Fl. Sylv. t. 312. 1873, *non* Roxb. (1824). *Bhumaj.*

Trees, 6–9 m; leaves obliquely ovate, acuminate, glabrous, 7.0–10.2 x 2.3–3.3 cm; flowers in paniculate cymes; drupes pisiform, obliquely beaked.

Fls. & Frts. : February–March.

In hilly forests, occasional. Charlotte lake to Heart Point, Matheran, *Irani* 4023, 4880–81 (**BLAT**).

The wood of this species is said to be used for building purposes.

3. Trema Lour.

Trema orientalis (L.) Blume in Mus. B. Lugd.–Bat. 2: 62. 1856; Hook. f. Fl. Brit. India 5: 484. 1888; Cooke, Fl. Pres. Bombay 3: 129. 1958 (Repr. ed.). *Celtis orientalis* L. Sp. Pl. 1044. 1753; Wight, Icon. tt. 602 & 603. 1842.

Trees,5-8 m; bark ash–coloured, lenticellate, rough; leaves ovate–lanceolate, sharply serrate, acuminate, silky–tomentose beneath, 2.5–12.8 x 1.7–5.2 cm; flowers creamy–white or yellowish, axillary; drupes ovoid–globose, purple–black, glabrous.

Fls. & Frts. : September–November.

In moist forests, frequent. Matheran; Pen to Khopoli; Varandh ghat; Mahad.

126. MORACEAE

1a. Anthers in bud reversed ... STREBLUS 1

1b. Anthers in bud erect :

2a. Flowers on the inner walls of closed receptacles ... FICUS 2

2b. Flowers all exposed ... ARTOCARPUS 3

1. STREBLUS Lour.

Streblus asper Lour. Fl. Cochinch. 615. 1790; Hook. f. Fl. Brit. India 5: 489. 1888; Cooke, Fl. Pres. Bombay 3: 141. 1958 (Repr.ed.). *Epicarpus orientalis* Blume, Bijdr. 488. 1825; Wight, Icon. t. 1961.1853. *Kharoti.*

Trees with crooked trunk and greyish bark; leaves elliptic–obovate, coriaceous, shortly acuminate, irregularly toothed, scaberulous, 2.2–7.0 x 1.3–2.7 cm; flowers white, axillary; males in pedunculate heads, females solitary; drupes ellipsoid or pisiform, yellowish, enclosed by enlarged perianth.

Fls. & Frts. : March–May.

In hilly forests, frequent. Karle–khind, Alibag; Karnala bird sanctuary; Matheran.

The wood is used as firewood and bark for paper–making. The leaves used as sand–paper for polishing wood, Ivory and horns. The fruits are edible.

2. FICUS L.

1a. Plants unisexual or asexual; male flowers without any rudimentary pistil; male, gall and female flowers in the same receptacle :

2a. Leaves coriaceous or subcoriaceous; petioles short or moderately long, stout:

3a. Receptacles sessile with 3 basal bracts :

4a. Leaves more or less tomentose; basal bracts not blunt :

5a. leaves obtuse; receptacles puberulous, globose, *ca* 2 cm across ... *F. benghalensis* 1

5b. Leaves shortly acuminate; receptacles almost glabrous, oblong or obovate, upto 2.5 cm across ... *F. drupacea var. pubescens* 2

4b. Leaves glabrous; basal bracts blunt ... *F. microcarpa* 3

3b. Receptacles on distinct peduncles, without basal bracts but 3 small bracts low down on the peduncle ... *F. nervosa* 4

2b. Leaves subcoriaceous or membranous; petioles usually long and slender:

6a. Apices of leaves more or less caudate–acuminate :

7a. Bases of leaves slightly narrowed to the petiole, leaf apex long, acuminate; apical tail 1/5 as long as the blade ... *F. rumphii* 5

7b. Bases of leaves usually cordate; leaf apex shortly caudate–acuminate, apical tail upto 2.5 cm long ... *F. arnottiana* 6

6b. Apices of leaves not caudate–acuminate :

8a. Receptacles sessile :

9a. Primary nerves of leaves indistinct; male perianth of 3 sepals ... *F. amplissima* 7

9b. Primary nerves of leaves distinct; male perianth of 4 or 5 sepals ... *F. citrena* 8

8b. Receptacles on peduncles ... *F. callosa* 9

1b. Plants unisexual; male and gall flowers in one set of receptacles; female flowers in another (in *F. racemosa*) all three kinds of flowers on the same receptacle :

10a. Male flowers with 2 stamens; leaves smooth ... *F. racemosa* 10

10b. Male flowers with 1 stamen; leaves scabrid :

11a. Leaves alternate; receptacles axillary, solitary; basal bracts minute or 0 :

12a. Creeping shrubs; bracts minute, basal or high upto peduncle ... *F. heterophylla* 11

12b. Erect shrubs or small trees; basal bracts absent ... *F. exasperata* 12

11b. Leaves opposite; receptacles axillary or on branches from stem near roots; basal bracts 3 ... *F. hispida* 13

1. **Ficus benghalensis** L. Sp. Pl. 1059. 1753; King in Ann. Roy. Bot. Gard. (Calcutta) 1: 18. tt. 13 & 81 C. 1887 & in Hook. f. Fl. Brit. India 5: 499. 1888; Cooke, Fl. Pres. Bombay 3: 145. 1958 (Repr. ed.); Corner in Gard. Bull. Singapore 21: 14. 1965. *Urostigma benghalense* (L.) Gasp. Nov. Gen. Fici.7.1844; Wight, Icon. t. 1989. 1853.

Trees, 10–20 cm; leaves broadly ovate, ovate–oblong, coriaceous, glabrous, 6.8–23.5 x 4.7–15.2 cm; receptacles orange–red.

Fls. & Frts. : April–June.

In the outskirts of forests, frequent. Chaul, Alibag.

2. **Ficus drupacea** Thunb. var. **pubescens** (Roth) Corner in Gard. Bull. Singapore 17: 381. 1960. *F. mysorensis* Heyne ex Roth var. *pubescens* Roth, in Roem. & Schult. Syst. 1: 508. 1817. *F. mysorensis* Heyne ex Roth Nov. Pl. Sp. 390. 1821; King in Ann. Roy. Bot. Gard. (Calcutta) 1: 19. tt. 14 & 81 D. 1887 & in Hook. f. Fl. Brit. India 5: 500. 1888; Cooke, Fl. Pres. Bombay 3: 145. 1958 (Repr. ed.).

Large trees, densely rufous–tomentose on younger parts; leaves elliptic–oblong, tomentose beneath, 8.0–13.2 x 4–7 cm; receptacles orange–yellow.

Fls. & Frts. : March–May.

In hilly forests, infrequent. Dahen forests, Mhasla.

3. **Ficus microcarpa** L. f. Suppl. 442. 1781; Corner in Gard. Bull. Singapore 21: 22. 1965. *F. retusa auct. non* L. 1767; King in Ann. Roy. Bot. Gard. (Calcutta) 1: 50. tt. 61 & 84. P. 1887 & in Hook. f. Fl. Brit. India 5: 511. 1888; Cooke, Fl. Pres. Bombay 3: 146. 1958 (Repr. ed.). *Nandruk.*

Medium sized trees with grey bark; leaves elliptic–ovate or obovate,acuminate, 6.5–8.6 x 3.2–4.8 cm; receptacles depressed–globose, yellowish, smooth, *ca.* 1 cm across.

Fls. & Frts. : February–May.

In plains and hilly forests, frequent. Alibag; Mangaon; Matheran.

4. **Ficus nervosa** Heyne ex Roth in Roem. & Schult. Syst. 1: 513. 1817; King in Ann. Roy. Bot. Gard. (Calcutta) 1: 53. t. 65. 1887 & in Hook. f. Fl. Brit. India 5: 512. 1888; Cooke, Fl. Pres. Bombay 3: 147. 1958 (Repr. ed.); Corner in Gard. Bull. Singapore 21: 31. 1965. *F. angustifolia* Roxb. Fl. Ind. 3: 554. 1832; Wight, Icon. t. 660. 1840.

Large trees with dark brown, smooth bark; leaves oblong–lanceolate, acuminate, 4–9 x 2.0–5.2 cm; receptacles yellowish, axillary, 1.0–2.2 cm across.

Fls. & Frts. : February–March.

In deciduous forests, infrequent. Indapur, Mangaon.

5. **Ficus rumphii** Blume, Bijdr. 437. 1825; King in Hook. f. Fl. Brit. India 5: 512. 1888; Cooke, Fl. Pres. Bombay 3: 148. 1958 (Repr. ed.); Corner in Gard. Bull. Singapore 21: 11. 1965. *Ashta, Poir.*

Trees; leaves ovate–oblong, glabrous, 6.5–12.7 x 4.2–7.0 cm;

receptacles sessile, axillary or from old scars, white with dark spots, not depressed at apex.

Fls. & Frts. : March–June.

In hilly forests, frequent. Matheran; Mhasla.

6. **Ficus arnottiana** (Miq.) Miq. in Ann. Mus. Bot. Ludg.–Bot. 3: 287. 1867; King in Ann. Roy. Bot. Gard. (Calcutta) 1: 56. tt. 68 & 84–V. 1887 & in Hook. f. Fl. Brit. India 5: 513. 1888; Cooke, Fl. Pres. Bombay 3: 149. 1958 (Repr. ed.); Corner in Gard. Bull. Singapore 21: 11. 1965. *Urostigma arnottianum* Miq. in Hook. J. Bot. 6: 564. 1847.

Trees or shrubs, 8-12; bark greyish–white; leaves ovate–cordate, subcoriaceous, margins subundulate, 6.0–30.2 x 4.0–19.5 cm; receptacles from axils of fallen leaves, depressed–globose, smooth with greyish dots.

Fls. & Frts. : August–October.

In hilly forests, frequent. Karnala fort; Neral to Matheran; Vankad to Nagothana.

7. **Ficus amplissima** J.E.Sm. in Rees, Cyclop. 14. No. 1. 1810; Corner in Gard. Bull. Singapore 21: 11. 1965. *F. tsiela* Roxb. Fl. Ind. 3: 549. 1832; Wight, Icon. t. 668. 1840; King in Hook. f. Fl. Brit. India 5: 515. 1888; Cooke, Fl. Pres. Bombay 3: 150. 1958 (Repr. ed.). *Pipri.*

Large, branched, glabrous trees upto 15 m; leaves ovate, elliptic–lanceolate, glabrous, 7.0–14.2 x 4.3–6.0 cm; receptacles axillary or from leaf–scars, purple, orbicular, crowded towards branch tips.

Fls. & Frts. : April–October.

In plains and hilly forests, infrequent. Matheran; Revas, Alibag.

8. **Ficus virens** Ait. Hort. Kew 3: 451. 1789; Corner in Gard. Bull. Singapore 18: 376. 1960. *F. infectoria sensu* Roxb. Fl. Ind. 3: 551. 1832, *non* Willd. (1806); Wight, Icon. t. 665. 1840; King in Hook. f. Fl. Brit. India 5: 515. 1888; Cooke, Fl. Pres. Bombay 3: 151. 1958 (Repr. ed.). *Payri.*

Trees, 10-14 m; bark greyish; leaves elliptic–oblong or ovate–oblong, coriaceous, acuminate, glabrous, 8.5–13.0 x 5–8 cm; receptacles globose, shortly pedunculate, axillary or on old wood, upto 1 cm across.

Fls. & Frts. : February–September.

In deciduous forests, frequent. Elephanta island; Mhasla; Pen to Khopoli.

9. **Ficus callosa** Willd. in Mem. Acad. Berl. 102. 1798; King in Ann. Roy. Bot. Gard. (Calcutta) 1: 64. tt. 84. V2 85. 1887 & in Hook. f. Fl. Brit. India 5: 516. 1888; Cooke, Fl. Pres. Bombay 3: 152. 1958 (Repr. ed.); Corner in Gard. Bull. Singapore 21: 29. 1965; Kothari & Moorthy in J. Bombay nat. Hist. Soc. 80(1): 259. 1983. *Garud.* (Plate 4 d).

Large trees with canescent twigs, grey bark and butress roots; leaves elliptic–oblong or obovate, tomentose above, rough, scabrous beneath, 9.0–18.6 x 6.1–9.4 cm; receptacles green, subglobose, rough, puberulous, *ca* 2.4 cm across.

Fls. & Frts. : August–October.

In deciduous and semievergreen forests, rare. Mhasla; Roha.

Cooke, *op. cit.* although recorded this species for the Bombay Presidency, he has not mentioned any specific locality from Maharashtra state.

10. **Ficus racemosa** L. Sp. Pl. 1060. 1753; Corner in Gard. Bull. Singapore 21: 34. 1965. *F. glomerata* Roxb. Pl. Cor. t. 123. 1798; King in Hook. f. Fl. Brit. India 5: 535. 1888; Cooke, Fl. Pres. Bombay 3: 154. 1958 (Repr. ed.). *Umber.*

Trees, 4-15; bark rough, blackish–brown; leaves ovate–oblong, glabrous, 4.7–14.6 x 2.4–6.9 cm; receptacles pedunculate, reddish, subglobose, puberulous, 1.3–3.6 cm across.

Fls. & Frts. : October–May.

In deciduous and semievergreen forests, frequent. Alibag; Matheran; Vankad to Nagothana.

* 11. **Ficus heterophylla** L.f. Suppl. Pl. 442. 1781; Wight, Icon. t. 659. 1840; King in Ann. Roy. Bot. Gard. (Calcutta) 2: 75. t. 94. 1888 & in Hook. f. Fl. Brit. India 5: 518. 1888; Cooke, Fl. Pres. Bomaby 3: 152. 1958 (Repr. ed.).

Shrubs; leaves polymorphous i.e. ovate, ovate–lanceolate, orbicular, irregularly lobed, scabrous; receptacles spherical, pyriform, scabrid.

Fls. & Frts. : May–June.

In hilly forests, infrequent. Matheran.

12. **Ficus exasperata** Vahl, Enum. 2: 197. 1806; Corner in Gard. Bull. Singapore 21: 74. 1965. *F. asperrima* Roxb. Fl. Ind. 3: 554. 1832; Wight, Icon. t. 633. 1840; King in Hook. f. Fl. Brit. India 5: 522. 1888; Cooke, Fl. Pres. Bombay 3: 153. 1958 (Repr. ed.).

Trees with scabrous, white bark; leaves elliptic–oblong, coriaceous, scabrid, 3–19 x 2.4–8.2 cm; receptacles hispid, globose, yellow–purplish, *ca* 1.5 cm across.

Fls. & Frts. : February–March.

In deciduous and semievergreen forests, frequent. Janjira fort, Murud; Karnala fort; Matheran; Pen.

13. **Ficus hispida** L. f. Suppl. Pl. 442. 1781; King in Ann. Roy. Bot. Gard. (Calcutta) 2: 116. tt. 154 & 155. 1888 & in Hook. f. Fl. Brit. India 5: 522. 1888; Cooke, Fl. Pres. Bombay 3: 154. 1958 (Repr. ed.); Corner in Gard. Bull. Singapore 21: 89. 1965.

Large shrubs or small trees upto 5 m; leaves elliptic–oblong, obovate, hispid beneath, 2.8–25.5 x 1.6–14.0 cm; receptacles ellipsoid–obovoid, yellowish, hispid, 1.5–3.5 cm across.

Fls. & Frts. : August–October.

In deciduous forests, frequent. Chavni forest, Pen; Elephanta island; Mhasla; Roha.

Cultivated or Introduced:

* 1.**Ficus elastica** Roxb. ex Hornem. H. Hufn. Suppl. 7. 1819; Wight, Icon. t. 663. 1840; king in Hook. f. Fl. Brit. India 5: 508. 1888; Cooke, Fl. Pres. Bombay 3: 155. 1958 (Repr. ed.).

Epiphytic trees with aerial roots; leaves coriaceous, shining; receptacles enclosed by hooded involucres when young and at maturity left with only saucer shaped cup.

Planted. Matheran.

2. **Ficus religiosa** L. Sp. Pl. 1059. 1753; King in Hook. f. Fl. Brit. India 5: 513. 1888; Cooke, Fl. Pres. Bombay 3: 149. 1958 (Repr. ed.); Corner in Gard. Bull. Singapore 21: 6. 1965. *Pimpal.*

Trees with rough, blackish bark; leaves ovate–rhomboid, glabrous; receptacles globose, reddish in pairs or in clusters, axillary or on leafless branches.

Often planted along road–sides and other religious places. Matheran.

3. ARTOCARPUS J. R. & G. Forst. *nom. cons.*

1a. Leaves entire ... *A. heterophyllus* 1

1b. Leaves pinnatifid ... *A. incisa* 2

1. **Artocarpus heterophyllus** Lam. Encycl. 3: 210. 1789; Jarett in J. Arnold Arb. 40: 334. 1959. *A. integrifolia auct. non.* L.f. (1781); Wight, Icon. t. 678. 1840; king in Hook. f. Fl. Brit. India 5: 541. 1888; Cooke, Fl. Pres. Bombay 3: 158. 1958 (Repr. ed.). *Phanas, Phanasi.*

Trees, 9–15 m; leaves elliptic–obovate, acuminate, shining above, rough beneath, 5.5–13.2 x 3.0–7.6 cm; fruits with pyramidal anthocarps.

Fls. & Frts. : February–March.

Usually cultivated, also occur frequently in hilly forests, Matheran; Sudhagad.

2. **Artocarpus incisa** L. f. Suppl. Pl. 411. 1781; Hook. f. Fl. Brit. India 5: 539. 1888; Cooke, Fl. Pres. Bombay 3: 159. 1958 (Repr. ed.).

Moderate sized trees; leaves deeply cut from upper part, upto 25–30 cm long; fruits muricated.

Fls. & Frts. : September–October.

Near sea–coasts, occasional. Alibag.

A native of Pacific Islands, cultivated along the coastal area of India, occasionally occur as an escape.

127. CASUARINACEAE

CASUARINA L.

Casuarina litorea L. Diss. Stickman 12. 1754, '*Casaarina*'. *C equisetifolia* L. Amoen. Acad. 4: 143. 1759; Hook. f. Fl. Brit. India 5: 598. 1888; Cooke, Fl. Pres. Bombay 3: 161. 1958 (Repr. ed.).

Evergreen trees with blackish–brown bark; branches slender, ribbed, pale–dark green; leaves reduced to scales in whorls of 6–8; male spikes terminal, female fascicles globose at tips of lateral branches; nuts winged in a woody cone.

Fls. & Frts: Almost throughout year.

This species is usually planted in bulk by Forest Department near sea coasts to prevent soil erosion and also as wind breakers. Such plantations are observed at Nagaon beach in Alibag.

128. CERATOPHYLLACEAE

CERATOPHYLLUM L.

Ceratophyllum demersum L. Sp. Pl. 992. 1753; Gaertn. Fruct. 1: t. 44. 1788; Hook. f. Fl. Brit. India 5: 639. 1888; Cooke, Fl. Pres. Bombay 3: 165. 1958 (Repr. ed.); Subr., Aq. Ang. 52. 1962.

Much branched, aquatic herbs, 20–60 cm; leaves 6–10 in a whorl, dichotomously forked, filiform, with toothed segments, 1.3–4.2 cm; perianth greenish–white; capsules blackish, ovoid with 2, decurved spines at base.

Fls. & Frts. : August–October.

In tanks and still waters, frequent. Ghosale, Roha; Madh, Pen.

The plant is used as a cooling agent for biliousness and scorpion sting. The achenes are eaten by wild ducks.

129. HYDROCHARITACEAE

1a. Stems branched, leafy :

- 2a. Leaves whorled; styles undivided ... HYDRILLA 1
- 2b. Leaves scattered; styles notched ... LAGAROSIPHON 2

1b. Stemless or with stolons :

- 3a. Leaves ovato-cordate, petioled; spathe winged ... OTTELIA 3
- 3b. Leaves linear, sessile; spathe not winged :
  - 4a. Perianth single; peduncle of the female spathe spirally coiled ... VALLISNERIA 4
  - 4b. Perianth double; peduncle not coiled ... BLYXA 5

1. HYDRILLA L.C. Rich.

Hydrilla verticillata (L.f.) Royle, Ill. Bot. Himal. t. 376. 1839; Hook. f. Fl. Brit. India 5: 659. 1888; Cooke, Fl. Pres. Bomaby 3: 170. 1958 (Repr. ed.). *Serpicula verticillata* L. f. Suppl. Pl. 416. 1781.

Aquatic, submerged herbs, often rooting at nodes; leaves linear–oblong, apiculate, 1.0–4.0 x 0.2–0.8 cm; flowers minute, unisexual; fruits smooth or muricate.

Fls. & Frts. : February–March.

In tanks, frequent. Kolad, Roha; Uran.

2. LAGAROSIPHON W. H. Harvey

Lagarosiphon alternifolia (Roxb.) Druce in Rep. Bot. Exch. Cl. Brit. Is. 1916. 630. 1917; Govind. in Proc. Indian Acad. Sci. (Plant Sci.) 93: 15. 1984. *Vallisneria alternifolia* Roxb. Pl. Cor. t. 165. 1802 & Fl. Ind. 3: 750. 1832. *Nechamandra alternifolia* (Roxb.) Thw. Enum. Pl. Zeyl. 332. 1864. *Lagarosiphon roxburghii* (Planch.) Benth. in Benth. & Hook. f. Gen. Pl. 3: 451. 1883; Hook. f. Fl. Brit. India 5: 659. 1888; Cooke, Fl. Pres. Bombay 3: 170. 1958 (Repr. ed.).

Submerged, fresh–water herbs with filiform stems; leaves alternate and opposite, oblong–lanceolate, 7–10 x0.4–0.6 cm; flowers minute, axillary; fruits ovoid, enclosed in persistent spathes.

Fls. & Frts. : August–February.

In ponds and tanks, infrequent. Karjat.

3. OTTELIA Pers.

Ottelia alismoides (L.) Pers. Syn. Pl. 1: 400. 1805; Hook. f. Fl. Brit. India 5: 662. 1888; Cooke, Fl. Pres. Bombay 3: 173. 1958 (Repr. ed.). *Stratiotes alismoides* L. Sp. Pl. 535. 1753.

Aquatic herbs; leaves membranous, 5–15 x 2.5–7.2 cm; flowers white, axillary, solitary, bisexual; fruits ellipsoid, winged.

Fls. & Frts. : November–December.

In tanks, infrequent. Nagothana.

4. VALLISNERIA L.

Vallisneria spiralis L. var. **dense-serrulata** Makino in Bot. Mag. Tokyo 28: 27. 1914; Lowden in Aquat. Bot. 13: 288. 1982. *V. spiralis sensu* Wight, Ill. Pl. 1: tt. 23–24. 1840 *non* L. (1753); Hook. f. Fl. Brit. India 5: 660. 1888; Cooke, Fl. Pres. Bombay 3: 171. 1958 (Repr. ed.).

Submerged, rooted, aquatic herbs with stolons; leaves erect, flat, glabrous, variable in length; male flowers minute, many in compact heads on short, axillary scape; female flowers solitary.

Fls. & Frts. : April–May.

In tanks, frequent. Ghosale and Kolad, Roha.

5. BLYXA Noron. ex Petit–Thou.

Blyxa echinosperma (C.B.Cl.) Hook. f. Fl. Brit. India 5: 661. 1888; Cooke, Fl. Pres. Bombay 3: 172. 1958 (Repr. ed.). *Hydrotrophus echinospermus* C.B.Cl. in J. Linn. Soc. Bot. 14: 8. t. 1. 1875.

Fresh water, annual herbs; leaves linear, 15–100 x 3–5 cm; flowers hermophrodite; capsules terete; seeds spinescent with a long tail at each end.

Fls. & Frts. : July–October.

In tanks, infrequent. Matheran.

130. BURMANNIACEAE

BURMANNIA L.

Burmannia coelestis D. Don, Prodr. Fl. Nepal. 44. 1825; Royle, Ill. Bot. Himal. 373. t. 91. f. 1. 1839; Hook. f. Fl. Brit. India 5: 665. 1888. *B. coelestis* D.Don var. *pusilla* (Miers) Trim. Handb. Fl. Ceylon 4: 138. 1898; Cooke, Fl. Pres. Bombay 3: 174. 1958 (Repr. ed.).

Slender, tiny herbs, 5–10 cm; leaves minute, scale–like, lanceolate; flowers bluish–purple, 1–3 on a scape; capsules, 3–winged; seeds minute, subglobose.

Fls. & Frts. : September–October.

In moist, hilly forests, frequent. Matheran; 'Unhere' near Sav village, Mahad.

131. ORCHIDACEAE

1a. Epiphytic plants without tubers :

2a. Plants with distinct basal pseudobulbs ... DENDROBIUM 1

2b. Plants without pseudobulbs :

3a. Lip distinctly spurred or saccate :

4a. Spur not laterally flattened ... RHYNCHOSTYLIS 2

4b. Spur not laterally flattened :

5a. Flowers terminal, 5 cm long ... THUNIA 3

5b. Flowers usually lateral, less than 5 cm long :

6a. Spur with septa within ... ARRIDES 4

6b. Spur without septa within :

7a. Sepals and petals distinctly narrowed to the base ... VANDA 5

7b. Sepals and petals not distinctly narrowed to the base ... ACAMPE 6

3b. Lip not spurred :

8a. Pseudobulbs discoid; flowers orange or brownish–red; sepals connivent at base ... PORPAX 7

8b. Pseudobulbs not discoid; flowers greenish–yellow or white; sepals free ... ERIA 8

1b. Terrestrial plants with tubers ;

9a. Flowers without spur :

10a. Leaf one, rugose above; pseudobulbs absent ... NERVILIA 9

10b. Leaf more than one, not rugose: pseudobulbs present... MALAXIS 10

9b. Flowers with spur :

11a. Racemes or spikes terminal :

12a. Flowers 6–7 cm across, stigmatic surfaces confluent ... PECTEILIS 11

12b. Flowers less than 3 cm across, stigmatic surface seperate :

13a. Stigmatic surfaces stipitate; ovary and capsule widely spreading ... HABENARIA 12

13b. Stigmatic surfaces not stipitate; ovary and capsule erect and parallel to floral axis ... PERISTYLUS 13

11b. Scapes lateral ... EULOPHIA 14

1. DENDROBIUM Swartz. *nom. cons.*

1a. Stems short; pseudobulbs small ... *D. microbulbon* 1

1b. Stems long, tufted; pseudobulbs usually absent :

2a. Flowers in racemes :

3a. Midlobe of lip more than twice the length of lateral lobes ... *D. barbatulum* 2

3b. Midlobe of lip less than twice the length of lateral lobes ... *D. ovatum* 3

2b. Flowers in fascicles ... *D. crepidatum* 4

* 1. **Dendrobium microbulbon** A. Rich. in Ann. Sci. Nat. Ser. 2, 15: 19. t. 8. 1841; Hook. f. Fl. Brit. India 5: 716. 1890; Cooke, Fl. Pres. Bombay 3: 183. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 87. t. 19. 1966.

Small epiphytes with ovoid, crowded, 1–2 cm long pseudobulbs; leaves oblong–lanceolate; flowers white, lip pinkish in racemes; capsules ellipsoid, smooth.

Fls. & Frts. : November–March.

In moist deciduous forests, infrequent. Matheran.

* 2. **Dendrobium barbatulum** Lindl. Gen. & Sp. Orch. Pl. 84. 1830; Hook. f. Fl. Brit. India 5: 719. 1890; Cooke, Fl. Pres. Bombay 3: 184. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 93. 1966.

Epiphytic herbs; leaves lanceolate, acute; flowers white–pink in terminal racemes; lip clawed at base, with 2, oblique–oblong purple side–lobes and ovate–oblong mid lobe.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Matheran.

* 3. **Dendrobium ovatum** (Willd.) Kranzl. in Engl. Pflanzenr. 45: 71. 1910; Sant. & Kapadia, Orch. Bombay 91. 1966. *Cymbidium ovatum* Willd. Sp. Pl. 4: 101. 1805. *Dendrobium chlorops* Lindl. in. Edgew. Bot. Reg. Misc. 44. 1844; Hook. f. Fl. Brit. India 5: 719. 1890; Cooke, Fl. Pres. Bomaby 3: 184. 1958 (Repr. ed.). *D.barbatulum* Wight, Icon. t. 910. 1844–1845 *non* Lindl. (1830).

Herbs, 20–30 cm; leaves narrowly lanceolate, acuminate, caducous; flowers greenish–yellow, disc pubescent.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Matheran.

4. **Dendrobium crepidatum** Lindl. in Paxton, Fl. Gard. 1: 63. f. 45. 1850; Hook. f. Fl. Brit. India 5: 740. 1890; Cooke, Fl. Pres. Bombay 3: 185. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 101. 1966.

Tufted herbs with fleshy, pendulous stems; leafless during flowering; flowers white with rounded, pubescent yellowish lip.

Fls. & Frts. : March–April.

In deciduous forests, infrequent. Mahad.

2. RHYNCHOSTYLIS Blume *emend.* Hassk.

Rhynchostylis retusa (L.) Blume, Bijdr. Fl. Nederl. Ind. 7: 286. t. 49. 1825; Hook. f. Fl. Brit. India 6: 32. 1890; Cooke, Fl. Pres. Bombay 3: 202. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 211. 1966. *Epidendrum retusum* L. Sp. Pl. 953. 1753.

Epiphytes with stems 7–15 cm; leaves loriform, irregularly notched at apex, 10–25 x 2.0–3.5 cm; flowers white, pink dotted in pendulous racemes; capsules clavate, ribbed, pedicellate.

Fls. & Frts. : September–October.

In hilly forests, frequent. Matheran; Varandh–ghat, Mahad.

3. THUNIA Reichb.

* **Thunia venosa** Rolfe in Orchid Rev. 13: 206. 1905; Cooke, Fl. Pres. Bombay 3: 195. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 184. 1966.

Epiphytes with stems 30–45 cm; leaves alternate, bifarious, membranous, sheathing, acuminate, 7–20 cm long; flowers white, few in terminal, drooping racemes.

Fls. & Frts. : July–August.

In hilly forests, infrequent. Matheran.

4. AERIDES LOUR.

1a. Sepals and petals speckled with coloured dots; lateral sepals obovate, upto 1 cm ... *A. maculosum* 1

1b. Sepals and petals not spotted; lateral sepals obliquely oblong, upto 1.5 cm ... *A. crispum* 2

* 1. **Aerides maculosum** Lindl. in Edgew. Bot. Reg. t. 58. 1845; Hook. f. Fl. Brit. India 6: 45. 1890; Cooke, Fl. Pres. Bombay 3: 203. 1958 (Repr. ed.); Sant. & Kapadia Orch. Bombay 120. 1966. *Saccolabium speciosum* Wight, Icon. tt. 1675–76. 1851.

Stout epiphytes with stems 3–7 cm; leaves linear–oblong,

unequally 2–lobed at apex; flowers inodorous, rosy in paniculately branched racemes; spurs pointing backwards; capsules ellipsoid or obovoid with 3 acute ribs.

Fls & Frts. : May–June.

In hilly forests, infrequent. Matheran; Neral.

* 2. **Aerides crispum** Lindl. Gen. & Sp. Orch. Pl. 239. 1833; Hook. f. Fl. Brit. India 6: 45. 1890; Cooke, Fl. Pres. Bombay 3: 203. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 122. 1966. *A lindleyana* Wight, Icon. t. 1677. 1851.

Robust plants with stem 10–20 cm; leaves oblong–lorate, coriaceous, 2–lobed at apex; flowers fragrant with mid lobe triangular and spur pointing forward.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

5. VANDA R. Br.

Vanda testacea (Lindl.) Reichb. f. & Gard. Chron. 2: 166. 1877; Sant. & Kapadia, Orch. Bombay 29. 1966. *Aerides testaceum* Lindl. Gen. Sp. Orch. Pl. 238. 1833. *Vanda parviflora* Lindl. in Edgew. Bot. Reg. 30. Misc. 45. 1844; Wight, Icon. t. 1669. 1851; Hook. f. Fl. Brit. India 6: 50. 1890; Cooke, Fl. Pres. Bombay 3: 207. 1958 (Repr. ed.); C.R. Rao in Indian forester 93: 56. 1967.

Epiphytic herbs with leafy stems, 7–12 cm; leaves linear–oblong, unequally and obtusely 2–lobed at apex, 7.2–18.3 x 0.8–1.2 cm; flowers yellow with lips pink spotted; capsules clavate with winged ridges.

Fls. & Frts. : August–September.

In deciduous forests, frequent. Mangaon; Mhasla.

6. ACAMPE Lindl.

1a. Inflorescence in dense corymbose racemes, shorter than leaves i.e. upto 8 cm ... *A. praemorsa* 1

1b. Inflorescence in lax panicles and longer than leaves i.e. upto 20 cm ... *A. ochracea* 2

1. **Acampe praemorsa** (Roxb.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 495. 1932; Sant. & Kapadia, Orch. Bombay 233. 1966.

Epidendrum praemorsum Roxb. Pl. Cor. 233. t. 43. 1795. *Saccolabium praemorsum* (Roxb.) Hook. f. Fl. Brit. India 6: 52. 1890; Cooke, Fl. Pres. Bombay 3: 209. 1958 (Repr. ed.).

Epiphytes with stems 20–30 cm; leaves oblong, emarginate, 10–25 x 1.4–3.0 cm; flowers creamy–yellow, lip with 3–4 red lines; capsules ribbed, cigar shaped, 5–7 cm.

Fls. & Frts. : September–October.

In deciduous forests, frequent. Mangaon.

2. **Acampe ocharcea** (Lindl.) Hochr. in Bull. N. Y. Bot. Gard. 6: 270. 1910; Sant. & Kapadia, Orch. Bombay 234. 1966. *Saccolabium ochraceum* Lindl. in Edgew. Reg. Misc. 2. 1842; Hook. f. Fl. Brit. India 6: 62. 1890.

Erect or pendulous epiphytes; leaves oblong, entire, shallowly oblique with 2–lobulate at apex, 4–17 x 1.2–1.8 cm; capsules linear–oblong or obovate, faintly ribbed.

Fls. & Frts. : May–August.

In hilly forests, occasional. Karnala fort.

7. PORPAX Lindl.

1a. Leafless in flowering; sepals glabrous outside, all united into a tube ... *P. reticulata* 1

1b. Leafy in flowering; sepals setulose outside, only lateral ones united ... *P. jerdoniana* 2

* 1. **Porpax reticulata** Lindl. in Edgew. Bot. Reg. 31: Misc. 62. 1845; Cooke, Fl. Pres. Bombay 3: 192. 1958 (Repr. ed.). *Eria reticulata* Benth. in Gen. Pl. 3: 509. 1883; Hook. f. Fl. Brit. India 5: 786. 1890.

Pseudobulbs button–like, sheathed; leaves broadly oblong or ovate–lanceolate, bright green, glabrous, upto 5.0 x 2.5 cm; flowers red or purple–brown, solitary; fruits pyriform.

Fls. & Frts. : June–October.

In moist deciduous forests, rare. Matheran.

2. **Porpax jerdoniana** (Wight) Rolfe, Orchid Rev. 16: 18. 1908; Sant. & Kapadia, Orch. Bombay 158. 1966. *Lichenora jerdoniana* Wight, Icon. t. 1738. 1851. *Porpax lichenora* T. Cooke, Fl. Pres. Bombay 2: 689.

1907. 13: 192. 1958. (Repr. ed.). *Eria lichenora* Lindl. in J. Linn. soc. Bot. 3: 46. 1858; Hook. f. Fl. Brit. India 5: 787. 1890.

Tiny epiphytes with disc–like, netted pseudobulbs; leaves 2, ovate, brownish, mottled, upto 2.8 x 1.5 cm; flowers brownish–red, 1–3, terminal with lower sepals connate.

Fls. : August.

In hilly forests, occasional. Dahen forests, Mhasla.

8. ERIA Lindl. *nom. cons.*

1a. Flowers secund; sepals and petals fringed with capitate glands; lip thin, without callocities ... *E. dalzellii* 1

1b. Flowers not secund; sepals and petals entire; lip fleshy with 2 callocities at base ... *E. microchilos* 2

1. **Eria dalzellii** (Hook. ex Dalz.) Lindl. in J. Linn. Soc. Bot. 3: 447. 1858 (excl. descript.); Hook. f. Fl. Brit. India 5: 789. 1890; Cooke, Fl. Pres. Bombay 3: 193. 1958 (Repr. ed.). *Dendrobium dalzellii* Hook. ex Dalz. in Hook. Kew. J. Bot. 4: 292. 1852. *D. filiforme* Wight, Icon. t. 1642. 1851.

Epiphytes with pseudobulbs flattened, ovoid, 3–7 cm; leaves linear–oblong, 2.5–7.0 x 0.4–1.0 cm; flowers white in terminal racemes.

Fls. : July–August.

In hilly forests, infrequent. Matheran; Neral to Matheran.

* 2. **Eria microchilos** (Dalz.) Lindl. in J. Linn. Soc. Bot. 3: 47. 1858; Cooke, Fl. Pres. Bombay 3: 194. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 154. 1966. *Dendrobium microchilos* Dalz. in Hook. Kew J. Bot. 3: 345. 1851. *Eria dalzellii* var. *fimbriata* Hook. f. Fl. Brit. India 5: 789. 1890.

Epiphytes with flattened, pseudobulbs reticulated; leaves oblong–lanceolate or linear–oblong, 1.8–7.5 x 0.2–5.0 cm; flowers pale yellow in terminal racemes; capsules ribbed.

Fls. & Frts. : July–October.

In hilly forests, occasional. Matheran.

9. NERVILIA Comm. ex Gaud. *nom. cons.*

1a. Petioles 2–5 cm long; leaf blade lying mostly flat on the ground ...*N. infundibulifolia* 1

1b. Petioles 8–20 cm long; leaf blade not lying flat on the ground ... *N. aragona* 2

* 1. **Nervilia infundibulifolia** Blatt. & McC. in J. Bombay nat. Hist. Soc. 35: 725. t. 3. 1932; Sant. & Kapadia, Orch. Bombay 127. t.31 1966.

Perennial, tuberous herbs; leaves ovate–suborbicular, green with 5–7 chocolate coloured, broad, bands along the nerves, 2–3 x 3–4 cm; flowers greenish purple; capsules ellipsoid, maroon coloured.

Fls. & Frts. : June–September.

In hilly forests, occasional. Matheran.

2. **Nervilia aragona** Gaud. in Frey. Voy. Monde Bot. 422. t. 35. 1826; Sant. & Kapadia, Orch. Bombay 134.1966 *Pogonia flabelliformis* Lindl. Gen. & Sp. Orch. Pl. 415. 1840. *nom. illegit.*; Hook. f. Fl. Brit. India 6: 121. 1890.

Ground orchid with bulbous roots; leaves cordate–ovate, wavy, cuspidate, upto 11.5 x 8.2 cm; flowers pale green, drooping; ovary with ridges often winged.

Fls. & Frts. : September–October.

In moist deciduous forests, occasional. On way to Kolad, Roha; Phansad forests, Murud.

10. MALAXIS Solan. ex Swartz

Malaxis rheedii Swartz in Kongl. Vet. Acad. Nya Handl. 21: 235. 1800. *Microstylis versicolor* Lindl. Gen. Sp. Orchid. 21. 1830 *non* Wight (1844–45); Cooke, Fl. Pres. Bombay 3: 179. 1958 (Repr. ed.). *Malaxis versicolor* (Lindl.) Abeywickr. in Ceylon J. Biol. Sci. 2: 147. 1959; Sant. & Kapadia in J. Bombay nat. Hist. Soc. 58: 347. 1961 & Orch. Bombay 141. 1966. *Microstylis rheedei* Wight, Icon. t. 902. 1843; Hook. f. Fl. Brit. India 5: 690. 1890.

Stoloniferous ground orchid with erect stems, swollen at base, 7–15 cm; leaves obovate or ovate-elliptic, membranous, 4.5-15.5 x 2.6-5.1 cm; flowers yellow in terminal racemes; fruits clavate–oblong.

Fls. & Frts. : July–September.

In hilly forests, frequent. Matheran.

11. PECTEILIS Raf.

Pecteilis susannae (L.) Raf. Fl. Tellur. 2: 38. 1837 ('*Susanna*'). *Orchis susannae* L. Sp. Pl. 939. 1753. *Plantanthera susannae* (L.) Lindl. Gen. & Sp. Orch. Pl. 295. 1835; Cooke, Fl. Pres. Bombay 3: 217. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 42. t. 7–8. 1966. *Habenaria susannae* (L.) R. Br. ex Spreng. Syst. Veg. 3: 622. 1826; Hook. f. Fl. Brit. India. 6: 137. 1890. *Wagchora.*

Stout herbs, 60–100 cm; leaves ovate–oblong or lanceolate, glabrous, 5–20 x 2.2–6.5 cm; flowers white, fringed, 2–6 in terminal racemes; capsules ellipsoid, beaked.

Fls. & Frts. : September–October.

In hilly forests, frequent. Matheran.

12. HABENARIA Willd.

1a. Petals 2-lobed :

2a. Lower segment of petals shorter than upper; pedicels very short or absent ... *H. digitata* 1

2b. Lower segments of petals longer than the upper; pedicels long :

3a. Leaves 1–3, subcordate, flat on the ground ... *H. grandifloriformis* 2

3b. Leaves 3–many, spiral on erect stem :

4a. Leaves arranged from above the middle of stem ... *H. foliosa* var. *gibsonii* 3

4b. Leaves arranged usually near base of stem ... *H. rariflora* 4

1b. Petals entire:

5a. Lateral lobes of lip petaloid, broader than mid-lobe :

6a. Ovary long beaked; lip segments filiform ... *H. commelinifolia* 5

6b. Ovary not beaked; lip segments not filiform :

7a. Leaves flat on the ground; spur upto 3 cm ... *H. plantaginea* 6

7b. Leaves clustered near base; spur upto 15 cm ... *H. longicorniculata* 7

5b. Lateral lobes of lip not broader than mid-lobe :

8a. Stems leafy upwards; flowers secund or subsecund; spur subacute ... *H. heyneana* 8

8b. Stems not leafy upwards; flowers not secund; spur stout, clavate ... *H. marginata* 9

1. **Habenaria digitata** Lindl. Gen. & Sp. Orch. Pl. 307. 1835; Hook. f. Fl. Brit. India 6: 134. 1890; Cooke, Fl. Pres. Bombay 3: 220. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 10.t.3. ff. 7–8.1966.

Herbs, 15–30 cm; leaves ovate–oblong, acuminate, 4.8–9.5 x 2.0–4.3 cm; flowers greenish–white in lax racemes; capsules linear–oblong.

Fls. & Frts. : July–August.

In hilly forests, infrequent. Matheran.

2. **Habenaria grandifloriformis** Blatt. & McC. in J. Bombay nat. Hist. Soc. 36: 17. 1932. Charact. *emend.* Sant. & Kapadia, Orch. Bombay 17. t. 1. ff. 2:2.1966. *H. grandiflora* Lindl. ex Dalz. & Gibs. Bombay Fl. 267. 1861; Hook. f. Fl. Brit. India 6: 136. 1890; Cooke, Fl. Pres. Bombay 3: 221. 1958 (Repr. ed.).

Herbs, 10–20 cm; roots tuberous; leaves opposite, broadly ovate–elliptic, 3.5–6.2 x 3.0–5.3 cm; flowers white in short, terminal, lax racemes; capsules ribbed.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Dasgaon; Matheran.

3. **Habenaria foliosa** A. Rich. var. **gibsonii** (Hook. f.) Bennet in J. Econ. Tax. Bot. 5: 452. 1984. *H. gibsonii* Hook. f. Fl. Brit. India 6: 135. 1890; Sant. & Kapadia, Orch. Bombay 12. t.2.ff. 3-4. 1966.

Herbs, 15–20 cm; leaves linear–oblong, 3.5 – 10.0 x 2.0–4.2 cm; flowers white, few in racemes; ovary slighty curved, ribbed.

Fls. & Frts. : July–August.

In hilly forests, frequent. Mandatna to Pangloli forests, Mhasla, Mangaon; Matheran.

4. **Habenaria rariflora** A. Rich. in Ann. Sci. Nat. Ser. 2, 15: 70. t. 2D. 1841; Wight, Icon. t. 924.1844-1845; Hook. f. Fl. Brit. india 6: 136. 1890; Cooke. Fl. Pres. Bombay 3: 221. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 15.t. 3.ff. 9-10. 1966.

Herbs, 5–20 cm; leaves linear–oblong or lanceolate, acute, 3.5–4.2 x 0.6–2.0 cm; flowers white in short racemes; capsules strongly ribbed, beaked, stalked.

Fls. & Frts. : July–August.

In hilly forests, occasional. Matheran.

* 5. **Habenaria commelinifolia** (Roxb.) Wall. ex Lindl. Gen. & Sp. Orch. Pl. 325. 1835; Hook. f. Fl. Brit. India 6: 143. 1890; Cooke, Fl.

Pres. Bombay 3:224. 1958 (Repr.ed.); Sant. & Kapadia, Orch. Bombay 25. t. 4. ff. 11–12. 1966. *Orchis commelinaefolia* Roxb. Fl. Ind. (ed. 2) 3: 451. 1832.

Herbs, 30–40 cm; leaves oblong–lanceolate, 7–14 x 2.0–3.6 cm; flowers white in terminal racemes; capsules fusiform, sessile.

Fls. & Frts. : August–October.

In hilly forests, infrequent. Matheran.

6. **Habenaria plantaginea** Lindl. Gen. & Sp. Orch. Pl. 323. 1835; Hook. f. Fl. Brit. India 6: 141. 1890; Cooke, Fl. Pres. Bombay 3: 224. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 28.t.6. f. 25.1966.

Slender, tuberous herbs, 15–20 cm; leaves elliptic–oblong, acute, membranous; flowers white, subsecund in lax spikes; capsules fusiform, curved.

Fls. & Frts. : March–April.

In hilly forests, infrequent. Matheran.

7. **Habenaria longicorniculata** Grah. Cat. Bombay Pl. 202. 1839; Sant. & Kapadia, Orch. Bombay 29. t. 1. ff. 1–1. 1966. *H longecalcarata* A. Rich. in Ann. Sci. Nat. Ser. 2, 15: 71. t. 3b. 1841; Wight, Icon. t. 925.1844-1845; Hook. f. Fl. Brit. India 6: 141. 1890; Cooke, Fl. Pres. Bombay 3 : 223. 1958 (Repr. ed.).

Herbs, 30–110 cm; leaves oblong–lanceolate, 4.5–20.0 x 3–5 cm; flowers white, fragrant, 1–4 in short racemes; pollinia pyriform, shorter than caudicles; capsules ellipsoid.

Fls. & Frts. : September–October.

In hilly forests, occasional. Matheran.

8. **Habenaria heyneana** Lindl. Gen. & Sp. Orch. Pl. 320. 1835; Hook. f. Fl. Brit. India 6: 148. 1890; Cooke, Fl. Pres. Bombay 3: 225. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 32.t.5. ff.15-16. 1966.

Small herbs with stout, leafy stems, 10–20 cm; leaves ovate, acute, sheathing, 2.2–3.0 x 0.8–1.2 cm; flowers greenish–yellow, few in terminal racemes; capsules fusiform–ellipsoid.

Fls. & Frts. : August–September.

In hilly forests, infrequent. Karle–khind, Alibag; Matheran; Pen.

9. **Habenaria marginata** Colebr. in Hook. Exot. Fl. 2: t. 136. 1824; Hook. f. Fl. Brit. India 6 : 150. 1890; Cooke, Fl. Pres. Bombay 3: 226. 1958 (Repr. ed.); Sant. & Kapadia, Orch. Bombay 53. 1966.

Herbs, 7–40 cm; leaves sub–radical, elliptic–oblong with yellow margins, 3.5–10.2 x 1.4–2.8 cm; flowers yellow in terminal spikes; capsules fusiform, turgid.

Fls. & Frts. : August–September.

In hilly forests, occasional. Matheran; Uran.

13. PERISTYLUS Blume *nom. cons.*

1a. Spur as long as or longer than sepals, linear, subclavate ... *P. stocksii* 1

1b. Spur shorter than sepals, subglobose or ellipsoid:

2a. Petals white; lip shorter than sepals, entire or scarcely 3–lobed ... *P. plantagineus* 2

2b. Petals yellow, lip as long as sepals, distinctly 3–lobed ... *P. lawii* 3

1. **Peristylus stocksii** (Hook. f.) Kraenzl. Orchid. Gen. Sp. 1: 513. 1898; Cooke, Fl. Pres. Bombay 3: 215. 1958 (Repr.ed.); Sant. & Kapadia, Orch. Bombay 48. t. 9 C–D. 1966. *Habenaria stocksii* Hook. f. Fl. Brit. India 6: 158. 1890.

Slender herbs, 10–40 cm; leaves lanceolate, obovate–elliptic, acute–acuminate, 7.5–10.0 x 2.0 – 3.5 cm; flowers greenish–yellow in terminal, spicate racemes; capsules ellipsoid.

Fls. & Frts. : July–August.

In hilly forests, infrequent. Mandatna to Pangloli, Mhasla; Neral.

2. **Peristylus plantagineus** Lindl. Gen. & Sp. Orch. Pl. 300. 1835; Cooke, Fl. Pres. Bombay 3:216.1958 (Repr.ed.); Sant. & Kapadia, Orch. Bombay 51. t. 10 A–B. 1966. *Habenaria wightii* Trim. Cat. Ceyl. Pl. 91. 1885; Hook. f. Fl. Brit. India 6: 162. 1890.

Robust herbs, 35–45 cm; leaves oblong–lanceolate, glabrous, 10.0–16.5 x 4.0–4.4 cm; flowers white in terminal spikes; capsules ellipsoid–fusiform.

Fls. & Frts. : July–August.

In hilly forests, frequent. Karnala fort; Matheran.

3. **Peristylus lawii** Wight, Icon. t. 1695. 1851; Cooke, Fl. Pres.

Bombay 3 : 216. 1958 (Repr.ed.); Sant. & Kapadia, Orch. Bombay 53. t. 10. C–D. 1966. *Habenaria lawii* Hook. f. Fl. Brit. India 6: 162. 1890.

Tuberous herbs, 15–40 cm; leaves 3–5, about middle of stem, oblong–lanceolate, membranous, 5–10 x 2–4 cm; flowers yellow in terminal spikes; capsules fusiform, beaked.

Fls. & Frts. : July–August.

In hilly forests, infrequent. Matheran; Neral.

14. EULOPHIA R. Br.

Eulophia ramentacea Lindl. ex Wight, Icon. t. 1666. 1851; Sant. & Kapadia, Orch. Bombay 113. t. 28.1966.*E. pratensis* Lindl. in J. Linn. Soc. 3: 25. 1858; Hook. f. Fl. Brit. India 6: 4. 1890; Cooke, Fl. Pres. Bombay 3: 197. 1958 (Repr. ed.). *Satavari.*

Terrestrial herbs; leaves oblong–lanceolate, appearing after flowering; flowers yellow in lax racemes, lip broader than long; capsules ellipsoid, turgid.

Fls. & Frts. : May.

In hilly forests, infrequent. Matheran.

132. ZINGIBERACEAE

1a. Lateral staminodes small or absent :

- 2a. Inflorescence terminal; leafy stem spirally twisted ... COSTUS 1
- 2b. Inflorescence not terminal; leafy stem straight ... ZINGIBER 2

1b. Lateral staminodes large and broad:

- 3a. Connectives spurred at base; corolla tube funnel shaped ... CURCUMA 3
- 3b. Connectives not spurred at base; corolla tube long, slender ... KAEMPFERIA 4

1. COSTUS L.

Costus speciosus (Koenig) J.E. Smith in Trans. Linn. Soc. London 1: 249. 1800; Baker in Hook. f. Fl. Brit. India 6: 249. 1892; Cooke, Fl. Pres. Bombay 3: 243. 1958 (Repr. ed.). *Banksea speciosa* Koenig in Retz. Obs. Bot. 3: 75. 1783.

Perennial herbs with leafy stems, 1–2 m; leaves oblong–lanceolate, pubescent beneath, 8.6–35 x 4–10 cm; flowers white in spikes; capsules trigonous, deep red.

Fls. & Frts. : September–October.

In hilly forests, frequent. Karle–khind, Alibag; Matheran.

2. ZINGIBER Boehm.

1a. Spikes with short peduncles; leaves glabrous beneath ... *Z. cernuum* 1

1b. Spikes with long peduncles; leaves pubescent beneath ... *Z. neesanum* 2

1. **Zingiber cernuum** Dalz. in Hook. Kew J. Bot. 4 : 342. 1852; Baker in Hook. f. Fl. Brit. India 6: 245. 1892; Cooke, Fl. Pres. Bombay 3: 240. 1958 (Repr. ed.).

Perennial herbs with aromatic rhizomes; leaves oblong–lanceolate, 30–50 x 5–7 cm; spikes ovoid, terminal; capsules trigonous, red, smooth.

Fls. & Frts. : July–September.

In hilly forests, frequent. Karnala fort; Matheran; Pali to Nagothana.

2. **Zingiber neesanum** (Grah.) Ramamoorthy in Sald. & Nicolson, Fl. Hassan 769. 1976. *Alpinia neesana* Grah. Cat. Pl. Bombay 207. 1839. *Zingiber macrostachyum* Dalz. in Hook. Kew J. Bot. 4: 342. 1852; Baker in Hook. f. Fl. Brit. India 6: 247. 1892; Cooke, Fl. Pres. Bombay 3: 241. 1958 (Repr. ed.). *Nisam.*

Perennial herbs with pubescent, reddish stems; leaves lanceolate, acuminate, 12–30 x 2.5–5.0 cm; flowers in cylindric spikes, 10–15 cm; capsules obovoid, red, pubescent.

Fls. & Frts. : July–September.

In moist hilly forests, occasional. Mandatna to Pangloli, Mhasla.

3. CURCUMA L.

1a. Petals yellow :

2a. Tubers yellow inside, but not palmately branched ...*C. pseudomontana* 1

2b. Tubers pale yellow inside, palmately branched ... *C. zedoaria* 2

1b. Petals purple :

3a. Petals purplish with a yellow streak on the lip; tubers not almond–like ... *C. inodora* 3

3b. Petals not as above; tubers almond–like ... *C. decipiens* 4

1. **Curcuma pseudomontana** Grah. Cat. Pl. Bombay 210. 1839; Cooke, Fl. Pres. Bombay 3: 236. 1958 (Repr. ed.). *C. montana* Baker in Hook. f. Fl. Brit. India 6: 214. 1890 *pro parte non* Rosc.(1828). *Pan-haldi, Sindarbar.*

Rhizomatous herbs with scapes; leaves lanceolate–oblong, 14–30 x 6–12 cm; flowers yellow in pedunculate spikes; capsules globose.

Fls. & Frts. : September–October.

In hilly forests, frequent. Karnala fort; Matheran.

* 2. **Curcuma zedoaria** (Christm.) Rosc. Monadr. Pl. t. 109. 1828; Baker in Hook. f. Fl. Brit. India 6: 210. 1890; Cooke, Fl. Pres. Bombay 3: 238. 1958 (Repr. ed.). *Amomum zedoaria* Christm. in Christm. & Panzer. in Linn. Pflanzenr. Syst. 5: 12. 1779. *Kachora.*

Perennial herbs with tuberous root stocks; leaves oblong–lanceolate, acuminate, glabrous; flowers yellow in spikes; capsules ovoid.

Fls. & Frts. : September– October.

In hilly forests, infrequent. Matheran.

3. **Curcuma inodora** Blatt. in J. & Proc. As. Soc. Bengal (N.S.) 26: 357. 1930.

Perennial herbs; leaves radical, elliptic–lanceolate, 8.5–40 x 4–15 cm; flowers purple in spikes; capsules 3–valved.

Fls. & Frts. : September–October.

In hilly forests, occasional. Matheran.

* 4. **Curcuma decipiens** Dalz. in Hook. Kew. J. Bot. 2: 114. 1850; Baker in Hook. f. Fl. Brit. India 6: 215. 1890; Cooke, Fl. Pres. Bombay 3: 237. 1958 (Repr. ed.).

Herbs with tuberous rootstocks; leaves elliptic, deltoid–acuminate, membranous, glabrous; flowers purple, twin in aestival spikes; capsules globose.

Fls. & Frts. : June–September.

Near sea–coast, occasional. Uran.

4. KAEMPFERIA L.

Kaempferia scaposa (Nimmo) Benth. in Benth. & Hook. f. Gen.

Pl. 3: 642. 1883; Baker in Hook. f. Fl. Brit. India 6: 224. 1890; Cooke, Fl. Pres. Bombay 3: 232. 1958 (Repr. ed.). *Hedychium scaposum* Nimmo in Grah. Cat. Bombay Pl. 205. 1839.

Herbs with oblique, tuberous rootstocks; leaves oblong-lanceoelate, acuminate, 15–25 x 5.0–7.5 cm; flowers in terminal, dense spikes; capsules obovoid, red, pubescent.

Fls. & Frts. : July–November.

In hilly forests, occasional. Mhasla.

133. MUSACEAE

1a. Plants wild, not stoloniferous	...	ENSETE 1
1b. Plants cultivated or escape; stoloniferous	...	MUSA 2

1. ENSETE Bruce Ex Horan.

Ensete superbum (Roxb.) Cheeseman in Kew Bull. 1947: 100. 1948. *Musa superba* Roxb. Pl. Cor. t. 223. 1811 & Fl. Ind. 1: 667. 1832; Baker in Hook. f. Fl. Brit. India 6: 261. 1892; Cooke, Fl. Pres. Bombay 3: 247. 1958 (Repr. ed.). *Chawani.*

Tree–like herbs, 3–6 cm; leaves oblong, tapering towards base, 1–3 x 0.5–1.0 m; flowers in drooping spikes; fruits oblong.

Fls. & Frts. : Greater part of the year.

In hilly forests, occasional. Matheran.

2. MUSA L.

1a. Plants 2 – 6 m high	...	*M. paradisiaca* 1
1b. Plants 90 – 150 cm high	...	*M. rosacea* 2

1. **Musa paradisiaca** L. Sp. Pl. 1043. 1753; Cooke, Fl. Pres. Bombay 3: 249. 1958 (Repr. ed.); Cheesman in Kew Bull. 1947: 148. 1948. *M. sapientum* L. var. *paradisiaca* (L.) Baker in Hook. f. Fl. Brit. India 6: 262. 1892.

Stoloniferous herbs with cylindric, false stems; flowers in drooping spikes; fruits cylindric.

Fls. & Frts. : Throughout the year.

Usually cultivated, occasionally occur as an escape. Matheran.

2. **Musa rosacea** Jacq. Hort. Schoenb. 4: 22. t. 445. 1804; Baker in Hook. f. Fl. Brit. India 6: 263. 1892; Cooke, Fl. Pres. Bombay 3: 247. 1958 (Repr. ed.). *Ran-kel.*

Stoloniferous herbs; leaves linear-oblong, petiolate; flowers few in drooping or erect spikes; calyx yellowish-white; fruits linear-oblong, 4-5-angled, slightly incurved.

Fls. & Frts. : September-October.

In hilly forests and sea-coasts, infrequent. Matheran; Shrivardhan.

134. CANNACEAE

CANNA L.

Canna indica L. Sp. Pl. 1. 1753: Cooke, Fl. Pres. Bombay 3: 251. 1958 (Repr. ed.). *C. indica* L. var. *orientalis* (Rosc.) Baker in Hook. f. Fl. Brit. India 6: 260. 1892.

Perennial herbs, 40-80 cm; leaves oblong-lanceolate; flowers yellow, reddish-yellow in terminal spikes; fruits globose, triangular, warty.

Usually cultivated in gardens for ornamental purposes. Forest nurseries, Matheran; Mhasla.

135. HYPOXIDACEAE

1a.	Leaves linear-lanceolate or elliptic-lanceolate, plicate, petiolate; ovary and perianth with a long filiform tube	...	CURCULIGO 1
1b.	Leaves grass-like, sessile on ovary	...	HYPOXIS 2

1. CURCULIGO Gaertn.

Curculigo orchioides Gaertn. Fruct. 1: 63. t. 16. 1788; Hook. f. Fl. Brit. India 6: 279. 1892; Cooke, Fl. Pres. Bombay 3: 255. 1958 (Repr. ed.). *C. malabarica* Wight, Icon. t. 2043 A, f. 1. 1853. *Kajuri.*

Erect herbs with stout root stocks; leaves radical, glabrescent, 4.5-35 x 1.2-4.8 cm; flowers yellow in small, axillary racemes; capsules beaked.

Fls. & Frts. : May-June.

In hilly forests, frequent. Karnala fort; Matheran; Roha.

Rhizomes used to cure piles, asthama, Jaundice, diarrhoea and skin diseases. It is also considered as a good tonic.

2. HYPOXIS L.

Hypoxis aurea Lour. Fl. Cochinch. 200. 1790; Hook. f. Fl. Brit. India 6: 277. 1892; Cooke, Fl. Pres. Bombay 3: 254. 1958 (Repr. ed.).

Small, perennial herbs with tuberous rhizomes; leaves linear, subcoriaceous, 8–25.4 x 0.7–1.1 cm; flowers yellow in terminal scapes; capsules oblong, 3–valved.

Fls. & Frts. : May–August.

In hilly forests, infrequent. Matheran.

136. TACCACEAE

TACCA Forst.

Tacca leontopetaloides (L.) O. Ktze. Rev. Gen. Pl. 3 : 311. 1893. *Leontice leontopetaloides* L. Sp. Pl. 313. 1753. *Tacca pinnatifida* Forst. Cahr. Gen. 70. t. 35. 1776; Hook. f. Fl. Brit. India 6: 287. 1892; Cooke, Fl. Pres. Bombay 3: 262. 1958 (Repr. ed.).

Erect, perennial herbs with tuberous rhizomes; leaves pinnatifid, 12.5–70 cm across; scape longer than petiole; flowers greenish–yellow, many in drooping, umbellate cymes; fruits ovoid, ribbed, yellow.

Fls. & Frts. : September–October.

In hilly forests, frequent. Alibag; Karnala fort; Matheran.

137. DIOSCOREACEAE

DIOSCOREA L.

1a. Leaves simple:

2a. Stem winged ... *D. alata* 1

2b. Stem not winged:

3a. Leaves alternate; seeds winged at base only ... *D. bulbifera* 2

3b. Leaves usually opposite; seeds winged all around ... *D. oppositifolia* 3

1b. Leaves compound :

4a. Leaflets 3; male flowers in panicles of short cylindric spikes; stamens 6, all antheriferous ... *D. hispida* 4

4b. Leaflets 5, 3 or 7; male flowers in long, pedunculate racemes; stamens 3, antheriferous, alternating with 3 staminodes ... *D. pentaphylla* 5

1. **Dioscorea alata** L. Sp. Pl. 1033. 1753; Hook. f. Fl. Brit. India 6: 296. 1892; Burkill in Fl. Males. 4: 330. 1951. *D. alata* L. var. *globosa* Prain, Bengal Pl. 1065. 1903; Cooke, Fl. Pres. Bombay 3: 267. 1958 (Repr. ed.). *Goradu*.

Extensive, glabrous twiners; leaves broadly ovate, 5–nerved from base, 6.5–17.5 x 5.5–12 cm; male flowers in fascicled spikes; capsules in 2 semicircular flat lobes.

Fls. & Frts. : September–October.

In plain and hilly forests, frequent. Matheran; Survey forests, Murud.

The tubers are edible and used as vegetables by natives.

2. **Dioscorea bulbifera** L. Sp. Pl. 1033. 1753; Cooke, Fl. Pres. Bombay 3: 265. 1958 (Repr. ed.); Burkill in Fl. Males. 4: 311. 1951. *D sativa auct. non* L. (1753); Hook. f. Fl. Brit. India 6: 295. 1892 *pro parte*.

Bulbil bearing extensive twiners; leaves broadly ovate, acuminate, cordate, glabrous, 6–30 x 4.5–21 cm; flowers greenish–white or purplish in axillary, solitary or fascicled; pendulous spikes; capsules longer than broad, quadrately oblong.

Fls. & Frts. : August–November.

In hilly forests, frequent. Karjat; Neral to Matheran; Pen to Khopoli Road; Pezari forests, Alibag.

3. **Dioscorea oppositifolia** L. Sp. Pl. 1033. 1753; Hook. f. Fl. Brit. India 6: 289. 1892; Cooke, Fl. Pres. Bombay 3: 266. 1958 (Repr. ed.).

Slender twiners with thick, cylindric, tuberous roots; leaves coriaceous, polymorphus, cartilaginous along the margins, 6–13 x 2.5–11.2 cm; male flowers in dense, short, pedunculate spikes; capsules broader than long or suborbicular.

Fls. & Frts. : June–March.

In hilly forests, frequent. Mazeri to Varandh; Mirya dongar, Pen; Pen to Khopoli; Parghat, Poladpur; Shrivardhan.

Tubers are said to be used in scorpion sting and snake bite.

4. **Dioscorea hispida** Dennst. Schluss. Hort. Ind. Malab. 33. 1818; Burkill in Fl. Males. 4: 318. 1951. *D. daemona* Roxb. Fl. Ind. 3: 805. 1832; Hook. f. Fl. Brit. India 6: 289. 1892; Cooke, Fl. Pres. Bombay 3: 264. 1958 (Repr. ed.).

Prickly twiners with tuberous roots; leaves ovate–oblong or cuneate–obovate, villous when young, glabrescent at length, 7.5 – 24 x 7–18 cm; flowers greenish–yellow in dense spikes (males) or solitary distant spikes (females); capsules oblong, winged.

Fls. & Frts. : June–October.

In hilly forests, frequent. Dasgaon; Mandatna to Pangloli, Mhasla; Parghat, Mahad.

5. **Dioscorea pentaphylla** L. Sp. Pl. 1032. 1753; Hook. f. Fl. Brit. India 6: 289. 1892; Cooke, Fl. Pres. Bombay 3: 264. 1958 (Repr. ed.); Burkill in Fl. Males. 4: 315. 1951. *Shendvel.*

Slender twiners with tuberous roots and prickly stem towards base; leaves alternate, ovate–obovate or obovate–oblong, acuminate, pubescent, 4.8–15 x 3.0–7.5 cm; flowers white or yellowish–white.

Fls. & Frts. : September–November.

In deciduous forests, frequent. Karjat; Mhasla; Nagothana; Palasdhari; Pen to Khopoli; Ramraj, Alibag.

138. LILIACEAE

1a. Undershrubs; leaves reduced to minute scales; fruits berries ... ASPARAGUS 1

1b. Herbs ; leaves normal, not as above; fruits capsular :

2a. Climbing herbs; leaves ending in a tendril; flowers large, showy, yellow and scarlet ... GLORIOSA 2

2b. Erect herbs; leaves not as above; flowers much smaller, not so showy, white, pinkish–purple or bluish:

3a. Underground stems small or none; root–fibers large, numerous, usually a few or all fleshy; flowers in terminal racemes or fascicled in racemes ... CHLOROPHYTUM 3

3b. Underground stems larger in proportion to the roots in the form of corm; flowers a few, corymbose ... IPHIGENIA 4

1. ASPARAGUS L.

Asparagus racemosus Willd. var. **javanica** (Kunth) Baker in J. Linn. Soc. 14: 624. 1874; Hook. f. Fl. Brit. India 6: 317. 1892; Cooke, Fl. Pres. Bombay 3: 270. 1958 (Repr. ed.). *A. javanicus* Kunth, Enum. Pl. 5: 100. 1850. *Satavari.*

Much branched, spinous, scandent undershrubs; cladodes slender, glabrous, spinous pointed; leaves linear–subulate with a stout, spinous spur; flowers white in racemes; berries globose, pale purple or red.

Fls. & Frts. : June–October.

In sandy soil, frequent. Murud.

2. GLORIOSA L.

Gloriosa superba L. Sp. Pl. 305. 1753; Hook. f. Fl. Brit. India 6: 358. 1892; Cooke, Fl. Pres. Bombay 3: 274. 1958 (Repr. ed.). *Bachnag, Khadyanag.*

Slender, perennial twiners with tuberous roots; leaves alternate, opposite or whorled, ovate–lanceolate, acuminate, cordate, 5.5–13 x 1.8–3.2 cm; flowers axillary, solitary; capsules linear–oblong.

Fls. & Frts. : June–November.

In forest outskirts, along the cultivated fields, frequent. Karjat; Matheran; Pen to Khopoli; Roha; Sarasgad, Pali.

The root tubers are highly poisonous and used medicinally in chronic ulcers, neuralgic pains etc.

3. CHLOROPHYTUM Ker.–Gawl.

1a. Leaves lanceolate or linear–oblong, petiolate:

2a. Scapes naked ... *C. breviscapum* 1

2b. Scapes bracteate ... *C. glaucum* 2

1b. Leaves linear or lorate, falcate, sessile:

3a. Scapes upto 35 cm long; flowers 1.5 –2 cm across ... *C. tuberosum* 3

3b. Scapes upto 30 cm long; flowers 2.5–3.5 cm across ... *C. borivilianum* 4

* 1. **Chlorophytum breviscapum** Dalz. in Hook. Kew J. Bot. 2: 141. 1850; Hook. f. Fl. Brit. India 6: 333. 1892; Cooke, Fl. Pres. Bombay 3: 280. 1958 (Repr. ed.).

Herbs with fibrous roots having oblong, pendulous tubers; leaves acuminate, flat with undulate margins, 20–30 x 1.8–3.0 cm; flowers white in racemes; capsules globose, 3–winged.

Fls. & Frts. : July–August.

In hilly forests, infrequent. Matheran.

2. **Chlorophytum glaucum** Dalz. in Hook. Kew J. Bot. 2: 142. 1850; Hook. f. Fl. Brit. India 6: 334. 1892; Cooke, Fl. Pres. Bombay 3: 280. 1958 (Repr. ed.).

Herbs; leaves acute, glaucous, glabrous, 20–35 x 2.8–4.5 cm; flowers white in simple, dense racemes; capsules globose, emarginate, 3–winged; seeds 2–4, orbicular, black.

Fls. & Frts. : August–October.

In hilly forests, frequent. Matheran; Varandh ghat, Mahad.

3. **Chlorophytum tuberosum** (Roxb.) Baker in J. Linn. Soc. 15: 322. 1875; Hook. f. Fl. Brit. India 6: 334. 1892; Cooke, Fl. Pres. Bombay 3: 281. 1958 (Repr. ed.). *Anthericum tuberosum* Roxb. Fl. Ind. 1: 149. 1832. *Kuli.*

Scapigerous, tuberous herbs with cylindric root–fibres; leaves falcate, recurved, acuminate or acute at apex, 12–28 x 1.2–1.6 cm; flowers white in simple, dense flowered, bracteate racemes; capsules obovoid–subglobose, emarginate, trigonous, shining; seeds black.

Fls. & Frts. : June–October.

In hilly forests, frequent. Matheran; Roha.

Roots are edible and leaves used as a vegetable by local people.

4. **Chlorophytum borivilianum** Sant. *et* Fernand. in J. Bombay nat. Hist. Soc. 52: 897. ff. A–F. 1955; Kothari in Red data book Ind. Pl. 2:142. 1988.

Rhizomatous herbs with 1–9 sessile root tubers upto 50 x 8 mm across; leaves radical, coriaceous, acute, flat, 8–22 x 0.7–1.8 cm; flowers white, bracteate in clusters of 3 flowered racemes; capsules greenish–yellow, obcordate, triquetrous; seeds orbicular, black.

Fls. & Frts. : June.

Moist places in hilly regions, infrequent. Jummapatti–Water pipe, Matheran, *Irani* 4112 (BLAT).

4. IPHIGENIA Kunth

1a.	Stem upto 50 cm high; filaments hairy	...	*I. indica* 1
1b.	Stem upto 80 cm high; filaments scabrous	...	*I. magnifica* 2

1. **Iphigenia indica** (L.) A. Gray *apud*. Kunth, Enum. 4: 213. 1843; Hook. f. Fl. Brit. India 6: 357. 1892; Cooke, Fl. Pres. Bombay 3: 275. 1958 (Repr. ed.). *Melanthium indicum* L. Mant. Pl. 2: 226. 1771.

Erect herbs; leaves alternate, linear–lanceolate, 6.5–15 x 0.4–0.6 cm; flowers purple, star–like, few or many in terminal racemes; capsules oblong–ellipsoid; seeds brownish.

Fls. & Frts. : June–October.

On moist, grassy hill plateau, frequent. Matheran.

2. **Iphigenia magnifica** Ansari *et* Rolla Rao in Bull. Bot. Surv. India 20: 162. t. 1. ff. 1–6b. 1978; Ansari in Red data book Ind. Pl. 1: 183. 1987.

Glabrous herbs, *ca* 60 cm; leaves linear–lanceolate, acute, grass–like, 12.5–25 x 0.5–1.2 cm; flowers deep violet or brownish–purple in 4–many flowered racemes; capsules subglobose–oblong, 3–locular, many–seeded.

Fls. & Frts. : August–October.

Among grasses in plains and hillocks, frequent. Mangaon; Matheran.

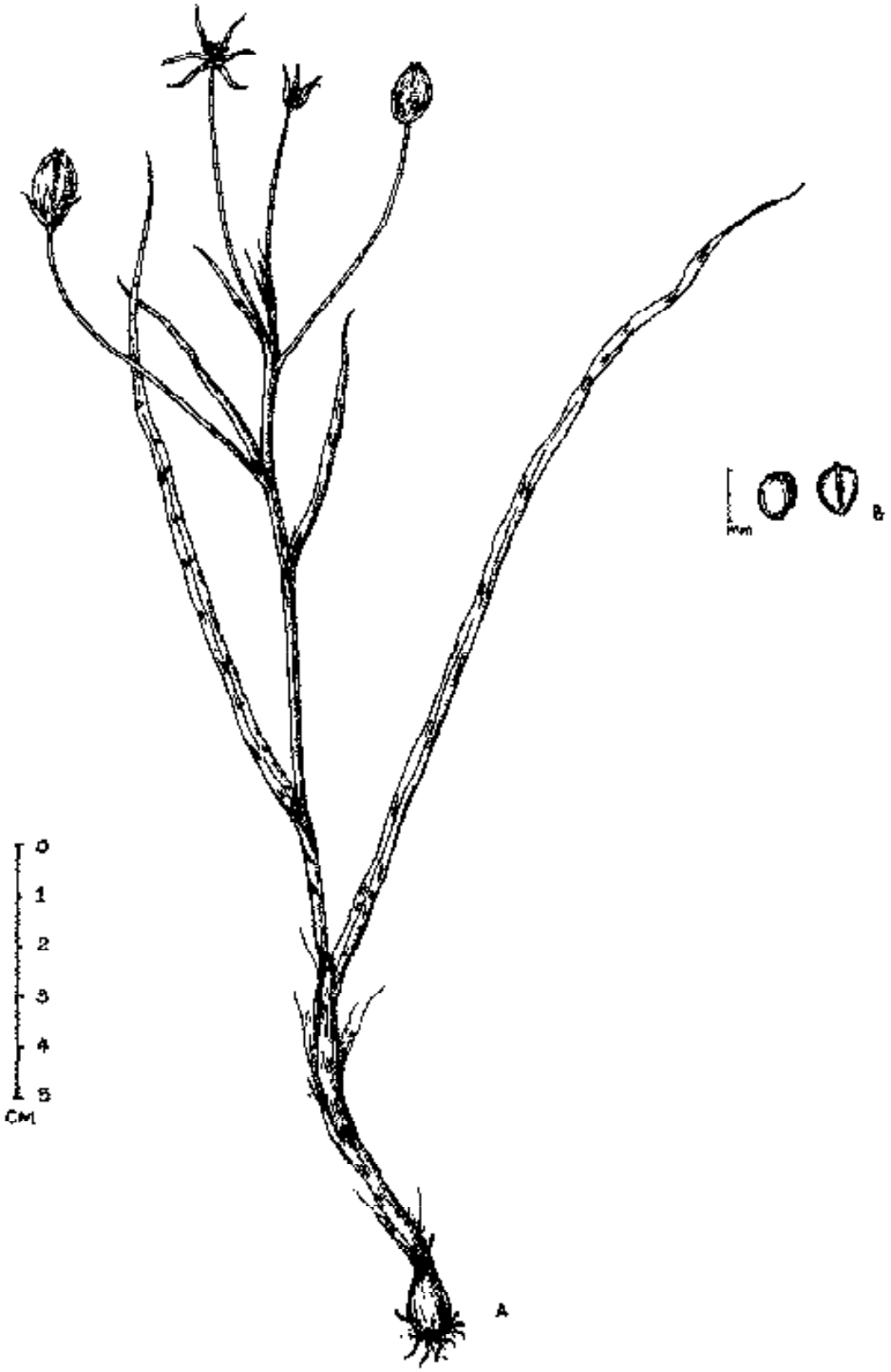
The seeds contain *ca* 0.7% colchicine. Since the number of fruits and seeds are more, the plant at present is vulnerable and may lead to be endangered if it is exploited more for commercial purposes.

139. SMILACACEAE

SMILAX L.

1a.	Leaf blades usually orbicular–oval, more than 9 cm broad and 10 cm long, 5–7–costate	...	*S. ovalifolia* 1
1b.	Leaf blades broadly elliptic, broadest at the middle, rounded–contracted at base, not orbicular, less than 9 cm broad and 10 cm long, 3–5–costate	...	*S. zeylanica* 2

1. **Smilax ovalifolia** Roxb. Fl. Ind. 3: 794. 1832; Wight, Icon. t. 809. 1844; T. Koyama in Adv. Front. Pl. Sci. 4 : 48. t. 1. 1963. *S*



Iphigenia magnifica Ansari *et* Rolla Rao
a) Habit, b) Lateral & Front view of seed.

macrophylla Roxb. Fl. Ind. 3: 793. 1832; Hook. f. Fl. Brit. India 6 : 310. 1892; Cooke, Fl. Pres. Bombay 3: 271. 1958 (Repr. ed.). *Ghotvel.*

Extensive, prickly climbers; leaves variable in shape; umbels 1–3 on an axis, many–flowered; berries 9–11 mm across; seeds 1–(2).

Fls. & Frts. : May–October.

In hilly forests, infrequent. Karjat, *Fernandes* 63 (A).

2. **Smilax zeylanica** L. Sp. Pl. (ed. 1) 1429. 1753; T. Koyama in Adv. Front. Pl. Sci. 4: 50. 1963.

Deciduous, scandent, prickly climbers; leaves uniform in shape; umbels 1–3 (mostly 1) on short axis; berries 6–8 mm across.

Fls. & Frts. : May–October.

In hilly forests, frequent. Karnala fort; Mangaon; Matheran; Palasdhari and Parhur forests, Alibag.

140. PONTEDERIACEAE

1a. Plants floating with swollen petioles; flowers sessile ... EICHHORNIA 1

1b. Plants not floating, petioles not swollen; flowers distinctly pedicellate ... MONOCHORIA 2

1. EICHHORNIA Kunth

Eichhornia crassipes (Mart.) Solms. in DC. Monogr. Phan.4: 527. 1883; Subr. Aq. Ang.70. 1962. *Pontederia crassipes* Mart. Nov. Gen. & Sp. Pl. 1: 9. t. 4. 1823.

Stoloniferous herbs; leaves radical, broadly ovate–rhomboid, 6–20 cm long; flowers irregular, greenish–red in spikes.

Fls. & Frts. : September–February

In ponds, frequent. On way to Panvel.

2. MONOCHORIA K.B. Presl

Monochoria vaginalis (Burm. f.) K.B. Presel, Rel. Haenk. 1: 128. 1827; Hook. f. Fl. Brit. India 6: 363. 1892; Cooke, Fl. Pres. Bombay 3: 286. 1958 (Repr. ed.); Subr. Aq. Angios. 69. 1962. *Pontederia vaginalis* Burm. f. Fl. Ind. 80. 1768.

Suberect herbs with short root–stalks; leaves ovate–lanceolate, acuminate, solitary, 5–10.8 x 2.4–4.7 cm; flowers regular, blue in axillary, sub–spicate racemes; fruits ellipsoid, glandular hairy.

Fls. & Frts. : December.

In moist places, infrequent. Matheran.

141. COMMELINACEAE

1a. Perfect stamens 6, staminodes–0:

2a. Leaf sheaths inflated; inflorescence sessile, embedded in the hollow axil of sheath ... TONNINGIA 1

2b. Leaf sheaths not inflated; inflorescence not as above ... CYANOTIS 2

1b. Perfect stamens 3, staminodes 1–3 :

3a. Flowers regular, 1–6 in a cluster or panicle, not enclosed in spathaceous bract ... MURDANNIA 3

3b. Flowers irregular, in a cyme, enclosed in a spathaceous bract ... COMMELINA 4

1. TONNINGIA Neck. ex A.H.L. Juss.

Tonningia axillaris (L.) O. Ktze. Rev. Gen. Pl. 2: 721. 1801. *Amischophacelus axillaris* (L.) Rolla Rao & Kammathy in J. Linn. Soc. 59: 306. 1966. *Tradescantia axillaris* L. Mant. Pl. 2: 321. 1771. *Cyanotis axillaris* (L.) Schult. f. Syst. 7: 1154. 1830; Hook. f. Fl. Brit. India 6: 385. 1892; Cooke, Fl. Pres. Bombay 3: 305. 1958 (Repr. ed.).

Diffuse or suberect herbs, 30–60 cm; leaves linear–lanceolate, glabrous, 3.5–12.7 x 0.5–1 cm; flowers bluish–purple or white, axillary, solitary, filaments bearded; capsules oblong, beaked.

Fls. & Frts. : September–October.

In moist places, frequent. Karle–khind and Ramraj, Alibag; Sanegaon forests, Roha.

2. CYANOTIS D. Don

1a. Perennial, robust, gregarious herbs; roots tuberous, tubers narrow, fusiform :

2a. Plants upto 75 cm; leaves upto 30 x 3 cm ... *C.concanensis* 1

2b. Plants upto 30 cm; leaves upto 20 x 2.5 cm ... *C. tuberosa* 2

1b. Annual, slender herbs; roots fibrous, not tuberous :

3a. Small, silky or woolly herbs upto 20 cm; leaves linear–lanceolate; hairs on filaments of 2 colours ... *C. fasciculata* 3

3b. Large, glabrous herbs upto 35 cm; leaves ovate–oblong; hairs on filament of 1 colour only. ... *C.cristata* 4

1. **Cyanotis concanensis** Hassk. Comm. Ind. 114. 1870; R. S. Rao in Blumea 14 (2): 348. 1966. *C. stocksii* Hassk. Comm. Ind. 118. 1870. *C. sahyadrica* Blatt. in J. Bombay nat. Hist. Soc. 33: 77. 1928. *C tuberosa sensu* Cooke, Fl. Pres. Bombay 3 : 302. 1958 (Repr. ed.) *non* Schult. f. (1830).

Erect–decumbent herbs; leaves radical; spathes in scorpioid cymes, purplish or reddish–purple; flowers blue; capsules ellipsoid–subglobose; seeds brownish.

Fls. & Frts. : October.

In moist hill slopes, infrequent. On way to Raigad.

2. **Cyanotis tuberosa** (Roxb.) J.A. & J.H. Schult. in Roem. & Schult. Syst. 7: 1153. 1830; Hook. f. Fl. Brit. India 6: 386. 1892; Cooke, Fl. Pres. Bombay 3: 302. 1958 (Repr. ed.) *Tradescantia tuberosa* Roxb. Pl. Cor. t. 108. 1798.

Suberect or prostrate herbs with fusiform tubers; leaves radical and cauline, linear–ensiform, hairy; flowers bluish–purple, pedunculate, hirsute cymes; capsules ellipsoid.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran; on way to Raigad.

3. **Cyanotis fasciculata** (Heyne ex Roth) J.A. & J.H.Schult. in Roem. & Schult. Syst. 7: 1152. 1830; Hook. f. Fl. Brit. India 6: 387. 1892; Cooke, Fl. Pres. Bombay 3: 303. 1958 (Repr. ed.). *Tradescantia fasciculata* Heyne ex Roth, Nov. Pl. Sp. 189. 1821.

Herbs, 10–20 cm high; leaves hairy, 1.7–9.5 x 0.3–2.2 cm; flowers pink–purple in axillary cymes; capsules oblong.

Fls. & Frts. : September–October.

In hilly forests, frequent. Karjat; Matheran; Roha; Sarasgad, Pali.

4. **Cyanotis cristata** (L.) D. Don, Prodr. Fl. Nepal. 46. 1825; Hook. f. Fl. Brit. India 6: 385. 1892; Cooke, Fl. Pres. Bombay 3: 304. 1958 (Repr. ed.). *Commelina cristata* L. Sp. Pl. 42. 1753.

Diffuse or suberect herbs, 10–30 cm; leaves glabrous, 1.3–7.5 x 0.4–2.0 cm; flowers purple with imbricating spathes; capsules trigonous.

Fls. & Frts. : September–October.

Frequent in hilly forests, occasionally near sea–coasts. Karnala fort; Matheran; Murud; Pen.

3. MURDANNIA Royle *nom. cons.*

1a. Cells of the ovary 2–many ovulate; seeds 1–seriate in each cell :

2a. Cells of the capsule 1–3–or more seeded:

3a. Procumbent herbs; filaments of sterile stamens sometimes bearded ... *M. spirata* 1

3b. Erect herbs; filaments of sterile stamens never bearded ... *M. dimorpha* 2

2b. Cells of the capsule 2–seeded ... *M. nudiflora* 3

1b. Cells of ovary 4–20–ovulate; seeds 2–seriate in each cell :

4a. Stems upto 20 cm; filaments naked ... *M. ochraceum* 4

4b. Stems upto 40 cm; filaments bearded ... *M. semiteres* 5

1. **Murdannia spirata** (L.) Brueckn. in Engl. & Prantl, Pflanzenf. (ed.2) 15 a: 173. 1930. *Commelina spirata* L. Mant. Pl. 176. 1767. *Aneilema spiratum* R. Br. Prodr. 271. 1810; Hook. f. Fl. Brit. India 6: 377. 1892; Cooke, Fl. Pres. Bombay 3: 296. 1958 (Repr. ed.).

Herbs with slender stems rooting at lower nodes; leaves linear–lanceolate or ovate–oblong, glabrous, 1.7–3.0 x 0.4–0.8 cm; flowers bluish–purple in dichotomously branched panicles; capsules oblong, mucronate; seeds 3–7, minute, greyish–black.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Ramraj forests, Alibag; Varandh ghat, Mahad.

2. **Murdannia dimorpha** (Dalz.) Brueckn. in Engl. & Prantl, Pflanzenf. (ed. 2) 15a: 173. 1930. *Aneilema dimorphum* Dalz. in Hook. Kew J. Bot. 3: 138. 1851; Hook. f. Fl. Brit. India 6: 377. 1892; Cooke, Fl Pres. Bombay 3: 297. 1958 (Repr. ed.).

Erect herbs, rooting at nodes, upto 30 cm; leaves liner-oblong or ovate-lanceolate, 1.3 – 4.5 x 0.3 – 0.8 cm; flowers bluish in dichotomously branched panicles; capsules oblong, trigonous, shining; seeds subcubical, blackish.

Fls. & Frts: September–October.

In hilly forests, occasional. Matheran.

3. **Murdannia nudiflora** (L.) Brenan in Kew Bull. 1952: 189. 1952; R.S. Rao in Bull. Bot. Surv. India 4: 393. 1961. *Commelina nudiflora* L. Sp. Pl. 41. 1753 *pro parte*. *Aneilema nudiflorum* R.Br. Prodr. 271. 1810; Hook.f. Fl. Brit. India 6 : 378. 1982; Cooke, Fl. Pres. Bombay 3 : 298. 1958 (Repr. ed.).

Erect herbs, 15–30 cm; leaves oblong–laceolate, glabrous, 2.5–7.2 x 0.3–0.7 cm; flowers pale pink in terminal (rarely axillary) panicles; capsules subtrigonous, scarcely longer than persistent sepals; seeds cubical.

Fls. & Frts. : August.

In deciduous forests, frequent. Hatvane forests, Pen; Kolad to Khamb, Roha; Ramraj, Alibag.

4. **Murdannia crocea** (Griff.) Faden in Kew Bull. 32: 188. 1977. *Aneilema crocea* Griff. Notul. t. 235. 1851. *A. ochraceum* Dalz. in Hook. Kew J. Bot. 3: 135. 1851; Hook. f. Fl. Brit. India 6: 380. 1892; Cooke, Fl. Pres. Bombay 3 : 299. 1958 (Repr. ed.).

Tender, erect herbs, 10–20 cm; leaves ovate–oblong, glabrous, 1.8–4.0 x 0.7–1.2 cm; flowers small, creamy–yellow, axillary; fruits green; seeds angular, straw–coloured.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Tata's Power Station, Bhira.

5. **Murdannia semiteres** (Dalz.) Sant. in Poona Agril. Coll. Mag. 41 : 284. 1951. *Aneilema semiteres* Dalz. in Hook. Kew J. Bot. 3: 138. 1851. *A. paniculatum* Wall. ex C.B.Cl. in DC. Monogr. Phan. 3: 215. 1881; Hook. f. Fl. Brit. India 6 : 381. 1892; Cooke, Fl. Pres. Bombay 3: 300. 1958 (Repr. ed.).

Erect, caespitose herbs with fibrous roots; leaves fleshy, acuminate, glabrous, 2.8–10.5 x 0.2–0.3 cm; flowers small, bluish–purple in paniculate cymes; capsules globose, greenish.

Fls. & Frts. : August–October.

In hilly forests, frequent. Jambulpada, Pali; Mangaon; Mhasla; Neral; Roha.

4. COMMELINA L.

1a. Ovary 3–celled, the 2 anticous cells 2–ovulate, the posticous 1–ovulate or obsolete :

2a. Posticous cell of the capsule keeled :

3a. Spathes complicate; capsule 3–locular, upper locule 2–seeded, lower loculus, 1–seeded; seeds not pitted:

4a. Spathes 1–2 per branch; staminodes 2, pollen grain smooth; seeds reticulate ... *C. diffusa* 1

4b. Spathes 3-6 per branch; Staminodes 3; pollen grains spiny; seeds smooth ... *C. hasskarlii* 2

3b. Spathes turbinate ; capsules always 5 –seeded; seeds closely pitted .... *C.benghalensis* 3

2b. Posticous cell of the capsule not keeled :

5a. Capsules constricted in the middle, bi–cuspidate ... *C. clavata* 4

5b. Capsules neither constricted in the middle nor bi–cuspidate ... *C. suffruticosa* 5

1b. All the cells of ovary 1–ovulate :

6a. Capsules 3–celled, 3–valved; seeds free in the cells :

7a. Spathes sessile or nearly so; capsule trigonous–ovoid ... *C. maculata* 6

7b. Spathes pedunculate; capsules quadrate–oblong ... *C. paleata* 7

6b. Capsules 3–celled, 2–valved; seeds free or adnate to the cells ... *C. erecta* 8

1. **Commelina diffusa** Burm. f. Fl. Ind. 18. t. 7. f. 2. 1768. *C nudiflora auct. non* L. (1753); Hook. f. Fl. Brit. India 6: 369. 1892; Cooke, Fl. Pres. Bombay 3: 290. 1958 (Repr. ed.). *Gandolgi.*

Diffuse herbs, rooting at nodes; leaves ovate–lanceolate, glabrous, 2–10 x 0.5–3.0 cm; flowers blue or white, 1–3 in a spathe; capsules oblong, 5–seeded.

Fls. & Frts. : September–October.

In hilly forests, frequent. Matheran; Roha.

2. **Commelina hasskarlii** C.B.Cl. Comm. & Cyrt. Beng. 13. t. 3. 1874 & in DC. Monogr. Phan. 3: 157. 1881; Hook. f. Fl. Brit. India 6: 370. 1892; Cooke, Fl. Pres. Bombay 3: 291. 1958 (Repr. ed.).

Prostrate or suberect herbs; leaves ovate–oblong or lanceolate, glabrous, 3.5–8.0 x 2–2.5 cm; flowers blue; capsules quadrate.

Fls. & Frts. : September–October.

In hilly forests, frequent. Alibag; Karjat; Matheran.

3. **Commelina benghalensis** L. Sp. Pl. 41. 1753; Hook. f. Fl. Brit. India 6: 370. 1892; Cooke, Fl. Pres. Bombay 3: 291. 1958 (Repr. ed.).

Herbs, 30–60 cm; leaves elliptic–ovate or oblong, glabrous or sparsely ciliate, 1.5–8.0 x 1.0–3.8 cm; flowers bright blue in short cymes; spathes 1–3 together, funnel shaped or turbinate; capsules pyriform; seeds 5, oblong, truncate.

Fls. & Frts. : September–October.

In moist hilly forests, frequent. Karjat; Neral to Matheran; Raigad; Ramraj, Alibag.

4. **Commelina clavata** C.B.Cl. Comm. & Cyrt. Beng. 15. t. 5. 1874 & in DC. Monogr. Phan. 3: 171. t. 2. f. 2. 1881; Hook. f. Fl. Brit. India 6: 371. 1892; Cooke, Fl. Pres. Bombay 3: 292. 1958 (Repr. ed.).

Diffuse herbs, 30–90 cm; leaves ovate or elliptic–lanceolate, acuminate, glabrescent, 3–8 x 1–2 cm; spathes ovate–lanceolate, pedunculate; capsules quadrate–oblong; seeds 4, cylindric.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Khopoli; Matheran.

5. **Commelina suffruticosa** Blume in Enum. Pl. Java 1: 3. 1827; R. S. Rao & Kammathy in J. Bombay nat. Hist. Soc. 59 (1): 65. t. 1 (E) & 3(4). 1962.

Perennial, slender, erect herbs, 30–70 cm; leaves ovate–lanceolate, glabrous, 5.8–15.6 x 2–6 cm; spathes pedunculate, terminal, glabrescent; flowers white, 6–8 in racemes; capsules quadrate–oblong; seeds yellowish, pitted.

Fls. & Frts. : August–September.

In moist forests, infrequent. Karjat; Matheran.

6. **Commelina maculata** Edgew. in Trans. Linn. Soc. 20: 89. 1846; R. S. Rao in Blumea 14 (20): 363. 1966. *C. obliqua* Buch.–Ham. ex D. Don, Prodr. Fl. Nepal. 45. 1825 *non* Vahl. (1806); Hook. f. Fl. Brit. India 6: 372. 1892. *C. paludosa* Blume, Enum. Pl. Jav. 1: 2. 1827; R. S. Rao & Kammathy in J. Bombay nat. Hist. Soc. 59: 60. 1962.

Suberect–prostrate herbs, rooting at nodes, 60–80 cm; leaves ovate–lanceolate; margins of leaf sheath rusty–hairy, 3.5–14 x 1.5–3 cm;

flowers blue in funnel–shaped spathes; capsules subglobose, 3–celled; seeds 3, oblong, greyish–brown or blackish.

Fls. & Frts. : September–October.

In moist forests, infrequent. Ramraj, Alibag; Matheran.

7. **Commelina paleata** Hassk. in Miq. Pl. Jungh. 139. 1852; R. S. Rao & Kammathy in J. Bombay nat. Hist. Soc. 59 (1): 61. t. 1(c) & 3(2). 1962; Hook. f. Fl. Brit. India 6: 372. 1892; Cooke, Fl. Pres. Bombay 3: 294. 1958 (Repr. ed.).

Herbs, rooting at nodes; leaves elliptic–lanceolate, acuminate, glabrous, 5–15 x 2.5–4 cm; spathes ovate–rhomboid, pubescent; flowers deep blue in bifid racemes; capsules 3–celled; seeds 3, ellipsoid, black with brown patches.

Fls. & Frts. : August–October.

In moist deciduous forests, frequent. Karjat; Matheran; Ramraj forests, Alibag; Sanegaon, Roha.

8. **Commelina erecta** L. Sp. Pl. 41. 1753; Morton in J. Linn. Soc. Bot. London 60: 183. 1967. *C. kurzii* C.B.Cl. in J. Linn. Soc. Bot. London 11: 444. 1871 & Cyrt. Beng. t.8.1874; Hook. f. Fl. Brit. India 6: 373. 1892.

Dichotomously branched herbs; leaves ovate–lanceolate, hairy beneath, 5.8–13.5 x 0.6–2.2 cm; flowers purple; capsules ellipsoid, glabrous; seeds blackish–brown, glabrous.

Fls. & Frts. : August–October.

In hilly forests, frequent. Karnala bird sanctuary; Matheran; Pen to Khopoli.

142. ARECACEAE
(*PALMAE*)

1a. Stems dichotomously branched ... HYPHAENE 1

1b. Stems usually unbranched, if branched, never dichotomously :

2a. Leaves simple, palmately fan–shaped, circular or lunate in outline, the margin multifid ... BORASSUS 2

2b. Leaves compound, not as above :

3a. Leaves pinnate, leaflets linear, longitudinally folded, midrib absent; plants dioecious; stamens 6, 3 or 9; seeds ventrally grooved ... PHOENIX 3

3b. Leaves bipinnatisect or decompound, leaflets obliquely wedge-shaped, midrib present; plants monoecious; stamens many; seeds not grooved ... CARYOTA 4

1. HYPHAENE Gaertn.

Hyphaene dichotoma (White) Furtado in Gard. Bull. Singapore 25: 301. 1970; Basu in Ind. Pl. Red-Data Book-I: 30. 1984. *Borassus dichotoma* ('*dichotomous*') White in Grah. Cat. Pl. Bombay 226. 1839. *H. indica* Becc. L' Agric. Colon. Florence 2: 173. t. 3. 1908; R. S. Rao in J. Bombay nat. Hist. Soc. 60 (3): 761. 1963. *Ravantad, Sindhi.* (PLATE 3d)

Trees, 8–10 m; leaves multifid, flabellate, fan-shaped, upto 1 m broad, long petiolate; flowers unisexual; fruits obovoid, green with brown tinge and hairs; mesocarp spongy, fibrous, endocarp hard, stony.

Fls. & Frts. : September–March.

Along the sea-coast, infrequent. Nagaon and Revdanda, Alibag.

Young leaves used as fodder, mature leaves for thatching, stem and branches as fire-wood.

2. BORASSUS L.

Borassus flabellifer L. Sp. Pl. 1187. 1753; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 482. 1894; Cooke, Fl. Pres. Bombay 3: 322. 1958 (Repr. ed.). *Tad, Tadi.*

Trees with striaght trunk, 1.5–2.0 m; leaves coriaceous in terminal crown, 60–120 cm; male spadix much branched, female one simple; flowers minute; drupes subglobose, brown; seeds oblong, 3-lobed at top.

Fls. & Frts. : March–April.

In hilly forests, frequent. Matheran; Mhasla.

Gum is extracted from stem. The wood is durable and used for water-pipes, posts; leaves for thatching, mats etc. Flower-stalks yeild sugar and fruits are edible.

3. PHOENIX L.

Phoenix sylvestris (L.) Roxb. Fl. Ind. 3: 787. 1832; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 425. 1892; Cooke, Fl. Pres. Bombay 3: 311. 1958 (Repr. ed.). *Elate sylvestris* L. Sp. Pl. 1189. 1753.

Trees with crooked bark, 8–12 m; leaves shining, glabrous upto 2.5 m long; leaflets conduplicate; flowers many, oblique; fruits orange–yellow, oblong, ellipsoid.

Fls. & Frts. : September–November.

In deciduous forests, frequent. Karjat.

Fruits are edible. The leaves are used for making mats, baskets, brooms and fans.

4. CARYOTA L.

Caryota urens L. Sp. Pl. 1189. 1753; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 422. 1892; Cooke, Fl. Pres. Bombay 3: 315. 1958 (Repr. ed.). *Bherlimar.*

Trees, 8–12 m; leaves bright-dark green in terminal crown, 1–2 m long; leaflets obovate–cuneate, curved, drooping; flowers 3–nate in drooping, compound spadix; fruits pale red.

Fls. & Frts. : September–January.

In hilly forests, frequent. Matheran; Mhasla.

Wood is used for making planks etc. and leaves yield strong fibre 'Kittul.' The trunk is also tapped for extracting 'Toddy'.

Cultivated and introduced:

1. **Areca catechu** L. Sp. Pl. 1189. 1753; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 405. 1892; Cooke, Fl. Pres. Bombay 3: 319. 1958 (Repr. ed.). *Supari.*

Slender stemmed palm upto 3m; leaves pinnate, spadix androgynous; fruits fleshy, fibrous, orange or scarlet.

Cultivated for its seeds 'Supari' at Nagaon, Alibag.

2. **Cocos nucifera** L. Sp. Pl. 1188. 1753; Becc. & Hook. f. in Hook. f. Fl. Brit. India 6: 482. 1893; Cooke, Fl. Pres. Bombay 3: 322. 1958 (Repr. ed.). *Naral.*

Trees; leaves pinnate; leaflets linear–lanceolate; spadix androgynous, drooping; drupes obovoid, fibrous.

Cultivated in coastal areas of the district. Kernel and oil are edible. Leaves used for thatching; drupe fibre in cottage industries.

143. PANDANACEAE

PANDANUS L. f. *nom. cons.*

Pandanus tectorius Soland. ex Parkinson in J. Voy. H.M.S. Endeavour. 46. 1773; Cooke, Fl. Pres. Bombay 3: 324. 1958 (Repr ed.). *P. odoratissimus* L. f. Suppl. 424. 1753 *nom. illeg. P. fascicularis* Lam. Encycl. 1: 372. 1785; Hook. f. Fl. Brit. India 6: 484. 1893.

Large shrubs or small trees, 4–8 m; stems terete, supported by stilt roots; leaves linear–ensiform, spiny on margins and midrib, 50–100 x 4–8 cm; flowers unisexual; spadix much branched, sessile, whitish, fragrant, covering male flowers.

Fls. & Frts. : September–October.

Along sea–coast, infrequent. Alibag.

The roots are used in basket and brush making, while leaves for making mats and their fibres for cordage etc. The fragrant spathes yield an aromatic, medicinal oil.

144. TYPHACEAE

TYPHA L.

Typha angustifolia L. Sp. Pl. 971. 1753; Backer in Steenis, Fl. Males. Ser. 1, 4: 243. 1951. *T. angustata* Bory & Chaub. Exp. Sc. More Bot. 2(1): 338. 1832; Hook. f. Fl. Brit. India 6: 489. 1893; Cooke, Fl. Pres. Bombay 3: 326. 1958 (Repr. ed.); Subr. Aq. Ang. 74. 1962.

Perennial, scapigerous, marshy herbs, 90–100 cm; leaves linear, semiterete, fleshy, grass-green, sheathing at base, as long as scape; flowers both male and female in terminal, reddish–brown spikes; males above, female ones below, both separated by sterile, constricted portion in centre; nutlets ellipsoid, brown.

Fls. & Frts. : September–March.

Near ponds, frequent. Ghosale, Roha.

145. ARACEAE

1a. Flowers bisexual; stem scandent ... POTHOS 1

1b. Flowers unisexual; stem not scandent :

2a. Plants aquatic ... PISTIA 2

2b. Plants terrestrial :

3a. Spadix with a barren terminal appendage; placentation not parietal :

4a. Male flowers stipitate;plants often dioecious ... ARISAEMA 3

4b. Male flowers sessile or nearly so; plants always monoecious :

5a. Flowers and leaves present together ... TYPHONIUM 4

5b. Flowers appearing before the leaves :

6a. Males and females remote; neuters present above the females; leaves pedatipartite ... SAURUMATUM 5

6b. Males and females contiguous; neuters wanting; leaves 3–sect, pinnatifid ... AMORPHOPHALLUS 6

3b. Spadix without a barren appendage; placentation parietal :

7a. Sapdix free from the spathe; stigma discoid ... REMUSATIA 7

7b. Female inflorescence adnate to base of spathe; stigma stellate ... ARIOPSIS 8

1. POTHOS L.

Pothos scandens L. Sp. Pl. 968. 1753; Hook. f. Fl. Brit. India 6: 551. 1893; Cooke, Fl. Pres. Bombay 3: 339. 1958 (Repr. ed.).

Shrubs; leaves obovate, elliptic–lanceolate, acuminate, 5–10 x 2–4.5 cm; petiole winged; spathe cuspidate, green; spadix yellow, globose–ovoid, stipitate; berries oblong, scarlet.

Fls. & Frts. : May–July.

In hilly forests, frequent. Parghat; Songar Reserve forest, Mhasla.

2. PISTIA L.

Pistia stratiotes L. Sp. Pl. 963. 1753; Hook. f. Fl. Brit. India 6: 497. 1893; Cooke, Fl. Pres. Bombay 3: 328. 1958 (Repr. ed.); Subr. Aq. Ang. 74. 1962.

Floating, stoloniferous herbs; leaves sessile, obovate–cuneate, densely pubescent, 2.7–10 cm long; spathes obliquely campanulate, white, gibbous below, contracted in middle, dilated and nearly orbicular above; fruits ovoid.

Fls. & Frts. : July–December.

In ponds and tanks, infrequent. Nagothana.

3. ARISAEMA Mart.

1a.	Appendages of spadix curved, included or exserted	...	*A. murrayi* 1
1b.	Appendage of spadix elongate, much exserted	...	*A. tortuosum* 2

1. **Arisaema murrayi** (Grah.) Hook. in Bot. Mag. t. 4388. 1848; Hook. f. Fl. Brit. India 6: 507. 1893; Cooke, Fl. Pres. Bombay 3: 332. 1958 (Repr. ed.). *Arum murrayi* Grah. Cat. Bombay Pl. 229. 1839. *Sapacha Kanda.*

Tuberous herbs; leaves solitary, peltate; segments 5–10, whorled, ovate–lanceolate, acuminate; spathe striate forming a wide tube; male flowers scattered with a few neuters; ovaries numerous; fruits conical.

Fls. & Frts. : May–July.

In hilly forests, frequent. Matheran.

2. **Arisaema tortuosum** (Wall.) Schott in Melet. Bot. 1: 17. 1832; Hook. f. Fl. Brit. India 6: 502. 1893; Cooke, Fl. Pres. Bombay 3: 331. 1958(Repr. ed.). *Arum tortuosum* Wall. Pl. Asiat. Rar. 2: 10. 1830.

Herbs with globose tubers, 15–90 cm; leaves solitary; lobes 5–8, linear–lanceolate or elliptic–obovate, acuminate; spathe pale–green or purple–yellow, cylindric; spadix with a smooth, purple appendage, tapering like a rat–tail, sigmoidly curved, sterile part exserted; berries 4–5–seeded.

Fls. & Frts. : August–September.

As forest undergrowth, infrequent. Mandatna to Pangloli, Mhasla.

4. TYPHONIUM Schott

Typhonium bulbiferum Dalz. in Hook. Kew J. Bot. 4: 113. 1852; Hook. f. Fl. Brit. India 6: 511. 1893; Cooke, Fl. Pres. Bombay 3: 333. 1958 (Repr. ed.).

Tuberous herbs; leaves triangular–hastate, sagittate or cordate, long petiolate (*ca* 15 cm), 5.5–10.2 cm long and as broad across the segments; spathe pale, rose–coloured; spadix slender, linear–acuminate, yellow; neuters above the female inflorescence, linear; berries ovoid.

Fls. & Frts. : May–June.

In deciduous forests, infrequent. Roha.

5. SAUROMATUM Schott

Sauromatum pedatum (Willd.) Schott in Schott & Endl. Melet. Bot. 17. 1832. *Arum pedatum* Willd. Enum. Suppl. 54. 1809. *A venosum* Ait. Hort. Kew. 3: 315. 1811. *A. guttatum* Wall. Pl. Asiat. Rar. 2: 10. t. 115. 1813. *Sauromatum venosum* (Ait.) Kunth, Enum. Pl. 3: 28. 1841. *S. guttatum* (Wall.) Schott *op. cit.*; Hook. f. Fl. Brit. India 6: 508. 1893; Cooke, Fl. Pres. Bombay 3: 335. 1958 (Repr. ed.). *Nurui.*

Herbs with corms, *ca* 1 m; leaves solitary; lobes 7–15, ovate–lanceolate or oblong–cordate, acuminate, glabrous, 4.6–30.5 x 2.5–10.2 cm; spathes greenish–brown, ovoid; male and female inglorescences short, distance, dense and flowered; neuters clavate, close above the females; berries 1–seeded.

Fls. & Frts. : April.

In hilly forests, occasional, Matheran.

6. AMORPHOPHALLUS Blume ex Decne. *nom. cons.*

1a. Spathe greenish–pink, 12–22 cm broad, appendage dark purple ...*A. paeoniifolius* var. *campanulatus* 1

1b. Spathe brownish–purple, 8–12 cm broad, appendage cream–coloured ... *A.commutatus* 2

1. **Amorphophallus paenoiifolius** (Dennst.) Nicol. var. *campanulatus* (Decne.) Sivadasan in Taxon 32: 130.1983. *Arum campanulatus* Decne. in Nouv. Ann. Mus. Hist. Paris 3: 366. 1834. *Amorphophallus campanulatus non* Blume ex Decne. (1834); Hook. f. Fl. Brit. India 6: 513. 1893; Cooke, Fl. Pres. Bombay 3: 336. 1958 (Repr. ed.). *Arum campanulatum* Roxb. Pl. Cor. t. 272. 1820; Wight, Icon. t. 782. 1844. *Suran.*

Bulbiferous herbs with depressed–globose corms, 20–25 cm across; leaves simple or forked; leaflets oblong, acute; spathes orbicular–ovate with obtuse limb; berries obovoid, red, 2–3–seeded.

Fls. & Frts. : August.

Near river banks, escape.Mangaon surroudings.

2. **Amorphophallus commutatus** (Schott) Engl. in DC. Monogr. Phan. 2: 319. 1879 & Pflanzenr. 48: 95. 1911; Hook. f. Fl. Brit. India 6:

515. 1893; Cooke, Fl. Pres. Bombay 3: 337. 1958 (Repr. ed.). *Conophallus commutatus* Schott in Bonpl. 7: 28. 1854.

Perennial herbs, 80-120 cm; tubers depressed; leaves solitary, variously lobed, 25–40 cm; spathes long peduncled, ovate–lanceolate, obtuse; spadix as long as spathes (*ca* 30 cm); berries orange.

Fls. & Frts. : September–October.

In moist deciduous forests, frequent. Matheran; Survey forests, Murud.

The peduncle and inflorescence are edible.

7. REMUSATIA Schott

Remusatia vivipara (Roxb.) Schott, in Schott & Endl. Melet. Bot. 18. 1832; Hook. f. Fl. Brit. India 6: 521. 1893; Cooke, Fl. Pres. Bombay 3: 339. 1958 (Repr. ed.). *Arum viviparum* Roxb. Fl. Ind. 3: 496. 1832. *Caladium viviparum* Lodd. Bot. t. 281. 1818.

Tuberous herbs with bulbiferous shoots, 15–40 cm; leaves orbicular–ovate, peltate, 10–40 x 7–30 cm; spathes oblong, limb golden yellow; spadix short with male inflorescence.

Fls. & Frts. : May–June.

In hilly forests, occasional. Neral.

8. ARIOPSIS Nimmo

Ariopsis peltata Nimmo in Grah. Cat. Bombay Pl. 252. 1839; Hook. f. Fl. Brit. India 6: 519. 1893; Cooke, Fl. Pres. Bombay 3: 338. 1958 (Repr. ed.). *Remusatia vivipara sensu* Wight, Icon. t. 900. 1847, *non.* Schott (1832).

Herbs with green, ovoid, clustered tubers; leaves solitary, peltate, orbicular, glaucous beneath, 2.5–14.6 cm across; male flowers dark purple, female ones green in decurved spathe.

Fls. & Frts. : June–September.

As forest undergrowth, infrequent. Neral; Roha.

Leaves are said to be used as vegetable.

Cultivated or introduced :

Colocasia esculenta (L.) Schott in Schott & Endl. Melet. Bot. 18. 1832; Matthew, Ill. Fl. Tamilnadu Carnatic tt. 766 & 979 C. 1982. *Arum esculentum* L. Sp. Pl. 965. 1753. *Colocasia antiquorum* Schott, *op. cit.* ; Hook. f. Fl. Brit. India 6: 523. 1893; Cooke, Fl. Pres. Bombay 3: 340. 1958 (Repr. ed.). *Alu.*

Tuberous herbs; leaves ovate–suborbicular or cordate with long petioles; spathes with convolute tube and pale yellow limb.

Usually cultivated, occasionally found as an escape in Songar Reserve forest, Mhasla.

All parts of the plant are edible.

146. ALISMATACEAE

LIMNOPHYTON Miq.

Limnophyton obtusifolium (L.) Miq. Fl. Ned. Ind. Bot. 3: 242. 1856; Hook. f. Fl. Brit. India 6: 560. 1893; Cooke, Fl.Pres. Bombay 3: 545. 1958 (Repr. ed.). *Sagittaria obtusifolia* L.Sp. Pl. 993. 1753. *Nalkut.*

Scapigerous, robust, aquatic herbs, 30 – 60 cm; leaves triangular, reniform–sagittate, 11.5–20 x 8–10.6 cm; flowers many, bluish–white, whorled on long, stout scapes; achenes black, obovoid, numerous.

Fls. & Frts. : November–February.

Along the margins of tanks and ditches, frequent. Nagothana; Pali to Nagothana.

147. NAJADACEAE

NAJAS L.

Najas minor All. Auct. Syn. Meth. Strip. Hort. Taurin. 3. 1773. & Fl. Peden. 2: 221. 1785; Hook. f. Fl. Brit. India 6: 569. 1893; Cooke, Fl. Pres. Bombay 3: 352. 1958 (Repr. ed.); Subr. Aq. Ang. 101. 1962.

Submerged, dichotomously branched herbs with filiform stems; leaves linear, dark green, margins with upcurved spinules, 0.9 – 2.0 cm long; flowers whitish, axillary; achenes ellipsoid–oblong; seeds ellipsoidal, pitted.

Fls. & Frts. : October–November.

In tanks, occasional. Alibag.

148. ERIOCAULACEAE

ERIOCAULON L.

1a. Floral bracts glabrous or nearly so:

2a. Receptacles glabrous; heads hemispheric; involucral bracts truncate ... *E. truncatum* 1

2b. Receptacles villous; heads conical or obconic; involucral bracts not truncate:

3a. Floral bracts oblanceolate or cuspidate; female sepals falcate, winged or keeled; petals absent ... *E. minutum* 2

3b. Floral bracts acute; female sepals narrow, not as above; petals 3 ...*E. hamiltonianum* 3

1b. Floral bracts bearded or pubescent :

4a. Involucral bracts longer than the flowering part of the head, shining, pale yellow or nearly white:

5a. Peduncles stout ... *E. xeranthemum* 4

5b. Peduncles slender ... *E. humile* 5

4b. Involucral bracts not as above:

6a. Receptacles glabrous; leaves cuspidate at apex ... *E. cuspidatum* 6

6b. Receptacles villous; leaves not cuspidate:

7a. Floral bracts scabrid or puberulous; female sepals strongly boat-shaped and crested on the keel or at least enlarged ... *E. elenorae* 7

7b. Floral bracts hairy; female sepals flat or if boat-shaped, not as above:

8a. Female petals absent; involucral bracts exceeding the floral bracts ... *E. achiton* 8

8b. Female petals present; involucral bracts not exceeding the floral bracts :

9a. Heads 3–5 mm across ... *E. sollyanum* 9

9b. Heads 6–8 mm across:

10a. Heads globose; peduncles thickened below it; sepals deeply boat-shaped and thickened along the keel ... *E. vanhourckii* 10

10b. Heads, peducle and sepals not as above:

11a. Female sepals all similar ...*E. quinquangulare* 11

11b. Female sepals dissimilar :

12a. Involucral bracts reflexed; male petals well developed ... *E. dianae var. longibracteatum* 12

12b. Involucral bracts reflexed; male petals well developed ... *E. collinum* 13

1. **Eriocaulon truncatum** Buch.-Ham. ex Mart. in Wall. Pl. Asiat. Rar. 3: 29. 1832; Hook. f. Fl. Brit. India 6: 578. 1893; Fyson in J. Ind. Bot. 2: 199. 1921.

Scapigerous herbs; leaves linear, flat, membranous, 1.5–3.8 x 0.2–0.3 cm; scapes glabrous, 4–12 cm long; female sepals narrow, 2, boat-shaped, toothed at apex; ovary 3-lobed.

Fls. & Frts. : September–October.

In wet places, infrequent. Pen to Khopoli.

2. **Eriocaulon minutum** Hook. f. Fl. Brit. India 6: 579. 1893; Cooke, Fl. Pres. Bombay 3: 359. 1958 (Repr. ed.); Fyson in J. Ind. Bot. 2: 317. t. 36. 1921.

Small, tufted herbs, 5–10 cm; leaves linear or filiform, 3–5 nerved, 0.6–2.0 cm long; scapes numerous, slender; heads white; ovary 2–3 lobed; seeds oblong, ellipsoid, reddish-brown.

Fls. & Frts. : August–September.

In wet places, infrequent. Near Jummapatti, Matheran, *Irani* 44392 (BLAT).

3. **Eriocaulon hamiltonianum** Mart. in Wall. Pl. Asiat. Rar. 3: 29. 1832; Fyson in J. Ind. Bot. 2: 313. t. 33. 1921. *E. oryzetorum sensu* Hook. f. Fl. Brit. India 6: 579. 1893 *pro parte non* Mart. (1832).

Scapigerous herbs; leaves linear-lanceolate, 5–10 cm long; scapes many, 8–12 cm high; heads yellowish-brown, glabrous, *ca* 4 mm; style with 3 filiform branches; seeds minute, pale yellow.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

4. **Eriocaulon xeranthemum** Mart. in Wall. Pl. Asiat. Rar. 3: 29. 1832; Hook. f. Fl. Brit. India 6: 584. 1893; Cooke, Fl. Pres. Bombay 3: 362. 1958 (Repr. ed.).

Stemless, scapigerous herbs; leaves linear–lanceolate, flat, membranous, 1.6–2.8 x 0.2–0.3 cm; scapes glabrous, 2–4 cm long; heads surrounded by longer, scarious, shining bracts; ovary 3–lobed; seeds oblong, yellowish.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Ghosale fort, Roha.

5. **Eriocaulon humile** Mold. in Phytologia 3: 162. 1949; Sant. in Rec. Bot. Surv. India 16(1): 294. 1967 (ed. 3); Ragh. *et* Singh in Pl. Cons. Bull. 3: 3. 1983; Kothari in Red data book Ind. Pl. 3: 117.1990

Acaulescent herbs; leaves linear, acute, glabrous, basal rosulate, 2–4 cm long; heads hemispheric, greyish, 2–3 mm; ovary subglobose, 3–celled, stigmas 3.

Fls. & Frts. : September–November.

In hilly forests, rare. Dungar–path, Matheran, *Irani* 4662 (**BLAT**).

This species is so far known from Khandala and Matheran (Maharashtra state) only. Vulnerable.

6. **Eriocaulon cuspidatum** Dalz. in Hook. Kew J. Bot. 3: 281. 1851; Hook. f. Fl. Brit. India 6 : 581. 1893; Cooke, Fl. Pres. Bombay 3: 359. 1958 (Repr. ed.).

Stemless herbs; leaves erect, caespitose, linear–oblong, cuspidate, 2.0–7.5 cm long; heads subglobose or hemispheric, white–puberulous; ovary 3–lobed; seeds oblong, smooth.

Fls. & Frts. : August–November.

In moist places, infrequent. Mangaon surroundings.

* 7. **Eriocaulon elenorae** Fyson in J. Ind. Bot. 2: 316. t. 35. 1921; Sant. in Rec. Bot. Surv. India 16(1): 294. 1967 (ed. 3).

Small, tufted herbs; leaves subulate or acicular, glabrous, 1.2–5.3 cm long; heads hemispheric; ovary triangular; seeds 3, brown, glabrous, polished.

Fls. & Frts. : August–September.

In hilly forests, infrequent. Matheran.

8. **Eriocaulon achiton** Koern. in Linnaea 27: 630. 1856; Hook. f. Fl.Brit. India 6: 584. 1893; Fyson in J. Ind. Bot. 2: 202–203. 1921.

Tiny, scapigerous herbs; leaves linear, 0.8–2.2 cm long; scapes 2.5–7.0 cm long; heads suborbicular or obconical; seeds ovoid, brownish–black.

Fls. & Frts. : September–October.

In hilly forests, frequent. On way to Panorama point, Matheran.

9. **Eriocaulon sollyanum** Royle, Ill. Pl. Himal. 409. t. 97. f. 1. 1839. *E. trilobum* Buch.–Ham ex Koern. in Linnaea 27: 645. 1856; Hook. f. Fl. Brit. India 6: 583. 1893; Cooke, Fl. Pres. Bombay 3: 361. 1958 (Repr. ed.).

Scapigerous herbs; leaves caespitose, linear, flat, acute–subobtuse, 1.5–6.0 x 0.1–0.3 cm; scapes glabrous, 6–18 cm long; heads subglobose, greyish–brown; ovary sub–sessile, 3–lobed; seeds ellipsoid, ridged.

Fls. & Frts. : August–October.

In moist places, infrequent. Jummapatti and Dastur–naka, Matheran, *Irani*, 4390, 4480 (**BLAT**).

10. **Eriocaulon vanheurckii** Muell.–Arg. in Heurck Obs. Bot. 2: 98. 1870; Sant. in Rec. Bot. Surv. India 16(1): 297.1967 (ed. 3).*E thomasi* Fyson in J. Ind. Bot. 2: 318. t. 41. 1921.

Herbs, stems tufted; leaves lanceolate or oblanceolate, acute or mucronate, glabrous, 5–10 x 2.3–5 cm; heads white; sepals 2, boat–shaped; female petals linear with basal hairs.

Fls. : September–October.

In moist places, infrequent. On way to Porcupine point, Matheran, *Irani* 4497 (**BLAT**).

11. **Eriocaulon quinquangulare** L. Sp. Pl. 87. 1753; Hook. f. Fl. Brit. India 6: 582. 1893; Cooke, Fl. Pres. Bombay 3: 361. 1958 (Repr. ed.); Fyson in J. Ind. Bot. 2: 204. t. 9. 1921.

Scapigerous herbs; leaves flat, linear or lanceolate, glabrous, 2.0–4.5 x 0.2–0.3 cm; scapes 5–ribbed, glabrous, 2.5–10 cm long; heads globose–ovoid, grey–white; ovary stipitate or subsessile, 3–lobed; seeds ellipsoid.

Fls. & Frts. : September–October.

On moist hill–slopes, occasional. Bhise–khind, Roha.

12. **Eriocaulon dianae** Fyson var. **longibracteata** Fyson in J.

Ind. Bot. 2: 259. t. 13. 1921; Sant. in Rec. Bot. Surv. India 16(1): 294. 1967 (ed. 3).

Scapigerous herbs; leaves linear–lanceolate, 2.2–6.0 x 0.3–0.8 cm; scapes terete, glabrous, 5–10 cm long; heads subglobose; involuaral bracts much longer than floral bracts.

Fls. : September.

In moist decidous forests, frequent. Matheran; Pachhad; Pen; Sarasgad, Pali.

13. **Eriocaulon collinum** Hook. f. Fl Brit. India 6: 584. 1893.

Tufted herbs; leaves linear, subulate, compressed, 1.8–4.0 cm long; scapes rigid, flexuose, 3–12 cm long; heads globose, dark grey; ovary sessile or shortly stipitate.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Bhira, Roha.

149. CYPERACEAE

1a. Nuts enclosed within a utricle ... CAREX 1

1b. Nuts not enclosed within a urtricle :

2a. Spikelets unisexual; nuts borne on a band like, 3–lobed disk ... SCLERIA 2

2b. Spiklets bisexual; nuts without the above disk.:

3a. Fertile glumes distichous ... CYPERUS 3

3b. Fertile glumes spirally arranged:

4a. Hypogynous bristles or scales present:

5a. Inflorescence reduced to a solitary spikelet ... ELEOCHARIS 4

5b. Inflorescence paniculate, umbellate or reduced to a capitate head:

6a. Spikelets many flowered :

7a. Inflorescence lobed, solitary, terminal head; hypogynous scales 2, hyaline ... LIPOCARPHA 5

7b. Inflorescence paniculate or anthelate; hypogynous scales 3, thick or filiform ... FUIRENA 6

6b. Spiklets few flowered ... RHYNCHOSPORA 7

4b. Hypogynous bristles or scales absent:

8a. Nuts with persistent, button-like articulated style base ... BULBOSTYLIS 8

8b. Nuts without persistent style base:

9a. Style articulated with ovary, swollen at base, usually fimbriate ... FIMBRISTYLIS 9

9b. Style articulated with ovary, neither swollen nor fimbriate ... SCIRPUS 10

1. CAREX L.

Carex caricina (D.Don) Ghild. & Bhatt. in J. Econ. Tax. Bot. 7: 602. 1985. *Cyperus caricinus* D. Don, Prodr. Fl. Nepal. 39. 1825.*Carex filicina* Nees var. *glaucina* (Boeck.) Kukenth. in Pflanzenr. 38: 274. 1907; Karthik. *et al* in Rec. Bot. Surv. India 21 (2): 192. 1981. *C glaucina* Boeck. in Linnaea 40: 353. 1876. *C. mercarensis* Hochst. ex Steud. var. *major* Steud. Syn. Pl. Cyp. 194. 1855; C.B.Cl. in Hook. f. Fl. Brit. India 6: 719. 1894; Cooke, Fl. Pres. Bombay 3: 421. 1958 (Repr. ed.).

Perennial herbs, 80–100 cm; rhizomes fibrous, conical; leaves flat, ligulate, linear , dark green; spikelets linear with 6–10 scabrous hairy urtricles; female glumes purple–brown.

Fls. & Frts. : February–March.

In moist places, infrequent. Matheran.

2. SCLERIA Berg.

1a. Hypogynous disk of female flowers zero or reduced to a narrow band ... *S. lithosperma* 1

1b. Hypogynous disk of female flowers well developed, usually 3–lobed :

2a. Leaves 0.25–0.3 cm, broad; lateral panicles erect, peduncles usually short, rigid ... *S. tessellata* 2

2b. Leaves 0.6–0.8 cm broad; lateral panicles pendulous; peduncles long and flexuous ... *S. biflora* 3

* 1. **Scleria lithosperma** (L.) Swartz, Prodr. 18. 1758; C.B.Cl. in Hook. f. Fl. Brit. India 6: 685. 1894; Cooke, Fl. Pres. Bombay 3: 418. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E. India 56. 1982. *Scirpus lithospermus* L. Sp. Pl. 51. 1753.

Rhizomatous perennials, 40–90 cm; leaves as long as or shorter than stems, aggregated towards middle, linear; spikelets dark brown in

subspiciform panicles; nuts oblong–obvoid or ellipsoid, trigonous, smooth.

Fls. & Frts. : December.

In moist deciduous forests, infrequent. Matheran.

2. **Scleria tessellata** Willd. Sp. Pl. 4: 315. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 6: 689. 1894 *pro parte*; Cooke, Fl. Pres. Bombay 3 : 418. 1958 (Repr.ed.); Verma & Chandra in Rec. Bot. Surv. India 21(2): 271. 1981.

Tufted annuals, 30–90 cm: leaves linear, acuminate with scabrid margins, 15–30 cm long; spiklets solitary or in clusters or terminal or subterminal panicles; nuts cylindric–ellipsoid, striate–lacunose.

Fls. & Frts. : September–October.

In moist places, infrequent. Matheran; near Panvel.

3. **Scleria biflora** Roxb. Fl. Ind. 3: 573. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 6: 687. 1894; Cooke, Fl. Pres. Bombay 3: 419. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E. India 57. 1982.

Tufted annuals, 20-60 cm; roots aromatic; leaves ensiform, flat, glabrous or scabrid on margins, 15–25 cm long; spikelets linear–lanceolate in panicles; nuts globose, terete, beaked, cancellate, white, hairy on ridges.

Fls. & Frts. : October.

In moist hill slopes, infrequent. Matheran; Ramraj, Alibag.

3. CYPERUS L.

1a. Stigmas 2; nuts not trigonous, lenticular :

2a. Nuts solitary in each spikelet ;

3a. Keel of glume winged ;

4a. Keel of nut bearing glume with a spinulose crest ... *C. kyllingia* 1

4b. Keel of nut bearing glume with a lobed, hyaline crest ... *C. metzii* 2

3b. Keel of glume not winged :

5a. Rhizome short, densely caespitose ... *C. triceps* 3

5b. Rhizome elongate, horizontally creeping, not caespitose .... *C. breviifolius* 4

2b. Nuts several in each spikelets :

6a. Glumes mucronate :

7a. Glumes spiral, spikelets contracted into dense heads ... *C. pygmaeus* 5

7b. Glumes distichous; spikelets in simple or subcompound umbels ... *C. pumilus* 6

6b. Glumes muticous:

8a. Nuts with transverse wavy lines:

9a. Plants rhizomatous; spikelets ovate–oblong, 20–60 flowered ... *C. diaphanus* 7

9b. Plants not rhizomatous; spikelets linear –oblong, upto 20 flowered:

10a. Glumes dark brown; nuts globose–ovoid ... *C. malabaricus* 8

10b. Glumes pale yellow; nuts obovoid ... *C. flavescens* 9

8b. Nuts punctate or reticulate :

11a. Stem leafy for more than half its length, decumbent; glumes with depressions ... *C. sanguinolentus* 10

11b. Stem leafy only at base, erect; glumes without depressions:

12a. Rachilla of spikelet winged; weak plant ... *C. hyalinus* 11

12b. Rachilla of spikelet not winged; robust plant:

13a. Glumes conspicuous with white margins; bracts upto 40 cm long ... *C. albomarginatus* 12

13b. Glumes not as above; bracts upto 15 cm long ... *C. polystachyos* 13

1b. Stigmas 3; nuts trigonous :

14a. Spikelets digitate or clustered :

15a. Annual herbs :

16a. Spikelets many; nuts punctate ... *C. difformis* 14

16b. Spikelets few; nuts warted ... *C. tenuispica* 15

15b. Perennial herbs :

17a. Stems solitary with elongate, creeping rhizomes; glumes multi–nerved; nuts smooth ... *C. arenarius* 16

17b. Stems caespitose with short rhizomes; glumes 1–nerved; nuts punctate ...*C. leucocephalus* 17

14b. Spiklets distinctly spicate, rarely subracemosely disposed :

18a. Rachilla of spikelet not winged (except *C. squarrosus*)

19a. Annuals with tufted stems :

20a. Glumes distinctly mucronate, cuspidate or aristate :

21a. Spiklets not squarrose, yellowish –brown; glumes aristate ... *C. squarrosus* 18

21b. Spiklets not squarrose, pale straw or greenish; glumes cuspidate ... *C. compressus* 19

20b. Glumes obtuse or minutely mucronate :

22a. Glume dorsally 3–5–nerved; back smooth ... *C. iria* 20

22b. Glume dorsally 5–7–nerved; back spinulose–ciliate ... *C. alulatus* 21

19b. Perennials with woody root–stock or rhizomes:

23a. Leaves more than 30 cm long :

24a. Spikelets 3–5 mm long; upper glumes twisted ... *C. cyperoides* 22

24b. Spikelets 5–60 mm long; upper glumes not twisted:

25a. Spikelets acicular; glumes obtuse; nuts as long as the glumes ... *C. distans* 23

25b. Spiklets linear; glumes minutely mucronate; nuts smaller than glumes ... *C. nutans* 24

23b. Leaves not more than 15 cm long ... *C. malaccensis* 25

18b. Rachilla of spiklets winged:

26a. Leaves short, rarely half as long as stem ... *C. pangorei* 26

26b. Leaves long, more than half as long as stem or longer:

27a. Rhizome with stolons:

28a. Stolons, soon disappear, terminate into bulbils; leaves arise from stem at some distance above the base and below the middle ... *C. bulbosus* 27

28b. Stolons, persistent with black tubers; leaves radical:

29a. Stems at base nodosely thickened and then contracted in wiry rhizomes; stolons tuberous ... *C. rotundus* 28

29b. Stems at base tuberous, woody; stolon not tuberous ... *C. rotundus* ssp. *tuberosus* 29

27b. Rhizomes without stolons ... *C. exaltatus* 30

1. **Cyperus kyllingia** Endl. Cat. Hort. Acad. Vindob. 1: 94. 1842; Rao & Verma, Cyperaceae N.E. India 7. 1982. *Kyllinga monocephala* Rottb. Descr. & Icon. 13. t. 4. f. 4. 1773 *pro parte*; C.B.Cl. in Hook. f. Fl. Brit. India 6: 588. 1893; Cooke, Fl. Pres. Bombay 3: 390. 1958 (Repr. ed.).

Perennials with glabrous stems and aromatic rhizomes 10–15 cm; linear, 4–8 cm long; inflorescence capitate; spikes solitary (–four), subglobose, greenish–white or brownish; spikelets many, ovate–elliptic; glumes red–dotted; nuts ovoid–oblong, compressed, blackish–brown.

Fls. & Frts. : September–October.

Among grasses in moist deciduous forests, infrequent. Matheran.

Karthik. *et al.* (1989) treat this species under *Kyllinga nemoralis* (J.R. & G. Forst.) Dandy ex Hutch. & Dalziel.

2. **Cyperus metzii** (Hochst. ex Steud.) Mattf. & Kuekenth. in Pflanzenr. Heft 101: 612. 1936; Verma & Chandra in Rec. Bot. Surv. India 21(2): 242. 1981. *Kyllinga metzii* Hochst. ex Steud. Syn. Cyp. 70. 1855. *K. squamulata* Thonn. ex Vahl, Enum. Pl. 2: 381. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 589. 1893.

Tufted annuals, 10–35 cm; leaves as long as or longer than stems; spikelets few, oblong in capitate inflorescence; nuts suborbicular–oblong, compressed.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

Karthik. *et al.* (1989) treat this species under *Kyllinga squamulata* Thonn. ex Vahl.

3. **Cyperus triceps** (Rottb.) Endl. Cat. Hort. Acad. Vindob. 1: 94. 1842; Verma & Chandra in Rec. Bot. Surv. India 21(2): 247. 1981. *Kyllinga triceps* Rottb. Descr. & Icon. 14. t. 4. f. 6. 1773 *nom. illegit.*; C.B.Cl. in Hook. f. Fl. Brit. India 6: 587. 1893; Cooke, Fl. Pres. Bombay 3: 391. 1958 (Repr. ed.).

Perennials, 10–40 cm; leaves linear. 6.5–20 cm long; inflorescence capitate of 1–5 heads; spikelets greenish–white, oblong, many; glumes ovate–oblong; nuts ellipsoid–oblong.

Fls. & Frts. : August–March.

In wet places, frequent. Kolad, Roha; Matheran; Murud; Pen, Sarasgad, Pali.

Karthik. *et al.* (1989) treat this species under *Kyllinga tenuifolia* Steud.

4. **Cyperus brevifolius** (Rottb.) Hassk. Cat. Hort. Bogor. 24. 1844; Rao & Verma, Cyperaceae N.E. India 6. 1982. *Kyllinga brevifolia* Rottb. Descr. & Icon. 13. t. 4. f. 3. 1773; C.B.Cl. in Hook. f. Fl. Brit. India 6: 588. 1893.

Stoloniferous, creeping, rhizomatous herbs, 10–35 cm; leaves shorter or equalling the stem, 4.5–18 cm long; inflorescence capitate; spikelets many, ovate–lanceolate, compact; glumes mucronate; nuts obovoid or oblong–ellipsoid, biconvex reddish–brown, punctate.

Fls. & Frts. : July–September.

In moist places, frequent. Matheran.

Karthik. *etal.* (1989) treats this species under *kyllinga brevifolia* Rottb.

5. **Cyperus pygmaeus** Rottb. Descr. & Icon. 20. t. 14. f. 4–5. 1773; Verma & Chandra in Rec. Bot. Surv. India 21(2): 245. 1981. *Juncellus pygmaeus* (Rottb.) C.B.Cl. in Hook. f. Fl. Brit. India 6: 596. 1893.

Tufted herbs, 3–25 cm; leaves as long as or shorter than the stems; spikelets ovate–lanceolate, many, keeled; nuts oblong–ellipsoid, orange–brown.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Matheran.

Karthik. *et al.* (1989) treat this species under *Juncellus pygmaeus* (Rottb.) C.B.Cl.

6. **Cyperus pumilus** L. Cent. Pl. 2: 6. 1756; Cooke, Fl. Pres. Bombay 3: 370. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E. India 9. 1982. *Pycreus pumilus* (L.) Nees in Linnaea 9: 283. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 6: 591. 1893 *pro parte*.

Tufted annuals, 2–20 cm; leaves linear, glabrous, up to 5–20 cm long; anthela simple or sub–compound, contracted or evolute; spikelets linear–oblong, compressed, congested in subglobose heads; nuts ellipsoid–lenticular, apiculate, brown.

Fls. & Frts. : September–March.

In moist places, frequent. Bhisekhind, Roha; Indapur, Mangaon; Matheran; Pen; Pachhad; Varandh ghat, Mahad.

Karthik. *et al.* (1989) treat this species under *Pycreus pumilus* (L.) Nees ex C.B.Cl.

7. **Cyperus diaphanus** Schrad. ex J.A. Schult. var. **latespicatus** (Boeck.) Kern in Steenis, Fl. Males. Ser. 1, 7(3): 653. 1974. *C latespicatus* Boeck. in Flora 42: 441. 1859; Cooke, Fl. Pres. Bombay 3: 368. 1958 (Repr. ed.). *Pycreus latespicatus* C.B.Cl. in Hook. f. Fl. Brit. India 6: 590. 1893.

Rhizomatous annuals, 8–30 cm; leaves linear, acute, shorter than stem; anthela simple, contracted or evolute; spikelets 3–6 together, oblong–lanceolate, straw–coloured, 20–60–flowered; glumes ovate–oblong, purplish; nuts stipitate, obovoid, black.

Fls. & Frts. : January–March.

In ditches and hilly forests, frequent. Matheran; Neral.

Karthik. *et al.* (1989) treat this taxon under *Pycreus diaphanus* (Schrad. ex R. & S.) Hooper & T. koyama.

8. **Cyperus malabaricus** (C.B.Cl.) T. Cooke, Fl. Pres. Bombay 2: 856. 1908 (3: 369. 1958. Repr.ed.); Kuekenth. in Pflanzenr. Heft 101: 390. 1936. *Pycreus malabaricus* C.B.Cl. in J. Linn. Soc. 34: 12. 1898.

Annuals, caespitose, 10–20 cm; leaves linear, 8–20 cm long; anthela with 6–12 spikelets; spikelets linear–oblong, subacute, 20–flowered; nuts globose–lineolate, brown.

Fls. & Frts. : September–October.

Among grasses in moist deciduous forests, infrequent. Matheran.

Karthik *et al.* (1989) treat this species under *Pycreus malabaricus* C.B.Cl.

9. **Cyperus flavescens** L. Sp. Pl. 68. 1753; Kuekenth. in Pflenzenr. Heft 101: 398. 1936. *Pycreus flavescens* Nees in Linnaea 9: 283. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 6: 589. 1893.

Slender annuals, 10-30 cm; leaves linear, glabrous, 8–20 cm long; inflorescence simple or compound umbels; spikelets yellowish, linear, clustered; nuts obovoid, compressed, obtuse, shining, black.

Fls. & Frts. : September–October.

In wet places, infrequent. Porcupine point, Matheran.

Karthik. *et al.* (1989) treat this species under *Pycreus flavescens* (L.) Reichb.

10. **Cyperus sanguinolentus** Vahl, Enum. Pl. 2: 354. 1806; Cooke, Fl. Pres. Bombay 3: 369. 1958 (Repr. ed.); Rao & Verma, Cyeraceae N.E. India 9. 1982. *Pycreus sanguinolentus* Nees in Linnaea 9: 283. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 6: 590. 1893.

Annuals or perennials, 10–60 cm; leaves linear, 6–15 cm; anthela evolute or capitately contracted; spikelets congested, 3–21 together, diverging ovate or oblong–lanceolate, compressed; nuts ovoid–spherical, biconvex, pale brown.

Fls. & Frts. : September–October.

In moist sandy or loamy soil, frequent. Kalasgiri and Kundlika river bank, Roha; Matheran.

Karthik. *et al.* (1989) treat this species under *Pycreus sanguinolentus* (Vahl) Nees ex C.B.Cl.

11. **Cyperus hyalinus** Vahl, Enum. Pl. 2: 329. 1806; Cooke, Fl.Pres. Bombay 3: 369. 1958 (Repr. ed.); Kuekenth. in Pflanzenr. Heft 101: 498. 1936. *Pycreus pumilus sensu* C.B.Cl. in Hook. f. Fl. Brit. India 6: 591. 1893 *pro parte.*

Tufted annuals, 5–15 cm; leaves linear, acuminate, flat, as long as or longer than stem; inflorescence simple umbels; spikelets ovate–lanceolate, compressed, greenish–yellow; nuts orbicular, punctate, brown.

Fls. & Frts. : September–October.

In coastal region, infrequent. Alibag.

Karthik. *et al.* (1989) treat this species under *Queenslandiella hyalina* (Vahl) Ballard.

12. **Cyperus albomarginatus** Mart. & Schrad. ex Nees in Mart. Fl. Bras. 2(1): 9. 1842; Cooke, Fl. Pres. Bombay 3: 371. 1958 (Repr. ed.). *Pycreus albomarginatus* Nees *op. cit.*; C.B.Cl. in Hook. f. Fl. Brit. India 6: 594. 1893.

Annuals, 30–70 cm; leaves linear, glabrous, shorter than stem; inflorescence compound umbels; spikelets 8–20, brownish, rachilla slightly winged; nuts obovoid, apiculate, black, granulate.

Fls. & Frts. : September–October.

In moist places, frequent. Karjat to Palasdhari; Kolad, Roha; Neral; Pejari forests, Alibag.

Karthik. *et al.* (1989) treat this species under *Pycreus macrostachyos* (Lam.) J. Raynal.

13. **Cyperus polystachyos** Rottb. Descr. & Icon. 39. t. 21. f. 1. 1773; Rao & Verma, Cyperaceae N.E. India 10. 1982. *C. odoratus* L. Sp. Pl. 46. 1753; Cooke, Fl. Pres. Bombay 3: 372. 1958 (Repr. ed.). *Pycreus polystachyos* (Rottb.) P. Beauv. Fl. de Oware 2: 48. t. 86. f. 2. 1807; C.B.Cl. in Hook. f. Fl. Brit. India 6: 592. 1893.

Tufted annuals or perennials, 10–50 cm; leaves 5–9, shorter than stems; anthela compound, evolute or contracted; spikelets numerous, congested, linear, 16–50–flowered; nuts linear–oblong, lenticular, brown–black.

Fls. & Frts. : September–March.

In damp places, frequent. Alibag sea–coast; Savitri river–bed near Vinehere, Mahad.

Karthik. *et al.* (1989) treat this species under *Pycreus polystachyos* (Rottb.) P. Beauv.

14. **Cyperus difformis** L. Sp. Pl. 67. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 6: 599. 1893; Cooke, Fl. Pres. Bombay 3: 376. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E. India 12. 1982.

Annuals, 10–40 cm; leaves linear, abruptly acuminate, 4–25 cm long; anthela simple, evolute or capitately contracted; spikelets numerous together forming subglobose–oblong heads; nuts ellipsoid or obovoid, trigonous, yellowish–brown.

Fls. & Frts. : September–March.

In wet places, frequent. Between Nadsur and Pali; Matheran; Nagothana to Pen.

15. **Cyperus tenuispica** Steud. Syn. Cyper. 11. 1854; Rao & Verma, Cyperaceae N.E. India 13. 1982. *C. flavidus* C.B. Cl. in J. Linn. Soc. Bot. 21: 122. t. 3. f. 25. 1884; C.B.Cl. in Hook. f. Fl. Brit. India 6: 600. 1893; Cooke, Fl. Pres. Bombay 3: 375. 1958 (Repr.ed.) *non* Retz. (1789).

Suberect annuals, 5–30 cm; leaves linear–ensiform, 6–18 cm long;

anthela compound or decompound, lax; spikelets digitate, 3–9 together, linear–lanceolate, compressed; nuts obovoid to subglobose, trigonous, tubercled, marble–white.

Fls. & Frts. : September–March.

In moist places, frequent. Bhira; Matheran; Mhasla; Ramraj forests, Alibag.

16. **Cyperus arenarius** Retz. Obs. 4: 9. 1786; C.B.Cl. in Hook. f. Fl. Brit. India 6: 602. 1893; Cooke, Fl. Pres. Bombay 3: 378. 1958 (Repr. ed.).

Creeping, rhizomatous herbs with glaucous green stems, 8–35 cm; leaves convolute, linear, 5–30 cm long; anthela simple, evolute or contracted in heads; spikelets 4–10, elliptic–lanceolate, straw–brown coloured; nuts obovoid, triquetrous, brown–black.

Fls. & Frts. : September–October.

In coastal region, infrequent. Shrivardhan.

17. **Cyperus leucocephalus** Retz. Obs. 5: 11. 1789; C.B.Cl. in Hook. f. Fl. Brit. India 6: 602. 1893; Cooke, Fl. Pres. Bombay 3: 377. 1958 (Repr. ed.); Verma & Chandra in Rec. Bot. Surv. India 21 (2): 242. 1981.

Perennials, 8–25 cm; leaves linear, glabrous, 5.5–20 cm long; anthela in dense, globose, white heads; spikelets 8–50, elliptic, compressed, 10–18 flowered; nuts trigonous, granulate, dark brown to black.

Fls. & Frts. : August–September.

In wet places, frequent. Karnala birds sanctuary; Mandatna to Pangloli Reserve forest, Mhasla.

Karthik *et al.* (1989) treat this species under *Sorostachys leucocephalus* (Retz.) Lye.

18. **Cyperus squarrosus** L. in Torner Cent. Pl. 2: 6. 1756; Verma & Chandra in Rec. Bot. Surv. India 21 (2): 247. 1981. *C. aristatus* Rottb. Descr. Pl. Rar. Progr. 22. 1772; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 606. 1893; Cooke, Fl. Pres. Bombay 3: 380. 1958 (Repr. ed.). *Mariscus squarrosus* (L.) C.B.Cl. *op. cit.* 623.

Annuals, caespitose, 5–20 cm; leaves linear, ensiform, glabrous, canaliculate, 6–12 cm long; anthela in simple umbels; spikelets

linear–oblong, squarrose; nuts oblong–obovoid or linear, stipitate, brown–black.

Fls. & Frts. : September–October.

In wet places and near sea–coast, frequent. Alibag; Dasgaon, Mahad; Janjira fort, Murud; Mangaon surroundings.

Karthik *et al.* (1989) treat this species under *Mariscus squarrosus* (L.) C.B.Cl.

19. **Cyperus compressus** L. Sp. Pl. 46. 1753; *emend* Dandy in Exell, Cat. S. Tome 357. 1944; C.B.Cl. in Hook. f. Fl. Brit. India 6: 605. 1893; Cooke, Fl. Pres. Bombay 3: 379. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E. India 15. 1982.

Erect or diffuse herbs, 4–30 cm; leaves linear, shorter than or subequalling stems; anthela simple or compound, lax; spikelets linear–oblong, compressed, subquadrangular, straw–coloured in clusters of 3–13; nuts obovoid, triquetrous, stipitate, beaked, dark brown.

Fls. & Frts. : September–October.

In moist places, frequent. Bhira; Neral to Matheran.

20. **Cyperus iria** L. Sp. Pl. 45. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 6: 606. 1893; Cooke, Fl. Pres. Bombay 3: 380. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E.India, 15. 1982.

Tufted annuals, 15–80 cm; leaves linear, as long as or shorter than stems; anthela simple or compound, lax; spikelets linear–oblong, compressed, yellow; nuts obovoid–oblong or obovoid–ellipsoid, triquetrous, punctate, dark brown.

Fls. & Frts. : May–January.

In moist places and near streams, frequent. Mandatna to Pangloli Reserve forests, Mhasla; Matheran; Neral.

21. **Cyperus alulatus** Kern in Reinwardtia 1 (4): 463. f. 1. 1952; Verma & Chandra in Rec. Bot. Surv. India 21 (2): 236. 1981. *C. iria* var. *rectangularis* Kuekenth. Pflanzenr. 101: 152. 1935.

Annuals, 10–40 cm; leaves linear, glabrous, as long as or longer than stems ; anthela compound; spikelets greenish or yellowish–brown; nuts obovoid, triquetrous, apiculate, reddish–brown.

Fls. & Frts. : April–October.

In shallow ditches, frequent. Mahad ghat; Matheran; Pen to Khopoli Road.

22. **Cyperus cyperoides** (L.) O. Ktze. Rev. Gen. Pl. 3, 2: 333. 1898; Rao & Verma, Cyperaceae N.E. India 21. 1982. *Scirpus cyperoides* L. Mant. Pl. 2: 181. 1771. *Mariscus sieberianus* Nees ex C.B.Cl. in Hook. f. Fl. Brit. India 6: 622. 1893. *Cyperus konkanensis* T. Cooke, Fl. Pres. Bombay 2: 874. 1908 (3: 387. 1958. Repr.ed.).

Creeping, rhizomatous, perennials, 15–60 cm; leaves coriaceous, shorter than or as long as the stem; anthela simple, evolute or sometimes contracted; spikelets linear–lanceolate, acuminate; nuts linear–oblong, trigonous, slightly curved, yellowish to dark brown.

Fls. & Frts. : September–October.

In wet places, frequent. Matheran; Murud.

Karthik. *et al.* (1989) treat this species under *Mariscus sumatrensis* (Retz.) J.Raynal.

23. **Cyperus distans** L.f. Suppl. Pl. 103. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 6: 607. 1893; Rao & Verma, Cyperaceae N.E. India 16. 1982.

Tufted perennials, 20–80 cm; leaves 6–12, sub–equalling the stem; anthela decompound or compound, lax; glumes reddish–brown; spikelets divaricate, acicular; nuts ellipsoid, trigonous, apiculate, dark brown.

Fls. & Frts. : January – March.

Along the streams and moist ditches, infrequent. Matheran; Neral; Neral to Matheran.

24. **Cyperus nutans** Vahl, Enum. Pl. 2 : 363. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 609. 1893; Cooke, Fl. Pres. Bombay 3 : 381. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E.India 16. 1982.

Rhizome bearing, stoloniferous, perennial herbs, 15–80 cm; leaves linear, shorter than or subequalling the stems; anthela compound or decompound, lax; spikelets suberect, linear–oblong, triquetrous, brown.

Fls. & Frts. : September–October.

In damp places, frequent. Bhise–khind, Roha; Matheran; Mhasla.

25. **Cyperus malaccensis** Lam. Illus. 1: 146. 1791; C.B.Cl. in Hook. f. Fl. Brit. India 6: 608. 1893; Cooke, Fl. Pres. Bombay 3: 382. 1958 (Repr. ed.).

Rhizome bearing, perennial herbs, 40–90 cm; leaves ensiform, 5–15 cm; anthela simple or compound; spikelets linear, 20–40 flowered; nuts oblong, trigonous, apiculate.

Fls. & Frts. : September–October.

Near river–banks, occasional. Kundlika river, Roha.

26. **Cyperus pangorei** Rottb. Descr. Pl. Rar. 18. 1772; & Descr.& Icon. 31.t. 7. f. 3 1773; Rao & Verma, Cyperaceae N.E.India 18. 1982. *C. tagetum* Roxb. Fl. Ind. 1:208. 1832; C.B. Cl. in Hook. f. Fl. Brit. India. 6: 613. 1893; Cooke, Fl. Pres. Bombay 3 : 384. 1958 (Repr. ed.).

Perennial herbs with aromatic rhizomes, 20–90 cm; leaves usually all reduced to bladeless sheaths, sometimes upper one bearing a blade upto 10–20 cm; anthela compound or decompound, lax; spikelets linear, 4–9, clustered, reddish–brown; glumes obtuse; nuts obovoid–oblong, yellowish to blackish–brown.

Fls. & Frts. : August–March.

In moist places, frequent. Alibag; Dhamni, Pen; Pen to Khopoli; Survey forest, Murud.

Stems used by natives for making mats.

27. **Cyperus bulbosus** Vahl, Enum. Pl. 2: 342. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 611. 1893; Cooke, Fl. Pres. Bombay 3: 384. 1958 (Repr.ed.); Verma & Chandra in Rec. Bot. Surv. India 21 (2): 236. 1981.

Perennials, 10-30 cm; stem–base swollen, covered with hard, black coating; leaves linear, as long as or longer than stem ; spikelets linear or ovate–lanceolate, yellowish–brown, 8–20 flowered; nuts obovoid, trigonous, smooth, brown–black.

Fls. & Frts. : September–October.

Along the sea–coast, frequent. Alibag.

Bulbs are eaten roasted or boiled and also made into flour in times of scarcity.

28. **Cyperus rotundus** L. Sp. Pl. 45. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 6: 614. 1893; Cooke, Fl. Pres. Bombay 3: 385. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E. India 19. 1982.

Perennials with triquetrous stems, 20–70 cm; leaves linear, 7–35

cm; anthela compound, lax; spikelets linear–lanceolate, compressed; glumes ovate, keeled; nuts oblong or obovoid, trigonous, black.

Fls. & Frts. : September–October.

In wet places, frequent. Pen to Khopoli Road; Roha.

29. **Cyperus rotundus** L. ssp. **tuberosus** (Rottb.) Kuekenth. in Engl. Pflanzenr. 101: 113. 1936; Verma & Chandra in Rec. Bot. Surv. India 21(2): 246. 1981. *C. tuberosus* Rottb. Descr. Pl. Rar. 18. 1772; Descr. & Icon. 28. t. 7. f. 1. 1773; C.B.Cl. in Hook. f. Fl. Brit. India 6: 616. 1893; Cooke, Fl. Pres. Bombay 3: 385. 1958 (Repr. ed.).

Perennials, upto 90 cm; leaves linear, glabrous, 10–30 cm; spikelets more slender, 1–2 cm; nuts triquetrous, oblong.

Fls. & Frts. : September–October.

In moist places, infrequent. Matheran.

30. **Cyperus exaltatus** Retz. Obs. 5: 11. 1789; C.B.Cl. in Hook. f. Fl. Brit. India 6: 617. 1893; Cooke, Fl. Pres. Bombay 3: 386. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E. India 19. 1982.

Perennials, 30–100 cm; leaves linear, serrulate, subequalling the stem; anthela lax, decompound or compound; spikelets numerous, compressed, ascending, distichous or subdistichous, yellowish to golden brown, linear–lanceolate; nuts ellipsoid–ovoid, trigonous, apiculate, stipitate.

Fls. & Frts. : September–October.

In moist deciduous forests, frequent. Karjat; Pen to Khopoli Road.

4. ELEOCHARIS R. Br.

1a. Hypogynous bristles brown; glumes scarcely keeled; nuts with faint vertical lines ... *E. geniculata* 1

1b. Hypogynous bristles glistening white; glumes keeled; nuts without faint vertical lines ... *E. atropurpurea* 2

1. **Eleocharis geniculata** (L.) Roem. & Schult. Syst. 2: 150. 1817; Verma & Chandra in Rec. Bot. Surv. India 21(2): 249. 1981. *Scirpus geniculata* L. Sp. Pl. 48. 1753. *Eleocharis capitata* R. Br. Prodr. 225. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 6: 627. 1893; Cooke, Fl. Pres. Bombay 3: 404. 1958 (Repr. ed.).

Tufted annuals, 20–40 cm; spikelets ovate–oblong, terminal,

yellowish–brown; hypogynous bristles 6–8, scabrid; nuts obovoid–oblong or globular, smooth, blackish.

Fls. & Frts.: February-March.

In moist places, near river banks, frequent. Mahad; Pen.

2. **Eleocharis atropurpurea** (Retz.) Presl, Rel. Haenk. 1: 196. 1828; C.B.Cl. in Hook. f. Fl. Brit. India 6: 627. 1893; Cooke, Fl. Pres. Bombay 3: 403. 1958 (Repr. ed.). *Scirpus atropurpureus* Retz. Obs. 5: 14. 1789.

Tufted annuals, 10–20 cm; spikelets ovoid–oblong or orbicular, subterete, acute, yellowish–brown, many flowered; hypogynous bristles 4–7, scabrid; nuts obovoid, bi–convex, brownish–black, shining.

Fls. & Frts. : September.

In wet places, infrequent. Ghosale fort, Roha.

5. LIPOCARPHA R. Br.

Lipocarpha chinensis (Osb.) Kern in Blumea Suppl. 4: 167. 1958 *et* in Fl. Males. Ser. 1, 7 (3): 521. f. 33. 1974; Rao & Verma, Cyperaceae N.E.India, 48. 1982. *Scirpus chinensis* Osb. Dagb. Ostind. Resa 220. 1757. *Lipocarpha argentea* (Vahl) R. Br. ex Nees in Linnaea 9: 287. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 6: 667. 1893.

Annuals or perennials, 20–40 cm; leaves risidulous, flat or involute, one–third to one–half as long as the stem; spikelets 3–7, ovoid to oblong–ovoid, glistening–greyish white in spathulate glumes; nuts obovoid–oblong, apiculate.

Fls. & Frts. : September–October.

In damp places, infrequent. Dasgaon, Mahad; Jambulpada, Pali.

6. FUIRENA Rottb.

Fuirena ciliaris (L.) Roxb. Fl. Ind. 1: 184. 1820; Kern in Fl. Males Ser. 1, 7 (3): 519. f. 32. 1974; Rao & Verma, Cyperaceae N.E. India 47. 1982. *Scripus ciliaris* L. Mant. Pl. 182. 1771. *Fuirena glomerata* Lam. Encycl. 1: 150. 1791; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 666. 1893; Cooke, Fl. Pres. Bombay 3: 472. 1958 (Repr. ed.).

Annuals, 10–30 cm; leaves linear–lanceolate, 3–5–nerved, margins and the surfaces hairy, 3.5–16 cm; panicles much contracted; spikelets

in clusters of 3–10, ovoid–oblong, obtuse, greyish green–black; nuts obovoid, apiculate, yellowish–brown, stipitate.

Fls. & Frts. : March.

In moist places, frequent. Dhamni forests, Pen; Kolad, Roha.

7. RHYNCHOSPORA Vahl

Rhynchospora wightiana (Nees) Steud. Cyper. 148. 1855; C.B.Cl. in Hook. f. Fl. Brit. India 6: 669. 1893; Cooke, Fl. Pres. Bombay 3: 415. 1958 (Repr.ed.). *Haplostylis wightiana* Nees in Nov. Act. Akad. Nat. Curr. 19 (Suppl. 1.): 101. 1843.

Solitary or tufted caespitose annuals, 5–40 cm; leaves linear, glabrous, 2.5–8.0 cm long; spikelets linear–lanceolate, smooth in a terminal, capitate head; nuts linear–oblong, compressed, beaked.

Fls. & Frts. : August–October.

In wet places, frequent. Karjat to Panvel; Matheran; Nagothana; Roha.

8. BULBOSTYLIS Kunth, *nom. cons.*

Bulbostylis densa (Wall.) Hand.–Mazz. in Karsten & Schenk, Vegetationsb. 20, 7: 16. 1930; Rao & Verma, Cyperaceae N.E. India 40. 1982. *Scirpus densus* Wall. in Roxb. Fl. Ind. 1: 231. 1820. *Bulbostylis capillaris* Kunth var. *trifida* (Nees) C.B.Cl. in Hook. f. Fl. Brit. India 6 : 652. 1893. *Isolepis trifida* Nees in Wight, Contr. Bot. Ind. 108. 1834.

Slender, setaceous annuals, 5–30 cm; leaves linear, acuminate, 2.5–8.2 cm; anthela simple or compound; spikelets solitary or a few, clustered, oblong–obovoid or lanceolate; nuts minute, oblong–ellipsoid, punctate, verruculose, brown.

Fls. & Frts. : February–March.

In damp places or near river banks, infrequent. Matheran; Pej river, Karjat.

9. FIMBRISTYLIS Vahl

1a. Stigmas 2, nuts lenticular :

2a. Spikelets solitary or few (1–3), terminating the stem :

3a. Spikelets solitary; stem 4–angled; nuts linear–oblong with almost parallel sides ... *F. tetragona* 1

3b. Spikelets 1–3; stem not 4–angled; nuts turbinate, obovoid or suborbicular :

4a. Glumes narrowly oblong, obtuse; nuts sessile, yellow with white spots ... *F. polytrichoides* 2

4b. Glumes suborbicular–broadly ovate, apiculate; nuts stipitate, white with brown spots ... *F. schoenoides* 3

2b. Spikelets many, umbellate (rarely capitate):

5a. Leaves ligulate; nuts with 6–8 prominent trabeculate ribs:

6a. Glumes 1–nerved, obtuse; spikelets angular ... *F. bisumbellata* 4

6b. Glumes 3–nerved, mucronate; spikelets terete ... *F. dichotoma* 5

5b. Leaves eligulate; nuts with many faintly striate trabeculate ribs:

7a. Annuals; nuts faintly transversely lineolate; stamen 1 ... *F. aestivalis* 6

7b. Perennials; nuts not transversely lineolate; stamens usually 2 :

8a. Nuts stipitate; glumes pubescent ... *F. sieberiana* 7

8b. Nuts sessile; glumes glabrous ... *F. cymosa* 8

1b. Stigmas 3; nuts trigonal :

9a. All glumes spirally imbricate; spikelets terete or angular:

10a. Stem more than 20 cm long; spikelets terete, obtuse ... *F. littoralis* 9

10b. Stem less than or upto 20 cm long; spikelets not as above:

11a. Inflorescence a head of digitately spreading spikelets; stamens 3 ... *F. lawiana* 10

11b. Inflorescence not as above, stamen 1 ... *F. woodrowii* 11

9b. Lower glumes distichous or subdistichous; spikelets many, much compressed ... *F. tenera* 12

1. **Fimbristylis tetragona** R. Br. Prodr. 226. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 6: 631. 1893; Rao & Verma, Cyperaceae N.E.India 29. f. 13, 13a. 1982.

Annuals or perennials, caespitose, 15–40 cm; leaves absent; spikelets terminal, ovoid–globose, terete, acute, brownish, many–flowered; nuts trabeculate with 8–9 vertical rows of surface cells, yellowish.

Fls. & Frts. : October–March.

In wet places near river banks or hilly regions, frequent. Bhira; Kankeshwar hill, Alibag; Karjat; Matheran; Nadsur to Pali.

2. **Fimbristylis polytrichoides** (Retz.) Vahl, Enum. Pl. 2: 248. 1806; R. Br. Prodr. 226. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 6: 632. 1893; Cooke, Fl. Pres. Bombay 3: 393. 1958 (Repr. ed.); Verma & Chandra in Rec. Bot. Surv. India 21(2): 257. 1981. *Scripus polytrichoides* Retz. Obs. 4: 11. 1786.

Rhizomatus perennials, 5–40 cm; leaves linear, setaceous, 5–10 cm; spikelets ovoid–oblong or lanceolate, brownish; nuts oblong–obovoid, trigonous.

Fls. & Frts. : September–October.

In coastal regions, frequent. Alibag; Janjira fort, Murud.

3. **Fimbristylis schoenoides** (Retz.) Vahl, Enum. Pl. 2: 286. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6 : 634. 1893;Cooke, Fl. Pres. Bombay. 3: 394. 1958 (Repr. ed.); Rao & Verma, Cyperaceae, N.E. India 30. 1982. *Scirpus schoenoides* Retz. Obs. 5: 14. 1789.

Tufted annuals or rarely rhizomatous perennials, 10–40 cm; leaves linear, scabrid on margins, 7–25 cm long; spikelets rusty–brown, ovoid–oblong; nuts oblong–obovoid, biconvex.

Fls. & Frts: September - October.

Wet places in hilly regions, infrequent. Kalasgiri, Roha; Ramraj forests, Alibag.

4. **Fimbristylis bisumbellata** (Forssk.) Bubani in Dodec. 30. 1850; Rao & Verma, Cyperaceae N.E. India 31. 1982.*Scirpus bisumbellatus* Forssk. Fl. Aeg.–Arab. 1: 15. 1775. *Fimbristylis dichotoma auct. non* Vahl (1806): C.B.Cl. in Hook. f. Fl. Brit. India 6: 635. 1893; Cooke, Fl. Pres. Bombay 3 : 394. 1958 (Repr. ed).

Tufted annuals, 6–35 cm; leaves flat, usually falcate–linear, subequalling or shorter than stem, glabrous or hairy, 5.5–25.0 cm long; anthela compound to supra–decompound, lax to rather dense, bearing few to many obvoid–ellipsoid or oblong–lanceolate spikelets; nuts obovoid, biconvex, yellowish, stipitate.

Fls. & Frts. : March–May.

In moist sandy to clayey–loam, frequent. Gavalwadi pond, Karjat; Matheran.

5. **Fimbristylis dichotoma** (L.) Vahl, Enum. Pl. 2: 287. 1806; Rao & Verma, Cyperaceae N.E.India 32. f. 17. 1982. *Scirpus dichotomus* L. Sp. Pl. 50. 1753. *Fimbristylis diphylla* Vahl, *op. cit.* 289; C.B.Cl. in

Hook. f. Fl. Brit. India 6: 636. 1893; Cooke, Fl. Pres. Bombay 3: 396. 1958 (Repr. ed.).

Annuals or perennials, 5–40 cm; leaves flat, linear–lanceolate, sparsely hairy, 4–20 cm long; anthela simple or decompound with many spikelets; ovoid–globose or oblong, yellowish–brown; nuts obovoid, apiculate, verruculose, trabeculate, shortly stipitate.

Fls. & Frts. : August–October.

In moist hilly regions, frequent. Kalasgiri, Roha; Mahad ghat; Ramraj forest, Alibag.

6. **Fimbristylis aestivalis** (Retz.) Vahl, Enum. Pl. 2: 288. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 637. 1893 *pro. parte.*; Cooke, Fl. Pres. Bombay 3: 395. 1958 (Repr.ed.); Rao & Verma, Cyperaceae N.E.India 32. 1982. *Scirpus aestivalis* Retz. Obs. 4: 12. 1786.

Tufted herbs, 5–30 cm; leaves 1–3, linear, 7–25 cm long; anthela compound or decompound, lax; spikelets solitary or few, polygonal, ellipsoid–oblong or lanceolate, acute, many–flowered; nuts ellipsoid–obovoid, biconvex, smooth, shortly stipitate.

Fls. & Frts. : March–June.

In moist hilly regions or near river banks, frequent. Karnala fort; Mirya dongar, Pen; Savitri river bank from Mahad to Nadgaon.

7. **Fimbristylis sieberiana** Kunth, Enum. 2: 237. 1837; Shah & Surya. in J. Bombay nat. Hist. Soc. 66: 412. 1969. *F. ferruginea* Vahl var. *sieberiana* Boeck. in Linnaea 37: 17. 1817.

Rhizomatous herbs, 8–40 cm; leaves flat, linear, scabrid on margins, as long as stems; anthela simple or subcompound; spikelets ovoid–lanceolate, terminal, ferruginous–brown; nuts globose–oblong, apiculate, yellowish–brown.

Fls. & Frts. : October.

In sandy–clayey loam or damp places, infrequent. Savitri river bank, Mahad.

8. **Fimbristylis cymosa** R. Br. Prodr. 228. 1810. *F. spathacea* Roth, Nov. Pl. Sp. 24. 1821; C.B.Cl. in Hook. f. Fl. Brit. India 6: 640. 1893; Cooke, Fl. Pres. Bombay 3: 396. 1958 (Repr. ed.).

Rhizomatous, caespitose herbs, 15–40 cm; leaves linear, coriaceous, scabrid on margins, much shorter than stem; spikelets ellipsoid or ovoid, brownish; nuts obovoid, biconvex, black.

Fls. & Frts. : September–October.

In coastal regions, frequent. Alibag; Murud.

9. **Fimbristylis littoralis** Gaud. in Freyc. Voy. Bot. 413. 1826; Rao & Verma, Cyperaceae N.E.India 36. 1982. *F. miliacea* Vahl, Enum. Pl. 2: 287. 1806, excl. basion.; C.B.Cl. in Hook. f. Fl. Brit. India 6: 644. 1893; Cooke, Fl. Pres. Bombay 3: 397. 1958 (Repr. ed.).

Tufted annuals; leaves linear, scabrid on margins, 4–25 cm long; spikelets dark brown; nuts creamy–white, triquetrous, obovoid.

Fls. & Frts. : September–October.

In wet places, frequent. Alibag; Mahad; Pali; Pen; Roha.

10. **Fimbristylis lawiana** (Boeck.) Kern in Reinwardtia 4: 96. 1956. *Scirpus lawianus* Boeck. in Linnaea 36: 497. 1869–70. *Fimbristylis digitata* Boeck. in Flora 61: 35. 1878; C.B.Cl. in Hook. f. Fl. Brit. India 6: 648. 1893; Cooke, Fl. Pres. Bombay 3: 398. 1958 (Repr. ed.).

Tufted caespitose herbs, 6–20 cm; leaves few, radical, linear, setaceous, 2.5–6.0 cm long; spikelets ovoid–oblong, greyish; nuts yellowish, globose, trigonous.

Fls. & Frts. : September–October.

In moist places, infrequent. Matheran; Roha.

11. **Fimbristylis woodrowii** C.B.Cl. in Kew Bull. 1898: 227. 1898 & in J. Linn. Soc. 34: 688. 1898; Cooke, Fl. Pres. Bombay 3 : 398. 1958 (Repr. ed.).

Annual, filiform, caespitose herbs, 5–12 cm; leaves linear–setaceous, 2–6 cm; spikelets ovoid, pale yellow, lanceolate, dark brown; nuts ellipsoid–oblong or obovoid, ribbed, stipitate.

Fls. & Frts. : September–October.

In hilly forests, frequent. Bhira; Matheran.

12. **Fimbristylis tenera** Schult. in Roem. & Schult. Mant. Syst. 2: 57. 1824; C.B.Cl. in Hook. f. Fl. Brit. India 6: 642. 1893; Verma & Chandra in Rec. Bot. Surv. India 21(2): 258. 1981. *F. monticola* Steud. Syn. Pl. Cyp. 3: 111. 1855; C.B.Cl. *op. cit.*; Cooke, Fl. Pres. Bombay 3: 399. 1958 (Repr. ed.).

Annuals, 10–30 cm; leaves linear, filiform, scabrid on margins,

6–15 cm long; spikelets linear or ovoid–subcylindric ; nuts obovoid, trigonous, tuberculate or verrucose, creamy–yellow.

Fls. & Frts. : September–October.

In moist hilly regions, frequent. Matheran; Pachhad; Shivthalgarh; Unhere near Sav, Mahad.

10. SCIRPUS L.

1a. Inflorescence capitate in a pseudolateral cluster or reduced to solitary spikelets; glumes aristate, nuts punctate ... *S. squarrosus* 1

1b. Inflorescence anthalate or lateral; glumes not aristate; nuts transversely rugose:

2a. Flowering nearer to the base on stem; glumes not mucronate: ... *S. articulatus* 2

2b. Flowering nearer to the top on stem; glumes mucronate :

3a. Glumes multi–striate, lax, inflated in fruit; stem septate when dry ... *S. roylei* 3

3b. Glumes not striate; imbricating, not inflated in fruit; stem not septate when dry ... *S. lateriflorus* 4

1. **Scirpus squarrosus** L. Mant. Pl. 2: 181. 1771; C.B.Cl. in Hook. f. Fl. Brit India 6: 663. 1893; Cooke, Fl. Pres. Bombay 3: 410. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E.India 45. 1982. *Rikliella squarrosa* (L.) J. Raynal in Adansonia Ser 3, 13: 154. 1973.

Tufted annuals with filiform stems, 6–30 cm; leaves linear, filiform, 2–5 cm long; spikelets 1–10, oblong–cylindric, squarrose, many–flowered; nuts obovoid–oblong, trigonous, apiculate, smooth, yellowish–brown.

Fls. & Frts. : October.

In moist places, infrequent. Sav village nearUnhere, Mahad.

Karthik. et al. (1989) treat this species under *Rikliella squarrosa* (L.) J. Raynal.

2. **Scirpus articulatus** L. Sp. Pl. 47. 1753; C.B.Cl. in Hook. f. fl. Brit. India 6: 656. 1893; Cooke, Fl. Pres. Bombay 3: 406. 1958 (Repr. ed.); Rao & Verma, Cyperaceae N.E.India 43. 1982.

Annuals or perennials, tufted, 10–50 cm; leaves absent or reduced to bladeless sheaths; spikelets ovoid–oblong, sessile; nuts obovoid, triquetrous, black.

Fls. & Frts. : September–December.

In wet places, frequent. Karjat to Panvel; Matheran; Vankad, Nagothana.

Karthik. *et al.* (1989) treat this species under *Schoenoplectus articulatus* (L.) Palla.

3. **Scirpus roylei** (Nees) Parkar in Duthie, Fl. Upp. Gang. Pl. 3: 361. 1929; Rao & Verma, Cyperaceae, N.E. India 43. 1982. *Isolepis roylei* Nees in Wight, Contr. Bot. Ind. 107. 1834. *Scirpus quinquefarius* Buch.–Ham. ex Boeck. in Linnaea 36 : 701. 1870; C.B.Cl.in Hook. f. Fl. Brit. India 6 : 657. 1893; Cooke, Fl. Pres. Bombay 3 : 407. 1958 (Repr .ed.).

Annuals, 8–20 cm; leaves absent; spikelets oblong, oblong to lanceolate, terete, acutish, many flowered; nuts, obovoid–orbicular or ellipsoid, compressed, trigonous, reddish–brown.

Fls. & Frts. : December.

In wet places, infrequent. Nagothana to Pen.

Karthik. *et al.* (1989) treat this species under *Schoenoplectus roylei* (Nees) Ovezinn & Czukav.

4. **Scirpus lateriflorus** Gmel. Syst. Veg. 1: 127. 1791; Rao & Verma, Cyperaceae N.E.India 42. 1982. *S. supinus* L. var. *uniloides* C.B.Cl. in Hook. f. Fl. Brit. India 6 : 656. 1893; Cooke, Fl. Pres. Bombay 3: 406. 1958 (Repr.ed.).

Annuals, 10–40 cm; leaves absent; spikelets 2–3 or one, obovoid to oblong, subterete, brownish; nuts obovoid–orbicular, pale–brownish to blackish, rugulose.

Fls. & Frts. : December.

In swampy places, infrequent. Nagothana to Pen.

Karthik. *et al.* (1989) treat this species under *Schoenoplectus lateriflorus* (Gmel.) Lye.

150. POACEAE
(GRAMINEAE)

Key to the groups

1a. Spikelets 2–flowered, falling entire at maturity, usually with the upper floret hermaphrodite, and lower male or barren and

if the latter, often reduced to the lemma or rarely the lemma entirely absent, all alike or more often differing in size, shape, structure, frequently dorsally compressed ... PANICOIDEAE 1

1b. Spikelets 1 to many-flowered, breaking up at maturity above the more or less persistent glumes or if falling entire, then not 2-flowered with the lower floret male or barren and the herm aphrodite, usually more or less laterally compressed or terete ... POOIDEAE 2

GROUP – 1 : PANICOIDEAE

Key to the tribes

1a. Male and female spikelets in seperate inflorescences or in different parts of the same inflorescence; lemmas hyaline or membranous and thinner than the glumes ... *MAYDEAE* 1

1b. Spikelets all hermaphrodite or with male or barren and hermaphrodite spikelets mixed in the same inflorescence so arranged that a male or barren spikelet is near a hermaphro -dite spikelet, or if unisexual, then the lemma of fertile floret indurated:

2a. Spikelets paired, similar or more often dissimilar, one sessile, other pedicelled; glumes more or less rigid upper lemma usually awned ... *ANDROPOGONEAE* 2

2b. Spiklets solitary or paired, more or less similar; glumes membranous; upper lemma usually awnless ... *PANICEAE* 3

TRIBE 1 – MAYDEAE

1a. Female spikelets completely enclosed in a metamorphosed leaf-sheath which takes the form of a spherical or cylindrical, osseous or ivory bead-like structure ... COIX 1

1b. Female spikelets not enclosed in a false involucre as above:

2a. Female spikelets in crowded longitudinal rows on a very thick axis; male one in ample terminal panicles ... ZEA 2

2b. Inflorescence, especially the female, not as above ... TRIFLORACHNE 3

1. COIX L.

Coix lacryma-jobi L. Sp. Pl. 972. 1753; Hook. f. Fl. Brit. India 7: 100. 1896; Cooke, Fl. Pres. Bombay 3: 517. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 3, t.1. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 264. 1960. *Kasai, Ran-Jondhala.*

Annual or perennial, stout herbs, rooting at lower nodes, 20–60 cm; leaves linear-lanceolate, acuminate, cordate at base, smooth, margins serrate, spinulose, 8–24 x 2.2–4.5 cm; racemes drooping,

2.2–6.0 cm long; glumes elliptic–lanceolate; fruits ovoid–globose, white or bluish–grey, smooth, shining.

Fls. & Frts. : September–October.

In wet places, frequent. Matheran.

Stem and leaves used as fodder. The hard shelled forms with cupules used as beads and in colours etc. while the soft shelled forms used as grains to make porridge.

2. ZEA L.

Zea mays L. Sp. Pl. 971. 1753; Hook. f. Fl. Brit. India 7: 102. 1896; Cooke, Fl. Pres. Bombay 3: 574. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 2. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 270. 1960.

Herbs, 1–2 m; leaves linear, glabrous; male panicles terminal, 20–30 cm; female spikes solitary, axillary.

Cultivated. The corn is eaten and foliaceous bracts are used as a wrapper for cigarettes. The stem and leaves are used as cattle fodder.

3. TRILOBACHNE Schenck ex Henr.

Trilobachne cookei (Stapf) Schenck ex Henr. in Meded. Rijks. Herb. Leid. n. 67: 4. 1931; Bor, Grass. Burma, Ceylon, India & Pak. 268. t. 31. 1960. *Polytoca cookei* Stapf in Hook. Icon. Pl. 24. t. 2333. 1894; Hook. f. Fl. Brit. India 7: 101. 1896; Cooke, Fl. Pres. Bombay 3: 519. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 5. t. 2. 1935.

Herbs, 40–90 cm; leaves linear–lanceolate, hispid, 40–50 x 4.5–7.0 cm; flowering branches crowded in the axils of upper leaves; inflorescence panicle; male spikelets in pairs, unequal, shortly pedicellate or sessile, 6–8 mm; female spikelets as long as the males, solitary.

Fls. & Frts. · September–October.

In hilly forests, infrequent. Matheran; Raigad.

TRIBE 2 – ANDROPOGONEAE

1a. Spikelets solitary, pedicelled or almost sessile at nodes of a tough or fragile rachis; inflorescence of a solitary or several racemes :

2a. Rachis of the racemes not jointed, tough, flat or filiform; spikelets almost sessile or shortly pedicelled; glumes keeled; keel glabrous or ciliate ... DIMERIA 1

2b. Rachis of the racemes jointed, fragile; spikelets pedicelled; glumes rounded on the back, not keeled; upper glume with a tuft of hairs in the middle third ... POGONACHNE 2

1b. Spikelets in pairs, similar or dissimilar, a sessile and a pedicelled or one short and the other long–pedicelled; rarely pedicelled reduced or very rarely the sessile reduced to a scale or two and the pedicelled spikelet developed (*Pogonachne*):

3a. Spikelets arranged in more or less ample panicles or compound racemes:

4a. Rachis of the racemes tough; inflorescence narrow, spiciform ... IMPERATA 3

4b. Rachis of the racemes breaking up; inflorescence in large panicles ... SACCHARUM 4

3b. Spikelets arranged in a single or in several racemes :

5a. Spikelets of each pair similar, the sessile and pedicelled hermaphrodite; joints of the panicle thin, linear or expanded at top ... EULALIA 5

5b. Spikelets in each pair dissimilar, the sessile hermaphrodite, the pedicelled male or sterile or completely absent or if more or less similar then joints of racemes and the pedicel thick and swollen:

6a. Joints of the rachis and pedicel of the pedicelled spikelet swollen, 3–angled, rounded or flattened:

7a. Sessile spikelet with a male and hermaphrodite floret; upper lemma awned:

8a. Racemes one–noded, reduced to three heteromorphous spikelets, enclosed in a boat–shaped spathe ... APLUDA 6

8b. Racemes many–noded, not enclosed in a spathe–like sheath:

9a. Racemes solitary, terminal; lower glume of sessile spikelet not transversely grooved:

10a. Spikelets solitary, pedicelled, forming a true raceme; keel or upper glume with a thick tuft of hairs from the middle ... POGONACHNE 2

10b. Spikelets in pairs, a sessile and pedicelled forming a false raceme; keel of upper glume with or without a tuft of hairs:

11a. Lower glume of sessile spikelet when young with two tufts of hairs, upper glume with one tuft; ligule membranous ... TRIPLOPOGON 7

11b. Lower and upper glumes without tufts of hairs; ligule, a row of hairs ... SEHIMA 8

9b. Racemes two to many; lower glume of sessile spikelet often with nodules on the margins or transversely furrowed :

12a. Pedicelled spikelets developed; lower glume often transversely wrinkled, furrowed or with nodules on the margins ... ISCHAEMUM 9

12b. Pedicelled spikelets reduced to a linear, curved, pedicelled; lower glume transversely ridged, often broken up into warts or teeth ... THELEPOGON 10

7b. Sessile spikelet with a hermaphrodite floret only or occasionally with a male floret below, sunk in the cavity of the joint; upper lemma unawned ... MANISURIS 11

5b. Joint of the rachis and the pedicel narrow, seldom thickened upwards, occasionally with a translucent longitudinal groove :

13a. Spikelets in racemes, not interrupted by spathes or solitary at ends of the branches; the racemes collected into whorled panicles; joints and panicles not furrowed :

14a. Spikelets dorsally compressed in panicles of many pairs or in threes of which one is hermaphrodite ... SORGHUM 12

14b. Spikelets compressed from the sides :

15a. Spikelets with many pairs of spikelets arranged in whorled racemes; lower glume tuberculate ... VETIVERIA 13

15b. Spikelets in groups, each consisting of a sessile and two more or less reduced pedicelled spikelets or a raceme of several pairs; lower glume not tuberculate ... CHRYSOPOGON 14

13b. Panicles of racemes, interrupted by spathes, or the espatheate racemes digitate or in pairs or solitary and terminal, sometimes the joints and/or pedicels with a translucent median furrow :

16a. Upper lemma of the sessile spikelet with a basal awn; sessile spikelet compressed from the sides; pedicelled spikelet reduced ... ARTHRAXON 15

16b. Upper lemma of sessile spikelet awned from the tip or from the cleft or upper lemma reduced to the hyaline base of the awn:

17a. Margins of the lower glume of sessile spikelets sharply infolded, 2–keeled; awn glabrous :

18a. Upper lemma of the sessile spikelet not cleft, often stipitate and passing into the awn:

19a. Spikelets arranged in false racemes terminating the branches or branchlets of a true panicle; pedicels with a median translucent furrow ... CAPILLIPEDIUM 16

19b. Spikelets arranged in false racemes which are either solitary or terminal or subsessile, arranged along a central axis but at the tips of capillary branches :

20a. Racemes solitary at the ends of branches supported by spathes, but sessile spikelets not overlapping; fertile spikelets 2 ...PSEUDANTHISTIRIA 17

20b. Racemes several to many, if solitary then the sessile spikelets imbricate; fertile spikelets many :

21a. Joints and pedicels with a translucent furrow; glumes sometimes pitted ... BOTHRIOCHLOA 18

21b. Joints and pedicels without a translucent furrow; glumes not pitted ... DICHANTHIUM 19

18b. Upper lemma of the sessile spikelet 2–lobed or 2–cleft, awned in the sinus ... CYMBOPOGON 20

17b. Margins of lower glume inturned and rounded at the sides, at the most keeled upwards; awn usually hairy ;

22a. Racemes solitary at ends of branches, surrounded at the base of an involucre of homogamous spikelets :

23a. Involucral spikelets pedicellate, deciduous; callus of fertile spikelet truncate or obtuse ... ISELEMA 21

23b. Involucral spikelets sessile, not deciduous ; callus of the fertile spikelets pointed ... THEMEDA 22

22b. Racemes without an involucre :

24a. Glumes often garnished with tubercle based bristles; lower glume of sessile spikelets terete, usually covered with short hairs ... HETEROPOGON 23

24b. Glumes glabrous; lower glume of sessile spikelet keeled and broadly winged, glabrous ... PSEUDODICHANTHIUM 24

1. DIMERIA R. Br.

1a. Annuals; racemes 2-3-nate ... *D. ornithopoda* 1

1b. Perennials; racemes many–nate ... *D. gracilis* 2

1. **Dimeria ornithopoda** Trin. Fund. Agrost. 167. t. 14. 1820; Hook. f. Fl. Brit. India 7: 104. 1896; Cooke, Fl. Pres. Bombay 3: 462. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 8. t. 4. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 142. t. 3. f. 8. 1960.

Annuals, 10–20 cm; leaves mostly basal, flat, linear, pilose, 4.2–10.8 cm; racemes spike–like, erect or spreading; spikelets laterally compressed, greenish with purple tinge, 3–6 mm long.

Fls. & Frts. : September–October.

In hilly forests, frequent. Kankaneshwar hill, Alibag; Matheran.

* 2. **Dimeria gracilis** Nees ex Steud. Syn. Pl. Glum. 1: 413. 1855; Hook. f. Fl. Brit. India 7 : 105. 1896; Cooke, Fl. Pres. Bombay 3:463. 1958 (Repr.ed); Blatt & McC. Bombay Grass. 9. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 140. 1960.

Tufted herbs, 30–90 cm; leaves linear, acuminate, glabrous or pilose; racemes lax–flowered, flexuose; spikelets spreading, 5.5 – 6 mm.

Fls. & Frts. : December.

In hilly forests, infrequent. Raigad.

2. POGONACHNE Bor

Pogonachne racemosa Bor in Kew Bull. 1949 : 176. ff. 1–11. 1949 *et* Grass. Burma, Ceylon, India & Pak. 200. f. 11. 1960.

Robust annuals upto 1 m; leaves linear, acuminate, margins scabrid, upto 20 x 1.5 cm; racemes simple, 4–6 cm; spikelets articulated, 1 cm long; lower glumes dorsally rotund, lanceolate–acute, multi–nerved, 9 mm long; upper glume coriaceous, 5–nerved.

Fls. & Frts. : September – October.

In hilly forests, infrequent. Matheran.

This species is endemic to Maharashtra. The type material was collected by Woodrow from Matheran in 1896.

3. IMPERATA Cyr.

Imperata cylindrica (L.) Raeuschel, Nom. Bot. ed. 3: 10. 1797; P. Beauv. Ess. Agrost. 165. 1812; Blatt. & McC. Bombay Grass. 42. t. 39. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 169. 1960. *Lagurus cylindricus* L. Syst. Nat. (ed.10): 878. 1759. *Imperata arundinacea* Cyr. Pl. Rar. Neap. 2: 26. 1792; Hook. f. Fl. Brit. India 7: 106. 1896; Cooke, Fl. Pres. Bombay 3: 464. 1958 (Repr. ed.).

Stoloniferous herbs, 30–90 cm; leaves linear, flat, acuminate, glabrous, 15–30 x 1.1–2.7 cm; panicles spike–like, subcylindric silvery–white, 3–15 cm; spikelets lanceolate, 1– flowered, bi–sexual, upto 3 mm long.

Fls. & Frts. : September–October.

Sandy shore, infrequent. Alibag.

4. SACCHARUM L.

* **Saccharum spontaneum** L. Mant. Alt. 183. 1771; Hook. f. Fl. Brit. India 7: 118. 1896; Cooke, Fl. Pres. Bombay 3: 465. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 45. t. 31. 1935. Bor, Grass. Burma, Ceylon, India & Pak. 214. 1960. *Bagheri, Kamis.*

Tufted, slender herbs upto 6 m; leaves linear, acuminate, coriaceous, glabrous, 30–90 x 0.15–0.16 cm; panicles silky hairy; spikelets lanceolate, awnless, 1–flowered, *ca* 2.5 mm long; glumes 4.

Fls. & Frts. : October–November.

Along the river bank and sea–coast, infrequent. Alibag; Karjat.

5. EULALIA Kunth

1a. Racemes few, 2–4	...	*E. fimbriata* 1
1b. Racemes many, 6–12	...	*E. trispicata* 2

1. **Eulalia fimbriata** (Hack.) O. Ktze. Rev. Gen. Pl. 2: 775. 1891; Blatt. & McC. Bombay Grass. 53. t. 36. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 155. 1960. *Pollinia fimbriata* Hack. in DC. Monogr. Phan. 6 : 164. 1889; Hook. f. Fl. Brit. India 7: 112. 1896; Cooke, Fl. Pres. Bombay 3: 468. 1958 (Repr. ed.).

Annuals, 30–60 cm; leaves linear, sparsely hairy, ligule ciliolate, sheaths glabrous, 10–30 cm; racemes 2–4, villous, flexuous; spikelets silky villous, 2–4 mm long.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

2. **Eulalia trispicata** (Schult.) Henr. in Blumea 3: 453. 1940; Bor, Grass. Burma, Ceylon, India & Pak. 157. 1960. *Andropogon trispicatus* Schult. Syst. Veg. 2. Mant. 452. 1824. *Pollinia argentea* (Brongn.) Trin. in Mem. Acad. Sci. Petersb. Ser. 6, 4(1) : 90. 1836; Hook. f. Fl. Brit. India 7: 111. 1896; Cooke, Fl.Pres. Bombay 3 : 467. 1958 (Repr.ed.). *Eulalia argentea* Brongn. in Duperr. Voy. Coq. Bat. 2(2) : 92. 1830; Blatt. & McC. Bombay Grass. 52. t. 35. 1935.

Tufted, erect or geniculate, perennials, 20–60 cm; leaves linear, flat, glabrous, 10–30 x 0.2–0.4 cm; racemes 6–12, subdigitate, spike–like, laxly flowered; spikelets elliptic–oblong, brown, 3–5 mm long.

Fls. & Frts. : October–December.

In damp places, infrequent. Matheran.

6. APLUDA L.

Apluda mutica L. Sp. Pl. 82. 1753; Bor, Grass. Burma, Ceylon, India & Pak. 93. 1960. *A. varia* Hack. in DC. Monogr. Phan. 6: 197. 1889 *nom. superfl.*; Hook. f. Fl. Brit. India 7: 150. 1896; Cooke, Fl. Pres. Bombay 3: 474. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 29. t. 120. 1935. *Ghagara.*

Tufted perennials, erect or rambling, upto 2–3 m; leaves linear–lanceolate, flat, scaberulous, 3.3–22 x 0.4–1.0 cm; panicles with many simple racemes or pseudo–spikes; spikelets yellowish, elliptic–lanceolate, awned; pedicellate ones broadly lanceolate.

Fls. & Frts. : October–November.

In hilly forests, infrequent. Matheran.

It is a good fodder grass relished by cattle.

7. TRIPLOPOGON Bor

Triplopogon ramosissimus (Hack.) Bor in Kew Bull. 1954: 501. 1954 *et* Grass. Burma, Ceylon, India & Pak. 225. f. 28. 1960. *Ischaemum ramosissimum* Hack. in DC. Monogr. Phan. 6: 249. 1889. *I spathiflorum* Hook. f. Fl. Brit. India 7: 138. 1896; Cooke, Fl. Pres. Bombay 3: 481. 1958 (Repr. ed.). *Sehima spathiflorum* (Hook. f.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 23. 1927 *et* Bombay Grass. 20. t. 13. 1935.

Erect herbs, much branched from above, 90–120 cm; leaves linear–lanceolate, petiolate, sparsely hairy, 25–40 x 0.7–1.8 cm; racemes exserted from spathes, 3.5–5.0 cm; sessile spikelets narrowly lanceolate, 8–10 mm; pedicellate spikelet longer than the sessile one.

Fls. & Frts. : September–December.

On moist hill slopes, frequent. Matheran; Pen; Sarasgad, Pali.

8. SEHIMA Forssk.

Sehima nervosum (Rottl.) Stapf in Prain, Fl. Trop. Afr. 9: 36. 1917; Blatt,. & McC. Bombay Grass. 21. t. 14. 1935. Bor, Grass. Burma,

Ceylon, India & Pak. 218. 1960. *Andropogon nervosus* Rottl. *apud* Willd. in Verh. Ges. Naturf. Freund. Berlin, Neue Schr. 4 : 218. 1806.

Perennial, tufted grass, 30–90 cm; leaves glaucous, long–acuminate to a filiform tip, 5.5-30 x 0.2–0.6 cm; racemes 5–10 cm; sessile spikelet laterally compressed, 6–8 mm; lower glume narrowly oblong–elliptic, keeled; pedicelled spikelet lanceolate, purplish, ciliate, 6–8 mm.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

This species is considered to be an excellent fodder grass.

9. ISCHAEMUM L.

1a. Margins of the lower glume of sessile spikelet expanded below the middle :

2a. Spikelets awned:

3a. Leaves and sheaths glabrous or puberulous but not villous ... *I. indicum* var. *indicum* sub–var. *indicum* 1

3b. Leaves and sheaths villous with erect hairs ... *I. indicum* var. *indicum* sub–var. *villosum* 2

2b. Spikelets unawned ... *I. muticum* 3

1b. Margins of the lower glume of the sessile spikelet narrowly and evenly inturned from base to apex:

4a. Base of the lower leaves acute, tapering, rounded or shallowly cordate, without a petiole :

5a. Pedicel of the pedicelled spikelet more than 1/3 rd the length of the sessile spikelet :

6a. Perennial grasses; lower glume of sessile spikelet without tuft of hairs :

7a. Lower glume of the sessile spikelet oblong –obtuse, glabrous ... *I. Commutatum* 4

7b. Lower glume of the sessible spikelet lanceolate or elliptic-lanceolate; dossal surface pilose ... ... *I. pilosum* 5

6b. Annual grass; lower glume of the sessile spikelet with 2 tufts of hairs on the margins about the middle ... *I. diplopogon* 6

5b. Pedicel of the pedicelled spikelet less than 1/3 rd of lenght of sessile spikelet :

8a. Lower glume of sessile spikelet coriaceous with nodules on the rounded keels; sometimes latter inconspicuous :

9a. Lower leaves tapering to the base; culms stilt–rooted ... *I. santapaui* 7

9b. Lower leaves not tapering to the base, rounded or shallowly cordate, culms not stiltrooted ... *I. tumidum* 8

8b. Lower glume of sessile spikelet crustaceous with side nodules joined by sharp ridges or chartaceous with very obscure nodules and ridges, glabrous, yellow or densely covered with white hairs :

10a. Dorsal surface of the lower glume glabrous or pilose; ridges deep; leaves tapering at base; rather slender plants ... *I. rugosum* 9

10b. Dorsal surface of the lower glume often almost smooth and frequently densely covered with white hairs; ridges very shallow; leaves shallowly cordate at base; usually tall, robust plants ... *I. molle* 10

4b. Base of lower leaves sagittate or deeply cordate, nearly always with a distinct petiole (except *I. tumidum*) :

11a. Joints of the racemes linear–clavate or slightly clavate –turbinate; lower glume of sessile and pedicelled spikelets deeply and irregularly wrinkled ... *I. dalzellii* 11

11b. Joints of the racemes distinctly turbinate; lower glumes not as above; laterally noduled or nodules joined across dorsal surface as sharp ridges ...*I. semisagittatum* 12

1. **Ischaemum indicum** (Houtt.) Merr. var. **indicum** sub–var. **indicum**; Bor, Grass. Burma, Ceylon, India & Pak. 180. 1960. *I indicum* (Houtt.) Merr. in J. Arnold Arb. 19: 320. 1938. *Phleum indicum* Houtt. Nat. Hist. ser. 2, 13: 198. t. 90. f. 2. 1782. *Ischaemum aristatum auct. non* L. (1753); Hook. f. Fl. Brit. India 7: 126. 1896; Cooke, Fl. Pres. Bombay 3: 476. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 11. t. 6. 1935.

Slender, tufted herbs, 40–60 cm; leaves linear to linear–lanceolate, 2.5–12 x 0.3–1 cm; spike–like racemes 2, spreading or closely appressed to each other, 2.5–8 cm; spikelets pedicellate, greenish, ovoid–oblong or obovoid, 3–5 mm long.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

2. **Ischaemum indicum** var. **indicum** sub–var. **villosum** (Nees) Bor, Grass. Burma, Ceylon, India & Pak. 180. 1960. *Spodiopogon villosus* Nees in Hook. & Arn. Bot. Beech. Voy. 242. 1838.

Slender, tufted herbs, villous at nodes; leaves linear to linear–lanceolate, flat, 3.5 – 14 x 0.4 – 1.1 cm.

Fls. & Frts. : September–October.

Near sea–shore, infrequent. Kolaba fort, Alibag.

3. **Ischaemum muticum** L. Sp. Pl. (ed.1) 1049. 1753; Hook. f. Fl. Brit. India 7: 132. 1896; Bor, Grass. Burma, Ceylon, India & Pak. 183. 1960.

Herbs, erect or suberect, 5–20 cm; leaves ovate–lanceolate, rigid; spikes 2, short, stout, glabrous; glumes of sessile spikelet oblong, 2–toothed, smooth; keels narrowly winged above the middle, oblong, shortly 2–fid.

Fls. & Frts. : October.

Near sea–shore, rare. Around Janjira fort, Murud. 147843.

4. **Ischaemum commutatum** Hack. in DC. Monogr. Phan. 6: 209. 1889; Hook. f. Fl. Brit. India 7: 131. 1896; Bor, Grass. Burma, Ceylon, India & Pak. 178. 1960.

Herbs, 10–30 cm; leaves linear–lanceolate, acute, softly hairy, margins scabrid, 2.5 – 7.0 cm; spikes 2.5–3.2 cm; joints of the sessile spikelet shortly ciliate, 0.5–0.6 cm; glumes coriaceous, keels glabrous, narrowly winged above.

Fls. & Frts. : March.

In hilly region, infrequent. Mirya dongar, Pen.

5. **Ischaemum pilosum** (Klein ex Willd.) Wight in Madras Lit. Sci. J. 138. 1835; Hook. f. Fl. Brit. India 7: 130. 1896; Cooke, Fl. Pres. Bombay 3: 479. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 14. f. 9. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 183. 1960. *Andropogon pilosus* Klein ex Willd. Sp. Pl. 4: 920. 1806.

Erect or suberect, tufted herbs, 40 – 120 cm; leaves linear, acuminate, membranous, glabrous, 6.8–18.0 x 0.2–0.5 cm; racemes yellowish–brown, 2–3–fascicled; sessile spikelet with callus and longer awn; glume chartaceous; pedicellate spikelet with shorter awn.

Fls. & Frts. : October.

In hilly forests, infrequent. Varandh ghat, Mahad.

6. **Ischaemum diplopogon** Hook. f. Fl. Brit. India 7: 129. 1896;

Cooke, Fl. Pres. Bombay 3 : 478. 1958 (Repr. ed); Blatt. & McC. Bombay Grass. 14. t. 8. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 178. 1960.

Glabrous herbs, 30–40 cm; leaves linear–lanceolate, acuminate, 7.0–15.2 x 0.6–1.3 cm; racemes 2–4 in terminal and axillary filiform peduncles; sessile spikelets lanceolate, awned, 3–5 mm long; pedicellate spikelets imperfect, awnless.

Fls. & Frts. : October.

In hilly forests, infrequent. Bhira; Sarasgad, Pali.

7. **Ischaemum santapaui** Bor in J. Bombay nat. Hist. Soc. 49: 167. 1950 *et* Grass. Burma, Ceylon, India & Pak. 185. 1960.

Robust annual herbs, branching at nodes, 80–120 cm; leaves linear–lanceolate, glabrous or silky hairy, 10–20 x 0.8–1.2 cm; racemes paired; spikelets with villous callus, 0.4–0.5 cm long.

Fls. & Frts. : September–October.

In moist places, infrequent. Karjat.

8. **Ischaemum tumidum** Stapf ex Bor in Kew Bull. 1951 : 450. 1952; Bor, Grass. Burma, Ceylon, India & Pak. 186. 1960.

Erect or suberect, tufted herbs, 20–60 cm; leaves upto 5 x 1.3 cm; racemes swollen, usually in pairs, enclosed in sheaths when young, upto 3 cm; lower glumes oblong, acute, truncate, scabrous; upper glumes 3–nerved, villous, 6 mm long.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Kolaba fort, Alibag; on way to Shivthalgarh from Varandh.

9. **Ischaemum rugosum** Salisb. Icon. Stirp. Rar. 1. t. 1. 1791; Hook. f. Fl. Brit. India 7: 127. 1896; Cooke, Fl. Pres. Bombay 3: 477. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 12. t. 7. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 184. 1960.

Tufted herbs, 30–50 cm; leaves linear–lanceolate, acuminate, flat, glabrous or sparsely hairy, 6.5–14.2 x 0.3–1.2 cm; racemes solitary or geminate, terminal, brownish, 2 – 6 cm long; spikelets linear–oblong.

Fls. & Frts. : September–October.

In moist places, infrequent. Kolad, Roha.

10. **Ischaemum molle** Hook. f. Fl. Brit. India 7: 128. 1896; Cooke, Fl. Pres. Bombay 3: 477. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass. 13. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 183. 1960.

Stout, leafy herbs, 40–80 cm; leaves linear, acuminate, scattered hairy, 12–25 x 0.5–0.8 cm; racemes 1–2, axillary and terminal; sessile spikelets ovoid, awned, 3–4 mm; pedicellate ones, awnless, smooth, smaller than sessile ones.

Fls. & Frts. : September–October.

In moist deciduous forests, infrequent. Ramraj forests, Alibag.

11. **Ischaemum dalzellii** Stapf ex Bor in Kew Bull. 1951: 448. 1952; Bor, Grass. Burma, Ceylon, India & Pak. 178. 1960.

Annuals, culms many, basal decumbent and upper ascending; leaves linear, acute–acuminate, base sagittates, upto 7.0 x 1.5 cm; racemes pedunculate, 4–6 cm long; sessile spikelets with lower glume oblong, obtuse, hairy, upto 5 mm; upper glume lanceolate, acute, compressed, 3–nerved, hairy.

Fls. & Frts. : September–October.

In hilly forests, frequent. Ghosale fort and Kalasgiri, Roha; Ramraj forests, Alibag.

12. **Ischaemum semisagittatum** Roxb. Fl. Ind. 1: 322. 1820; Hook. f. Fl. Brit. India 7: 130. 1896; Cooke, Fl. Pres. Bombay 3: 480. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 15. t. 10. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 185. 1960.

Annual herbs, glabrous, ascending, 20–60 cm; leaves 1.2–1.5 cm broad; racemes 2, more or less villous; sessile spikelet awned, 0.3–0.5 cm long; pedicellate spikelets shorter, appressed than sessile ones.

Fls. & Frts. : September–October.

In hilly forests, frequent. Karnala fort; Matheran; Pejari forest, Alibag; Varandh ghat, Mahad.

10. THELEPOGON Roth ex Roem. & Schult.

* **Thelepogon elegans** Roth ex Roem. & Schult. Syst. Veg. 2, 46: 788. 1817; Hook. f. Fl. Brit. India 7: 148. 1896; Cooke, Fl. Pres. Bombay 3: 490. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 27. t. 18. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 247. 1960.

Tufted annuals, 30–60 cm; leaves linear, acuminate, base cordate, or amplexicaul, hispid, ciliate on margins, 10–40 x 0.9–1.8 cm; racemes corymbose, 2.5–5 cm; spikelets, yellowish–white, beaked; glumes 4, floral ones ovate–lanceolate, awned.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

11. MANISURIS L.

1a. Lower glume of sessile spikelets not awned, winged on both sides above the middle ... *M. clarkei* 1

1b. Lower glume of sessile spikelets with one or two divaricate long awns, not winged, decorated with transverse rows of tubercles or hooks, the latter bearded at tips ... *M. forficulata* 2

1. **Manisuris clarkei** (Hack.) Bor *apud* Sant. Rec. Bot. Surv. India 16 (1): 357. 1953; Bor, Grass. Burma, Ceylon, India & Pak. 191. 1960. *Rottboellia clarkei* Hack. in Oest. Bot. Zeit. 41: 8. 1891; Hook. f. Fl. Brit. India 7: 156. 1896; Cooke, Fl. Pres. Bombay 3: 472. 1958 (Repr. ed.). *Coelorachis clarkei* (Hack.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 33. 1927; Blatt. & McC. Bombay Grass. 41. t. 29. 1935.

Erect annuals, 15–40 cm; culms glabrous except ring of hairs at nodes; leaves linear–lanceolate, acuminate, scabrous with tubercle based hairs, 8–15 x 0.6–1.2 cm; racemes solitary, yellowish, rachis fragile; sessile spikelets obtuse, imbricating with short and broad callus.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

Karthik, *et al.* (1989) treat this species under *Mnesithea clarkei* (Hack.) Koenig & Sosef.

2. **Manisuris forficulata** C.E.C. Fischer in Kew Bull. 1933: 355. 1933; *emend.* Jain in Bull. Bot. Surv. India 12: 12. 1972; Bor, Grass. Burma, Ceylon, India & Pak. 192. 1960. *Rottboellia divergens* Hook. f. Fl. Brit. India 7: 155. 1896 *non* Hack. (1889); Cooke, Fl. Pres. Bombay 3: 470. 1958 (Repr. ed.). *Glyphochloa forficulata* (Fischer) W.D. Clayton in Kew Bull. 35(4): 815. 1981.

Erect or ascending annuals, 10–20 cm; leaves linear, acuminate, hairy, 4.5–10.0 x 0.2–0.4 cm; racemes pale yellow, simple, solitary, 2.2–3.2 cm; sessile spikelets 2, aristate, 6 mm long, glumes 4; pedicellate spikelets as long as the sessile.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

Karthik, *et al.* (1989) treat this species under *Glyphochloa forficulata* (C.E.C Fischer) W.D. Clayton.

12. SORGHUM Moench.

Sorghum halepense (L.) Pers. Syn. Pl. 1: 101. 1805; Blatt. & McC. Bombay Grass. 55. t. 37. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 222. 1960. *Holcus halepensis* L. Sp. Pl. 1047. 1753. *Andropogon halepensis* (L.) Brot. Fl. Lus. 1: 89. 1804; Hook. f. Fl. Brit. India 7: 182. 1896; Cooke, Fl. Pres. Bombay 3: 502. 1958 (Repr .ed.). *Boru.*

Robust herbs, 1.5–3m; leaves linear–lanceolate, flat, glabrous, 15–60 x 0.8–3.0 cm; panicles oblong–pyramidal, 10–40 cm; sessile spikelets ellipsoid, acute, red, purplish–black, 4–5 mm long; pedicelled spikelets at length deciduous , purplish, 4.5–6.0 mm long; lower glumes keeled above with 3–toothed tip.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

13. VETIVERIA (Lem.–Lisanc.) Bory

Vetiveria zizanioides (L.) Nash in Small, Fl. South–East U.S. 67. 1903; Blatt. & McC. Bombay Grass. 65. t. 40. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 258. 1960. *Phalasis zizanioides* L. Mant. Pl. 2: 183. 1771. *Andropogon squarrosus* Hook. f. Fl. Brit. India 7 : 186. 1896, *non* L.f. (1781); Cooke, Fl. Pres. Bombay 3: 511. 1958 (Repr. ed.). *Khas–khas.*

Tufted, rhizomatus herbs, 0.7-1.8 m; roots aromatic, fibrous; leaves sub–bifarius, acuta, narrow, margins scabrid, 30–60 cm long; panicles oblong, contracted, 10–20 cm; sessile spikelets lanceolate, acute, curved, 3–5 mm; lower glume concave spinulose, muricate on back, 5–nerved; upper glume spinulose, muricate on back, 5–nerved; upper glume concave, spinulose, muricate on the keel, awnless, 1–nerved.

Fls. & Frts. : September.

In moist deciduous forests, occasional. Matheran.

14. CHRYSOPOGON Trin.

1a. Pedicels half the length of sessile spikelets or longer, glabrous or nearly so ... *C. aciculatus* 1

1b. Pedicels shorter than half the length of sessile spikelets, ciliate ... *C. fulvus* 2

1. Chrysopogon aciculatus (Retz.) Trin. Fund. Agrost. 188. 1820; Blatt. & McC. Bombay Grass. 68. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 115. 1960. *Andropogon aciculatus* Retz. Obs. Bot. 5: 22. 1789; Hook. f. Fl. Brit. India 7: 188. 1896; Cooke, Fl. Pres. Bombay 3: 504. 1958 (Repr. ed.).

Herbs, 30–60 cm; leaves linear, obtuse or subacute, glabrous, margins spinulose; panicles oblong, purplish, sessile, compressed; pedicellate spikelets lanceolate, cuspidately acuminate.

Fls. & Frts. : October.

In hilly forests, infrequent. Raigad.

2. Chrysopogon fulvus (Spreng.) Chiov. Fl. Somala 1: 327. 1929; Bor, Grass. Burma, Ceylon, India & Pak. 116. 1960. *Pollinia fulva* Spreng. Pugill. 2: 10. 1815. *Andropogon monticola* Roem. & Schult. Syst. Veg. 2, Mant. 665. 1827; Hook. f. Fl. Brit. India 7: 192. 1896; Cooke, Fl. Pres. Bombay 3: 505. 1958 (Repr. ed.). *Agiva*.

Perennials with densely tufted culms, 30–90 cm; leaves linear–acuminate, cauline, 10–30 x 0.2–0.5 cm; panicles ovate with fulvous capillary branches, 4–10 cm; sessile spikelet with lower glume oblong, 5–7 mm long; upper glume awned, awns 3–6 mm long; pedicelled spikelets dorsally compressed, 4–6 mm long.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

15. ARTHRAXON P. Beauv.

1a. Spikelets long–awned; awns 15 – 25 cm ... *A. jubatus* 1

1b. Spikelets short–awned or awnless; awns not more than 2.5 cm :

2a. Lower glumes of sessile spikelets rounded on the back, not keeled; spikelets laterally compressed:

3a. Spikelets 2.5 – 3 mm; pedicelled spikelets at least in the upper part of the racemo developed ... *A. lancifolius* 2

3b. Spikelets 3 –4 mm; pedicelled spikelets not developed; pedicels more or less reduced ... *A. hispidus* 3

2b. Lower glumes of sessile spikelet 2–keeled; spikelets not laterally compressed ... *A. lanceolatus* 4

1. **Arthraxon jubatus** Hack. in DC. Monogr. Phan. 6: 358. 1889; Hook. f. Fl. Brit. India 7: 147. 1896; Cooke, Fl. Pres. Bombay 3: 489. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 79. t. 50. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 100. 1960.

Slender, suberect, ascending annuals, 8 – 25 cm; leaves lanceolate, acute, flat, membranous, densely pubescent on both surfaces, 2.0–4.2 x 0.4–0.8 cm; Spikelets binate, a sessile and pedicellate one at each point and a terminal male; sessile spikelets linear-lanceolate with bearded callus upto 7 mm.

Fls. & Frts. : September–October.

In hilly forests, infrequent. On way to Raigad from Pachhad.

2. **Arthraxon lancifolius** (Trin.) Hochst. in Flora 39: 188. 1856; Blatt. & McC. Bombay Grass. 77. t. 48. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 100. 1960. *Andropogon lancifolius* Trin. in Mem. Acad. Sci. Petersb. Ser. 6, 2: 271. 1832. *Arthraxon microphyllus sensu* Hook. f. Fl. Brit. India 7: 147. 1896; Cooke, Fl. Pres. Bombay 3: 488. 1958 (Repr. ed.), *non* (Trin.) Hochst. (1856).

Erect or trailing annuals, 5–25 cm; leaves lanceolate–ovate, 1.2–4.5 x 0.3–1.0 cm; inflorescence with 2–7 racemes; each 1–2 cm long, rachilla ciliate, sessile spikelets linear; awns 5–7 mm long; pedicelled spikelets lanceolate.

Fls. & Frts. : May–October.

In hilly forests, frequent. Janjira fort, Murud; Matheran; Raigad; Sarasgad, Pali; Varandh ghat, Mahad.

3. **Arthraxon hispidus** (Thunb.) Makino in Bot. Mag. Tokyo 26: 214. 1912; Bor, Grass. Burma, Ceylon, India & Pak. 99. 1960; Welzen in Blumea 27: 266. 1981. *Phalaris hispida* Thunb. Fl. Jap. 4. 1784. *Arthraxon ciliaris* P. Beauv. Ess. Agrost. 111, 152, t. 11, f. 6. 1812; Hook. f. Fl. Brit. India 7: 145. 1896; Cooke, Fl. Pres. Bombay 3: 489. 1958 (Repr. ed.). *A. nudus* (Steud.) Hochst. in Flora 39: 188. 1856; Bor, *op. cit.* 101. *A. inermis* Hook. f. *op. cit.*; Cooke, *op. cit.* 487; Blatt. & McC. Bombay Grass. 74, t. 45. 1935; Bor, *op. cit.* 100. *A. quartinianus* (A. Rich.) Nash. in N. Amer. Fl. 17: 99. 1912; Bor, *op. cit.* 102.

Erect or decumbent, slender annuals, 30–60 cm; culms purplish, thickened at nodes; leaves ovate–lanceolate, cordate, amplexicaule

1.8–4.8 x 0.4–2 cm; spikes deflexed; joints glabrous, hairy or ciliate; sessile spikelets linear–lanceolate, 3–4 mm long; lower glume round at back or laterally compressed; pedicelled spikelets reduced to a pedicel.

Fls. & Frts. : September–October.

In moist and shady places, frequent. Dasgaon; Kalasgiri, Roha; Karjat; Matheran; Mhasla; Vankalagar forest, Shrivardhan.

4. **Arthraxon lanceolatus** (Roxb.) Hochst. in Flora 39: 188. 1856; Hook. f. Fl. Brit. India 7: 143. 1896; Cooke, Fl. Pres. Bombay 3: 487. 1958 (Repr. ed.); Bor, Grass. Burma, Ceylon, India & Pak, 100. 1960; Welzen in Blumea 27: 283. 1981. *Andropogon lanceolatus* Roxb. Fl. Ind. 1: 262. 1820. *Arthraxon prionodes* (Steud.) Dandy in Andrews, Fl. Pl. Sudan 3 : 399. 1956; Bor, *op. cit.* 101. *A. serrulatus* Hochst. *op.cit.*; Blatt. & McC. Bombay Grass. 75. t. 46. 1935.

Slender, tufted, straggling or decumbent annuals, 30–50 cm; leaves ovate–lanceolate, acuminate, tuberculate–ciliate on margins, 2.5–6.0 x 0.4–1.8 cm; racemes 2–7, internodes pilose; sessile spikelets linear–lanceolate, 5–6 mm long; pedicellate ones narrowly lanceolate, 4–5 mm long.

Fls. & Frts. : September.

On road sides, infrequent. Neral to Matheran.

16. CAPILLIPEDIUM Stapf

Capillipedium huegelii (Hack.) Stapf in Hook. Icon. Pl. sub–t. 3085. 1922; Bor, Grass. Burma, Ceylon, India & Pak. 111. 1960. *Andropogon huegelii* Hack. in DC. Monogr. Phan. 6: 492. 1889; Hook. f. Fl. Brit. India 7: 180. 1896; Cooke, Fl. Pres. Bombay 3: 501. 1958 (Repr. ed.). *Dichanthium huegelii* (Hack.) Jain & Deshpande in Bull. Bot. Surv. India 20: 135. (1978) 1979; Deshpande in Fasc. Fl. India 15: 15. ff. 29–30. 1984.

Suffrutescent herbs, 60–90 cm; leaves linear–lanceolate, acuminate, flat, flaccid, glabrous, margins scaberulous, 8.0–19.5 x 0.9 – 1.2 cm; panicles 5–8 cm; sessile spikelets pale green to purplish, 3 mm long, callus densely villous; pedicellate spikelets lanceolate, green or purple, 4 mm long.

Fls. & Frts. : September–October.

In hilly forests, frequent. Karnala fort; Murud; Roha.

17. PSEUDANTHISTIRIA (Hack.) Hook. f.

1a. Culms erect, robust; primary nerves on both sides of the mid-rib distinct:

2a. Lower glume of sessile spikelet shortly hispid ... *P. heteroclita* 1

2b. Lower glume of sessile spikelet glabrous ... *P. hispida* 2

1b. Culms slender, creeping below and rooting at nodes; primary nerves on both sides of the mid-rib not distinguishable ... *P. umbellata* 3

1. **Pseudanthistiria heteroclita** (Roxb.) Hook. f. Fl. Brit. India 7: 219. 1896; Blatt. & McC. Bombay Grass. 121. t. 75. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 203. 1960. *Andropogon heteroclita* Roxb. Fl. Ind. 1: 253. 1820.

Simple or branched herbs, 30–60 cm; leaves linear, ciliate on both surfaces with tubercle based hairs, 12.5–25.0 x 0.4–0.6 cm; panicles leafy, compound; sessile spikelets hispidulous, awned, 3–4 mm long; pedicellate spikelets with a few long, tubercle-based bristles; keel ciliate.

Fls. & Frts. : September–October.

In hilly forests, frequent. Bhira; Bhise-khind, Roha; Karnala fort; Neral to Matheran; Pachhad.

2. **Pseudanthistiria hispida** Hook.f. Fl. Brit. India 7: 219. 1896; Cooke, Fl. Pres. Bombay 3: 512. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 120. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 203. 1960. *Pokalaya.*

Erect, glabrous annuals, 25–40 cm; leaves linear, acuminate, hairy on both surfaces with bulbous based hairs, ciliate on margins, 4.7–12.0 x 0.3–0.6 cm; panicles elongate, simple; sessile spikelets with bearded callus, 4 mm long; pedicellate spikelets lanceolate, hairy.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Neral to Matheran.

3. **Pseudanthistiria umbellata** (Hack.) Hook. f. Fl. Brit. India 7: 220. 1896; Bor, Grass. Burma, Ceylon, India & Pak. 204. 1960. *Andropogon umbellatus* Hack. in DC. Monogr. Phan. 6: 401. 1889.

Glabrous annuals, leaves linear-oblong, acute, scattered hairs on both surfaces, 2.2–4.8 cm long; spikelets 3–6 on simple or branched peduncles; sessile spikelets scaberulous, 2–9 mm long; pedicelled one naked, awns 10–12 mm long.

Fls. & Frts. : March.

In hilly forests, rare. Matheran. *D'Almeida* 329 (*BLAT*).

18. BOTHRIOCHLOA O. Ktze.

1a. Lower racemes shorter than the rachis ... *B. bladhii* 1

1b. Lower racemes longer than the rachis :

2a. Lower glume of sessile spikelets glabrous ... *B. concanensis* 2

2b. Lower glume of sessile spikelets hairy below the middle :

3a. Racemes 2–8, upto 5 cm long; leaves mostly at the base only ... *B. pertusa* 3

3b. Racemes 9–15, upto 8 cm; leaves cauline ... *B. kuntzeana* 4

1. **Bothriochloa bladhii** (Retz.) S.T. Blake in Proc. R. Soc. Queensland 80 : 62. 1969; T.A. Cope in Nasir & Ali, Fl. Pak. 143 : 284. 1982. *Andropogon bladhii* Retz. Obs. Bot. 2: 27. 1981. *Bothriochloa glabra* (Roxb.) A. Camus in Ann. Soc. Linn. Lyon 1930, n.s. 76: 164. 1931; Bor, Grass. Burma, Ceylon, India & Pak. 107. 1960. *B. odorata* (Lisboa) A. Camus *op. cit.* 165; Bor, *op. cit.* 109. *Andropogon odoratus* Lisboa in J. Bombay nat. Hist. Soc. 4: 123. 1889; Hook. f. Fl. Brit. India 7: 177. 1896; Cooke, Fl. Pres. Bombay 3: 500. 1958 (Repr. ed.). *A intermedius* R. Br. Prodr. 202. 1810; Hook. f. *op. cit.* 175; Cooke, *op. cit.* *Amphilophis glabra* (Roxb.) Stapf in Prain Fl. Trop. Afr. 9: 172. 1917; Blatt. & McC. Bombay Grass. 87. 1935. *Dichanthium glabrum* (Roxb.) Jain & Deshpande in Bull. Bot. Surv. India 20: 134. (1978) 1979; Deshpande in Fasc. Fl. India 15: 13. f. 22. 1984.

Tufted perennials, 1-2 m; leaves linear-lanceolate, acuminate with setaceous tip, 2.5-60 x 0.4-1.1 cm; panicles 10–20 cm, sessile spikelets purplish, oblong–lanceolate, 3–5 mm; pedicellate spikelets linear–oblong, as long as sessile.

Fls. & Frts. : September–December.

In moist or salt marshes, frequent. Alibag; Pen.

2. **Bothriochloa concanensis** (Hook.f.) Henr. in Blumea 3: 457. 1940; Bor, Grass. Burma, Ceylon, India & Pak. 106. 1960. *Andropogon concanensis* Hook. f. Fl. Brit. India 7: 174. 1896; Cooke, Fl. Pres. Bombay 3: 499. 1958 (Repr. ed.) *Dichanthium concanensis* (Hook. f.) Jain & Deshpande in Bull. Bot. Surv. India 20: 134. (1978) 1979; Deshpande in Fasc. Fl. India 15: 11. ff. 18–19. 1984.

Slender, erect, leafy perennials, 40–60 cm; leaves narrow with terete sheaths, acuminate, smooth, 15–20 x 0.2–0.3 cm; spikes loosely

fascicled, stipes 1.2–1.8 cm long; sessile spikelets and pedicelled spikelets ovate or oblong–lanceolate, truncate, 7–9–nerved; keels very shortly ciliate.

Fls. & Frts. : October.

In hilly forests, infrequent. Matheran.

3. **Bothriochloa pertusa** (L.) A. Camus in Ann. Soc. Linn. Lyon, 1930, n. s. 76: 164. 1931; Bor, Grass. Burma, Ceylon, India & Pak. 109. 1960. *Holcus pertusus* L. Mant. Pl. 2: 301. 1771. *Andropogon pertusus* (L.) Willd. Sp. Pl. 4(2): 922. 1806; Hook. f. Fl. Brit. India 7 : 173. 1896. *Amphilophis pertusa* (L.) Nash ex Stapf in Agric. News, Bridg. 15: 179. 1916; Blatt. & McC. Bombay Grass. 84. 1935. *Dichanthium pertusum* (L.) Clayton in Kew Bull. 32: 4. 1977; Deshpande in Fasc. Fl. India 15: 22. ff. 42–44. 1984.

Stoloniferous herbs, 40–60 cm; leaves 4.5–25 x 0.25–0.50 cm; inflorescence subdigitate; racemes pilose, 2.5–5.0 cm long; sessile spikelet narrowly ellipspid, 3.5–4.5 mm long; lower glume cartilaginous, pitted above the middle; awn 10–15 mm; pedicelled spikelet glabrous on the back.

Fls. & Frts. : October–March.

In river beds and moist places, infrequent. Near Dasgaon, Mahad; Pej river bed, Karjat.

* 4. **Bothriochloa kuntzeana** (Hack.) Henr. in Blumea 3: 456. 1940; Bor, Grass. Burma, Ceylon, India & Pak. 108. 1960. *Andropogon kuntzeanus* Hack. in DC. Monogr. Phan. 6: 478. 1889; Hook. f. Fl. Brit. India 7: 175. 1896; Cooke, Fl. Pres. Bombay 3: 498. 1958 (Repr. ed.). *Amphilophis kuntzeana* (Hack.) Haines, Bot. Bihar & Orissa 2: 1031. 1924; Blatt. & McC. Bombay Grass. 86. t. 55. 1935. *Dichanthium kuntzeana* (Hack.) Jain & Deshpande in Bull. Bot. Surv. India 20: 134. (1978) 1979; Deshpande in Fasc. Fl. India 15: 17. 1984.

Tufted annuals, nodes bearded, 0.9–1.5 m; leaves linear, glabrous, margins scaberulous, 17–30 x 0.3–0.6 cm; racemes corymbosely fasciculate, silky; sessile spikelets linear–lanceolate; pedicellate spikelets narrower than sessile.

Fls. & Frts. : September–October.

In hilly regions, infrequent. Concan (Cooke, *op. cit.*)

19. DICHANTHIUM Willem.

Dichanthium annulatum (Forssk.) Stapf in Prain, Fl.Trop. Afr.

9 : 178. 1917; Blatt. & McC. Bombay Grass. 94. t. 62. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 133. 1960; Deshpande in Fasc. Fl. India 15: 5. ff. 1–2. 1984. *Andropogon annulatus* Forssk. Fl. Aegypt–Arab. 173. 1775; Hook. f. Fl. Brit. India 7: 196. 1896; Cooke, Fl. Pres. Bombay 3; 508. 1958 (Repr. ed.).

Tufted perennials, 12–60 cm; leaves linear, acuminate, glaucous, margins scabrid, sheaths bearded at tip, 7–25 x 0.3–0.4 cm; racemes fascicled, subdigitate, 2.2–3.5 cm long; sessile spikelets elliptic–oblong, 4 mm long; pedicellate spikelets equalling the sessile ones; keels bristly.

Fls. & Frts. : October–March.

Near river banks and sea–shores, frequent. Janjira fort, Murud; Kolaba fort & Revdanda, Alibag; Savitri river bank, Mahad.

20. CYMBOPOGON Spreng.

Cymbopogon martinii (Roxb.) Wats. in Atkins Gaz. N.W. Prov. Ind. 392. 1882; Blatt. & McC. Bombay Grass. 104. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 129. 1960. *Andropogon martinii* Roxb. Fl. Ind. 1: 280. 1820. *A. schoenanthus* L. var. *martinii* (Roxb.) Hook. f. Fl. Brit. India 7: 204. 1896. *Rosha Ghas.*

Perennial, scented herbs, 50–80 cm; leaves linear–lanceolate or ovate–lanceolate, glabrous, margins scabrid, 10–20 x 0.7–1.2 cm; spikes spathaceous 2.2–5.5 cm long; racemes 1.5–2.0 cm long, internodes and pedicels densely ciliate along the margins; sessile spikelets ellipsoid–oblong, 4–4.5 mm.

Fls. & Frts. : June.

On hill plateau, occasional. Raigad, Mahad.

21. ISEILEMA Anderss.

1a. Involucral spikelets more than 4.5 mm long; lower glume of hermaphrodite spikelet ciliate on margins ... *I. anthephoroides* 1

1b. Involucral spikelets less than 4.5 mm long; lower glume of hermaphrodite spikelet eciliate on the margins below ... *I. laxum* 2

1. **Iseilema anthephoroides** Hack. in DC. Monogr. Phan. 6: 683. 1889; Hook. f. Fl. Brit. India 7: 219. 1896; Blatt. & McC. Bombay Grass. 112. t. 72. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 187. 1960.

Densely tufted annuals, 20–40 cm; stems leafy below; leaves ciliate at base and tip, scabrid on margins, 0.6–1.7 x 0.2–0.6 cm; panicles

interrupted by spatheoles; sessile spikelets hispid; involucral spikelets elliptic–oblong, sparsely hairy.

Fls. & Frts. : October.

In moist places, infrequent. Karjat.

2. **Iseilema laxum** Hack. in DC. Monogr. Phan. 6: 682. 1889; Hook. f. Fl. Brit. India 7: 218. 1896; Cooke, Fl. Pres. Bombay 3: 516. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 113. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 188. 1960.

Slender, tufted, ascending perennials, 40–80 cm; leaves linear, flat, glabrous, ciliate near base, margins scabrid, 2.6–14.3 cm long; panicles axillary in pedunculate fascicles; spikelets 0.3–0.5 cm long; males whorled, oblong–lanceolate; hermaphrodites narrowly lanceolate.

Fls. & Frts. : October.

In moist places, infrequent. Karjat.

22. THEMEDA Forssk.

1a. Involucral spikelets over 6 mm long; awns longer (upto 6 cm) ... *T. triandra* 1

1b. Involucral spikelets less than 6 mm long; awns shorter ... *T. quadrivalvis* 2

1. **Themeda triandra** Forssk. Fl. Aegypt.–Arab. 123. & 178. 1775; Blatt. & McC. Bombay Grass. 115. t. 74. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 254, 253. f. 27. 1960. *Anthistiria imberbis* Retz. Obs. 3: 11. 1783; Hook. f. Fl. Brit. India 7: 211. 1896. *Themeda imberbis* (Retz.) T. Cooke, Fl. Pres. Bombay 2: 993. 1908 (3 : 513. 1958. Repr. ed.). *Batani.*

Perennial herbs, 30–60 cm; leaves linear, flat, scabrid above and on margins, 14.5–40 cm long; panicles 4.8–12.5 cm long; racemes clustered; involucral spikelets sessile, 7–10 mm long; bisexual spikelets solitary, linear–oblong; awns dark brown or purplish.

Fls. & Frts. : November–February.

In hilly forests, frequent. Karjat; Matheran.

2. **Themeda quadrivalvis** (L.) O. Ktze. Rev. Gen. Pl. 2 : 794. 1891; Blatt. & McC. Bombay Grass. 118. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 252. 1960. *Andropogon quadrivalvis* L. in Murr. Syst. Veg. (ed. 13) 758. 1774. *Anthistiria ciliata* L. f. Suppl. Pl. 113. 1781; Hook. f. Fl. Brit. India 7: 213. 1896. *Themeda ciliata* Hack. in DC.

Monogr. Phan. 6: 664. 1889; Cooke, Fl. Pres. Bombay 3: 514. 1958 (Repr. ed.).

Erect or basally geniculate, simple or sparingly branched herbs, 60–90 cm; leaves linear, flat, glabrous, 12.5–20 cm long; panicles dense, 25–40 cm; racemes erect in obconical or broadly ovate fascicles 8–15 mm long; involucral spikelets whorled, sessile, persistent; bisexual spikelets solitary, narrow, linear–lanceolate, pedicellate ones narrow, glabrous.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

23. HETEROPOGON Pers.

1a. Annuals; lower 1–2 pairs of spikelets homogamous ... *H. ritchiei* 1

1b. Perennials; lower 2–15 pairs of spikelets homogamous :

2a. Racemes not more than 6 mm long; lower glume of fertile spikelet not more than 5 mm long; lower 2–6 pairs of spikelets homogamous ... *H. contortus* 2

2b. Racemes 10–15 cm long; lower glume of fertile spikelets 8–9 mm long; lowest 12 – 15 pairs of spikelets homogamous ... *H. triticeus* 3

1. **Heteropogon ritchiei** (Hook. f.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 623. 1928 & Bombay Grass. 108. t. 70. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 165. 1960. *Andropogon ritchiei* Hook. f. Fl. Brit. India 7: 201. 1896; Cooke, Fl. Pres. Bombay 3: 509. 1958 (Repr. ed.).

Erect, rigid, stout herbs, 80–100 cm or more high; leaves linear, flat with tubercle based hairs, 20–45 x 1.0–1.3 cm; racemes hispid, 1.5–4.0 cm long; sessile spikelet hispid, 0.5–0.7 cm long; pedicellate ones 1–1.2 cm long.

Fls. & Frts. : October.

In hilly forests, infrequent. Varandh ghat, Mahad.

2. **Heteropogon contortus** (L.) P. Beauv. ex Roem. & Schult. Syst. Veg. 2: 836. 1817; Blatt. & McC. Bombay Grass. 109. t. 71. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 163–164. f. 6. 1960. *Andropogon contortus* L. Sp.Pl. 1045. 1753; Hook. f. Fl. Brit. India 7: 199. 1896; Cooke, Fl. Pres. Bombay 3: 510. 1958 (Repr. ed.).

Erect or basally geniculate, tufted herbs, 60–90 cm; leaves linear, flat or folded, 7.5–18.0 x 0.2–0.3 cm; spikelets sessile, imbricate,

pubescent, dark brown, upper females long awned, lower males or neuter, awnless, 3–5 mm.

Fls. & Frts. : September–January.

On hill plateau and near river bank, frequent. Matheran; Roha; Varandh ghat, Mahad.

3. **Heteropogon triticeus** (R. Br.) Stapf ex Craib in Kew Bull. 1912: 432. 1912; Bor, Grass. Burma, Ceylon, India & Pak. 165. 1960. *Andropogon triticeus* R. Br. Prodr. 201. 1810; Hook. f. Fl. Brit. India 7: 200. 1896; Cooke, Fl. Pres. Bomay 3: 509. 1958 (Repr. ed.). *Heteropogon insignis* Thw. Enum. Pl. Zeyl. 437. 1814; Blatt. & McC. Bombay Grass. 108. t. 69. 1935.

Erect, stout herbs, 80–130 cm; leaves linear, puberulous, scabrid on margins, 20–50 x 0.4–0.8 cm; spikelets numerous, imbricating, upper ones sessile, hairy, long awned; pedicellate ones smooth, upto 2 cm long.

Fls. & Frts. : September–October.

In hilly forests, frequent. Bhira; Matheran.

24. PSEUDODICHANTHIUM Bor

* **Pseudodichanthium serrafalcoides** (Cooke & Stapf) Bor in Indian Forester 66: 272. 1940 & Grass. Burma, Ceylon, India & Pak. 204. 1960. *Andropogon serrafalcoides* Cooke & Stapf in Kew Bull. 1908: 456. 1908. *A. cookei* Stapf ex Woodrow in J. Bombay nat. Hist. Soc. 13: 438. 1893; Cooke, Fl. Pres. Bombay 3: 506. 1958 (Repr. ed.). *Dichanthium serrafalcoides* (Cooke & Stapf) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 426. 1928 & Bombay Grass. 95. t. 63. 1935.

Straggling, much branched annuals, upto 60 cm; leaves flaccid, scaberulous with bulbous based hairs on both sides, 7.5–15 x 0.3–0.6 cm; racemes solitary, terminal, 13–20 mm; spikelets imbricate, straw coloured, scarious; pedicellate spikelets obliquely lanceolate, longer than sessile ones; grains oblong, 4 mm.

Fls. & Frts. : September–October.

In hilly regions, infrequent. Raigad.

TRIBE 3–PANICEAE

1a. Spikelets mostly unisexual, dioecious; the females solitary on axes collected into a spherical head; the males seated on a

sharp pointed rachis, many of which are collected together terminating the culm and branches or in the axils of leaves ... SPINIFEX 1

1b. Spikelets all similar in shape and sex; male and female spikelets not as above :

2a. Spikelets falling singly, not subtended by bristles, or if so, then the bristles persisting after the spikelets have fallen (*Setaria*) ;

3a. Spikelets arranged in more or less open panicles, or with the panicles contracted and spike-like :

4a. Spikelets not subtended by bristle-like branches :

5a. Spikelets arranged in open or constricted panicles; upper glume not inflated:

6a. Spikelets dorsally compressed; upper lemma as long as the spikelet ... PANICUM 2

6b. Spikelets laterally compressed; upper lemma shorter than spikelet ... CYRTOCOCCUM 3

5b. Spikelets usually arranged in cylindrical spike-like panicles; upper glume inflated ... SACCIOLEPIS 4

4b. Spikelets subtended or replaced by one to many bristle like branchlets which remain after the spikelets have fallen ... SETARIA 5

3b. Spikelets arranged in one-sided spikes or spike-like racemes; spikes or racemes digitate or scattered, rarely solitary :

7a. Lemma of the upper floret more or less crustaceous or coriaceous, usually with narrow inrolled margins, exposing much of the palea :

8a. Lower glume and lowest internodes of the rachilla not forming a swollen callus at the base of the spikelet :

9a. Lower glume (when present) turned away from the rachis of the racemes or spikes, the back of the upper lemma facing it, i.e. spikelets abaxial :

10a. Lower glume developed, although sometimes small :

11a. Glumes acuminate or awned, rarely only acute :

12a. Leaf-blades linear; racemes dense; culms erect or suberect ... ECHINOCHLOA 6

12b. Leaf-blades lanceolate to ovate; racemes loose to moderately dense; culms creeping and ascending ... OPLISMENUS 7

11b. Glumes awnless ... PASPALIDIUM 8

10b. Lower glume usually absent; spikelets plano-convex ... PASPALUM 9

9b. Lower glume turned towards the rachis, the back of the upper lemma turned away from it, i.e. spikelets adaxial ... BRACHIARIA 10

8b. Lower glume and lowest internode of the rachilla forming a swollen callus at the base of the spikelet ... ERIOCHLOA 11

7b. Lemma of the upper floret thinly cartilaginous, usually with flat, hyaline margins :

13a. Spikelets awnless ... DIGITARIA 12

13b. Spikelets awned ... ALLOTEROPSIS 13

2b. Spikelets with an involucre of bristles or subtended by a solitary bristle and falling with or without bristles at maturity, solitary or in clusters:

14a. Upper lemma smooth; bristles caducous; involucre of free, naked or plumose bristles ... PENNISETUM 14

14b. Upper lemma transversely rugose; bristles persistent; involucre and bristles not as above ... SETARIA 5

1. SPINIFEX L.

Spinifex littoreus (Burm. f.) Merr. in Philip. J. Sci. Bot. 7: 229. 1912; Bor, Grass. Burma, Ceylon, India & Pak. 366. 1960. *Stipa littorea* Burm. f. Fl. Ind. 29. 1768. *Spinifex squarrosus* L. Mant. Pl. 2: 300. 1771; Hook. f. Fl. Brit. India 7: 63. 1896; Cooke, Fl. Pres. Bombay 3: 428. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 122. t. 76 A. 1935.

Perennials, creeping, stout, dioecious shrubs; leaves rigid, bluish-green, coriaceous, spinous-tipped, 7 – 14 cm long; inflorescence a large, terminal, stiff, globose, bracteate head.

Fls. & Frts. : September–March.

On sandy soils, frequent. Alibag.

2. PANICUM L.

1a. Spikelets 0.4–0.5 cm long; leaf-sheaths hairy ... *P. miliaceum* 1

1b. Spikelets 0.15–0.35 cm long; leaf-sheaths glabrous:

2a. Lower glume cuspidate-acuminate ... *P. trypheron* 2

2b. Lower glume not cuspidate-acuminate ... *P. notatum* 3

1. **Panicum miliaceum** L. Sp. Pl. 1: 58. 1753; Hook. f. Fl. Brit. India 7: 45. 1896; Cooke, Fl. Pres. Bombay 3: 456. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 159. t. 100. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 327. 1960. *Varai.*

Robust, sparsely or densely hispid annuals, 30–120 cm; leaves linear–lanceolate, acuminate, cordate–amplexicaul, glabrous, margins ciliate below, 12–30 x 0.5–1.8 cm; panicles oblong–pyramidal, contracted, 15–40 cm long; spikelets ovate–oblong, turgid, acuminate, 4–5 mm long.

Fls. & Frts. : October–November.

In hilly forests, infrequent. Matheran.

2. **Panicum trypheron** Schult. Syst. Veg. 2, Mant. 244. 1824; Hook. f. Fl. Brit. India 7: 47. 1896; Cooke, Fl. Pres. Bombay 3: 452. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 158. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 331. 1960. *Bhatur.*

Tufted, glabrous, erect or geniculate below, leafy annuals, 30–90 cm; leaves linear, acuminate, hairy, 6.2–20 x 0.3–0.5 cm; panicles effuse with filiform branches, 8–20 cm long; spikelets ovoid, acuminate, distant, glabrous.

Fls. & Frts. : September–October.

Along the sea–coast, infrequetnt. Alibag.

3. **Panicum notatum** Retz. Obs. Bot. 4: 18. 1786; Roy, Grass. Madhya Pradesh 120. 1984. *P. montanum* Roxb. Fl. Ind. 1: 315. 1820; Hook. f. Fl. Brit. India 7: 53. 1896; Cooke, Fl. Pres. Bombay 3: 454. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 164. t. 105. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 329. 1960.

Erect perennials with woody rootstock, 90–120 cm; leaves linear–lanceolate or oblong, acuminate, flat, many veined, cordate at base, glabrous, ciliate near base only, 10.4–20.0 x 1.0–2.8 cm; panicles effuse, copiously branched, 20–30 cm long; spikelets many, ellipsoid, obtuse, 2–3 mm long.

Fls. & Frts. : October.

In hilly forests, infrequent. Mhasla; Pen.

3. CYRTOCOCCUM Stapf

1a. Leaves more than 5 cm long; spikelets glabrous ... *C. oxyphyllum* 1

1b. Leaves less than 5 cm long; spikelets hispid ... *C. trigonum* 2

* 1. **Cyrtococcum oxyphyllum** (steud.) Stapf. in Hook. Icon. Pl. Subtab. 3096. 1922; Bor, Grass. Burma, Ceylon, India & Pak. 291. 1960. *Panicum axyphyllum* Steud. Syn. Pl. Glum. 1: 65. 1854. *Cyrtococcum pilipes* (Nees & Arn. ex Buese) A. Camus in Bull. Mus. Hist. Nat. Paris 27: 118. 1921; Blatt. & McC. Bombay Grass. 169. t. 110. 1935.

Geniculately ascending perennials, 30–60 cm; leaves lanceolate, acuminate, glabrous or sparsely hairy 5–15 x 0.8–3.5 cm; panicles 7–13 cm; spikelets brown, pedicellate, *ca* 1.5 mm.

Fls. & Frts. : Sepetember–October.

In shady forests, infrequent. Matheran.

2. **Cyrtococcum trigonum** (Retz.) A. Camus in Bull. Mus. Hist. Paris 27: 118. 1921; Blatt. & McC. Bombay Grass. 169. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 292. 1960. *Panicum trigonum* Retz. Obs. Bot. 3: 9. 1783; Hook. f. Fl. Brit. India 7: 56. 1896.

Erect perennials; leaves linear–lanceolate, glabrous or sparsely hairy, 2.5–5 cm long; panicles contracted, 2.5–3.5 cm; spikelets shortly pedicellate, ca 1.5 mm.

Fls. & Frts. : August–October.

In hilly forests, infrequent. Matheran.

4. SACCIOLEPIS Nash

1a. Spikelets subglobose, blunt, not interrupted in crowded fascicles ... *S. myosuroides* 1

1b. Spikelets obliquely lanceolate, tip acute, usually interrupted in crowded fascicles ... *S. interrupta* 2

1. **Sacciolepis myosuroides** (R. Br.) A. Camus in Lecomte Fl. Gen. de l'Indo–Chine 7: 460. 1922; Blatt. & McC. Bombay Grass. 166. t. 107. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 358. 1960. *Panicum myosuroides* R. Br. Prodr. 189. 1810; Hook. f. Fl.Brit. India 7: 42. 1896; Cooke, Fl. Pres. Bombay 3: 451. 1958 (Repr.ed.). *Kara–lom, Pokalia* .

Erect or decumbent annuals, 30–90 cm; leaves linear, usually glabrous, margins scabrous, 10–15 x 0.3–0.4 cm; inflorescence in spike–like, cylindric panciles, 3–15 cm long; spikelets many, green–purplish, elliptic, 2.0–2.5 mm long.

Fls. & Frts. : October.

Along the ponds and springs, infrequent, Alibag; Unhere in Sav village, Mahad.

2. **Sacciolepis interrupta** (Willd.) Stapf in Prain, Fl. Trop. Afr. 9: 757. 1920; Blatt. & McC. Bombay Grass. 167. t. 108. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 358. 1960. *Panicum interruptum* Willd. Sp. Pl. 1: 341. 1798; Hook. f. Fl. Brit. India 7: 40. 1896; Cooke, Fl. Pres. Bombay 3: 450. 1958 (Repr. ed.).

Perennial, stout herbs,35-70 cm; root-stocks creeping and rooting or floating; leaves flat, linear, glabrous, 5.6–22.5 x 0.5–1.1 cm; panicles spikelike, 5.5–30 cm long; spikelets ovoid–lanceolate, glabrous, crowded in small fascicles.

Fls. & Frts. : December.

In swampy soil, infrequent. Nagothana.

5. SETARIA P. Beauv.

1a. Bristles retrorsely barbed ... *S. verticillata* 1

1b. Bristles antrorsely barbed :

2a. Inflorescence a cylindric false spike :

3a. Spikelets 3 mm long; upper lemma coarsely rugose, boatshaped and slightly keeled upwards, broad and dorsally strongly curved in the profile ... *S. glauca* 2

3b. Spikelets 2.2–2.5 mm long; upper lemma usually finely rugose, narrow and dorsally gently curved, not keeled ... *S. pumila* 3

2b. Inflorescence a narrow panicle, sometimes loosely lobed below and tapering upwards ... *S. intermedia* 4

1. **Setaria verticillata** (L.) P. Beauv. Ess. Agrost. 51, 178. 1812; Hook. f. Fl. Brit. India 7: 80. 1896; Cooke, Fl. Pres. Bombay 3: 436. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 174. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 365. 1960. *Panicum verticillatum* L. Sp. Pl. (ed.2) 82. 1762.

Slender, erect, tufted herbs, 50–90 cm; leaves linear–lanceolate, flat, glabrous, scaberulous on margins, 4.6–18.5 x 0.3–0.6 cm; panicles dense flowered, pyramidal; spikelets ovoid, subacute, 2–2.5 mm.

Fls. & Frts. : November.

Near sea–coast, infrequent. Alibag.

2. **Setaria glauca** (L.) P. Beauv. Ess. Agrost. 51, 169, 178. 1812; Hook. f. Fl. Brit. India 7: 78. 1896; Cooke, Fl. Pres. Bombay 3: 435. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 172. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 360. 1960. *Panicum glaucum* L. Sp. Pl. 56. 1753.

Slender, tufted herbs, 12–40 cm; leaves linear, flat, glabrous or sparsely hairy, 4.5–12.2 x 0.3–1.0 cm; racemes spike–like, densely flowered, linear–cylindric, fulvous, 1.5–7.3 cm; spikelets ellipsoid, many, glabrous, 3 mm long.

Fls. & Frts. : September–November.

In moist places and pasture lands, frequent. Dasgaon; Matheran; Pen; Sanegaon.

Karthik. *et al.* (1989) treat this species under *Pennisetum glaucum* (L.) R. Br.

3. **Setaria pumila** (Poir.) Roem. & Schult. Syst. Veg. 2: 891. 1817; T.A. Cope in Nasir & Ali, Fl. Pak. 143. 181. 1982. *Panicum pumilum* poir. in Lam. Encycl. 4: 273. 1816; *P. pallide–fuscum* Schum. Beskr. Guin. Pl. 58. 1827. *Setaria pallide–fusca* (Schum.) Stapf & C.E. Hubb. in Kew Bull. 1930: 259. 1930; Bor, Grass. Burma, Ceylon, India & Pak. 363. 1960.

Tufted, slender herbs, 30–50 cm; leaves linear, flat, glabrous or sparsely hairy, 4.7–8.0 x 0.3–0.6 cm; panicles linear–cylindric, 4.5–13 cm; bristles rufous or purplish.

Fls. & Frts. : August-September.

In hilly forests, infrequent. Neral to Matheran.

4. **Setaria intermedia** Roem. & Schult. Syst. Veg. 2: 489. 1817; Hook. f. Fl.Brit. India 7: 79. 1896; Cooke, Fl. Pres. Bombay 3: 436. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 174. 1935; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 183. 1982. *Panicum tomentosum* Roxb. Fl. Ind. 1: 303. 1820. *Setaria tomentosa* (Roxb.) Kunth, Rev. Gram. 1: 47. 1829; Bor, Grass. Burma, Ceylon, India & Pak. 365. 1960.

Tufted herbs, 55–90 cm; leaves linear–lanceolate, flat, glabrous or sparsely hairy, margins scaberulous, 5–20 x 0.4–0.6 cm; panicles dense flowered; spikelets ovoid, subacute *ca* 2 mm.

Fls. & Frts. : September–October.

Road–sides in moist places, infrequent. Pen to Khopoli.

6. ECHINOCHLOA P. Beauv.

1a. Spikelets cuspidate, 0.2–0.3 cm long; grains deciduous ... *E. colona* 1

1b. Spikelets not cuspidate, 0.3–0.4 cm long; grains not deciduous ... *E. frumentacea* 2

1. **Echinochloa colona** (L.) Link, Hort. Berol 2: 209. 1833; Blatt. & McC. Bombay Grass. 148. t. 94. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 308–309 f. 34. 1960. *Panicum colonum* L. Syst. Nat. (ed. 10) 2: 870. 1759; Hook. f. Fl. Brit. India 7: 32. 1896; Cooke, Fl. Pres. Bombay 3: 447. 1958 (Repr. ed.). *Bovur sama.*

Suberect or diffuse, scaberulous annuals, 20–60 cm; leaves linear, flat, glabrous, 3.5 x 22 x 0.4–1.2 cm; spikes 5–10, globose, acute, hispid in panicles, 4–12 cm; spikelets ovoid–ellipsoid, sessile, greenish, 1–3 mm.

Fls. & Frts. : Septmeber–October.

Alibag; Dasgaon; Ghosale fort, Roha; Mangaon; Neral to Matheran; Roha; Varandh ghat, Mahad.

2. **Echinochloa frumentacea** Link, Hort. Berol. 1: 204. 1827; Bor, Grass. Burma, Ceylon, India & Pak. 311. 1960. *Panicum crus-galli* L. var. *frumentaceum* (Link) Trim. Cat. Ceylon Pl. 103. 1885; Hook. f. Fl. Brit.India 7: 31. 1896; Cooke, Fl. Pres. Bombay 3: 447. 1958 (Repr. ed.).

Tufted, glabrous herbs, 40–60 cm; leaves linear–lanceolate, glabrous, 10–25 x 0.5–1.2 cm;spikes solitary or geminate, in lax or compact pyramidal panicles; spikelets ovoid or orbicular, 2–3 mm.

Fls. & Frts. : September–October.

In hilly forests, frequent. Kalasgiri, Roha; on way to Shivthal garh from Varandh ghat.

7. OPLISMENUS P. Beauv.

1a. Annuals; awns scaberulous, flexuous, usually pale ... *O. burmannii* 1

1b. Perennials, awns smooth, viscid , often reddish ... *O. compositus* 2

1. **Oplismenus burmannii** (Retz.) P. Beauv. Ess. Agrost. 54: 168–169. 1812; Hook. f. Fl. Brit. India 7: 68. 1896; Cooke, Fl. Pres.Bombay 3: 443. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 154. t. 97. 1935; Bor, Grass. Burma Ceylon, India & Pak. 317. 1960. *Panicum burmanii* Retz. Obs. Bot. 10. 1783. *Kudak.*

Prostrate, simple or branched herbs, 20–60 cm; leaves thin, ovate or elliptic–lanceolate, pubescent, 1.2–6.5 x 0.3–1.1 cm; panicles terminal in 3–7 flowered racemes, upto 10 cm; spikelets oblong, lanceolate, pubescent, 2–3 mm; lower glumes with ciliate margins and awns upto 10 mm.

Fls. & Frts. : September–October.

On sandy soil near sea–coast and river, road–sides frequent. Alibag; Pen to Khopoli; Savitri river bank, Mahad.

2. **Oplismenus compositus** (L.) P. Beauv. Ess. Agrost. 54: 168–169. 1812; Hook. f. Fl. Brit. India 7: 66. 1896; Cooke, Fl. Pres. Bombay 3: 442. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 152. t. 96. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 317. 1960. *Panicum compositus* L. Sp. Pl. (ed. 1) 57. 1753. *Turdia.*

Creeping or geniculately branched, terete, ascending herbs, 40–90 cm; leaves ovate–lanceolate, acuminate, thin, glabrous, or hairy, 4–12 x 1.2–1.8 cm; panicles distant, made of 3–5 one–sided racemes alternatley arranged on triquetrous rachis, 8–20 cm long; spikelets elliptic–lanceolate, 3–4 mm long; glumes subequal, ca 3 mm.

Fls. & Frts. : September-October.

Under shade of trees in hilly forests, frequent. Kalasgiri, Roha.

8. Paspalidium Stapf

Paspalidium flavidum (Retz.) A. Camus in Lecomte Fl. Gen. de Indo–Chine 7: 419. 1923; Blatt. & McC. Bombay Grass. 141. t. 90. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 333. 1960. *Panicum flavidum* Retz. Obs. Bot. 4: 15. 1786; Hook. f. Fl. Brit. India 7: 28. 1896; Cooke, Fl. Pres. Bombay 3: 445. 1958 (Repr. ed.).

Erect or ascending, slender, tufted annuals, 60–120 cm; leaves linear, lanceolate, glabrous, 15–40 x 0.7–1.4 cm; recemes with 3-15 spikes, 10-40 cm long; spikes shorter than internodes, 2–2.6 cm long; spikelets glabrous, biseriate, pale straw coloured.

Fls. & Frts. : August–September.

In moist places, infrequent. Karnala bird sanctuary.

9. Paspalum L.

1a. Plants 15–30 cm high; leaves 2.4–7.5 x 0.7–1.2 cm; spikelets 12–13 mm long ... *P. canarae* 1

1b. Plants 60–90 cm high; leaves 10–30 x 0.3–0.9 cm; spikelets 20–30 mm long ... *P. scrobiculatum* 2

1. **Paspalum canarae** (Steud.) Veldk. in Blumea 21: 72. 1973. *Panicum canarae* Steud. Syn. Pl. Glum. 1: 58. 1853. *Paspalum compactum auct. non* Roth, ex Roem. & Schult. (1817); Hook. f. Fl. Brit. India 7: 12. 1896; Cooke, Fl. Pres. Bombay 3: 460. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 138. t. 88. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 336. 1960.

Leafy annuals with wiry roots and diffuse, hairy stems; leaves elliptic–lanceolate, acute, sparsely hairy on both surfaces, ciliate; spikes many in pyramidal racemes, 5–10 cm; spikelets hemispheric, closely set, pendulous; lower involucral glumes absent; upper ones elliptic or suborbicular.

Fls. & Frts. : September–October.

In hilly forests, frequent. Matheran.

2. **Paspalum scrobiculatum** L. Mant. Pl. 1: 29. 1767; Hook. f. Fl. Brit. India 7: 10. 1896; Cooke, Fl. Pres. Bombay 3: 460. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 136. t. 87. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 340. 1960.

Erect annuals; leaves linear, bifarius, acuminate, margins papillate; spikes 2–6, sessile, distant, 3–12 cm long; spikelets in two rows, elliptic–ovate, lower involucral glumes absent; the upper convex, 3–7–nerved, membranous; upper floral glumes coriaceous, brownish, shining.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Ramraj, Alibag.

10. BRACHIARIA Griseb.

1a. Panicle linear; lower glume a minute scale ... *B. eruciformis* 1

1b. Panicle various, oblong, lanceolate or spreading; lower glume upto half as long as the spikelet:

2a. Spikelets turgid, podicel and rachis with long colourless hairs ... *B. ramosa* 2

2b. Spikelets not turgid, or if so, rachis not triquetrous; podicels and rachis puberulous or glabrous, not with long colourless hairs ... *B. miliiformis* 3

1. **Brachiaria eruciformis** (J.E. Sm.) Griseb. in Ledeb. Fl. Ross.

4: 469. 1853; Bor, Grass. Burma, Ceylon, India & Pak. 283. 1960. *Panicum eruciforme* J. E. Sm. in Sibth. & J. E. Sm. Fl. Graeca 1: 44. t. 59. 1806. *P. isachne* Roth ex Roem. & Schult. Syst. Veg. 2: 458. 1817; Hook. f. Fl. Brit. India 7: 28. 1896; Cooke, Fl. Pres. Bombay 3: 448. 1958 (Repr. ed.).

Tufted herbs, 30–60 cm; leaves linear–lanceolate, glabrescent, 2.0–6.5 x 0.2–0.4 cm; racemes 2–8, secund with single spikelet on triquetrous, hairy rachis; spikelets ellipsoid or linear–lanceolate, hairy; upper glume membranous, pubescent, 1.5–2.0 mm long.

Fls. & Frts. : August–January.

In wet places, infrequent. Ramraj forest, Alibag.

2. **Brachiaria ramosa** (L.) Stapf in Prain, Fl. Trop. Afr. 9: 542. 1919; Blatt. & McC. Bombay Grass. 134. t. 84. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 284. 1960. *Panicum ramosum* L. Mant. Pl. 1: 29. 1767; Hook. f. Fl. Brit. India 7: 36. 1896; Cooke, Fl. Pres. Bombay 3: 449. 1958 (Repr. ed.).

Erect, loosely tufted annuals, 20–80 cm; leaves broadly linear–lanceolate, acuminate, puberulous beneath, margin scabrid, 5–25 x 0.4–1.2 cm; racemes 5–many, branched at base, 2–7 cm; spikelets usually in pairs, ovoid–obovoid, turgid, apiculate, 3 mm; lower glume 1 mm, upper glume rugose, apiculate, upto 2 mm.

Fls. & Frts. : August–November.

In moist places, infrequent. Pen.

3. **Brachiaria miliifomis** (Presl) A. Chase in Contrib. U.S. Nat. Herb. 22: 35. 1920; Bor, Grass. Burma, Ceylon, India & Pak. 283. 1960. *Panicum miliiforme* J. Presl ex C. Presl, Rel. Haenk. 1: 300. 1830. *P. distachyum* L. Mant. Pl. 1: 138. 1767; Hook. f. Fl. Brit. India 7: 37. 1896.

Slender annuals, 30–60 cm; leaves linear or lanceolate, flat, margins ciliate, 5–10 cm long; spikes 2–4, distant, spreading; spikelets solitary, subsessile, 1–2–seriate, ellipsoid.

Fls. & Frts. : September–October.

In shady places, infrequent. Mhasla.

11. Eriochloa H. B. & K.

Eriochloa procera (Retz.) C.E. Hubb. in Kew Bull. 1930: 256. 1930; Bor, Grass. Burma, Ceylon, India & Pak. 312. 1960. *Agrostis*

procera Retz. Obs. Bot. 4: 19. 1786. *Eriochloa polystachya auct. non* H. B. & K. 1816; Hook. f. Fl. Brit. India 7: 20. 1896; Cooke, Fl. Pres. Bombay 3: 461. 1958 (Repr. ed.).

Tufted annuals, 40–60 cm; leaves linear–lanceolate, acuminate, glabrous, 6–24 cm long; panicles with few to many, spike–like, alternate, angular, racemes; spikelets ovoid–lanceolate, silvery, distichous, solitary or paired, 3–4 mm; upper lemma mucronate or short awned.

Fls. & Frts. : September–October.

Near sea–coost and river banks, frequent. Alibag; Alibag to Khopoli; Roha.

12. DIGITARIA (Heist. ex Fabric.) Hall.

1a. Verrucose hairs present on the spikelets i.e. spikelets covered with minute warty growths ... *D. longiflora* 1

1b. Verrucose hairs absent on the spikelets :

2a. Hairs on the spikelets clavate :

3a. Spikelets 2.2–2.5 mm long; arranged in threes; caryopsis *ca* 2.5 mm long ... *D. ternata* 2

3b. Spikelets 1.2–1.5 mm long; arranged in pairs; caryopsis *ca* 1 mm long:

4a. Tips of caryopsis protruding above the lower lemma; inflorescence of 3–7 racemes; anthers yellow ... *D. abludens* 3

4b. Tips of caryopsis not protruding above the lower lemma; inflorescence of 2–3 racemes; anthers purplish ... *D. stricta* 4

2b. Hairs on the spikelets, if any, not clavate :

5a. Spikelets of each pair heteromorphous: lower lemma of sessile spikelet 7 nerved, pectinate ... *D. bicornis* 5

5b. Spikelets of each pair not heteromorphous; lower lemma of sessile spikelet 3–nerved, glabrous ... *D. ciliaris* 6

1. **Digitaria longiflora** (Retz.) Pers. Syn. 1: 85. 1805; Cooke, Fl. Pres. Bombay 3: 458. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 127. t. 81. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 302. 1960. *Paspalum longiflorum* Retz. Obs. 4: 15. 1786; Hook. f. Fl. Brit. India 7: 17. 1896.

Tufted annuals, 15–40 cm; leaves linear to linear–lanceolate, flat, glabrous, 1.5–7.0 x 0.1–0.5 cm; spikelets ternate, ellipsoid–oblong,

appressed to rachis, 1.2–1.6 mm; lower involucral glumes absent; upper ones 3–7; lower and upper floral glumes similar, 3–5–nerved.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Matheran.

2. **Digitaria ternata** (A. Rich.) Stapf ex Dyer, Fl. Cap. 7: 376. 1898; Cooke, Fl. Pres. Bombay 3; 457. 1958 (Repr. ed.); Bor, Grass. Burma, Ceylon, India & Pak. 306. 1960. *Cynodon ternatus* A. Rich. Tent. Fl. Abyss. 2: 405. 1851. *Paspalum ternatum* Hook. f. Fl. Brit. India 7: 17. 1896.

Tufted annuals, 10–40 cm; leaves linear–lanceolate, acute, glabrous, 4.6–12.5 x 0.4–0.6 cm; spikelets 2–3–nate, ellipsoid, subacute, 2–3 mm; floral glumes subequal, the lower distinctly 5–nerved, silky villous; the uper charataceous, ovate–oblong, dark brown.

Fls. & Frts. : September–October.

Moist deciduous forests, infrequent. Matheran.

3. **Digitaria abludens** (Roem. & Schult.) Veldk. in Blumea 21: 53. 1973. *Panicum abludens* Roem. & Schult. Syst. Veg. 2: 457. 1817; Hook. f. Fl. Brit. India 7: 59. 1896 *pro prate. Digitaria granularis* (Spreng.) Henr. Monogr. 302. 1950; Bor, Grass. Burma, Ceylon, India & Pak. 301. 1960. *D. pedicellaris* (Trin.) Prain, Beng. Pl. 2: 1182. 1903; Cooke, Fl. Pres. Bombay 3: 458. 1958 (Repr. ed.).

Erect annuals, 5–30 cm; leaves linear, acuminate, 6–10 cm long; spikelets ellipsoid–lanceolate, 1.2–1.4 mm; lower glumes absent; upper glumes ellipsoid, acute, 3–5–nerved.

Fls. & Frts. : August.

In moist places, infrequent. Mangaon surroundings.

4. **Digitaria stricta** Roth ex Roem. & Schult. Syst. Veg. 2: 474. 1817; Bor, Grass. Burma, Ceylon, India & Pak. 305. 1960. *Paspalum royleanum* Nees ex Thw. Enum. Pl. Zeyl. 358. 1864; Hook. f. Fl. Brit. India 7: 18. 1896. *Digitaria royleana* (Nees) Prain, Beng. Pl. 2: 1182. 1903; Cooke, Fl. Pres. Bombay 3: 459. 1958 (Repr. ed.).

Tufted annuals, 40 cm; leaves hirsute, 3.8–12.5 x 0.2–0.5 cm; spikelets ternate, obtuse, oblong, ellipsoid–obovoid, 1–1.4 mm; lower glume absent; upper glume 0 or very short; lower lemma as long as the spikelet, 3–5–nerved.

Fls. & Frts. : August–September.

In moist deciduous forests, infrequent. Hatavane forests, Pen; Matheran.

5. **Digitaria bicornis** (Lam.) Roem. & Schult. ex Loud. Hort. Brit. 24: n. 1578. 1830; Bor, Grass. Burma, Ceylon, India & Pak. 299. 1960. *Paspalum bicorne* Lam. Encycl. 1: 176. 1791. *Panicum heteranthum* Hook. f. Fl. Brit. India 7: 16. 1896.

Stout herbs; spikelets with rigid, trigonous rachis, 4–5 mm; upper spikelets long pedicellate, lanceolate with acuminate, villous with long spreading hairs and hooked tips; lower spikelets glabrous with each pair of strongly nerved, acuminate glumes.

Fls. & Frts. : September–November.

In waste places, frequent. Karjat; Pen to Khopoli.

6. **Digitaria ciliaris** (Retz.) Koel, Desc. Gram. 27. 1802; Clayton in Fl. W. Trop. Afr. 2, 3: 453. 1972. *Panicum ciliare* Retz. Obs. Bot. 4: 16. 1786. *Digitaria adscendens* (H.B. & K.) Henr. in Blumea 1: 92. 1934; Bor, Grass. Burma, Ceylon, India & Pak. 298. 1960. *Paspalum Sanguinale var. ciliaris* Hook. f. Fl. Brit. India 7 : 15.1896. *Digitaria sanguinalis* Scop. var. *ciliaris* Prian, Beng. Pl. 2: 1181. 1903; Cooke, Fl. Pres. Bombay 3: 457. 1958 (Repr. ed.).

Erect or decumbent annuals, 20–40 cm; leaves linear, flat, glabrous, except bulbous based hairs on the base, 6–15 x 0.5–11.0 cm; spikelets ellipsoid–lanceolate, acute, 2–3.2 mm.

Fls. & Frts. : August–October.

In shady or moist places, frequent. Alibag; Karjat; Mhasla; on way to Shivthalgarh, Mahad.

13. ALLOTEROPSIS J. Presl ex C. Presl *emend* Hitchc.

Alloteropsis cimicina (L.) Stapf in Prain, Fl. Trop. Afr. 9: 487. 1919; Blatt. & McC. Bombay Grass. 129. t. 83. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 276. 1960. *Milium cimicinum* L. Mant. Pl. Alt. 2: 184. 1771. *Axonopus cimicinus* Beauv. Agrost. 12. 1812; Hook. f. Fl. Brit. India 7: 64. 1896; Cooke, Fl. Pres. Bombay 3: 441. 1958 (Repr. ed.).

Tufted, hairy annuals, 30–120 cm; leaves ovate–lanceolate, flat, acute, cordate at base, hairy, ciliate at margins, 3–15 x 0.5–2.0 cm; spikelets subsecund, solitary or 2–nate, 6–8 mm; lower glume ovoid–lanceolate, aristate; upper glume coriaceous.

Fls. & Frts. : August–September.

In outskirts of forests, frequent. Dabhol forests, Dasgaon; Hatvane, Pen; Neral to Matheran.

14. PENNISETUM Rich.

Pennisetum americanum (L.) K. Schum. in Engl. Pflanzenw. Oest. Afr. B. 51, C. t. 4. f. A. & B. 1895; Bor, in Rech. f. Fl. Iran 70: 503. 1970. *Panicum americanum* L. Sp. Pl. 56. 1753. *Pennisetum typhoides* (Burm.) Stapf *et* C. E. Hubb. in Kew Bull. 1933: 271. 1933; Bor, Grass. Burma, Ceylon, India & Pak. 350. 1960. *P. typhoideum* A. Rich. in Pers. Syn. 1: 72. 1805; Hook. f. Fl. Brit. India 7: 82. 1896; Cooke, Fl. Pres. Bombay 3: 43. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 182. t. 117. 1935.

Simple or branched, stout annuals, 1–2 m; leaves linear–lanceolate, glabrous or hairy, 8.5–32 x 0.7–1.8 cm; spikes cylindric, terminal, pale brown; spikelets 3–4 mm.

Fls. & Frts. : August–January.

As an escape. Matheran.

GROUP–2 : POOIDEAE

Key to the Tribes

1a. Lamina transversely veined and articulate on the sheath ... BAMBUSEAE 1

1b. Lamina and sheath not as above :

2a. Spikelets usually with two or more fertile florets or if with one fertile floret then with sterile reduced florets above it (cf. Chloridoae) :

3a. Lemma and rachilla glabrous or hairy but with hairs not enveloping the lemma, or if so, the lemma with a geniculate awn; low or moderately tall grass :

4a. Lemmas usually 5–to–many–nerved; inflorescence a simple spike or globular head of spikelets ... AELUROPODEAE 2 (AELUROPUS)

4b. Lemmas 1–3–nerved; inflorescence of panicles or racemes :

5a. Inflorescence of panicles; if racemes or spikes, the spikelets are not secund ... ERAGROSTEAE 3

5b. Inflorescence of racemes or panicles of racemes, the spikelets secund ... CHLORIDEAE 4

3b. Lemma or rachilla joints bearing long, silky hairs which envelope the lemma; tall grasses with large, plume like panicles ... ARUNDINEAE 5

2b. Spikelets with one floret (male or female in unisexual 1–flowered spikelets) with or without one or two male or barren florets below it, the latter often much reduced :

6a. Glumes minute or suppressed; fertile lemma and palea very similar in shape and texture ... ORYZEAE 6

6b. Glumes well–developed; fertile lemma and palea not similar :

7a. Spikelets with 2 florets; the lower, male or barren, the upper hermaphrodite :

8a. Glumes equal in size, obtuse or mucronate, upper lemma unawned ... ISACHNEAE 7 (ISACHNE)

8b. Glumes unequal, the lower acute, the upper acuminate, upper lemma awned with a perfect awn or at least a bristle ... ARUNDINELLEAE 8 (ARUNDINELLA)

7b. Spikelets with one fertile floret :

9a. Spikelets cylindrical, falling entire; glumes bearded at base ... GARNOTIEAE 9 (GARNOTIA)

9b. Spikelets cylindrical, ellipsoid–acute or definitely laterally compressed; rachilla disarticulating above the more or less persistent glumes, not bearded at base :

10a. Spikelets very rarely falling entire; lemmas firm, membranous to coriaceous, awned or 5–nerved :

11a. Lemmas hyaline or membranous at maturity, rarely indurated and then laterally compressed, awnless ... SPOROBOLEAE 10 (SPOROBOLUS)

11b. Lemmas indurated or rigid at maturity, terete or dorsally compressed, trifid and awned ... ARISTIDEAE 11 (ARISTIDA)

10b. Spikelets falling entire at maturity, either singly or in clusters from the axis of slender spike–like panicles or racemes; lemmas delicate, 1–3–nerrved :

12a. Spikelets fascicled or solitary; glumes not awned ... ZOYSIEAE 12 (ZOYSIA)

12b. Spikelets solitary; glumes awned ... PEROTIDEAE 13 (PEROTIS)

TRIBE 1– BAMBUSEAE

1a. Rachilla internodes elongate upto half the length of the lemma promptly or tardily disarticulating; spikelets clustered or in open compound leafy panicle ... BAMBUSA 1

1b. Rachilla internodes very short, not disarticulating; spikelets in dense clusters along the panicle branches .. DENDROCALAMUS 2

1. BAMBUSA Schreb.

Bambusa arundinacea (Retz.) Roxb. Pl. Cor. t. 79. 1796–98; Willd. Sp. Pl. 2: 245. 1799; Gamble in Hook. f. Fl. Brit. India 7: 395. 1896; Cooke, Fl. Pres. Bombay 3: 569. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 283. 1935. *Bambos arundinacea* Retz. Obs. Bot. 5: 24. 1789. *Kalak.*

Perennials with culms erect, branched, having prominent nodes and internodes, 6–12 m; leaves linear–lancolate, stiff with scabrid margins, 15–20 x 1.2–2.5 cm; inflorescence a branched panicle; spikelets lanceolate, pale yellow, 3–6–flowered; rachilla hairy.

Fls. & Frts. : Once in life time.

In hilly forests, frequent.Matheran.

The culms are very strong and extensively used for building purposes.

2. DENDROCALAMUS Nees

Dendrocalamus strictus (Roxb.) Nees in Linnaea 9: 476. 1834; Gamble in Bambuseae Brit. India 78. t. 68, 69. 1896 & in Hook. f. Fl. Brit. India 7: 404. 1896; Cooke, Fl. Pres. Bombay 3: 572. 1958 (Repr. ed.). *Bambusa stricta* Roxb. Pl. Cor. t. 80. 1796-98.

Densely tufted trees, culms solid or with a small cavity, 6–15 m; leaves deciduous, narrowed from the base, linear–lanceolate, nerves 3–6 pairs, upto 25 x 3.2 cm; panicles large with dense, globular heads; spikelets spiny, hairy, the fertile inter–mixed with many smaller, sterile ones.

Fls. & Frts. : August–October.

In hilly forests, frequent. Matheran.

TRIBE 2–AELUROPODEAE

AELUROPUS Trin.

Aeluropus lagopoides (L.) Trin. ex Thw. Enum. Pl. Zeyl. 374. 1864 ('*lagopodioides*'); Bor, Grass. Burma, Ceylon, India & Pak. 380. 1960. *Dactylis lagopoides* L. Mant. Pl. 33. 1767. *Aeluropus villosus* Trin. ex C.A. Mey, Verz. Pfl. Cauc. 18. 1831; Hook. f. Fl. Brit. India 7: 334. 1896; Cooke, Fl. Pres. Bombay 3: 567. 1958 (Repr. ed.). *A. repens* (Desf.) Parl. Fl. Ital. 1: 462. 1848; Blatt. & McC. Bombay Grass. 277. t. 33. 1935.

Rhizomatus perennials with culms creeping or erect, 10–15 cm; leaves subulate–lanceolate, flat, pungent, glabrous or pilose, margins scabrid, 2–4 x 0.2–0.4 cm; spikelets 4–8–flowered, elliposid–oblong, 2.2–3.5 x 2.0–2.4 cm.

Fls. & Frts. : March.

On sandy soil or salt marshes near sea, infrequent. Nagaon beach, Alibag; Uran.

TRIBE 3 – ERAGROSTEAE

1a. Lemmas usually entire at apex, obtuse, acute or acuminate or awned from the tip (*Elytrophorus*) then glabrous near margin and along side nerves :

2a. Spikelets in open, contracted or spike–like panicles, rarely in solitary secund spikes (*Eragrostiella*) :

3a. Spikelets awnless :

4a. Inflorescence a panicle, sometimes spike–like ... ERAGROSTIS 1

4b. Inflorescence a solitary secund spike ... ERAGROSTIELLA 2

3b. Spikelets awned ... ELYTROPHORUS 3

2b. Spikelets loosely to densely imbricate in digitate or ramosely arranged spikes or spike–like racemes :

5a. Axis of the branches of the inflorescence ending in spikelets; spikes digitate or subdigitate; spikelets 3–6–flowered; grains oblong–globose, grooved, with a loose conspicuous pericarp ... ELEUSINE 4

5b. Axis of spikes terminating in a sharp point; upper glume mucronate or awned; spikes digitate, rarely racemose; spikelets many –flowered, grains not as above ...DACTYLOCTENIUM 5

1b. Lemmas usually emarginate or 2–4–lobed or toothed at the apex, rarely entire and then hairy along the nerves :

6a. Median nerve is prolonged into a perfect awn, twisted at the base; caryopsis 3–4.5 mm and with a hyaline, fleshy appendage ... INDOPOA 6

6b. Median nerve is not so prolonged and awns are not twisted at base; caryopsis is comparatively shorter and without a hyaline, fleshy appendage :

7a. Spikelets in terminal, solitary, secund spikes ... TRIPOGON 7

7b. Spikelets in panicles or in digitate or racemosely arranged spike–like racemes ... DIPLACHNE 8

1. ERAGROSTIS P. Beauv *emend.* Reichb.

1a. Spikelets breaking up at maturity from above downwards; rachis fragile :

2a. Keel of the palea more or less ciliate :

3a. Panicles spiciform, or compact and dense; lemmas ciliate (at least the upper) on the keels ... *E. ciliaris* 1

3b. Panicles effuse; lemmas not ciliate on the keels ... *E. tenella* 2

2b. Keel of the palea scabrid or smooth, not ciliate ... *E. japonica* 3

1b. Spikelets breaking up from below upwards; rachis tough :

4a. Annuals :

5a. Spikelets 2 mm or more wide, ovoid or ovoid–oblong; glandular bands or pitted glands absent ... *E. unioloides* 4

5b. Spikelets less than 2.0 mm wide, linear; glandular bands below the culm nodes and pitted glands above and below the lowest node present ... *E. pilosa* 5

4b. Perennials ... *E. atrovirens* 6

1. **Eragrostis ciliaris** (L.) R. Br. in Tuckey, Narr. Exp. Congo, App. 478. 1818; Hook. f. Fl. Brit. India 7 : 314. 1896; Blatt. & McC. Bombay Grass. 231. t. 154. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 506. 1960. *Poa ciliaris* L. Syst. Nat. (ed. 10) 2: 875. 1759.

Tufted annuals, 10–40 cm; leaves flat, linear–lanceolate, 4–8 x 0.2–0.5 cm; panicles cylindric, interrupted or not, woolly; spikelets aggregated, compressed, 6–12 flowered, ovoid, 2.0–4.2 mm; glumes lanceolate, subequal; grains ellipsoid.

Fls. & Frts. : September–October.

In hilly forests and along sea–coast, frequent. Alibag; Janjira fort, Murud; Matheran.

2. **Eragrostis tenella** (L.) P. Beauv. ex Roem. & Schult. Syst. Veg. 2: 576. 1817; Hook. f. Fl. Brit. India 7: 315. 1896; Cooke, Fl. Pres. Bombay 3: 545. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 232. t. 155. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 513. 1960. *Poa tenella* L. Sp. Pl. 1: 69. 1753. *Eragrostis tenella* var. *plumosa* (Retz.) Stapf in Hook. f. *op. cit.* (PLATE 5a)

Erect, tufted annuals, 10–30 cm; leaves linear, flat, glabrous, 2.5–10.0 x 0.2–0.4 cm; panicles elliptic or ovate–oblong, hairy; spikelets greenish, oblong–ovoid, 4–8 flowered, 1.5–2.0 mm; glumes ovoid; grains; ellipsoid.

Fls. & Frts. : September–November.

In hilly forests, infrequent. Matheran; Thakurwadi hill, Karjat.

Grains of this fodder grass are said to be very nutritious.

3. **Eragrostis japonica** (Thunb.) Trin. in Mem. Acad. Sci. Petersb. Ser. 6, 1: 405. 1831; Bor, Grass. Burma, Ceylon, India & Pak. 509. 1960; T.A. Cope in Nasir & Ali, Fl. Pak. 143: 88. 1982. *Poa japonica* Thunb. Fl. Japan. 51. 1784. *Eragrostis interrupta* (Lam.) Decell. var. *tenuissima* (Schrad.) Stapf in Hook. f. Fl. Brit. India 7: 316. 1896. *E. diarrhena* (Schult.) Steud. Syn. Pl. Glum. 1: 266. 1854; Bor, *op. cit.* 507. *E. interrupta* var. *koenigii* Stapf in Hook. f. *op. cit.*; Cooke, Fl. Pres. Bombay 3: 546. 1958 (Repr. ed.).

Tufted perennials, 20–70 cm; leaves variable, linear, flat, upto 28 x 0.7 cm; panicles linear to lanceolate in interrupted pseudowhorls; spikelets pedicellate, ovoid–oblong, 1.5–3.0 mm long; grains ellipsoid.

Fls. & Frts. : September–October.

In moist places, infrequent. Matheran; Mhasla; Unhere of Sav village, Mahad.

4. **Eragrostis unioloides** (Retz.) Nees ex Steud. Syn. Pl. Glum. 1: 264. 1854; Blatt. & McC. Bombay Grass. 235. t. 156. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 515. 1960. *Poa unioloides* Retz. Obs. Bot. 5: 19. 1789. *Eragrostis amabilis sensu* Stapf in Hook. f. Fl. Brit. India 7: 317. 1896; Cooke, Fl. Pres. Bombay 3: 546. 1958 (Repr. ed.).

Tufted herbs, 10–60 cm; leaves linear–lanceolate, flat, acute,

glabrous or sparsely hairy, 4.8–15.0 x 0.3–0.6 cm; panicles ovate or oblong, branched, green–straw coloured; spikelets 20–50 flowered, 3.5–15.0 x 2–4 mm; grains obovoid.

Fls. & Frts. : September–October.

In moist places, frequent. Karjat; Matheran; Pen.

5. **Eragrostis pilosa** (L.) P. Beauv. Ess. Agrost. 71: 162, 175. 1812; Stapf in Hook. f. Fl. Brit. India 7: 323. 1896; Cooke, Fl. Pres. Bombay 3: 550. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 241. t. 160. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 512. 1960. *Poa pilosa* L. Sp. Pl. 68. 1753.

Slender or erect, tufted herbs, 10–40 cm; leaves linear, flat, glabrous, 6–15 x 0.1–0.4 cm; panicles open, delicate, lower branches fascicled or sub–whorled; spikelets pedicellate, 2–4 mm.

Fls. & Frts. : September–October.

In moist places, frequent. Karjat; Pen to Khopoli.

6. **Eragrostis atrovirens** (Desf.) Trin. ex Steud. Nom. Bot. (ed.2) 1: 562. 1840; Bor, Grass. Burma, Ceylon, India & Pak. 503. 1960. *Poa atrovirens* Desf. Fl. Atlant. 1: 73. t. 14. 1798. *Eragrostis papposa* Steud. *op. cit.* 564; Stapf in Hook. f. Fl. Brit. India 7: 322. 1896; Blatt. & McC. Bombay Grass. 240. 1935.

Tufted herbs, 30–90 cm; leaves flat or rolled, 15–25 x 0.2 x–0.4 cm; spikelets 6–50 flowered, narrowly oblong, 3–20 mm; glumes subequal, ovate–elliptic, acute, 0.7–1.5 mm.

Fls. & Frts. : March.

Near river bank, infrequent. On way to Parli–Vaijanath, Karjat.

2. Eragrostiella Bor

Eragrostiella bifaria (Vahl) Bor in Indian Forester 66: 270. 1940 *et* Grass. Burma, Ceylon, India & Pak. 494. 1960. *Poa bifaria* Vahl, Symb. Bot. 2: 19. 1791. *Eragrostis bifaria* (Vahl) Wight ex Steud. Nom. Bot. (ed. 2) 1: 562. 1840; Stapf in Hook. f. Fl. Brit. India 7: 325. 1896; Cooke, Fl. Pres. Bombay 3: 550. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 241. 1935.

Tufted perennials, 20–40 cm; leaves filiform, convolute, 1.2–5 cm long; spikes binate, terminal, 10–15 cm; spikelets greenish, ovoid–lanceolate or oblong, compressed, secund, many–flowered.

Fls. & Frts. : August–October.

On rocky slopes, infrequent. Matheran.

3. ELYTROPHORUS P. Beauv.

Elytrophorus spicatus (Willd.) A. Camus in Lecomte Fl. Gen. de Indo–Chine 7: 547. 1923; Bor, Grass. Burma, Ceylon, India & Pak. 493. 1960. *Dactylis spicata* Willd. in Ges. Naturf. Fr. Berl. Neue Schrift 3: 416. 1801. *Elytrophorus articulatus* P. Beauv. Ess. Agrost. 67. t. 14. f. 2. 1812; Hook. f. Fl. Brit. India 7: 306. 1896; Cooke, Fl. Pres. Bombay 3 : 567. 1958 (Repr.ed); Blatt. & McC. Bombay Grass. 276. t. 188. 1935. *Jangli–rala.*

Simple or branched, tufted herbs, 10–20 cm; leaves linear, flat, glabrous or sparsely hairy beneath, 5.2–20.6 cm long; spikes cylindric, interrupted at base, 4.2–20 cm; spikelets in globose–ovoid clusters.

Fls. & Frts. : November–December.

In hilly forests and cultivated fields, frequent. Matheran; Nadsur to Pali; Pen.

4. ELEUSINE Gaertn.

1a.	Spikes stout, incurved, hairy at base; caryopsis globose	...	*E. coracana* 1
1b.	Spikes slender, straight, glabrous at base; caryopsis oblong, trigonous	...	*E. indica* 2

1. **Eleusine coracana** (L.) Gaertn. Fruct. 1: 8. t. 1. f. 11. 1789; Hook. f. Fl. Brit. India 7: 294. 1896; Cooke, Fl. Pres. Bombay 3: 561. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 260. t. 173. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 492. 1960. *Cynosurus coracanus* L. Syst. Nat. (ed. 10) 2: 875. 1759. *Nachni, Nagli, Ragi.*

Stout, glabrous, annuals, 50–80 cm; leaves linear, glabrous, 15–40 x 1–1.6 cm; spikes 6–10, broad, closely packed, digitate, umbellate; spikelets ovoid, glabrous.

Fls. & Frts. : November.

In hilly forests, often cultivated. Also as an escape. Karjat.

This African or 'Finger Millet' grains are largely eaten by tribal people. It is also used to make a kind of porridge or alcoholic beverage locally known as 'Bojah'

2. **Eleusine indica** (L.) Gaertn. Fruct. Sem. Pl. 1: 8. 1789; Hook. f. Fl. Brit. India 7: 293. 1896; Cooke, Fl. Pres. Bombay 3:560. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 259. t. 172. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 493. 1960. *Cynosurus indicus* L. Sp. Pl. (ed. 1) 72. 1753.

Tufted, simple or branched annuals, 20–60 cm; leaves linear, flat, glabrescent, 8–24 x 0.2–0.4 cm; spikes 2–5 , umbellate; spikelets secund, ovoid–oblong, disarticulating between florets.

Fls. & Frts. : September–October.

In hilly forests, pasture grounds and roadsides, frequent. Alibag; Karjat; Pen to Khopoli.

It is considered to be a good fodder grass.

5. DACTYLOCTENIUM Willd.

Dactyloctenium aegyptium (L.) P. Beauv. Ess. Agrost. Expl. Pl. 15 1812; Blatt. & McC. Bombay Grass. 262. t. 176. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 489, 490. f. 54. 1960. *Cynosurus aegyptius* L. Sp. Pl. (ed. 1) 72. 1753. *Eleusine aegyptiaca* (L.) Desf. Fl. Atlant. 1: 85. 1798; Hook. f. Fl. Brit. India 7: 293. 1896; Cooke, Fl. Pres. Bombay 3: 560. 1958 (Repr. ed.). *Mahar–nachni.*

Erect or suberect annuals 6–40 cm; leaves linear, glabrous or sparsely hairy, ciliate on margins, 6–18 x 0.3–0.5 cm; spikes 3–6, digitate; spikelets light green–purple, rigid, laterally compressed, 2–4 flowered, 2–4 mm long.

Fls. & Frts. : September–October.

In hilly forests and near sea–coast, frequent. Matheran; Uran.

This is a very nutritious fodder grass for cattle. The grains are used for eating at the time of scarcity by local people.

6. INDOPOA Bor

Indopoa paupercula (Stapf) Bor in Kew Bull. 1958 (2): 225. 1958 *Tripogon pauperculus* Stapf in Hook. f. Fl. Brit. India 7: 285. 1896 & in Hooker's Icon. Pl. t. 2442. 1896 (as *T. pauperulus*); Cooke, Fl. Pres. Bombay 3: 558. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 266. f. 178. 1935; Bor, Grass. 266. f. 178. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 522, 523. f. 57. 1960.

Tufted annuals, 6–10 cm; leaves linear, setaceous, involute, 1.2–2.4 cm long; spikes slender, erect, upto 8 cm long; spikelets many, alternate, sessile, 4–6 flowered; glumes linear–oblong.

Fls. & Frts. : September–October.

In hilly forests, infrequent. On way to Panorama point, Matheran.

7. TRIPOGON Roth ex Roem. & Schult.

1a. Lemmas cleft at the apex into 2 lobes, awned in the cleft :

- 2a. Median awn as long as or longer than lemma, capillary, flexuous ... *T. capillatus* 1
- 2b. Median awn shorter than lemma, occasionally almost absent:
  - 3a. Leaves and culms glaucous; leaves upto 20 cm long, involute; ligule very short but definite, ciliate ... *T. jacquemontii* 2
  - 3b. Leaves and culms not glaucous; leaves 30 – 60 cm long, flat, sometimes rolled; ligule obsolete ... *T. lisboae* 3

1b. Lemmas cleft at the apex into 4 lobes or with a definite lobe between each lateral awn and the median :

- 4a. Slender grass; median awn twice as long as the lemma or more ... *T. filiformis* 4
- 4b. Stout grass; meidan awn shorter than or nearly equal to the lemmas ... *T. bromoides* 5

1. **Tripogon capillatus** Jaub. *et* Spach, Ill. Fl. Or. 4: 47. t. 332. 1851; Hook. f. Fl. Brit. India 7: 285. 1896; Cooke, Fl. Pres. Grass. 267. t. 179. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 521. 1960.

Erect or geniculately ascending tufted herbs, 10–45 cm; leaves narrowly linear, convolute, 12.5–18 cm long; spikes filiform or capillary, flexuous, 15–30 cm; spikelets 2–4–flowered, distant along the rachis with numerous, slender awns.

Fls. & Frts. : September–October.

On trees, infrequent. Matheran.

2. **Tripogon jacquemontii** Stapf in Kew Bull. 1892: 85. 1892; Hook. f. Fl. Brit. India 7: 286. 1896; Cooke, Fl. Pres. Bombay 3: 559. 1958 (Repr. ed.); Blatt. & McC. Bombay. Grass. 268. t. 181. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 522. 1960.

Perennials, 20–60 cm; leaves glabrous, 4.5–20 cm long; spikes narrow, 8–16 cm; spikelets narrow, oblong, 10–20 flowered, 7–18 mm.

Fls. & Frts. : September–October.

In hilly forests, frequent. Matheran.

3. **Tripogon lisboae** Stapf in Kew Bull. 1892. 84. 1892; Hook. f. Fl. Brit. India 7: 286. 1896; Cooke, Fl. Pres. Bombay Bombay 3: 558. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 267. t. 180. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 522. 1960.

Stout or slender, tufted, perennials; leaves 15.5–30.0 x 0.4–1 cm; spikes 12–20 cm; spikelets densely aggregated, 5–15 flowered, 0.5–1.2 cm.

Fls. & Frts. : August–October.

In hilly forests, infrequent. Matheran.

4. **Tripogon filiformis** Nees ex Steud. Syn. Pl. Glum. 1: 301. 1854; Hook. f. Fl. Brit. India 7: 288. 1896; Blatt. & McC. Bombay Grass. 269. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 521. 1960.

Tufed prtrnnials, 10 40 cm; leaves filiform, convolute, 5–15 cm long; spikes straight or flexuous, 5-20 cm; spikelets 5–8–flowered, 4–10 mm; glumes lanceolate.

Fls. : September–October.

In hilly forests, infrequent. Matheran.

* 5. **Tripogon bromoides** Roem. & Schult. Syst. Veg. 2: 600. 1817; Hook. f. Fl Birt. India 7: 287. 1896 *non* Roth (1821); Blatt. & McC. Bombay Grass. 269. t. 182. 1935; Bor, Grass. Burma, Ceylon, India &Pak. 521. 1960.

Tufted herbs, 15–45 cm; leaves flat or convolute, usually short, sometimes as long as the stem; spikes 8-20 cm; spikelets few or many flowered, 4–12 mm; lower involucral glume ovate or lanceolate; upper olong-lanceolate, bifid.

Fls.: August–October.

Usually occur on old walls, infrequent. Raigad.

8. DIPLACHNE P. Beauv.

Diplachne fusca (L.) P. Beauv. ex Roem. & Schult. Syst. Veg. 2: 615. 1817; Hook. f. Fl. Brit. India 7: 329. 1896; Cooke, Fl. Pres. Bombay 3: 552. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 246. t. 163. 1935;

Bor, Grass. Burma, Ceylon, India & Pak. 492. 1960; T. A. Cope, in Nasir & Ali, Fl. Pak. 143. 72. 1982. *Festuca fusca* L. Syst. Veg. (ed. 10) 2 : 876. 1759. *Leptochloa malabarica* (L.) Veldk. in Blumea 19(1) : 64. 1971.

Tufted herbs, 60–120 cm; leaves flat or convolute, acuminate, glabrous, 15–20 x 0.12–0.25 cm; spikelets linear–oblong, 4–10 flowered, 6–13 mm.

Fls. : August–October.

Along the sea–coast, infrequent. Alibag.

TRIBE 4 CHLORIDEAE

1a. Spikelets with one or more fertile florets and one or more imperfect florets above them, awned ... CHLORIS 1

1b. Spikelets with one fertile floret and no imperfect florets, awnless ... CYNODON 2

1. CHLORIS SW.

1a. Empty lemmas above the fertile floret 2–4 :

2a. Spikelets plump, with 3 awns (rarely 4); second lemma globose ... *C. barbata* 1

2b. Spikelets cuneate, with 4-5 awns; second lemma cuneiform ... *C. montana* 2

1b. Empty lemmas above the fertile floret solitary ... *C. virgata* 3

1. **Chloris barbata** Sw. Fl. Ind. Occ. 1 : 200. 1797; Hook. f. Fl. Brit. India 7: 292. 1896; Cooke, Fl. Pres. Bombay 3: 557. 1958 (Repr.ed); Blatt. & McC. Bombay Grass. 256. t. 171. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 465. 1960. *Gondvel.*

Tufted, geniculately branched perennials, 60–90 cm; leaves linear, flat or involute, 10–20 x 0.2–0.4 cm; spikes purplish, feathery, 5–20, digitate in a truncate clusters, 4–10 cm; spikelets greenish–purple.

Fls. & Frts. : November–December.

On sandy soil in pasture grounds, infrequent. Palasdhari, Karjat.

* 2. **Chloris montana** Roxb. Fl. Ind. 1: 331. 1820; Hook. f. Fl. Brit. India 7: 292. 1896; Blatt. & McC. Bombay Grass. 257. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 466. 1960.

Simple or branched herbs, 10–80 cm; leaves linear, acuminate,

glabrous, 1–20 x 0.15–0.3 cm; spikes 2–6, connate at base; spikelets unilateral, biseriate, *ca* 3 mm.

Fls. : September–October.

In hilly forests, infrequent. Raigad.

3. **Chloris virgata** Sw. Fl. Ind. Occ. 1: 203. 1797; Hook. f. Fl. Brit. India 7: 291. 1896; Blatt. & McC. Bombay Grass. 255. t. 170. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 468. 1960.

Erect or geniculately ascending annuals, 60–80 cm; leaves flat, narrowed at apex, basal sheaths keeled, 8–20 x 0.2–0.5 cm; spikes feathery, digitate, 4–8 cm; spikelets 2–3-flowered, 2-awned.

Fls. : September–October.

On sandy soil near sea-coast and road-sides, frequent. Janjira fort, Murud; Pen to Khopoli.

A good fodder grass.

2. CYNODON Rich. *nom. cons.*

Cynodon dactylon (L.) Pers. Syn Pl 1: 85. 1805; Hook. f. Fl. Brit. India 7:288. 1896; Cooke, Fl. Pres. Bombay 3: 554. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 250. t. 166. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 469, 470. f. 52. 1960. *Panicum dactylon* L. Sp. Pl. 58. 1753. *Durva.*

Slender, creeping perennials, 5–30 cm; leaves linear or lanceolate, flat, scaberulous, 1.6–8.0 x 0.2–0.4 cm; spikes digitate, 4–6, in whorl; spikelets sessile, compressed, imbricating, 2–3 mm; glumes lanceolate.

Fls. : Almost throughout the year.

Near sea-coast and along railway lines, frequent. Matheran; Neral to Matheran; Roha.

TRIBE 5 – ARUNDINEAE

ARUNDO L.

Arundo donax L. Sp. Pl. 81. 1753; Hook. f. Fl. Brit. India 7: 302. 1896; Cooke, Fl. Pres. Bombay 3: 574. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 204. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 413, 414. f. 44. 1960.

Tall grass, creeping from below, 1.5–2.5 m; leaves flat, base amplexicaul, 20–40 cm; panicles decompound, thyrsiform, 30–60 cm; spikelets greenish–yellow, 3–4–flowered, 6–8 mm; glumes 6 or more, oblong–lanceolate, 3–nerved; grains oblong.

Fls. & Frts. : February–March.

Near sea-coast, infrequent. Shrivardhan.

TRIBE 6–ORYZEAE

1a.	Leaf–blades ovate–oblong or ovate–lanceolate, sheaths inflated, floating	...	HYGRORYZA 1
1b.	Leaf–blades linear, acute to acuminate, sheaths not inflated	...	ORYZA 2

1. HYGRORYZA Nees

Hygroryza aristata (Retz.) Nees ex Wight & Arn. in Edinb. New Phil. J. 15: 380. 1833; Hook. f. Fl. Brit. India 7: 95. 1896; Blatt. & McC. Bombay Grass. 271. t. 184. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 597. 1960; Kothari & Moorthy in J. Bombay nat. Hist. Soc. 80 (1): 259. 1983. *Pharus aristatus* Retz. Obs. Bot. 5: 23. 1789.

Floating annuals upto 30 cm; leaves obtuse, scabrous above, glabrous beneath, 2.6–8.0 x 1.0–2.2 cm; panicles triangular, 3–6 cm; spikelets pale–green, sessile or shortly pedicellate, upto 20 mm; awns scaberulous, 10–13 mm; grains ovoid–ellipsoid.

Fls. & Frts. : December–March.

In ponds, infrequent. Gavalwadi, Karjat; Pali to Nagothana.

Cattle are fond of this grass and the grain is said to be eaten by the poor people.

2. ORYZA L.

1a.	Spikelets caducous	...	*O. nivara* 1
1b.	Spikelets persistent	...	*O. sativa* 2

1. **Oryza nivara** Sharma and Shastri in Ind. J. Genetics & Pl. Breeding 25 (2): 161. 1965. *O. sativa* var. *fatua* Prian, Beng. Pl. 1184. 1903. *O. rufipogon* Griff. Notul. 3: 5. 1851 & Icon. Pl. As. 3: t. 144. f. 2. 1851; Bor, Grass. Burma, Ceylon, India & Pak. 605. 1960.

Annuals, 60–80 cm; leaves linear, flat, scabrid, 12.0–30.0 x 0.6–1.3

Hygroryza aristata (Retz.) Nees
a) Entire plant, b) Palea, c) Filaments, ovary and styles,
d) Floral glume.

cm; panicles effuse; spikelets greenish, scabrid 0.5–0.7 cm; awns brownish, scabrous; grains oblong-ellipsoid.

Fls. & Frts. : November–December.

Near sea–coast, infrequent. Alibag.

2. **Oryza sativa** L. Sp. Pl. 1: 333. 1753; Hook. f. Fl. Brit. India 7: 92. 1896; *pro parte;* Cooke, Fl. Pres. Bombay 3: 565. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 274. t. 187. 1935 *pro prate* ; Bor, Grass. Burma, Ceylon, India & Pak. 605. 1960.

Herbs, 60–90 cm;leaves linear, scabrid on margins and nerves beneath, 10.5–40.0 x 0.4–1.7 cm; panicles lax, drooping; spikelets ovoid–oblong, brownish, 0.5–1.0 cm; grains oblong-ellipsoid.

Fls. & Frts. : December.

Usually cultivated, occasionally as an escape. Nagothana.

TRIBE 7– ISACHNEAE

ISACHNE R Br.

1a. Spikelets about 1 mm long ... *I. gracilis* 1

1b. Spikelets over 1.5 mm long :

2a. Florets equal in size or nearly so and of same texture :

3a. Glumes setosely hirsute; lemmas and paleas glistening punctate ... *I. lisboae* 2

3b. Glumes hirtellous in upper half at tip or glabrous; lemmas and paleas not as above ... *I. elegans* 3

2b. Florets unequal in size and of different texture; the lower more delicate :

4a. Spikelets 2 mm or more long; lower and upper lemmas obtuse ... *I. globosa* 4

4b. Spikelets 2 mm or less long; lower and upper lemmas not obtuse ... *I. miliacea* 5

1. **Isachne gracilis** C.E. Hubb. in Kew Bull. 1927: 77. 1927; Bor Grass. Burma, Ceylon, India & Pak. 581. 1960.

Perennials; leaves flat, ovate–elliptic, acute very thin, 0.8–3.0 x 0.1–0.2 cm; panicles loose, 1–2–flowered; glumes delicately membranous, elliptic to elliptic–ovate, sparsely setose.

Fls. & Frts. : September–March.

In moist and shady places, frequent. Matheran; Mirya donger, Pen.

2. **Isachne lisboae** Hook. f. Fl. Brit. India 7: 22. 1896; Cooke, Fl.Pres. Bombay 3: 438. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 187. t. 120. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 581. 1960.

Annuals, 8–15 cm; leaves oblong–lanceolate, acute, recurved, striate, margin ciliate, 2–4 cm long; panicles stout, hispid, 2.2–5.0 cm; spikelets secund, subsessile, 3–4 mm; glumes 4; lower and upper involucre glumes ovate–suborbicular, acuminate; floral glumes orbicular.

Fls. & Frts. : September–October.

In hilly forests, infrequent. Mahad ghat.

3. **Isachne elegans** Dalz. in Dalz. & Gibs. Bombay Fl. 291. 1861; Hook. f. Fl. Brit. India 7: 23. 1896; Cooke, Fl. Pres. Bombay 3:439.1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 187. t. 121. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 580. 1960.

Tufted elegant herbs, 10–30 cm; leaves linear to lanceolate, acute, 4.8–15.0 x 0.4–0.6 cm; spikelets greenish, hispid with two perfect flowers, 2-3 mm. across; glumes 4, involucral glumes ovoid–suborbicular; floral glumes hemispheric; grains ovoid.

Fls. & Frts. : November–December.

Usually forming large mats in moist soil and along margins of streams, frequent. Nagothana; Pen.

4. **Isachne globosa** (Thunb.) O. Ktze. Rev. Gen. Pl. 2: 778. 1891; Bor, Grass. Burma, Ceylon, India & Pak. 580. 1960. *Milium globosum* Thunb. Fl. Jap. 49. 1784. *Isachne australis* R. Br. Prodr. 196. 1810; Hook. f. Fl. Brit. India 7: 24. 1896; Cooke, Fl. Pres. Bombay 3: 439. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 188. t. 122. 1935.

Tufted, slender, erect herbs, 20–40 cm; leaves linear–lanceolate or ovate–lanceolate, acuminate, scaberulous or glabrous, ciliate on margins, 2.5–10.2 x 0.3–0.8 cm; panicles ovoid or pyramidal, contracted or open, 2.0–2.8 cm; spikelets globose.

Fls. & Frts. : September–February.

In plains, hilly regions and damp places near river banks, frequent. Matheran; Nagothana; Neral; Roha; Sanegaon forests, Roha.

The grass is eaten by cattles and horses.

5. **Isachne miliacea** Roth ex Roem. & Schult. Syst. Veg. 2: 476. 1817; Henr. in Blumea 3: 465. 1940; Hook. f. Fl. Brit. India 7: 25. 1896; Cooke, Fl. Pres. Bombay 3:439. 1958 (Repr.ed); Blatt. & McC. Bombay Grass. 189. t. 123. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 582. 1960.

Annuals, 15–30 cm; leaves ovate, acute, glabrous, ciliate at apex, 1.2–3.5 x 0.3–0.7 cm; spikelets globose, few and distant; involucral glumes orbicular–oblong, hispid, 7–nerved; lower floral glumes longer than upper ones, ovate–oblong, membranous; upper floral glumes hemispheric; grains globose.

Fls. & Frts. : September–October.

In shady places of hilly regions, infrequent. Neral to Matheran.

TRIBE 8–ARUNDINELLEAE

1a. Lemma of the upper floret glabrous, scaberulous or scabrid; minutely 2–lobed ... ARUNDINELLA 1

1b. Lemma of the upper floret bearded dorsally, deeply bifid ... JANSENELLA 2

1. ARUNDINELLA Raddi

1a. Upper floral glume with solitary awn; annuals; leaves upto 15 cm long ;

2a. Spikelets 2–3 mm long; stem upto 90 cm tall ... *A. metzii* 1

2b. Spikelets not more than 2 mm long; stem 10– 30 cm tall ... *A. pumila* 2

1b. Upper floral glume with 3 awns; perennials; leaves upto 30 cm long ... *A. setosa* 3

1. **Arundinella metzii** Hochst. ex Miq. in Verh. Konink. Nederl. Inst. 3(4): 31. 1851; Hook. f. Fl. Brit. India 7: 72. 1896; Cooke, Fl. Pres. Bombay 3: 523. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 195. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 423. 1960.

Tufted, erect, slender herbs; leaves linear, glabrous or sparsely hairy, 3.5–12.6 x 0.4–0.8 cm; spikelets ovoid–lanceolate, geminate, pedicellate, 2–3 mm long; glumes 4; lower involucral glumes ovate–lanceolate; floral glumes ellipsoid; grains oblong.

Fls. & Frts. : Septmeber–November.

Near moist places in hilly regions, infrequent. Jummapatti, Matheran; on way to Shivthalgarh and Raigad, Mahad.

2. **Arundinella pumila** (Hochst. ex A. Rich.) Steud. Syn. Pl. Glum. 114. 1854; Bor, Grass. Burma, Ceylon, India & Pak. 423. 1960. *Acratherum pumilum* Hochst. ex A. Rich. Tent. Fl. Abyss. 2: 414. t. 100. 1851. *Arundinella tenella* Nees ex Steud. *op. cit.* 115; Hook. f. Fl. Brit. India 7: 71. 1896; Cooke, Fl. Pres. Bombay 3: 522. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 193. t. 127. 1935.

Erect, glabrous herbs; leaves 5.5–12.0 x 0.6–1.2 cm, ovate–lanceolate or linear–lanceolate, acuminate, glabrous; panicles long, branched, 5–15 cm; spikelets awned, *ca* 1 mm long; grains ellipsoid.

Fls. & Frts. : October–January.

In hilly regions, frequent. Matheran; Pen.

3. **Arundinella setosa** Trin. Gram. Panic. 63. 1826; Hook. f. Fl. Brit. India 7: 70. 1896; Cooke, Fl. Pres. Bombay 3: 521. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 192. t. 126. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 424. 1960.

Erect, slender, caespitose herbs, 30–90 cm; leaves linear, flat, glabrous or sparsely hairy, 10–25 x 0.3–0.5 cm; panicles filiform 2–4–nately whorled branches, 10–20 cm; spikelets pedicellate, unequally paired, 4–6 mm; glumes 4, ovoid–lanceolate; grains ovoid-ellipsoid.

Fls. & Frts. : September–October.

Moist places, infrequent. Pen.

2. Jansenella Bor

Jansenella griffithiana (C. Muell.) Bor in Kew Bull. 1955: 98. 1955 & Grass. Burma, Ceylon, India & Pak. 426. 1960. *Danthonia griffithiana* C. Muell. in Bot. Zeit. (Berlin) 14: 347. 1856. *Avena malabarica* Heyne ex Hook. f. Fl. Brit. India 7: 69. 1896. *Arundinella arenacea* Munro ex Thw. Enum. Pl. Zeyl. 362. 1864; Cooke, Fl. Pres. Bombay 3: 520. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 191. t. 124. 1935.

Erect, slender, annuals, 15–30 cm; ovate–lanceolate, cordate, amplexicaul, softly hairy, 2.6–5.0 cm long; panicles compact, crowded; spikelets subsessile, 2–flowered, 5–6 mm; glumes awned; styles 2, stigmas plumose grains ellipsoid.

Fls. & Frts. : September–October.

In hilly regions, frequent. Matheran; Neral; on way to Raigad from Pachchad.

TRIBE 9 – GARNOTIEAE

GARNOTIA Brongn.

Garnotia arborum Stapf ex T. Cooke, Fl. Pres. Bombay 2: 1013. 1908 (3: 534. 1958. Repr. ed.); Blatt. & McC. Bombay Grass. 206. t. 135. 1935; Bor, Grass. Burma, Ceylon, India & pak. 567. 1960.

Tufted, slender annuals, 5–15 cm; leaves linear, acuminate, glabrous, 2.2–4.5 x 0.3–0.4 cm; spikes angular in 2–3–branched clusters on horizontal or deflexed panicles; spikelets 1–flowered, jointed on branch ends; grains ovoid-lancedate.

Fls. & Frts. : September–October.

In hilly regions, infrequent. On way to Panorama point, Matheran.

TRIBE 10 – SPOROBOLEAE

SPOROBOLUS R. Br.

Sporobolus indicus (L.) R. Br. Prodr. 170. 1810. var. **diander** (Retz.) Jovet & Guedes in Bull. Centre Et. Rech. Sc. Biarritz 7: 65. 1968 & in Taxon 22: 163. 1973. *Agrostis diandra* Retz. Obs. Bot. 5: 19. 1789. *Sporobolus diander* (Retz.) P. Beauv. Ess. Agrost. 26: 147, 178. 1812; Hook. f. Fl. Brit. India 7: 247. 1896; Cooke, Fl. Pres. Bombay 3: 539. 1958 (Repr. ed); Blatt. & McC. Bombay Grass. 221. t. 148. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 629. 1960.

Annual or perennial herbs, 30–90 cm; leaves linear, convolute, 8–14 cm long; panicles pyramidal, 9–14 cm; branches capillary, densely crowded; spikelets ovate, shortly pedicellate, 2–4 mm; grains obovoid, truncate, red-brown, rugulose.

Fls. & Frts. : September–October.

In waste places on road sides, frequent. Pen to Khopoli.

A good fodder grass for cattle and horses.

TRIBE 11 – ARISTIDEAE

ARISTIDA L.

Aristida redacta Stapf in Kew Bull. 1892 : 85. 1892; Hook. f. Fl.

Brit. India 7: 227. 1896; Cooke, Fl. Pres. Bombay 3: 531. 1958 (Repr. ed.); Blatt. & McC. Bombay Grass. 215. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 412. 1960.

Tufted herbs, 10–40 cm; leaves slender, convolute, hairy above, glabrous beneath, 8–15 cm long; panicles 10–20 cm long; spikelets greenish–purplish; lower involucral glumes subequal, lanceolate, floral glumes with a hairy callus; awns capillary, twisted; grains cylindric, narrow.

Fls. & Frts. : October.

In hilly regions, infrequent. Kankeshwar hill, Alibag.

TRIBE 12 – ZOYSIEAE

ZOYSIA Willd.

Zoysia matrella (L.) Merr. in Philipp. J. Sci. Bot. 7: 230. 1912; Bor, Grass. Burma, Ceylon, India & Pak. 684. 1960. *Agrostis matrella* L. Mant. Pl. 2: 185. 1771. *Zoysia pungens* Willd. in Ges. Naturf. Fruende Berlin, Neue Schr. 3: 441. 1801; Hook. f. Fl. Brit. India 7: 99. 1896; Cooke, Fl. Pres. Bombay 3: 537. 1958 (Repr. ed.). *Osterdamia matrella* (L.) O. Ktze. Rev. Gen. Pl. 2: 781. 1891; Blatt. & McC. Bombay Grass. 219. t. 146. 1935.

Erect, tufted, perennials, 10–25 cm; leaves subulate, coriaceous, concave, pungent, 2.2–6.0 cm long; racemes erect, 2.2–3.5 cm; spikelets erect, 3–3.2 mm; involucral glumes biconvex, coriaceous, shining; floral glumes shorter, narrower, hyaline; grains oblong, free within glume and palea.

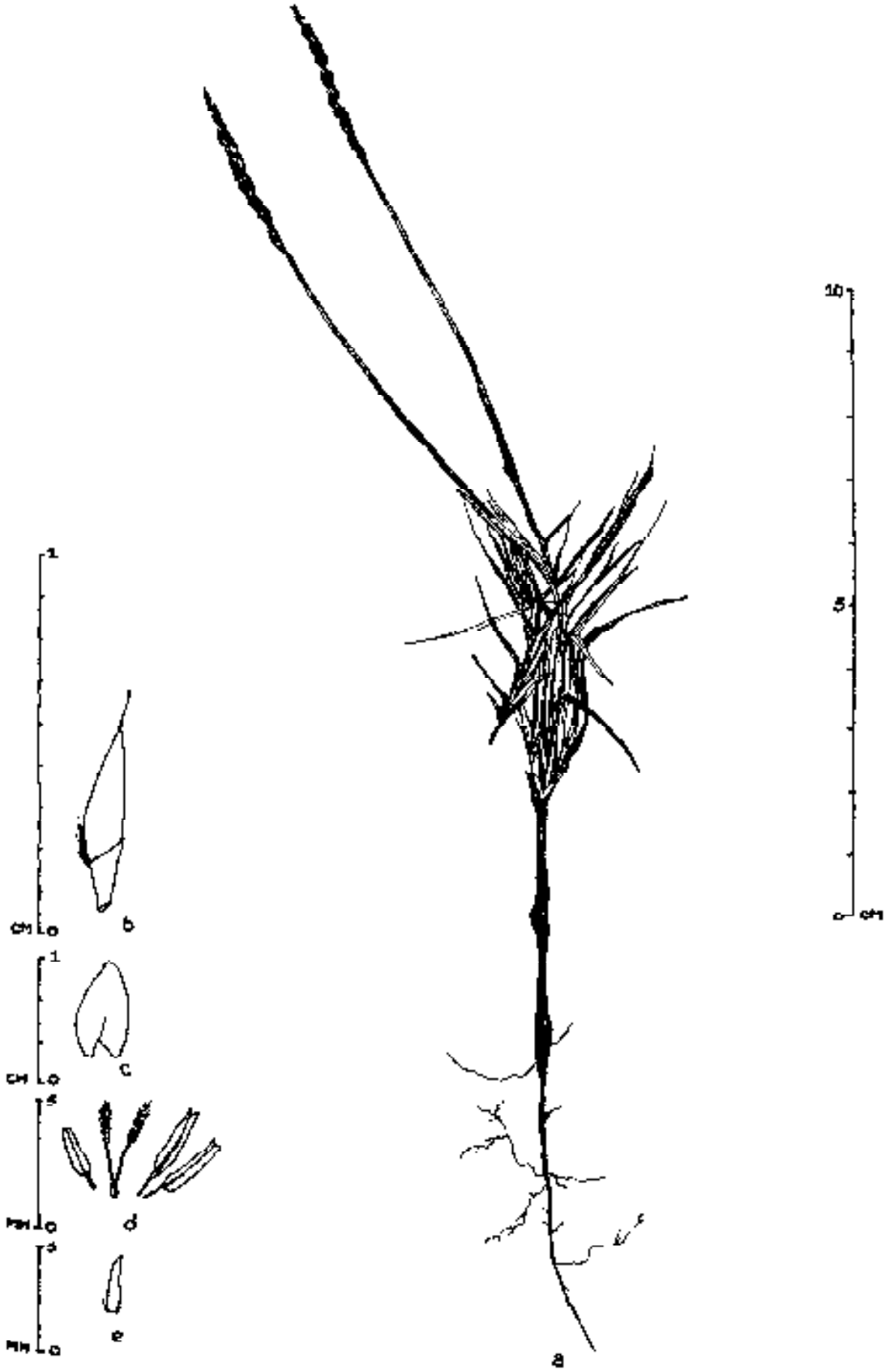
Fls. & Frts. : September–October.

On sandy soil, frequent. Alibag.

TRIBE 13 – PEROTIDEAE

PEROTIS Ait.

Perotis indica (L.) O. Ktze. Rev. Gen. Pl. 3: 787. 1891; Blatt. & McC. Bombay Grass. 220. t. 147. 1935; Bor, Grass. Burma, Ceylon, India & Pak. 611, 612. f. 72. 1960. *Anthoxanthum indicum* L. Sp. Pl. 28. 1753. *Perotis latifolia* Ait. Hort. Kew 1: 85. 1789; Hook. f. Fl. Brit. India 7: 98. 1896; Cooke, Fl. Pres. Bombay 3: 538. 1958 (Repr. ed.).



Zoysia matrella (L.) Merr.
a) Entire plant, b) Involucral glume with pedicel, c) Floral glume, d) Stamens, ovary and styles, e) Palea of floral glume.

Erect or suberect herbs, 20–40 cm; leaves ovate–lanceolate, flat, glabrous, 2.5–5.3 x 0.4–0.6 cm; spikes violet–purple, compact, 8–14 cm; spikelets linear, subcerete, scabrous, *ca* 2 mm; grains cylindric.

Fls. & Frts. : September–October.

Along the sea–coast, frequent. Alibag; Shrivardhan.

151. GNETACEAE

GNETUM L.

Gnetum ula Brongn. in Dupperrey, Voy. Coquille 9: 12. 1829. *G scandens* Roxb. Fl. Ind. 3: 518. 1834; Hook. f. Fl. Brit. India 5: 642. 1888; Cooke, Fl. Pres. Bombay 3: 167. 1958 (Repr. ed.). *G. funiculare* Wight, Icon. t. 1955. 1853. *Umbli.* (PLATE 3a)

Large, robust, dioecious climbers with dichotomous branches and scaly bark; leaves opposite, elliptic–ovate or ovate–oblong, coriaceous, acuminate, base acute or cuneate, 7.2–15.0 x 3.4–7.5 cm; flowers in paniculate spikes; ripe fruits fleshy, reddish–orange, oblong, obtuse or shortly apiculate.

Fls. & Frts. : February–March.

In thick forests, infrequent. Mahan forests, Alibag; Matheran.

PTERIDOPHYTES

1. SELAGINELLACEAE

1. Selaginella delicatula (Desv. ex Poir.) Alst. in J. Bot. 70: 282. 1932; Dixit, Census Ind. Pteridophytes 12. 1984. *Lycopodium delicatulum* Desv. ex Poir. in Lam. Encycl. Suppl. 3: 554. 1814.

Trailing herbs with wiry rhizophores, dimorphic leaves, micro and megasporangiate strobili.

Fertile : September–October.

Damp places in hilly forests, frequent. Kalasgiri, Roha; Matheran.

* **2. Selaginella proniflora** (Lam.) Baker in J. Bot. 22: 156. 1885 & Handb. Fern Allies 108. 1984 (Repr. ed.); Dixit, Census Ind. Pteridophytes 16. 1984. *Lycopodium proniflorum* Lam. Encycl. 3: 652. 1789.

Fertile : October.

Trailing herbs with membranous, unequal sided, cordate, ciliated leaves and resupinate spikes.

In hilly forests, infrequent. Matheran.

2. OPHIOGLOSSACEAE

3. **Ophioglossum costatum** R. Br. Prodr. 163. 1810; Dixit, census Ind. Pteriodophytes 23. 1984. *O. fibrosum* Schum, Beskr. Guin. Pl. 452. 1827; Beddome, Handb. Ferns Brit. India 465. t. 287. 1969 (Repr. ed.).

Perennial herbs, 5–15 cm; fronds one to many; sporophylls larger than sterile ones.

Fertile : July–August.

Mossy hill slopes and open moist places, frequent. Karnala fort; Khamb forests, Roha; Mandatna to Pangloli, Mhasla.

4. **Ophioglossum nudicaule** L. f. Suppl. Syst. t. 443. 1781; Beddome, Handb. Ferns. Brit. India 464. t. 288. 1969 (Repr. ed.); Dixit, Census Ind. Pteridophytes 23. 1984.

Slender herbs, 2–4 cm; fronds 1–2; sterile ones without prominent mid veins, sporophylls stalked; strobilus 4–5 mm long.

Fertile : July–August.

Among grasses in moist hill–slopes, rare. Karnala fort.

5. **Ophioglossum reticulatum** L. Sp. Pl. 2: 1063. 1753; Beddome, Ferns S. India 23 t. 70. 1863 & Handb. Ferns Brit. India 465. t. 290. 1969 (Repr. ed.) & Suppl. 109. 1892; Dixit, Census Ind. Pteridophytes 24. 1984.

Herbs with cylindric rhizomes; fronds with prominent reticulate vein; fertile spikes 2.5 cm or more.

Fertile : July.

In hilly regions, infrequent. Hills near Alibag.

Young fronds used as vegetable, salads and in curries.

3. POLYPODIACEAE

6. **Lepisorus nudus** (Hook.) Ching in Bull. Fan. Mem. Inst. Biol. Bot. 4: 83. 1933; Dixit, Census Ind. Pteridophytes 41. 1984. *Pleopeltis*

nuda Hook. Exot. Fl. 1: t. 63. 1823. *P. wightiana* (Thw.) Beddome, Ferns S. India, 60, t. 180. 1863. *P. linearis sensu* Beddome, Handb. Ferns Brit. India 347. t. 194. 1969 (Repr. ed.).

Herbs with rhizomes woody, creeping, clothed with dull–brown scales; fronds entire, coriaceous; sori superficial, never sunk in a cyst.

Fertile : July–September.

In hilly forests, infrequent. Matheran; Mahad–ghat.

7. **Lepisorus thunberagianus** (Kaulf.) Ching. in Bull. fan. Mem. Inst. Biol. Bot 4: 88. 1933; Dixit, Census Ind. Pteridophytes 43. 1984. *Pleopeltis thunbergiana* Kaulf. Wesen. Fernkr. 113. 1827.

Epiphytes with paleate rhizomes and ovate–lanceolate scales on lamina surface.

Fertile : September–February.

In hilly forests, frequent. Matheran; Neral to Matheran.

8. **Microsoruim membranaceum** (D.Don) Ching in Bull. Fan. Mem. Inst. Biol. 4: 309. 1933; Bir & Trikha in Bull. Bot. Surv. India 10: 139. ff. 27–31. 1968; Dixit, Census Ind. Pteridophytes 45. 1984. *Polypodium membranaceum* D. Don, Prodr. & Fl. Nepal. 2. 1825. *Pleopeltis membranacea* Moore, Index Fil. 191. 1859; Beddome, Handb. Ferns. Brit. India 335. 1969 (Repr. ed.).

Rhizomes thick, branched, creeping, densely scaly with wiry roots; fronds simple, mombranous; sori small, naked, in two rows.

Fertile : September–October.

Epiphytic on trees in hilly forests, frequent. Matheran; Neral to Matheran.

9. **Pyrrosia adnascens** (Sw.) Ching in Bull. Chin. Bot. Soc. 1: 45. 1935; Dixit, Census Ind. Pteridophytes 53. 1984. *Polypodium adnascens* Sw. Syn. Fil. 25, 222. t. 2. f. 2. 1806. *Niphobolus adnascens* (Sw.) Kaulf. Enum. Fil. 124. 1824; Beddome, Handb. Ferns. Brit. India 325. t. 176. 1969 (Repr. ed.).

Rhizomes creeping with snow–white setaceous scales; fronds dimorphous, hoary–pubescent below; sori round, sunken.

Fertile : December.

In hilly regions, infrequent. Sarasgad, Alibag; Matheran.

4. DRYNARIACEAE

10. **Drynaria quercifolia** (L.) J. Sm. in Hook. J. Bot. 3: 398. 1841; Beddome, Handb. Ferns. Brit. India 342. t. 191. 1969 (Repr. ed.); Dixit, Census Ind. Pteridophytes 58. 1984. *Polypodium quercifolium* L. Sp. Pl. 2: 1087. 1753; Beddome, Ferns S. India t. 187. 1863.

Epiphytes with stout rhizomes, densely clothed with reddish–brown hairs; fronds coriaceous, dimorphous; sori small, many.

Fertile : September–October.

On trees in hilly forests, infrequent. Matheran; Pangloli reserve forests, Mhasla.

Ornamental.

5. LYGODIACEAE

11. **Lygodium flexuosum** (L.) Sw. in Schrad. Journ. Bot. 1800(2): 106. 1801; Beddome, Ferns S. India t. 63. 1863 & Handb. Ferns Brit. India 457. f. 283. 1969 (Repr. ed.); Dixit, Census Ind. Pteridophytes 60. 1984. *Ophioglossum flexuosum* L. Sp. Pl. 2: 1063. 1753.

Climbers; fronds with pinnules pinnate or variously lobed, serrulate; sori protruding from margins.

Fertile : October–February.

In hilly forests, frequent. Karnala fort; Mirya donger, Pen; Sudhagad, Pali; Tadavali forests, Panvel.

Ornamental. Rhizomes boiled with mustard oil, used in rheumatic pains.

6. CHEILANTHACEAE

12. **Cheilanthes albomarginata** C.B.Cl. Trnas. Linn. Soc. London II. Bot. 1: 456. t. 52. 1880; Beddome, Ferns Brit. India 94. 1969 (Repr. ed.); Dixit, Census Ind. Pteridophytes 63. 1984. *Aleuritopteris albomarginata* (C.B.Cl.) Ching in Hongkong Nat. 10: 199. 1941.

Rhizomes with hair–pointed scales and long stipes; fronds deltoid–lanceolate with brownish scales and yellowish–white powder when young.

Fertile : August–December.

In hilly forests, frequent. Mahad–ghat; Matheran.

Ornamental.

13. **Cheilanthes farinosa** (Forssk.) Kaulf. Enum. Fil. 212. 1824; Beddome, Ferns S. India t. 191. 1863 & Handb. Ferns. Brit. India 92. 1969 (Repr. ed.); Dixit, Census Ind. Pteridophytes 64. 1984. *Pteris farinosa* Forssk, Fl. Aegypt. Arab. 187. 1775.

Herbs with tufted roots and stipes; fronds subcoriaceous, lanceolate or deltoid, pinnate, white powdery beneath.

Fertile : September–October.

In hilly forests, frequent. Neral to Matheran; Sudhagad, Pali.

Ornamental.

7. PTERIDACEAE

14. **Pteris biaurita L.** Sp. Pl. 2 : 1076. 1753; Dixit, Census Ind. Pteridophytes 69. 1984. *Campteria biaurita* (L.) Hook. Gen. Fil. t. 65A. 1841; Beddome, Ferns S. India t. 44. 1863. & Handb. Ferns Brit. India 116. 1969 (Repr. ed.).

Herbs; fronds subcoriaceous, membranous, pedately ovate, pinnate; pinnae lanceolate, acuminate, lowest pairs 2–3–pinnate, lower veins uniting, anastomosing.

Fertile : October.

In hilly forests, infrequent. Dahen forests, Mhashla; Mahad.

15. **Pteris pellucida** Presl, Rel. Haenk. 1: 55. 1825; Beddome, Ferns S. India t. 38. 1863 & Handb. Ferns Brit. India 106. 1969 (Repr. ed.); Dixit, Census Ind. Pteridophytes 71. 1984.

Caudex short, thick, creeping; fronds simple, lanceolate, ternate or pinnate; pinnae 3–11 with simple or forked, close horizontal veins.

Fertile : June–February.

In hilly forests, frequent. Matheran; Sudhagad near Pali.

16. **Pteris quadriaurita** Retz. Obs. Bot. 6: 38. 1791; Beddome, Ferns S. India t. 31. 1863 & Handb. Ferns Brit. India 110. 1969 (Repr. ed.).

Caudex short, erect· fronds cordate–ovate, pinnate; pinnae 4 to many, entire or serrate; apex ending in a long tail; veins free, forked.

Fertile : September–October.

In hilly forests, infrequent. Mahad; Matheran.

8. BOLBITIDACEAE

* 17. **Bolbitis subcrenata** (Hook. & Grev.) Ching in Chiv. Ind. Fil. 3: 50. 1934; Dixit, Census Ind. Pteridophytes 162. 1984. *Acrostichum subcorenatum* Hook. & Grev. Icon. fil. t. 110. 1829. *Gymnopteris subcrenata* (Hook. & Grev.) Bedd. Handb. Ferns Brit. India 437. f. 265. 1969 (Repr. ed.).

Rhizomes thick; fronds pinnate with 4–12, alternate or subopposite, waved pinnae fertile fronds conform to sterile, contracted.

Fertile : October.

The hilly forests, infrequent. Matheran.

* 18. **Bolbitis virens** (Wall) Schott , Gen. Fil. ad. t. 14. 1834. *Acrostichum virens* Wall. ex Hook. et. Grev. Icon. Fil. t. 221. 1831. *Leptochilus virens* (Wall. ex Hook. et Grev.) C. Chiv. Ind. fil. 20. 1905. *Gymnopteris contaminens* (Wall.) Beddome, Handb. Ferns Brit. India 435. t. 264. 1969 (Repr. ed.).

Rhizomes thick, short, creeping; fronds pinnate with 11–30 , alternate, crenate pinnae; fertile pinnae much contracted.

Fertile : September - October.

In hilly forests, infrequent. Matheran.

* 19. **Bolbitis appendiculata** (Willd.) K. Iwats. in Actas Phytotax. Geobot. 18: 48. 1959. *Acrostichum appendiculatum* Willd. Sp. Pl. 5: 114. 1810. *Polybotrya appendiculata sensu* Beddome, Handb. Ferns Brit. India 424. 1969 (Repr. ed.).

Rhizomes thick, creeping; fronds pinnate with 25–50 pinnae; fertile fronds much contracted and shorter than sterile ones.

Fertile : August-October.

In hilly forests, infrequent. Matheran.

9. ADIANTACEAE

20. **Adiantum philippense** L. Sp. Pl. 2: 1094. 1753; Dixit, Census Ind. Pteridophytes 75. 1984. *A. lunulatum* Burm. Fl. Ind. 235. 1768; Beddome, Ferns S. India t. 1. 1863 & Handb. Ferns Brit. India 82. 1969 (Repr. ed.); Sharma & Vyas in Bull. Bot. Surv. India 27: 91. 1985.

Rhizomes tufted, creeping; fronds oblong; pinnate; sori marginal.

Fertile : July–October.

In hilly forests, frequent. Karnala fort; Mahad ghat; Matheran; Pen to Khopoli.

Ornamental and medicinal value. Decoction of fronds is appetiser and useful in acidity and urinal disorders. The paste of leaves is said to be used in leprosy and to overcome hair falling.

10. HEMIONITIDACEAE

21. **Pityrogramma calomelanos** (L.) Link, Handb. Erken. Gew. 3: 20. 1833; Dixit, Census Ind. Pteridophytes 79. 1984. *Acrostichum calomelanos* L. Sp. Pl. 2: 1072. 1753. *Pellaea calomelanos* (L.) Link, Fil. Sp. 61. 1841; Beddome, Handb. Ferns Brit. India 104. 1969 (Repr. ed.).

Caudex thick, scaly; fronds caespitose, bippinate; sori marginal.

Fertile : May–June.

In hilly regions, infrequent. Dongarwadi, Bhira.

Decoction of plants is said to be used to cure kidney troubles and fronds tea for Influenza, hyper–tension, fever and cough.

11. PARKERIACEAE

22. **Ceratopteris thalictroides** (L.) Brongn. Bul. Sci. Soc. Philom. Paris 1821: 186. 1822: Beddome, Ferns S. India 5: 75. 1863 & Hanb. Ferns Brit. India 123. t. 83. 1969 (Repr. ed.); Dixit, Census Ind. Pteridophytes 84. 1984. *Acrostichum thalictroides* L. Sp. Pl. 2: 1070 1753.

Aquatic or semi–aquatic with inflated stipes; fronds succulent, simple or bi–tripinnate, ultimate segments pod–like in fertile ones.

Fertile : October.

In hilly forests, frequent. Bhira, Roha.

Fronds used as poultice in skin diseases, blood clotting and young fresh leaves as vegetable curry.

12. MARSILEACEAE

23. **Marsilea minuta** L. Mant. Pl. 308. 1771; Gupta, Marsilea Monogr. No. 2. 23. f. 7, 7a. 1962; Dixit, Census Ind. Pteridophytes 85. 1984.

Semiaquatic herbs; leaflets 4, entire, crenate–serrate; fruits rounded, ribbed and bordered.

Fertile : May–October.

In ponds and ditches, frequent. Roha.

Dried stipes used for decorative purposes. Whole plant is medicinally valued. The leaves and sprouts are cooked as vegetable and sold in market.

13. PTERIDIACEAE

24. **Pteridium aquilinum** (L.) Kuhn. V. Deck. Reis. 3(3): 11. 1879. Dixit, Census Ind. Pteridophytes 98. 1984. *Pteris aquilina* L. Sp. Pl. 2: 1075. 1753; Beddome, Ferns S. India t. 44. 1863; Handb. Ferns Brit. India 115. 1969 (Repr. ed.).

Rhizomes stout, creeping, underground with erect stipes, 10–20 cm; fronds subdeltoid or compound with double involucre.

Fertile : September–October.

In hilly forests, infrequent. Mahad ghat; Matheran.

It yeilds 'dye'. Decoction of rhizomes and fronds given in chronic disorders of viscera & spleen. Fronds are poisonous and harmful to grazing animals.

14. THELYPTERIDACEAE

25. **Christella parasitica** (L.) Lev. fl. Koutesycheon 475. 1915; Dixit; Census Ind. Pteridophytes 106. 1984. *Polypodium parasiticum* L. Sp. Pl. 2: 1090. 1753. *Nephrodium procurrens* (Mett.) Bak. Sp. Fil. 290. 1867; Beddome, Handb. Ferns Brit. India suppl. 67. 1892 (*pro* prate) *N didymosorum* Beddome *op. cit.* 279. 1969 (Repr. ed.). *N. tectum* Beddome *op. cit.* 79. 1892.

Rhizomes creeping; fronds bi–pinnatifid with anastomosing veins; sori globose, indusiate.

Fertile : October.

In moist, swampy places, infrequent. Bhira; Dahen forests, Mhasla.

15. ASPLENIACEAE

26. **Asplenium indicum** Sledge, Bull. Brit. Mus. (N.H.) 3: 264. 1965; Dixit, Census Ind. Pteridophytes 118. 1984. *A. planicaule* Wall. ex Mett. Aspl. 157. 1857; Beddome, Ferns S. India t. 139. 1863. *A laciniatum sensu* Beddome, Handb. Ferns Brit. India 154. 1969 (Repr. ed.).

Stipes and rachis scaly; fronds linear, upto 60 cm; pinnae numerous, pinnatifid, pinnatisect; sori copious.

Fertile : September–October.

In hilly forests, infrequent. Mahad ghat; Matheran.

Ornamental. Fronds are said to be used to cure spleen diseases.

16. ATHYRIACEAE

27. **Athyrium falcatum** Beddome, Ferns S. India t. 151. 1865 & Handb. Ferns Brit. India 164. f. 80. 1969 (Repr. ed.); Dixit, Census Ind. Pteridophytes 126. 1984. *A. drepanophyllum* Beddome, Handb. Ferns Brit. India Suppl. 32. 1892.

Terrestrial; stipes with golden scales at base; fronds with 15 – 20 pinnae; sori many, horse–shoe shaped.

Fertile : July.

In hilly forests, infrequent. One tree hill, Matheran.

28. **Athyrium filix–femina** (L.) Roth, Rom. Mag. 2(1): 106. 1797; Beddome, Handb. Ferns Brit. India 168. 1969 (Repr.ed.); Dixit, Census Ind. Pteridophytes 126. 1984. *Polypodium filix–femina* L. Sp. Pl. 2: 1090. 1753.

Terrestrial ferns with large (30–120 cm), bipinnate fronds; involucres subpersistent in two rows.

Fertile : September.

In hilly forests, infrequent. Matheran.

29. **Athyrium hohenackerianum** (Kuntze) Moore, Ind. Fil. XLIX. 1857. Beddome, Ferns S. India t. 151. 1865 & Handb. Ferns Brit. India 163. 1969 (Repr. ed); Dixit, Census Ind. Pteridophytes 127. 1984. *Altantoides hohenackeriana* Kuntze, Farrankr. 2: 63. t. 126. 1850.

Terrestrial ferns with many pairs of pinnae; sori copious with linear–oblong, curved of horse–shoe shaped involucres.

Fertile : July–October.

In hilly forests, frequent. Karnala fort; Mhasla; Matheran; Sarasgad, Pali. Mahad ghat.

17. ASPIDIACEAE

30. **Tectaria macrodonta** (Fee) C. Chr. Ind. Fil. Suppl. III 181. 1934; Dixit, Census Ind. Pteridophytes 143. 1984; Sharma & Vyas in Bull. Bot. Surv. India 27: 91. 1985. *Sagenia macrodonta* Fee, Gen. Fil. 313. t. 24 A. f. 1. 1852. *Aspidium cicutarium* (L.) Sw. Schra. J. Bot. 1800 (2): 36. 1801; Beddome, Handb. Ferns Brit. India 220. 1969 (Repr. ed.).

Terrestrial ferns with tufted, much scaly stipes; fronds large, deltoid with pinnate apex and large sori.

Fertile : September–February.

In hilly regions, frequent. Mahad ghat; Matheran.

The leaves mixed with honey or decoction of leaves is said to be used to cure asthma and bronchitis.

18. DAVALLIACEAE

31. **Leucostegia immersa** (Wall. ex Hook.) Presl. Tent. Pterid. 95. t. 4 f. 11. 1936; Beddome, Ferns S. India t. 11. 1863 & Handb. Ferns. Brit. India 51. 1969 (Repr. ed.); Dixit, Census Ind. Pteridophytes 171. 1984. *Davallia immersa* Wall. ex Hook. Sp. Fil. 1: 156. 1846.

Rhizomes creeping, fibrillose; fronds deltoid, tri–pinnate; sori large, impressed.

Fertile : July.

In hilly forests, infrequent. Matheran.

The young fronds are said to be cooked with potato and eaten with rice.

32. **Leucostegia pulchra** D.Don Prodr. Fl. Nepal 11. 1825. *L pulchra* (D. Don.) J. Sm. in Lond. J. Bot. 1: 426. 1842; Beddome, Handb. Ferns of Brit. India 52. t. 25. 1969 (Repr. ed).

Rhizomes creeping with peltate scales; fronds lanceolate deltoid, 3–4–pinnatifid; sori copious.

Fertile : July.

In hilly forests, infrequent. Matheran.

19. AZOLLACEAE

33. **Azolla pinnata** R. Br. Prodr. Fl. N. Holl. 167. 1810; Baker, Handb. of the Fern–allies 138. 1984. (Repr. ed.); Dixit, Census Ind. Pteridophytes 174. 1984.

Aquatic ferns with feathered root fibres and single and crowded fronds.

Fertile : Almost throughout the year.

In small ditches, frequent. Near Kundalika river, Roha.

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VII	10	*huegalli*	*huegelli*
	10	*reparia*	*riparia*
VIII	4	*pubescence*	*pubescens*
	15	*Dendropthoe*	*Dendrophthoe*
XIII	19	*Acacia concinna*	*Acacia rugata*
XV	7	36	39
	17	1136	1137
XVI	33	*Achyranthus*	*Achyranthes*
XVII	7	*membranaceous*	*membranaceus*
XXII	19	*Daly.*	Dalz.
XXV	29	*N. membranaceous*	*N. membranaceus*
XXVII	26	(*Graf.*)	(Grah.)
XXXI	37	HIPPOCRATEACEAC	HIPPOCRATEACEAE
31	11	mericorps	mericarps
33	5	bracches	branches
39	21	scross	across
57	8	*C. tabularis* bur.	*C. tabularis* var.
63	9	panincled	panicled
	13	*Madval*	*Madvel*
67	4	2. TETRASTGMA	2. TETRASTIGMA
	20	Cyclindric	Cylindric
68	32	Prds.	Pres.
73	26	*Schmidelia*	*Schmidella*
86	27	*Yekel*	*Yekyel*
105	8	*T. canaremsis*	*T. canarensis*
107	31	*letebrosa*	*latebrosa*
173	20	tubeous	tuberous
176	17	Hool	Hook.
	18	Mukh. in	Mukh. & Const. in
	21	stm	stem
	22	triagular	triangular
182	31	1795	1796
183	27	1796	1795
186	13	*Hedyotas*	*Hedyotis*
195	1	not above	not as above
197	18	*sarmantosa*	*sarmentosa*
216	8	**Angallis**	**Anagallis**
223	3	*pubescence*	*pubescens*
233	12	ICUN	IUCN

244	15	CENTAURIIM	CENTAURIUM
255	13	stigmas	stigmas
257	34	S. Monso	S. Manso
259	23	obovtae	obovate
267	31	branching	branches
267	3	*pubescence*	*pubescens*
274	18	*S.vicosa*	*S.viscosa*
275	32	Spring	Spreng.
	36	resting	rooting
283	23	A. DC. DC.	A. DC. in DC.
285	7	Icontt. 1337. &	Icon. tt. 1337 &
291	34	subeafual	subequal
295	32	cosats	coasts
300	3	*N. membranaceous*	*N. membranaceus*
	16	**membranaceous**	**membranaceus**
	18	*membranaceous*	*membranaceus*
311	25	*J. procumbens var. simplex 5*	*J. procumbens 5*
312	21	**diffusia**	**diffusa**
323	10	pedenulate	pedenculata
347	4	*oblanga*	*oblonga*
359	last	*B.stipularis 1*	*B.scandens 1*
360	17	Inida	India
369	7	brancehes	branches
373	2	*C.trmorensis 2*	*C.timorensis 2*
388	9	**ocharcea**	**ochracea**
410	15	*M. ochraceum 4*	*M. crocea 4*
444	22	*F. littorlais 9*	*F. littoralis 9*
470	16	ellipspid	ellipsoid
483	35	*B.miliifomis 3*	*B.miliiformis 3*
484	24	**miliifomis**	**miliiformis**
497	23	Pres. Grass.	Pres. Bombay 3: 558. 1958 (Repr.ed.); Blatt. & McC. Bombay Grass.
498	15	prtmnials	perennials
507	2	Pachchad	Pachhad
	11	lancedate	lanceolate
512	8	**thunberagianus**	**thunbergianus**
	15	**Microsoruim**	**Microsorium**
515	8	*A.subcorenatum*	*A.subcrenatum*
	15	(Wall)	(Wall.ex Hook. *et* Grev.)

★ ★ ★